The Water Report™

Water Rights, Water Quality & Water Solutions in the West

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Coal Train Issues

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& More!

MANAGED AQUIFER RECHARGE

BENEFITS OF PUBLIC-PRIVATE PARTNERSHIP

by David R. Tuthill, Jr., Hal N. Anderson, Idaho Water Engineering (Boise, ID) and Michael Comeskey (Boise, ID)

INTRODUCTION

Demands on water are increasing worldwide, including the western United States. Supplies in many basins are fully allocated and competition is rapidly increasing to secure future needs. Conservation and improved efficiency, while helpful, will not provide enough savings to satisfy all future needs. Additional storage is needed to maximize water management and enhance precious water supplies. Natural storage in snowpacks is depleting earlier in the year and the best surface water storage sites have already been developed. Remaining surface sites face decreasing public funding and new environmental requirements. **M**anaged **a**quifer **r**echarge (MAR), which uses aquifers to store water for later use, is an increasingly viable storage solution.

This is the final of a three-part series in *The Water Report* exploring issues related to MAR. Part 1 (Mortimer, *TWR*# 127) provided a brief technical background and an overview of laws affecting MAR in Arizona, California, Colorado, and Idaho. Part 2 (Tuthill & Mortimer, *TWR* #129) explored legal issues specifically related to MAR in these four states. This third article focuses on the potential to implement MAR, with a special emphasis on public-private partnerships. This article builds on a discussion of conjunctive administration and conjunctive management challenges described in a 2013 article in *The Water Report* — Tuthill, Rassier & Anderson, *Conjunctive Management in Idaho, TWR* #108 (PDF versions of back issues are available to *TWR* subscribers upon request, email: thewaterreport@yahoo.com).

This article discusses: needs for mitigation water for existing and new uses; threatened uses of water; opportunities for water development; examples of MAR; and current developments in the use of MAR in Idaho. These Idaho developments may well illustrate a path forward for other western states.

THE IDAHO EXPERIENCE

Background

Idaho is similar to other fast-growing western states in experiencing increased demands of water. Expanding uses are particularly associated with urbanization, environmental purposes (e.g., endangered species), and energy production. Some recent uses have only developed in the last 50 years, while prior established water uses were primarily for agriculture. The recently increasing frequency of drought conditions across the West has resulted in lower average water yield in many basins. The literature is beginning to predict that present drought conditions over much of the western United States could be part of a long-term trend.

Adding complexity to the scarcity of water supplies is an increasing awareness of the interface between groundwater and surface water. As an example, the recently completed Snake River Basin Adjudication (SRBA) resulted in the decree of more than 158,000 water rights covering 87% of Idaho. The SRBA Court found that every groundwater

Managed Aquifer Recharge

Conjunctive Management

Curtailment

Economic Impacts

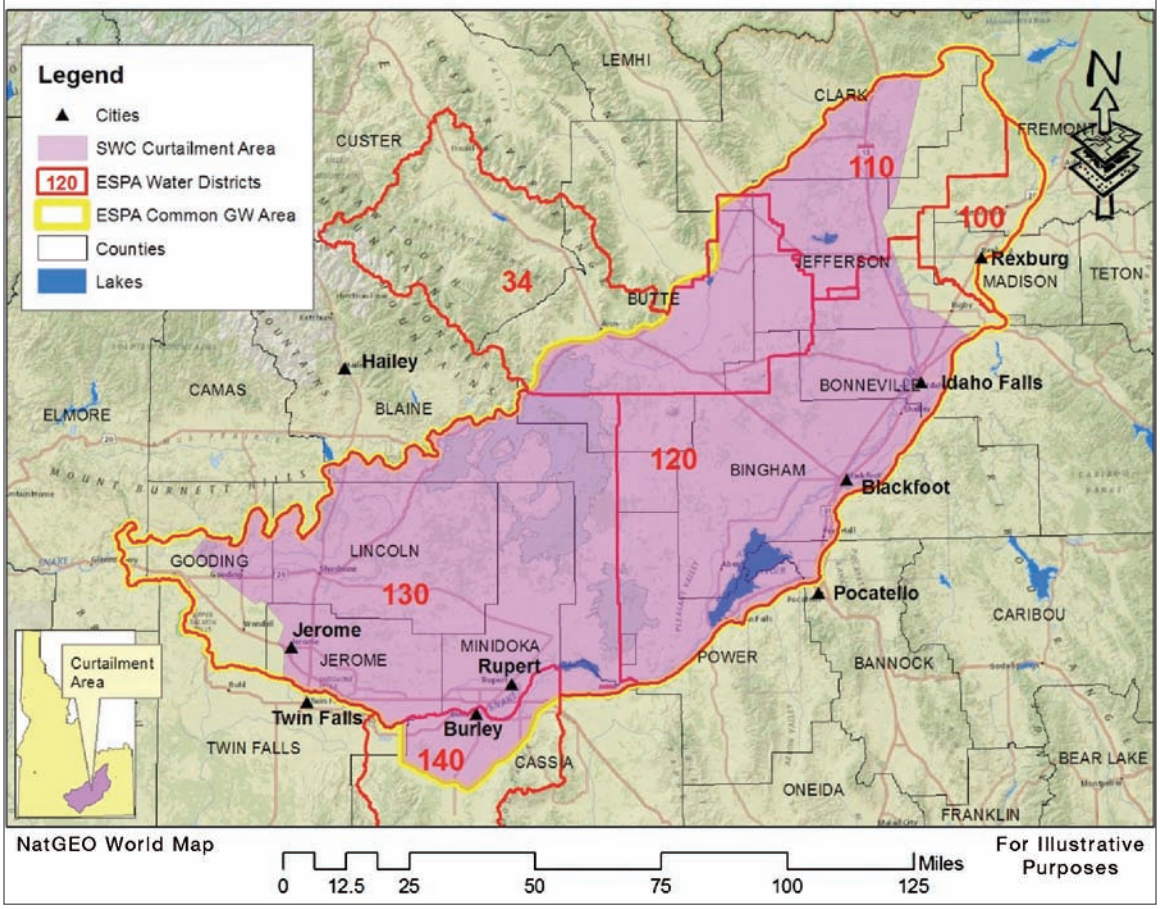
right decreed in the SRBA is connected to surface water. Consequently, the State of Idaho is engaged in a process of administering an increasing number of basins conjunctively as required by state law. Tuthill, Rassier & Anderson,, *TWR* #108. Conjunctive administration or management means that surface water rights and groundwater rights are regulated together (conjunctively) based on their respective priority dates, rather than as separate sources of water. In Idaho, junior groundwater rights avoid curtailment under conjunctive administration by providing mitigation.

Needs for Mitigation Water – Existing Uses

To find an example of the potential impact of conjunctive administration on delivery of groundwater rights, one must merely examine activities in the Upper Snake River Basin early in 2014. The water supply outlook for 2014, considering both snowpack and surface reservoir carryover (remaining storage water) caused many to be concerned. Thus on January 28, 2014, the Director of the Idaho Department of Water Resources sent a letter to more than 1,000 holders of groundwater rights in the basin warning of the potential for curtailment during 2014. The Director's letter stated that based on computed predictions, there was a 50% chance that no curtailment would be required and a 30% chance that groundwater rights with priority dates junior to May 31, 1989, would be curtailed to satisfy a delivery call made by the Surface Water Coalition (SWC). The SWC consists of seven large irrigation companies and irrigation districts that have senior surface water rights in the lower reaches of the Upper Snake River Basin. *See* www.idwr.idaho.gov/news/curtailment/2014/01Jan/Curtailment_WarningLtr012714_Final.pdf. This letter was accompanied by a map similar to the one shown in **Figure 1**, describing the area impact of the SWC delivery call. Note that the area extends about 70 miles by about 120 miles — covering most of the Eastern Snake Plain Aquifer.

It would be difficult for any groundwater user to survive a year without the right to divert water. Thus, literally hundreds of farming operations had a 30% chance of facing bankruptcy, or at best serious economic impacts due to this delivery call. Ultimately, generous late winter and early spring precipitation obviated the need for curtailment during 2014. However, based on the law of averages it is only a matter of time before curtailment or significant mitigation expense will be required. In a sequence of years where the basin precipitation is significantly below the 30-year average water supply, mitigation requirements become increasingly more difficult for groundwater users to meet through the purchase of unused surface storage.

Figure 1. Map of Potential Surface Water Coalition Curtailment Area



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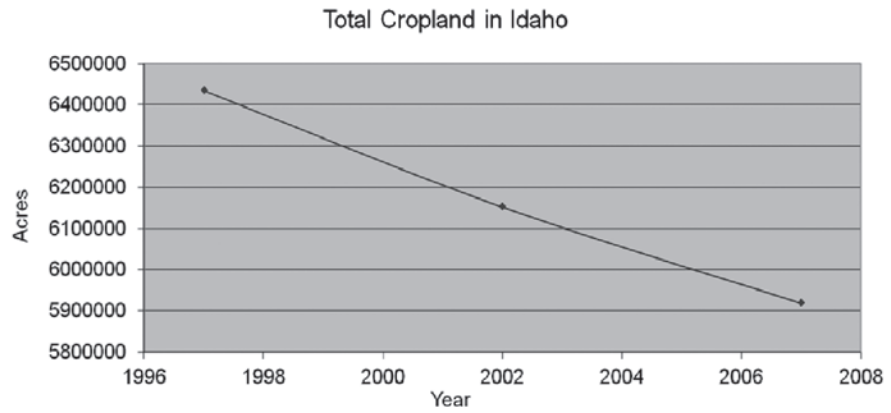
Needs for Mitigation Water – New Uses

The Eastern Idaho Water Rights Coalition was formed to find new sources of water to satisfy growing demand in the eastern portion of the state. This organization has worked for the past seven years to actively promote alternatives to the "buy and dry" technique of drying up valuable farmland to provide water for other uses. Municipalities, subdivisions, commercial users, industrial users, and irrigation entities comprise the Board of Directors for this organization, which has been a champion of MAR over the years.

Figure 2. Idaho's Declining Farmed Land

Source: USDA Census of Agriculture for Idaho



Losses from 1997 to 2007: - 516,547 acres of crop land (8.0%)
234,916 acres of irrigated farmland (6.9%)

The combination of "buy and dry" and federal crop set-aside programs has reduced irrigated acreage in Idaho over the years. The US Department of Agriculture periodically develops census data for agricultural production. Their 1997 and 2007 census reports are particularly troubling relative to the farm sector given that agriculture is still a large segment of the state economy. As depicted in **Figure 2** the decline in farmland has been significant.

Concerns about declining farm acreage have also been expressed by those who understand the significance of losing markets and market share. An article in the Twin Falls Times News on October 26, 2014 ("*Loss of Crop Land to Development Worries County Officials*") describes the discussions among members of the Twin Falls County Planning and Zoning Commission as they consider the impacts of loss of crop land production to other urban uses.

Water Transfers

THREATENED USES OF WATER

Most water distribution from natural water sources in the western United States follows the major principle of western water law's prior appropriation doctrine. Under prior appropriation, "first in time is first in right"— i.e., those earliest to put water to beneficial use retain a prioritized right to use the amount of water needed for that use, before use by subsequent water developers. However, water rights are real property rights and ultimately water flows to uses with the highest ability to pay via sales and transfers. One only needs to look at the thriving and growing municipalities in the driest portions of the West to see this occurring. Better financed municipal uses will ultimately acquire agricultural water over time. Further, the addition of environmental water demands, including endangered species, places more stress on already-depleted systems and drives water prices beyond agriculture's ability to pay. **Table 1** depicts selected water uses, sorted in order of volume used in column 1, and by ability to pay in column 3. Quantification of values for column 3 will differ from area to area.

Table 1. Volumes Used and Ability to Pay for Selected Water Uses

Use, sorted by Volume of Use in 2010	Volume of Use in 1000s of acre-feet*		Ability to Pay, sorted by Highest to Lowest
Thermoelectric Power	180,200		Self-Supplied Domestic
Agriculture (Irrigation, Livestock, Aquaculture)	141,840		Public Supply
Public Supply	47,000		Self-Supplied Industrial
Self-Supplied Industrial	17,900		Mining
Mining	5,960		Thermoelectric Power
Self-Supplied Domestic	4,040		Environmental
Environmental	Not shown		Agriculture (Irrigation, Livestock, Aquaculture)

*US Geological Survey, 2014, "Estimated Use of Water in the United States in 2010"

Managed Aquifer Recharge

This shift from agriculture, which often has the senior priority water rights, to other uses erodes the capability in the western US to produce food at a time when demand for food and commodity prices are steadily rising in world markets. Agriculture has provided a steady economic base for Idaho and other states during the recent recession and will be a vital segment of our national economy long into the future. Needed support for agriculture will require better water management, including enhanced storage. Because surface water storage sites are scarce and associated costs prohibitive, MAR represents a highly viable management option that can help meet existing and future needs — including agriculture.

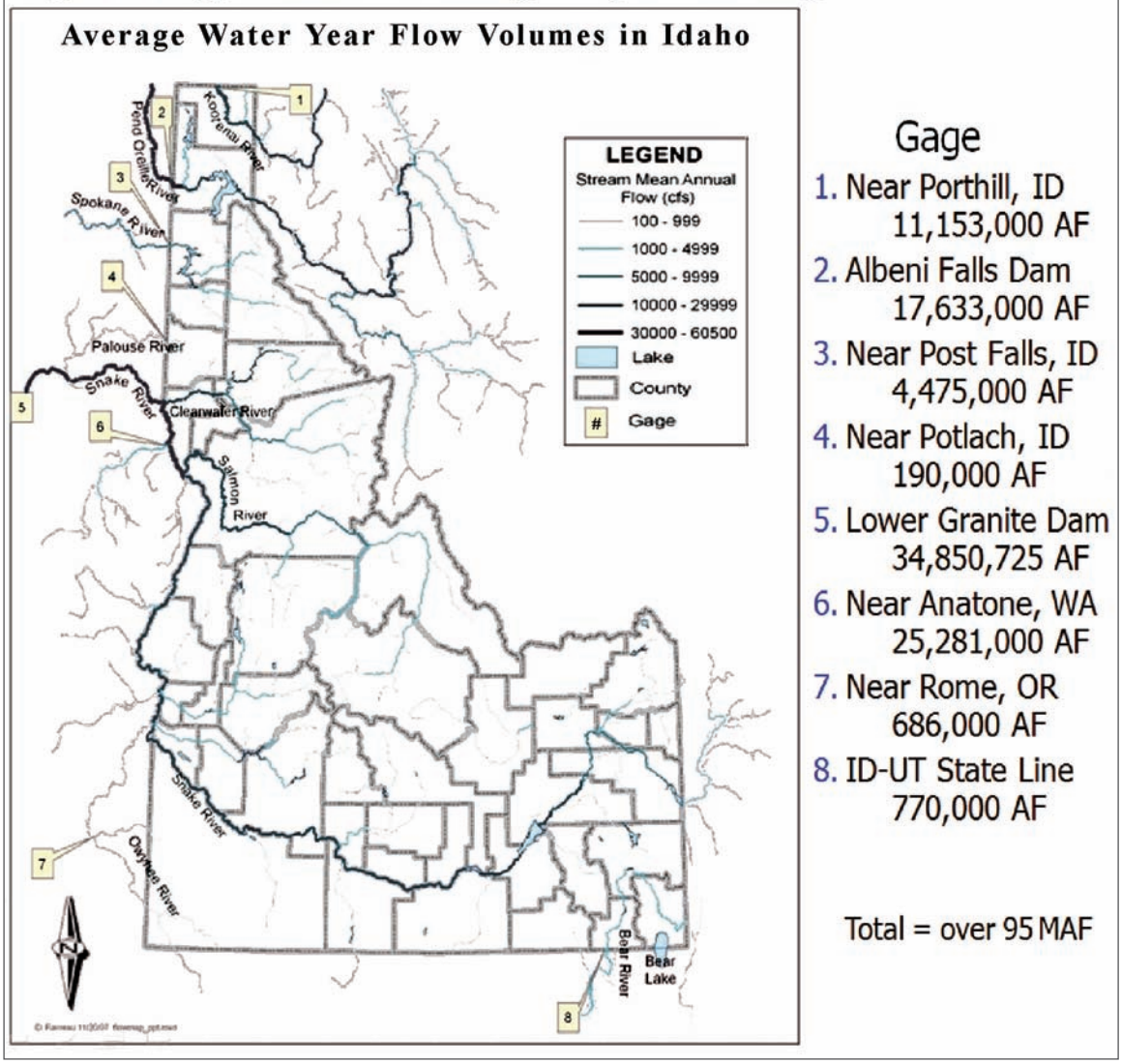
OPPORTUNITIES FOR WATER DEVELOPMENT

THE IDAHO EXAMPLE

Spring Runoff

For many water sources in the western US, there are times during the year when available water supplies exceed demands — even in basins where supplies are believed to be "fully appropriated" and additional water rights are unavailable. This is true for both major river drainages and smaller ephemeral systems. In Idaho, some streams are totally depleted by existing uses every summer, but during the spring runoff water flows downstream in excess of all recorded uses. Some of this water, if stored, could provide for beneficial uses later in the year or in subsequent years. Idaho, a mountainous state with abundant headwaters, has ample annual runoff — as depicted in **Figure 3**.

Figure 3. Opportunities for Managed Aquifer Recharge



Flow Volumes

Storage Purpose

While these flows are large, it is important to note that water shortages are experienced by surface water users in many parts of the state during years when the basin water yield is below average. Storage of additional water is needed during times of plenty to enable delivery during time of scarcity.

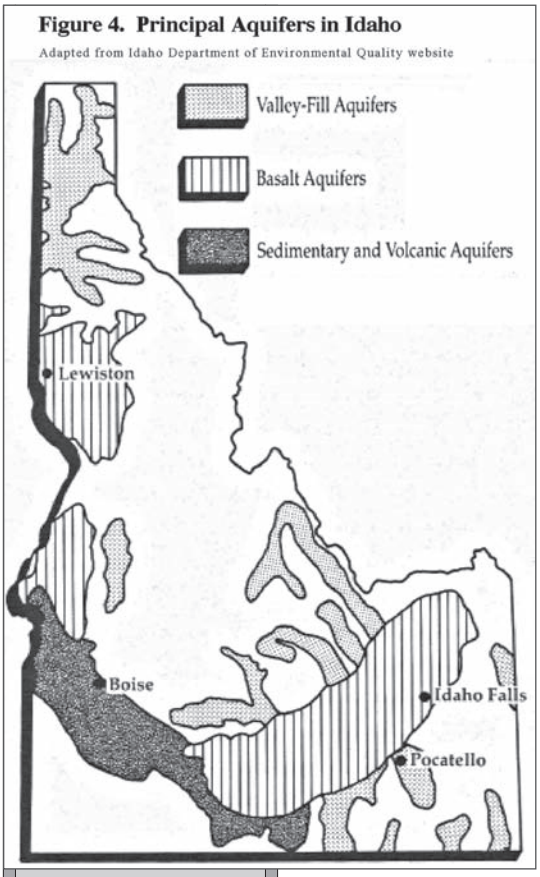


Figure 4. Principal Aquifers in Idaho

Adapted from Idaho Department of Environmental Quality website

Nearly five million **a**cre-**f**eet (AF) of surface water surface storage has been constructed in the Upper Snake River Basin since 1906. These storage facilities provide additional water, including supplemental irrigation supplies during late summer when base flows are insufficient to meet irrigation requirements. The Teton Project was first studied in the 1960's and was authorized to store over 300,000 AF of unappropriated water. This reservoir was constructed during the early 1970s but failed during its first fill in 1976. Ever since this tragic failure many have continued to argue for reconstruction. Recently the State of Idaho sponsored a review of options for storage in the Teton basin. The study was instructive because it placed in doubt the construction of any future surface storage under the Federal Reclamation Act. The costs of surface storage are simply too high to be justified and approved by Congress. New surface reservoir construction anywhere in the western US is equally unlikely. Thus the only water management option remaining is to retain more water in the subsurface reservoirs we call aquifers.

Taking Idaho as an example we find many aquifers that might provide storage opportunities, as depicted in **Figure 4**. Volume of the potential storage is measured in millions of acre-feet, thus the potential for storage is vast.

MAR provides an opportunity to store large volumes of additional water without evaporation losses. While this water is not as readily measured as is surface storage, modern groundwater modeling techniques enable tracking of water within aquifers. MAR projects should be as conducive to **p**ublic-**p**rivate **p**artnerships (PPPs) as the surface storage projects that were built under the 1902 Reclamation Act (see *Conjunctive Management in Idaho, TWR* #108). Case studies provide snapshots of how PPPs have been successfully implemented in some western states.

CASE STUDIES

Encouraging Investment

State of Arizona

The State of Arizona has the most advanced laws and procedures for MAR among the western states. While described in more detail in Parts 1 and 2 of this three part series (*TWR*s #127 and #129), as the most successful case of state programs available, we mention it again here. **Figure 5** depicts the relationship established between the State of Arizona, the Central Arizona Project, and the private sector. This relationship has resulted in an encouraging climate for private investment for both recharging water to aquifers and applying the resulting "credits" to a range of beneficial uses. *See* also, *Gila River Water Storage,* page 20, this *TWR*.

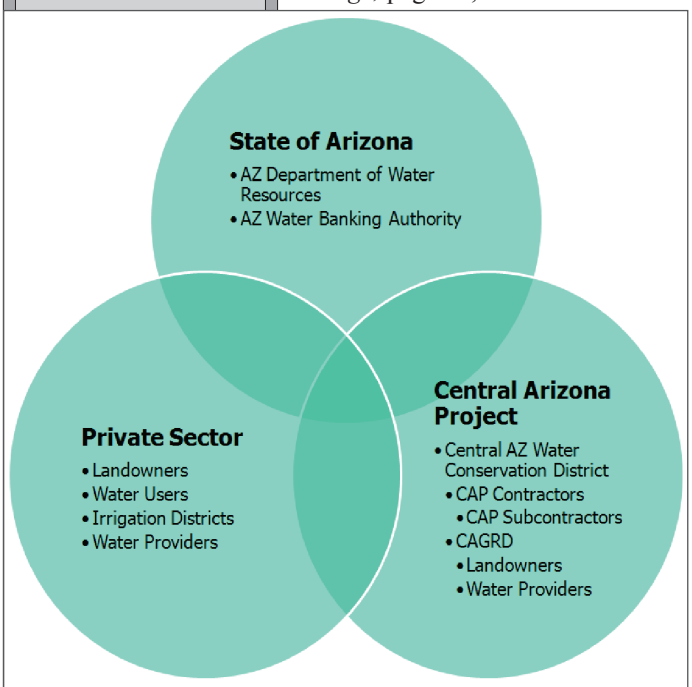


Figure 5. Public-Private Partnerships in Arizona

City of Santa Paula, California

The City of Santa Paula (City), California obtains its drinking water from the Santa Paula Groundwater Basin (Basin), a sub-basin of the Santa Clara River Valley Basin (City of Santa Paula Water Supply Facts at: http://limoneira-4ec70e40.s3.amazonaws.com/PDF/City-of-Santa-Paula-Water-Supply-Facts-8-14-13.pdf). In 2007, the Los Angeles Regional Water Quality Control Board gave the City a deadline to bring its wastewater treatment facility into compliance with state discharge requirements or face $8 million of fines. *See* Santa Paula Water, LLC, at: www.santapaulawater.com/aboutus.html.

In May 2008, the City awarded a 30-year PPP contract to Santa Paula Water, LLC, a joint venture between PERC Water Corporation and Alinda Capital Partners, to **d**esign, **b**uild, **o**perate, and **f**inance (DBOF) a new membrane bioreactor wastewater treatment facility (www.water-technology.net/projects/santapaularecyclingf/). Under the terms of the DBOF contract, Santa Paula Water was responsible for the design and construction of the new facility using only privately-raised funds. By utilizing private capital, the City avoided issuing bonds during an economically unstable period when municipal bond rates were falling rapidly. After construction, Santa Paula Water would also be responsible for operating the facility for a period of thirty years, with specific performance and cost guarantees built into the contract.

Managed Aquifer Recharge

Recycled Water Savings

Santa Paula Water met the City's goals, which included: no capital outlay by the City; the creation of local jobs; meeting effluent permit requirements; and reducing the City's energy costs. The contract between the City and Santa Paula Water limits the risk to the City of increased costs from rising energy prices. The energy cost risks have been transferred from the rate payers to the Santa Paula Water. In addition, any energy savings are split between the City and the vendor.

When complete, the City avoided $18 million in construction costs, increased the design capacity by 25%, and reduced the energy consumption by 30%. The City also avoids $1.8 million per year in current operating costs. Once the plant's wastewater is treated, the effluent is held in percolation ponds to recharge the Basin. The plant is currently producing 2,200 acre-feet per year of recycled water. *See*: *Public-Private Partnership Created Substantial Savings For the Citizens of Santa Paula* at: http://waterindustry.org/Water-Facts/Santa%20Paula-1.htm.

Private Funding

The City of Santa Paula PPP was the first to take advantage of California Government Code Section 5956.10, which states, "[I]t is the intent of the Legislature that local governmental agencies have the authority and flexibility to utilize private investment capital to study, plan, design, construct, develop, finance, maintain, rebuild, improve, repair, or operate, or any combination thereof, fee-producing infrastructure facilities." It was also the first water recycling facility in the US built with only private funds. Minnick, F. (2011). *Water PERCs - CA Firm Builds First Privately Funded Water Recycling Facility*. Integration Quarterly, pp. 16-17. As depicted in **Table 2**, this PPP adds private participation to many facets that are traditionally in the public sector for this type of project.

Table 2. Roles and Responsibilities in City of Santa Paula Public-Private Partnership

	Design	Bid	Build	Operate	Maintain	Finance	Regulate
Traditional Public Works	Public	Public	Public	Public	Public	Public	Public
City of Santa Paula	Private	Private	Private	Private	Private	Private	Public

Partnership

Columbia Basin Development League

The Columbia Basin Development League (League) is a private-public partnership formed in 1964 to support the completion of the Columbia Basin Project, a multi-purpose project providing irrigation to Adams, Franklin, and Grant Counties in Washington State. The League is focused on protecting Project water rights and educating the public about the Project's benefits. *See*: *Columbia Basin Development League* at: www.cbdl.org/facts-cbdl_304.html.

Aquifer Depletion

As depicted in **Figure 6**, the League is a PPP between the federal government, the State of Washington, irrigation districts, private landowners, and **n**on-**g**overnmental **o**rganizations (NGOs) representing landowner interests. In this case, the PPP is not a network of contracts between public and private organizations for the construction of public works, but rather a true partnership that exists for the benefit of the stakeholders involved. The US Bureau of Reclamation owns the Project's infrastructure, the State of Washington permits the diversion of irrigation water from the Columbia River, three irrigation districts operate and maintain most of the Project facilities, and the landowners make up the governing boards of the irrigation districts.

Figure 6. Columbia Basin Public-Private Partnership

Many of the landowners in the eastern Columbia Basin Project area irrigate with groundwater drawn from the Odessa Aquifer (*see* www.odessarecord.com/story/2014/11/13/news/aquifer-project-progresses/2965.html?m=true). Recognition that the aquifer was being depleted at an unsustainable rate spurred a call for expansion of the Columbia Basin Project to replace groundwater irrigation with surface water supplied by the Project. The Odessa Subarea Special Study identified 90,000 acres of land that will be supplied with 164,000 AF of water from the expanded Project. *See* Odessa Groundwater Replacement Program at: www.ecy.wa.gov/programs/wr/cwp/cr_odessa.html. In response, the League has opened an office to coordinate the design and implementation of the Project expansion and to identify delivery alternatives that maximize the benefits of interested landowners. Because the League has an established record of partnership and coordination between the public and private interests involved in the Project, they are uniquely suited to facilitate the negotiation of new water delivery.

Managed Aquifer Recharge

The Columbia Basin Development League is a model for the type of public-private partnerships that will become increasingly necessary as the nation's infrastructure ages. Fixed infrastructure will require rehabilitation, replacement, or adaptation to changing conditions and demands, which will require the cooperative efforts of all parties involved. By applying the PPP model to both the infrastructure and the modification of water rights, the stakeholders in the Columbia Basin Project have established conditions to successfully mitigate for the increased demands that were causing aquifer depletion.

MANAGED AQUIFER RECHARGE IN IDAHO

Canal Infiltration

MAR has long been contemplated in Idaho, with studies conducted by the US Bureau of Reclamation, the US Geological Survey and the State of Idaho as far back as 1962. The program evolved when the Idaho Water Resource Board (IWRB) acquired water right permits for 1200 **c**ubic **f**eet per **s**econd (cfs) from the Snake River and 800 cfs from the Wood River. During the 1990s, the Idaho Legislature provided funding to enable early and late season filling of canals. The recharge efforts were administered by Water District 01. The Water District efforts resulted in the recharge to the aquifer of approximately 500,000 AF of water. More importantly this process resulted in a "proof of concept" that can be used for future groundwater recharge efforts. Dedicated recharge projects are rare and most of the MAR conducted to date has been dependent upon the use of existing canals for infiltration.

Annual Recharge

As shown in **Figure 7**, average annual recharge for the past six years has totaled almost 80,000 AF. Note the majority of recharge from the Snake River to the aquifer during these years was conducted upstream from American Falls. This is consistent with recommendations in the Eastern Snake Plain Aquifer Comprehensive Aquifer Management Plan that was adopted by the IWRB and approved by the Idaho Legislature in 2009 (*see*: www.idwr.idaho.gov/WaterBoard/WaterPlanning/CAMP/ESPA/PDFs/ESPA_CAMP_lowres.pdf p.19.

State Projects

While state-sponsored MAR has been helpful, the amount of recharge has been insufficient to insure enough water for all current needs. As noted above, this was demonstrated by the letter sent to groundwater users by the IDWR Director on January 28, 2014, concerning the potential for curtailment of their rights. During good water years the Snake River provides more water than can be recharged using the IWRB's 1200 cfs water right. In 1998, the IWRB filed applications to appropriate additional water for groundwater recharge. These applications were protested and still have not been approved. Another impediment to the adequacy of state-sponsored recharge is a lack of funding. Currently the IWRB provides $3.00 per acre-foot to deliver water to a recharge site. Recently the IWRB did receive additional legislative funding for recharge and has increased the water delivery amount for selected entities to encourage winter recharge.

Idaho's recharge program is helpful in providing some additional water to enhance overall aquifer levels. However, state funding is not anticipated to be sufficient to provide for future water needs. On June 19, 2013, two aquifer storage applications were filed by non-governmental entities. The intent of these applications was to appropriate water for MAR as privately held aquifer storage. The applications, filed by the Peoples Canal and Irrigation Company and the Snake River Valley Irrigation District, were advertised by IDWR and protests were filed. Stipulated withdrawals of the protests were obtained by the applicants, and IDWR issued

ESPA Recharge – what has been done?

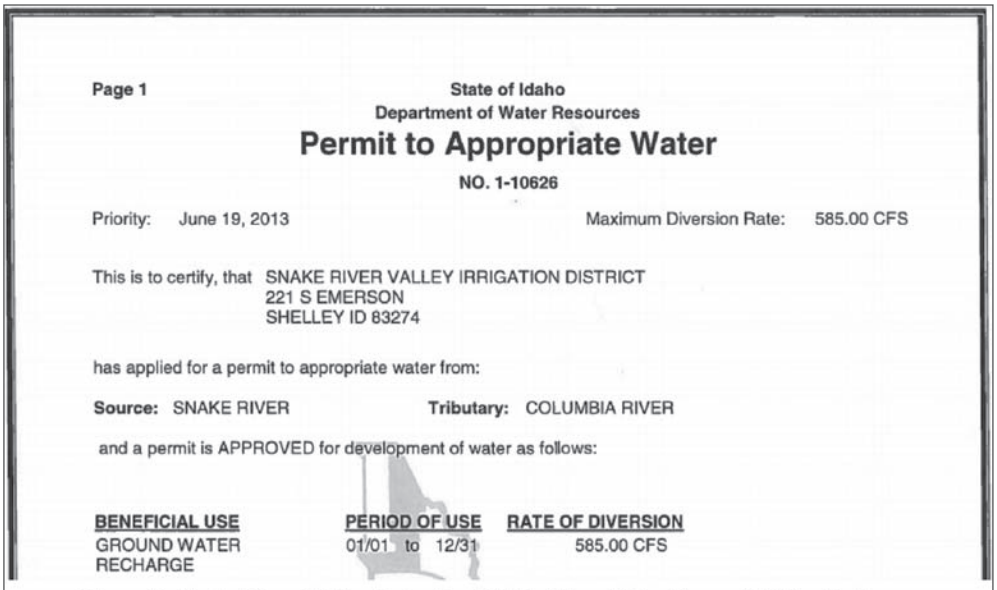
Since ESPA CAMP Approval in 2009

	Below American Falls	Above American Falls	Total
2009	46,708	77,828	**124,536**
2010	5,595	55,913	**61,508**
2011	77,614	40,430	**118,044**
2012	54,671	70,147	**124,818**
2013	3,867	0	**3,867**
2014	10,435	0	**10,435**
Average	**33,148**	**40,720**	**73,868**

Figure 7. Managed Aquifer Recharge in the Eastern Snake Plain Aquifer (slide provided by the Idaho Water Resource Board)

Managed Aquifer Recharge

permits for both water rights on October 6, 2014. As depicted in **Figure 8** the purpose/use of the water is for groundwater recharge and the season of use is year-around, whenever it is available in priority.



Page 1

State of Idaho
Department of Water Resources

Permit to Appropriate Water

NO. 1-10626

Priority: June 19, 2013 Maximum Diversion Rate: 585.00 CFS

This is to certify, that SNAKE RIVER VALLEY IRRIGATION DISTRICT
221 S EMERSON
SHELLEY ID 83274

has applied for a permit to appropriate water from:

Source: SNAKE RIVER **Tributary:** COLUMBIA RIVER

and a permit is APPROVED for development of water as follows:

BENEFICIAL USE	PERIOD OF USE	RATE OF DIVERSION
GROUND WATER RECHARGE	01/01 to 12/31	585.00 CFS

Figure 8. Snake River Valley Irrigation District Permit for Ground Water Recharge

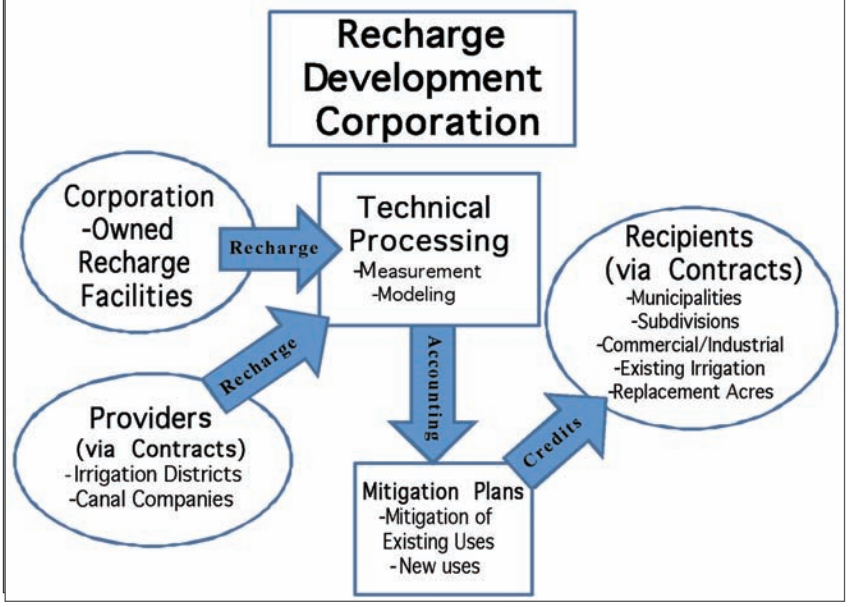
Figure 9. Diversion to Ground Water Recharge by Snake River Valley Irrigation District November 4, 2014

Snake River Valley Irrigation District (SRVID) began diverting water from the Snake River for groundwater recharge under this permit on October 30, 2014. **Figure 9** is a photgraph showing flows being diverted to MAR during November, 2014 by SRVID.

Recharging the aquifer with river flows is just one step in the MAR process. **Figure 10** provides a flowchart of the primary steps in achieving a private MAR as depicted by Recharge Development Corporation (RDC), a private corporation created to implement MAR projects. RDC initially is contracting with entities that are capable of providing water for recharge. This is made possible by specific recipients who have a need for privately held aquifer storage. The associated modeling and storage tracking provides for optimizing the benefits of recharge events. Recharge facilities can be either corporation-owned or owned by other entities. RDC conducts technical analysis, administrative processing, and provides all documentation to IDWR to demonstrate the adequacy of mitigation needed by recipients.

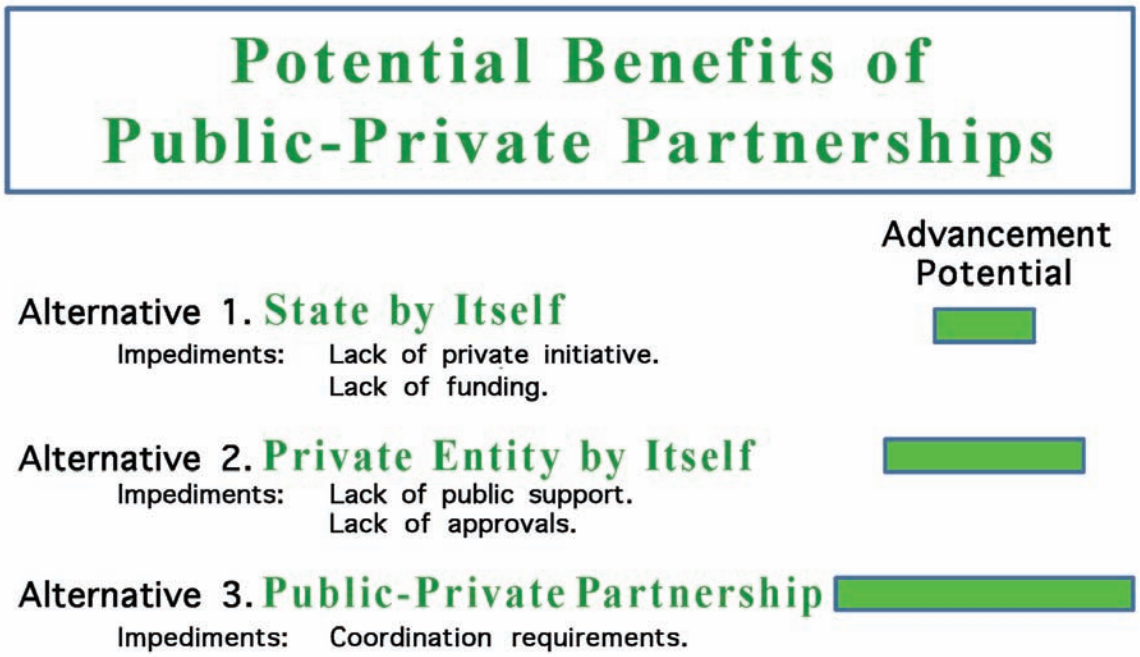
While MAR can be achieved by a public or private entity, a more optimum solution can be achieved by the two entities working together. This helps to minimize duplication and competition, and maximize efficiency while maintaining the independence and objectives of each group. Both entities necessarily must understand the value of enhanced water management. The development of private aquifer storage entitlements creates a vehicle for economic growth, which always benefits government. Government, on the other hand, has funding and administrative mechanisms that can encourage and facilitate private investment. As depicted in **Figure 11**, this is a case of the joint activity being more productive than the sum of the parts. The market-based need to satisfy customer demand, combined with the public need to enhance and manage public water supplies, has the potential of achieving positive results as shown in the case studies above. Public-private partnerships result in a powerful combination of: minimizing regulatory impediments; leveraging efforts and investments; enhancing efficiencies; and maximizing returns on investments.

Figure 10. Recharge Development Corporation Business Model



Managed Aquifer Recharge

Figure 11.



The long-term nature of major MAR projects requires staged development, as depicted in **Figure 12**. Staging enables project participants to achieve definable interim milestones while moving toward the long-term goal. This is particularly important to provide transparency and visibility by the public participants and private investors. Any joint operations need to clearly establish milestones for project tracking and contracting purposes.

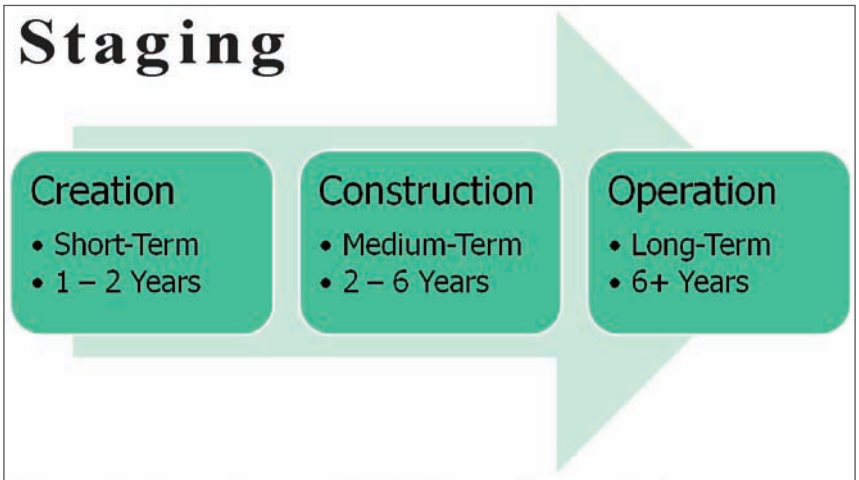


Figure 12. Staging Steps for Public-Private Partnership Implementation

CONCLUSION

Demands on water will continue to increase in the western United States. Competition for supplies is becoming more acute, hindering economic development and polarizing the water use sectors. Conservation and improved efficiency, while helpful, will not satisfy all current and future water needs. Short-term storage in snowpack is always variable. In recent years, many basins have experienced more precipitation as rain than snowfall, which results in flashier runoff with surpluses occurring earlier in the spring and shortages in the fall. Most viable surface water storage sites have already been developed and a benefit-to-cost analysis for new surface storage is rarely found to be positive. The current financial and environmental requirements effectively remove additional surface storage as a vehicle for future water management.

Managed Aquifer Recharge

Enhanced Management

Managed aquifer storage (MAR) on the other hand is an increasingly viable solution. MAR is certainly not the only option to enhance water resource management but in many areas it can provide a viable and cost-effective tool. Implementation of MAR can be significantly enhanced by public-private partnerships when compared with public or private efforts accomplished independently.

In eastern Idaho, water is available for appropriation if we develop more storage facilities. Retaining water that would otherwise be lost from the basin enhances both "management" and "storage." Absent improved management, however, water supply conflicts will undoubtedly multiply and Idaho will continue to be unable to fully utilize precious water supplies.

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Dave Tuthill is a principal in Recharge Development Corporation, which represents the vanguard of private managed aquifer recharge in Idaho. Dave has worked in the field of water resources throughout his career. He worked for the Idaho Department of Water Resources from 1976 through his retirement from the State of Idaho in 2009. During the period from January 1, 2007 through June 30, 2009, he served as Director of the agency. In this capacity he was a member of the Cabinet of Governor C.L. "Butch" Otter, charged with the responsibility for planning and administration of water resources in the State of Idaho. In 2009, he founded Idaho Water Engineering, LLC, which now consists of more than a dozen water professionals located around the State of Idaho. Idaho Water Engineering provides a wide variety of water resource engineering services including water rights analysis and solutions, and water measurement, automation and telemetry.

Michael Comeskey has worked in the water and wastewater industry for more than ten years. Michael graduated in 2002 from Washington State University with a Bachelor of Science in Biology and is a 2014 graduate of Boise State University's Executive MBA program. A generalist, Michael has developed innovative methods for integrating business and technology into the technical management of wastewater systems. Michael was an Environmental Health Specialist for four years in western Washington and, most recently, Michael managed the business, GIS, and IT functions of the Bench Sewer District in Boise, Idaho. Michael is now the Utilities Asset Manager for the City of Boise Public Works Department and is developing the City's strategic asset management plan and integrated asset management system.

Hal Anderson began his Idaho career in 1975 at the University of Idaho in the College of Natural Resources (CNR), after completing a four year tour of duty in the US Air Force. Hal was on staff at CNR and after completing his Masters degree came to the Idaho Department of Water Resources (IDWR) in 1981. Hal served in a variety of increasingly responsible positions within IDWR. Hal was Technical Services Bureau Chief for 12 years prior to his promotion to Planning and Technical Services Division Administrator in 1999. As division administrator Hal managed and supervised the hydrogeologists, hydrologists, planners, modelers, engineers and GIS specialists that provided the technical support to IDWR and the Water Board. Hal also served as the lead staff person for the Idaho Water Resource Board. As lead staff person Hal managed Board programs, represented the Board in various professional and political capacities including working directly with the Governor's Office and the Idaho Legislature. Hal is currently Managing Partner of Idaho Water Engineering, LLC.

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Texas v. New Mexico and Colorado

NO. 141 ORIGINAL: UPDATE AND SUMMARY

by Sarah A. Bond, New Mexico Assistant Attorney General (Santa Fe, NM)

INTRODUCTION

Special Master

New Mexico's motion to dismiss both the Texas and United States Complaints is fully briefed. On November 3, 2014, the United States Supreme Court issued an order appointing A. Gregory Grimsal as special master, "with authority to fix the time and conditions for the filing of additional pleadings, to direct subsequent proceedings, to summon witnesses, to issue subpoenas, and to take such evidence as may be introduced and such as he may deem it necessary to call for."

A broad summary of the case, claims, defenses raised, and current procedural status follows. Because the author is counsel of record for New Mexico, this article is limited to the public record in the case. Disclaimer: *This article does not necessarily express the official views of the New Mexico Office of Attorney General Gary K. King.*

ORIGINAL SUPREME COURT JURISDICTION

Original Jurisdiction

The US Supreme Court (Court) has original jurisdiction over controversies between states. U.S. Const. art. III, § 2, cl. 2. In controversies between or among states, that jurisdiction is exclusive. 28 U.S.C § 1251(a). In theory, that jurisdiction is only granted sparingly. *Louisiana v. Texas*, 176 U.S. 1, 15 (1900). In weighing whether to grant a state's motion for leave to file a complaint against another state, the Court balances the need to preserve its docket for its primary function as the nation's highest appellate court against its fundamental constitutional obligation as the court of only resort for disputes between the repositories of all sovereignty not delegated to the federal government, i.e., the states. *Illinois v. City of Milwaukee*, 406 U.S. 91, 93-94, 92 S.Ct. 1385, 1388, 31 L.Ed.2d 712, 718 (1972). The Court considers two factors when determining whether to grant leave (permission) to file an original complaint: first, "the nature of the interest of the complaining state, focusing on the seriousness and dignity of the claim," and second, "the availability of an alternative forum in which the issue tendered can be resolved." *Mississippi v. Louisiana*, 506 U.S. 73, 77 (1992) (internal quotations and citations omitted). In accordance with its long-standing precedent, the Court has rejected motions for leave when an alternative forum exists. *Arizona v. New Mexico*, 425 U.S. 794 (1976).

The Court has explained that the constitutional provision is intended to provide an avenue for the peaceful resolution of only the most serious disputes between states. "The model case...is a dispute between States of such seriousness that it would amount to casus belli [Latin for "an act or event that provokes or is used to justify war"] if the States were fully sovereign. *Texas v. New Mexico*, 462 U.S. 554, 571, n. 18, 103 S.Ct. 2558, 77 L.Ed.2d 1 (1983)." *South Carolina v. North Carolina*, 130 S.Ct. 854,869 (2010).

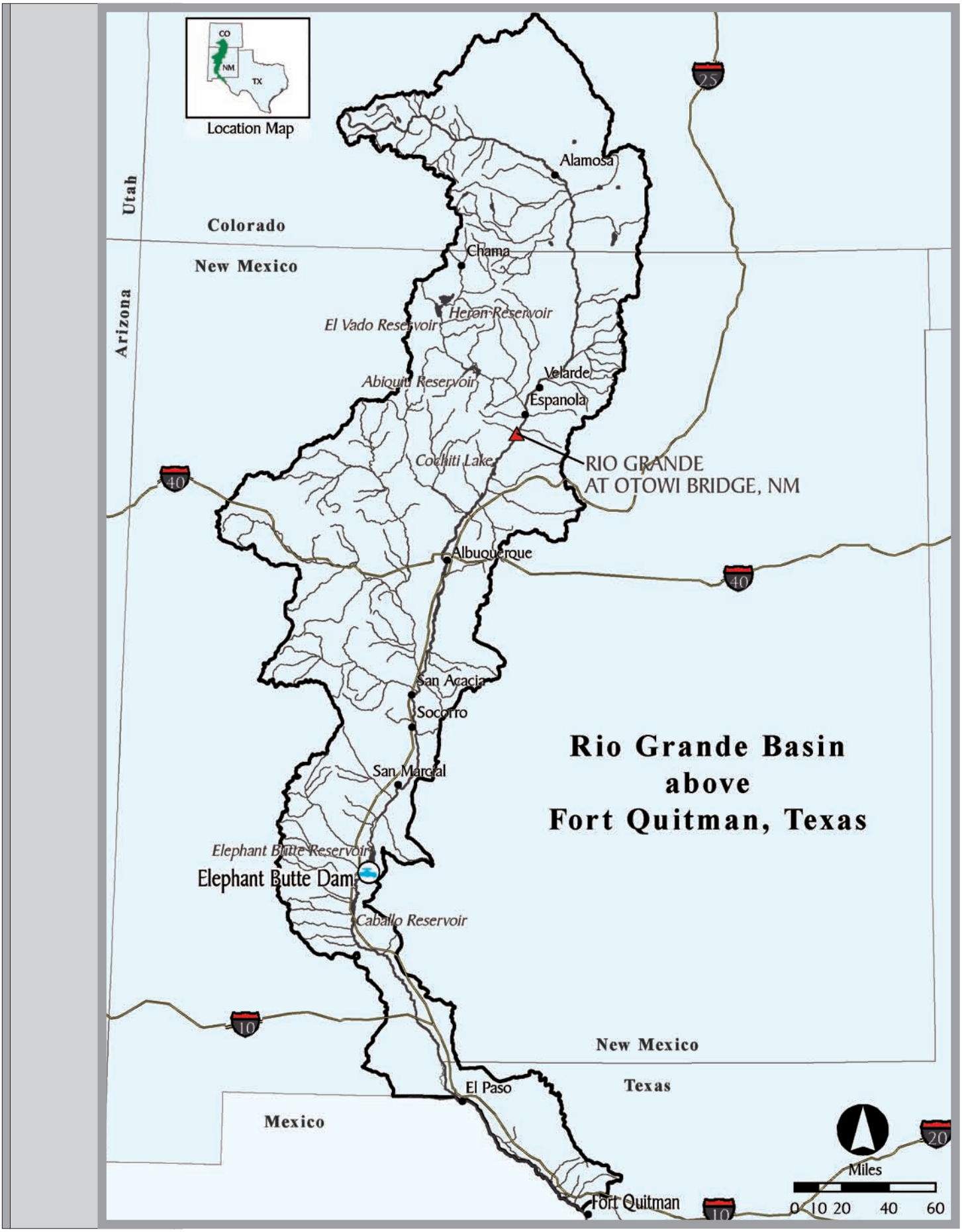
Despite the consistent precedent that motions for leave are sparingly granted, in practice, the Court virtually always accepts such motions when brought by a state against another state to enforce an interstate water compact.

BACKGROUND FACTS: RIO GRANDE COMPACT & RIO GRANDE PROJECT

River Diversion

Rio Grande

The Rio Grande is an interstate and international river that arises in Colorado and flows in a generally southerly direction through New Mexico to Texas, where it forms the border between Texas, USA, and Mexico, continuing south/southeast until it empties in the Gulf of Mexico. Most of the land in the Rio Grande basin is arid and irrigation is required to sustain agriculture. The Rio Grande basin has long been functionally divided into upper and lower sections at Fort Quitman, Texas. The current litigation arises from the portion of the river Compacted among Colorado, New Mexico and Texas from the headwaters in Colorado near Creede, through New Mexico, into Texas near El Paso, thence to Fort Quitman, Texas. ***See* Map,** next page. This segment is referred to, vis-à-vis the entire river, as the Upper Rio Grande. Within New Mexico, to describe the purely intrastate regions, the river is divided into Upper, Middle and Lower. In New Mexico, the river below San Marcial is referred to as the Lower Rio Grande (LRG). The underground basin there is referred to as the Lower Rio Grande Underground Water Basin.



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Rio Grande Project and 1906 Treaty with Mexico

Disputes over river water have long plagued the area, particularly around southern New Mexico, El Paso, Texas, and Juarez, Mexico. In reaction to an international dispute and a severe and prolonged drought in 1896, the US Secretary of the Interior effectively placed an embargo on significant water development upstream of what would eventually become Elephant Butte Reservoir and the Rio Grande Project by prohibiting the granting of any new rights of way across federal land for such projects. By that time the river was essentially fully appropriated, at least for its reach in the United States.

Embargo

In 1905, Congress first extended the Reclamation Act to lands in Texas:

Proposed Reservoir

> …bordering upon the Rio Grande which can be irrigated from a dam to be constructed near Engle, in the Territory of New Mexico, on the Rio Grande, to store the flood waters of that river, and if there shall be ascertained to be sufficient land in New Mexico and in Texas which can be supplied with the stored water at a cost which shall render the proposed project feasible and return to the reclamation fund the cost of the enterprise, then the Secretary of Interior may proceed with the work of constructing a dam on the Rio Grande as part of the general system of irrigation, should all other conditions of feasibility be found satisfactory.

33 Stat. 814.

Stored Water

In 1906, the US settled the dispute with Mexico by entering into a Treaty allocating the Upper Rio Grande (from the headwaters to Fort Quitman, Texas), between them. Also in 1906, the US filed the required New Mexico Notice of Intent to Appropriate Rio Grande flood waters to store in a proposed dam near Engle. In 1908, it filed another notice in New Mexico seeking to appropriate all unappropriated water in the Rio Grande above Elephant Butte. Though direct flows of the Rio Grande were fully appropriated, the storage project would allow flood waters stored (on a priority basis) to later be used out of priority in conformance with the Prior Appropriation Doctrine incorporated into both Reclamation law and New Mexico Territorial law. 43 U.S.C. § 372, N.M. Laws 1907, ch. 49, § 2. [Editor's Note: Water stored in a reservoir, once diverted and stored, may be used later at the discretion of the reservoir owner without regard for other water users' relative rights.]

Water Allocation

The proposed project became the Rio Grande Project (Project). In 1916, the dam proposed to be built near Engle, New Mexico, as the storage reservoir for the Project (Elephant Butte Dam) became operational. The available water therein (i.e., the water stored minus the 60,000 acre-feet the US owes to Mexico under the Convention of 1906), was allocated to the irrigation districts in New Mexico and Texas on the basis of irrigable acres: 57% to lands in New Mexico in Elephant Butte Irrigation District (EBID), and 43% to lands in Texas in El Paso County Water Improvement District No. 1 (EPCWID).

Rio Grande Compact

Although the Project solved many of the southern New Mexico/West Texas/Juarez, Mexico water supply issues, it did not solve the disputes among the states in the US who had to share the resource, but which naturally sought to grow their economies and develop their arable lands. The US' policy at this time was to sponsor new water development projects to encourage western settlement and agricultural development. After years of discussion, in 1929 Colorado, New Mexico, and Texas agreed to a temporary compact to maintain the status quo on the river, gather data, and allow the federal development agencies to conduct a thorough study of the river, all its current uses, and associated hydrologic and geologic circumstances. The federal "Joint Investigation" provided the agreed upon facts the states could rely on in drafting an agreement settling their obligations to each other and to the Project. Once that was accomplished, Colorado and New Mexico's obligations to their respective downstream states and the Project could be quantified, and further development could proceed in the upstream states. In 1938, that effort succeeded, and the states entered into a compact to equitably apportion the river among the states of Colorado, New Mexico, and Texas. The Compact was passed by each of the state legislatures into the laws of each state and approved by Congress. 53 Stat. 785. Once the delivery obligations and points were quantified, Colorado and New Mexico were free to develop additional waters in the basin, so long as their delivery obligations were met. For a comprehensive background on the Compact, see William A Paddock, *The Rio Grande Compact of 1938*, 5 U. Denv. Water L. Rev. 1 (2001).

RIO GRANDE COMPACT

Compact Intent

The Compact's first stated purpose is that the states, "…desiring to remove all causes of present and future controversy among these states and between citizens of one of these states and citizens of another state with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters, have resolved to conclude a compact for the attainment of these purposes." Additionally, it was intended to assure adequate water availability for each state, for the federal Rio Grande Project in southern New Mexico, and for the United States' treaty obligation to Mexico at El Paso. The Compact settled each state's obligation to the others through a complex set of accounting allowing for maximum development of the river throughout the Upper Basin, and allowed several stalled projects in Colorado and New Mexico to proceed. See Nat'l Res. Comm., Regional Planning, Part VI-The Rio Grande Joint Investigation in the Upper Rio Grande Basin in Colorado, New Mexico, and Texas, 1936-1937 at 12 (1938) (Joint Investigation).

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Delivery Points

The Compact requires Colorado and New Mexico to deliver specific quantities of water to the adjacent downstream state based on an inflow/outflow method. That is, the Compact provides for measurement of flows at certain gaged points upstream in the system and, based upon a formula taking those inflows into account, requires Colorado and New Mexico to pass a certain amount of outflow, again as measured by Compact gages, to New Mexico and Texas, respectively. For Colorado, that express obligation to deliver water to New Mexico is established at the Colorado – New Mexico state line, as measured by the Lobatos gage. Art. III, Compact. New Mexico, however, is obligated to deliver its apportionment for Texas at the Project's Elephant Butte Reservoir, about 100 miles north of the border with Texas. Art. IV, Compact. (The original delivery point was the upper end of the Reservoir, San Marcial, but that gage became dysfunctional due to geomorphologic changes in the riverbed. In 1948, the Rio Grande Compact Commission (RGCC) moved the delivery point downstream to the Dam under their authority to do so under Article V, Compact.)

Jurisdiction over the Compact accounting is delegated to the Rio Grande Compact Commission (Commission). Arts.VI, XII. The Compact accounting is complex, with credits and debits accruing over time. *See* generally, Art. VI. Although New Mexico's Compact obligation to Texas is delivered at Elephant Butte Reservoir, there are other accounts of water stored in that reservoir, and the different accounts are under the jurisdiction of different entities. New Mexico may have credit water in the reservoir, and only New Mexico may make decisions about using that credit water. Colorado, similarly, has sole jurisdiction over its credit water. Art. VII, Compact. Also, San Juan Chama water is stored in Elephant Butte, and that water is neither Project water nor Compact water. Arts. I (l), IX. [Editor's Note: The San Juan-Chama Project is a US Bureau of Reclamation (Reclamation) project that consists of a system of diversion structures and tunnels for transmountain movement of water from the San Juan River Basin to the Rio Grande Basin.] Water available to Reclamation to allocate to Project beneficiaries is defined as "Usable water." Art. I (l), Compact. Usable water is divided among Mexico (60,000 AF except in drought) and the New Mexico and Texas irrigation districts in the historic ratio of 57% to 43% respectively.

"Usable Water"

Rio Grande Project — Recent Operational Changes Leading to Current Litigation

Operating Agreement

Relevant to this case, in 2008, in settlement of irrigation district claims against the United States, the US, EBID and EPCWID signed a fifty-year Operating Agreement (OA) effecting a major operational change in allocations. The intended result has been a substantial increase in water allocated to Texas since the OA was signed. For example, since adoption of the OA in 2008 the allocation and delivery of Rio Grande Project water to EBID lands in New Mexico in full supply years has decreased by more than 150,000 acre-feet annually. The actual allocations have since varied each year, as the US and the districts seek to correct some acknowledged imbalances. During the severe drought that continues today, the differences in allocations have been less simply because there is very little water in the Elephant Butte Reservoir to allocate. As of this writing, the reservoir is at 10% capacity.

In 2011, New Mexico filed an action in United States District Court in New Mexico alleging that the OA violates Reclamation law, the Administrative Procedures Act (APA), and the National Environmental Policy Act (NEPA). *New Mexico v. United States et al*., 1:11 cv-00691. That action has been stayed pending decision in this case.

Proceedings On Motion for Leave and Complaint

Texas' Position

Texas' Allegations in Motion for Leave and Complaint

Texas filed its Motion for Leave and Complaint in January of 2013.

The Texas Motion alleged that:

- Rio Grande Project (Project) deliveries are historically made based on the irrigated acreages in the two states, 57% to New Mexico, 43% to Texas
- Elephant Butte Irrigation District (EBID) is the Project district in New Mexico, and El Paso County Water Improvement District No. 1 (EPCWID) is the Project district in Texas
- the City of El Paso receives on average about 50% of its water supply from the Project through contracts with EPCWID
- the Compact did not quantify specific allocations as between New Mexico south of Elephant Butte and Texas, or impose a stateline delivery amount
- the Compact intended to protect the Project
- Texas entered into the Compact with the understanding that Project operations under the conditions existing in 1938 would be maintained in New Mexico, and that New Mexico would prevent any New Mexico water users from depleting Project water before it entered Texas

See, generally, Texas Motion for Leave.

Texas' Flow

Texas also alleged that the Compact obligates New Mexico to ensure the Texas apportionment (presumably as measured at the delivery point, Elephant Butte) flows "unimpeded" to the Texas state line,

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(Tex. Compl. ¶4), and that by allowing New Mexico water users to make illegal diversions of Rio Grande surface and hydrologically connected groundwater, New Mexico has violated its Compact obligation to Texas. *Id*. Texas also complained New Mexico's actions have encouraged water uses that deplete Texas' Compact apportionment, and that New Mexico is attempting to control the Project by making novel arguments in other litigation involving Project operations, i.e., the state adjudication and a pending United States District Court case (Tex. Compl. ¶¶19-21). Texas further alleges that because New Mexico is violating the Compact, it does not give full faith and credit to Texas' adjudication of the Texas portion of the Project right (Tex. Compl. ¶22). Texas maintains it has suffered damages as a result, and seeks declaratory and injunctive relief against New Mexico, as well as an award of unspecified damages (Tex. Compl. p. 15-16).

Diversions in NM

Relief Requested

In its brief in support, Texas argues that New Mexico has repeatedly violated the Compact by allowing unauthorized diversions in New Mexico that deplete its Compact apportionment before it can reach Texas. It also complains about the positions New Mexico is taking in other court actions. In the New Mexico state adjudication court, New Mexico is currently actively adjudicating the Lower Rio Grande water rights, including, as required by the McCarran amendment, the US Project rights and the state-based groundwater rights used conjunctively with the surface Project water by the Project area farmers. In the United States District Court in New Mexico, Texas claims that New Mexico is advancing "novel theories of law" that are contrary to the rights of the United States and the Compact, and which would deprive Texas of water to which it is entitled. (Presumably, New Mexico's novel argument would only have the alleged ramifications if New Mexico is successful in these other forums.) Texas alleges that by these actions New Mexico is attempting to wrest control of the Rio Grande Project for itself. (Tex. Br. in Supp. at 16, 3, 26).

Depletion Issue

New Mexico's Opposition to Texas' Positions

New Mexico opposed the granting of Texas' Motion for Leave, arguing that Texas had not pled a case appropriate for exercise of the Court's original jurisdiction. Texas conceded that the Compact contains neither a stateline delivery obligation for New Mexico, nor any provision requiring New Mexico to maintain depletions at a 1938 condition level. New Mexico pointed out that after complaining about alleged injuries to the Project right — injuries Texas had no standing to raise — Texas further admitted it had no contract for water from the Project. Additionally, New Mexico argued that an alternative forum existed for the dispute about the scope of the United States' water right in the Project, in that the issue was properly being litigated in the New Mexico Adjudication Court. The dispute about the legality of the 2008 OA, which made a major operational change to the Project allocations, was properly before the United States District Court in New Mexico. If Texas were right about its allegations, any ruling it considered adverse from these cases could be reviewed by the high court. *See* e.g., *Arizona v. New Mexico*, 425 U.S. 794 (1976). Lastly, New Mexico asserted that the US is an indispensable party to the Texas claims, and because of its sovereign immunity, it could not be joined without its consent (N.M. Br. in Opp'n to Mot. for Leave 1-3).

Jurisdiction Questions

New Mexico and Texas agree on many points of law, but differ dramatically over how that law applies to the facts. Both assert: that New Mexico's delivery obligation to Texas is at Elephant Butte Reservoir — not the Texas state line; that Project Usable water is legally required to be allocated to Project lands equally per acre; and that the proper split of Project usable water is 57% to New Mexico, 43% to Texas based on the legally authorized irrigated lands in each district, by acre.

Agreed Facts

New Mexico asserts that the most important factor in Compact interpretation is the plain language of the Compact. Texas' Complaint is, instead, asking the Court to insert additional language to the Compact and thereby increase New Mexico's obligations to include a specific stateline delivery and, in addition, to maintain depletion levels in New Mexico at 1938 levels. Because the Compact is both federal law and a state law, however, the Court cannot add language into the Compact or re-write it, regardless of how reasonable that might seem in the present day. This is long-standing law based on the separation of powers doctrine, and has always governed Compact and other statutory interpretation cases.

Plain Language

In addition to these points, New Mexico argued that since the Compact admittedly imposes no stateline delivery obligation on New Mexico, at its essence the Texas case is really a complaint raising an alleged injury to the Project right. A case arising from operational details of a federal reclamation project is not the serious sovereign dispute that is appropriate for the Court's original jurisdiction (see above). In addition, Texas not only does not have standing to raise this claim — because it is not a Reclamation contract holder — but whether New Mexico groundwater pumping is injuring the Project right is essentially already before the US District Court in *State of New Mexico v. United States of America et al.*, No1:11-cv-00691 JB/ACT. The US is currently litigating the scope of its Project right in the New Mexico Lower Rio Grande Adjudication Court. New Mexico is arguing that the existence of an alternative forum for these claims weighs heavily against the Court granting Texas' Motion. New Mexico also noted that for the injuries Texas alleges, the US is an indispensable party whose immunity cannot be waived without its consent and thus could not be involuntarily joined.

Injury Assertion

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Colorado Brief

Colorado filed a brief in opposition to Texas' Motion, noting that Texas has not made any claim against Colorado but only named Colorado as a defendant because it is a party to the Compact. Colorado argued that Texas' Complaint was not based on obligations in the language of the Compact, and so whether it raised a bona fide compact dispute could not be discerned. In the absence of a clear Compact-based case, Colorado asserted it could not support the Texas Motion for Leave.

Amici Briefs

Las Cruces Assertions

The city of Las Cruces, the second largest city in New Mexico, is located near the Project area. Las Cruces satisfies its obligation to supply more than 100,000 people with a reliable supply of potable water by using its groundwater wells with senior water rights in the Lower Rio Grande Underground Water Basin. It has for some time sought to diversify its water supplies by acquiring surface water rights in the basin and pursuing agricultural to municipal changes in use, but the ongoing disputes about allocations from the Project (the only available surface water in the area), prevent progress in that effort. It is necessarily involved in the LRG adjudication, participates as a Plaintiff-Intervenor in *State v. United States of America et al*., (alleging Reclamation violated NEPA in entering into the OA), and has filed an amicus in support of New Mexico in the Supreme Court action. In its amicus brief, Las Cruces argues that Texas' Complaint is admittedly not based on the language of the Compact, and to grant the relief sought would effectively insert language into the Compact, something the Supreme Court cannot do. Las Cruces also notes that alternative forums exist for the issues raised by Texas. Cases in the New Mexico Adjudication Court and the United States District Court for the district of New Mexico are already determining the nature and extent of the US Project right, and whether the 2008 OA that reallocated the water in the project was legally adopted, respectively. Las Cruces argues that Texas' claims prematurely interfere with the ongoing LRG adjudication and US District Court case raising Project operational concerns.

Other Cases

Texas Irrigation District

EPCWID filed an amicus on behalf of Texas' Motion for Leave. EPCWID argued Texas' Motion asserted a claim that was serious and dignified as befits claims appropriate for an original action. EPCWID also asserts that the alternative forums New Mexico and Las Cruces suggest are not adequate to vindicate Texas' claims, arguing that neither of the suggested courts can assert jurisdiction over both state parties or bring complete relief to Texas. EPCWID further notes that the Compact Commission cannot resolve Texas's claims either.

El Paso Position

The city of El Paso, which relies on both Project surface water and its own extensive groundwater well system for its municipal supply, also filed a brief in support of Texas' Motion for Leave. El Paso argued generally that Texas' Complaint is appropriate for original jurisdiction, that New Mexico groundwater pumping is negatively affecting Project deliveries, and that the alternative forums New Mexico suggests are not adequate. El Paso also complains about the legal regime under New Mexico law which recognizes that groundwater belongs to the state, and disagrees with the New Mexico Adjudication Court's conclusion that the US did not appropriate groundwater in New Mexico. The adjudication court based its conclusions in part on the undisputed facts that the US has no wells (points of diversion for groundwater), and did not mention any intent to appropriate groundwater in Notices of Intent to Appropriate filed in 1906 and 1908.

"Waste Water"

Hudspeth County Conservation and Reclamation District No. 1 (Hudspeth) also filed an amicus brief in support of Texas' Motion for Leave. Hudspeth is not within EPCWID boundaries but receives waste water left over unused from EPCWID from the Project. [Editor's Note: "waste water" is water that is not consumed by crops and is left over after diversion and irrigation use.] It generally asserts the same arguments as the other amici in support of Texas' Motion for Leave.

Texas filed a reply brief asserting that New Mexico's brief in opposition was based on the merits, which confirmed the existence of a genuine dispute, and again asserted that the other court actions ongoing were not adequate alternative forums.

US Brief On Views of the United States

US Position

As is customary in these cases, after the initial round of briefing on the Motion for Leave was complete and the case distributed for conference, the Court issued an order inviting the US Solicitor General to file a brief expressing the views of the United States (U.S. Sup. Ct. Order, April 15, 2013).

In December, 2013, the US filed its brief asserting that the Motion for Leave should be granted. The US also agrees that the Project water is to be split pro rata among the irrigated acres of the Project, 57% to the New Mexico district EBID, and 43% to the Texas district, EPCWID.

Groundwater Impacts

The US then argued against a position New Mexico has never asserted and concludes that the position is inconsistent with Reclamation law. It argued, despite the fact that no party had argued otherwise, "only entities having contracts with the United States may receive deliveries of water from a Reclamation project" (U.S. Brf. at 15). The US then leapt to a separate point, arguing that New Mexico cannot allow groundwater pumpers, under state law, to pump groundwater hydrologically connected to the river without injuring the Project and implicitly violating the Compact. The US appears to be asserting that groundwater right holders in New Mexico (but apparently not Texas) must have a contract with Reclamation to pump

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Groundwater Control

their state groundwater rights, and that New Mexico has an obligation to limit groundwater pumping by Project beneficiaries to the contract amounts. Reclamation has never made this claim before throughout the long history of the Project or the state-wide adjudication, which started in 1986. If this is what the US is truly claiming, it represents a radical grab for jurisdiction over groundwater in the LRG and would upend a century of settled law. The US also suggested the case would be expedited by the Court inviting New Mexico to file a motion in the nature of a Motion to Dismiss before referring the matter to a special master.

Supplemental Briefs in Response to the United States

Conjunctive Regulation

New Mexico filed a supplemental brief in response to the United States. We pointed out that, assuming for the sake of argument New Mexico groundwater pumping is injuring the Project surface water right, the remedy for that injury under state law (and incorporated into the Reclamation Act) is for the US to bring an impairment action or seek enforcement of priorities by the New Mexico State Engineer. In New Mexico, surface water and groundwater are administered conjunctively, and groundwater rights are curtailed by the State Engineer if found to be impairing senior surface rights. *City of Albuquerque v. Reynolds*, 379 P.2d 73 (N.M. 1962). Federal law incorporates state law, and so under federal law, the state law remedies are to be followed. *Nebraska v. Wyoming*, 325 U.S. 589, 639-40 (1945). As for the claims arising from the dispute about the OA, as in *Arizona v. New Mexico, supra*, that matter is being litigated in a lower court, and if the interests with which Texas is aligned prevail, Texas' Project claims would be vindicated. Thus, there are alternative forums to make the Project and Texas whole if they are correct about the facts.

Colorado filed a supplemental brief in response, noting again that Texas' claims are not based on the Compact; seeking leave fully to participate in a motion to dismiss; and stating it does not support Texas' claims at this time. Texas filed a supplemental brief as well, arguing that no other forum can resolve Texas' Compact claim.

In late January of 2014, the Court granted Texas' Motion to Leave and set a deadline for New Mexico to file a Motion to Dismiss.

US Motion to Intervene as a Plaintiff - Complaint in Intervention

US Injury Asserted

In late February, 2014, the US filed a Motion for Leave to Intervene and a Complaint. In its Complaint, the US alleges various positions of law, and for its injury alleges the possibility of future harm to the Project. "Uncapped use of water below Elephant Butte Reservoir in New Mexico could reduce Project efficiency to a point where 43% of the available water could not be delivered to EPCWID, and 60,000 acre-feet per year could not be delivered to Mexico." (U.S. Compl. ¶15, at 4). The US also agrees with Texas and New Mexico that Project allocations are to be divided 43% to EPCWID and 57% to New Mexico, based on irrigated acreages. It appears to raise the issue of whether the United States' rights in the Project include groundwater (U.S. Compl. ¶13).

US' Relief

The US requests the Court to declare that:

- "New Mexico, as a party to the Compact" may not permit water users without contracts with Interior (Reclamation) to interfere with Project deliveries or water delivery to Mexico
- New Mexico may not permit Project beneficiaries in New Mexico to "intercept or interfere with Project water in excess of federal contractual amounts," and must affirmatively act to prohibit such interference
- New Mexico must affirmatively prevent such interception and interference

U.S. Compl. at 5.

Future Harm

In its memorandum in support, however, the US raises only the specter of future harm. It alleges, "[T]here would likely come a point at which uncapped groundwater pumping in New Mexico would reduce Project efficiency to an extent that 43% of the available water could not be delivered to Texas, even if EPCWID forwent *all* Project deliveries." (U.S. Mem. in Sppt. at 6) (emphasis in original.) The US also raises the possibility of harm to deliveries to Mexico, noting it is the US which is best situated to determine how the US complies with its treaty obligations. It further alleges that the "limitations on Project water use are incorporated into the Compact and binding on New Mexico." (U.S. Mem. In Sppt. at 9). Texas filed a supplemental response stating it supported the United States' intervention.

Jurisdiction Issues

New Mexico filed a supplemental response in opposition, asserting that the US was attempting to add the question of the scope of the US Project rights into Texas' case; that this issue was already before the New Mexico Adjudication Court as required by federal law, 43 U.S.C. § 666, *United States v. City of Las Cruces*, 289 F.3d 1170 (10th Cir. 2002); and that the Adjudication Court had determined that the US did not appropriate groundwater for the Project. New Mexico also argued that jurisdiction was pled and established under the original exclusive jurisdiction statute, which only applies to actions between states. The Court had already allowed New Mexico to file a motion to dismiss the Texas Complaint, and if that motion is granted, the Court should dismiss the US Complaint as well. The United States District Court action raising the operational disputes about the Rio Grande Project should be allowed to proceed, New Mexico maintained, and the US should continue to defend its Project claims in that case.

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New Mexico Positions

Issues Under the Motion to Dismiss

New Mexico moved to dismiss both Complaints of the US and Texas on the grounds that they fail to state a claim for relief under the Rio Grande Compact. The bases for the Motion are: that the plain language of the Compact sets New Mexico's delivery point at Elephant Butte Reservoir; that it does not require New Mexico to maintain depletions within the Lower Rio Grande at the levels existing as of 1938; and that New Mexico has no affirmative duty to prevent interference with deliveries of Project water. Furthermore, the US is not a party to the Compact and so cannot raise Compact claims. To the extent it claims injury to its Project rights, those claims are best resolved in the other available forums, where those issues are already before the appropriate courts.

The Motion is in the nature of a motion to dismiss under Rule 12(b)(6), Federal Rules of Civil Procedure. The Supreme Court is not bound by these rules in original actions, but the rules are taken as a guide. SUP. CT. R. 17. Thus, New Mexico argues, even if the facts Texas alleges are true — which it does not concede — the Plaintiffs are not entitled to relief under the applicable law.

Stateline Obligation

As to Texas' claim that the Compact implicitly imposes a stateline delivery obligation on New Mexico, New Mexico notes that Compact parties knew how to establish a stateline delivery obligation for New Mexico and could have done so — but chose not to do so. For example in Art. III, the Compact expressly requires Colorado to deliver water to New Mexico at the Colorado/New Mexico line, but in Art. IV, the Compact requires New Mexico to deliver water for Texas at Elephant Butte Reservoir. The negotiation history further confirms it was Texas' understanding that the New Mexico delivery obligation was to Elephant Butte, and that it was Reclamation's obligation to deliver the water to Project beneficiaries (N.M. Mot. to Dismiss at 24-39). To insert a stateline delivery obligation on New Mexico is beyond the Court's authority because that would amount to re-writing a federal statute. Other compacts expressly require stateline deliveries, and support the conclusion that such an obligation would have been expressly inserted if that had been the parties' intent. Additionally, other court rulings interpreting the Compact have also concluded the Compact intended New Mexico to deliver its water to Elephant Butte, and that the obligation to distribute the water further south to the irrigation districts and Mexico lay with Reclamation. *El Paso Water Conservancy District v. City of El Paso*, 133 F. Supp. 894, 907(1955). Texas' true dispute is with Reclamation for failing to make a call on New Mexico junior water right holders allegedly interfering with its Project rights.

Parties' Intent

Compact Language

In regard to Texas' claim that the Compact silently requires New Mexico to maintain the levels of depletion between Elephant Butte and the Texas/New Mexico stateline that existed as of 1938, New Mexico asserts that long-standing law provides that the Compact's plain language is the best indication of the parties' intent. Where a Compact is silent, the Court will presume a state did not silently relinquish its sovereignty, and that each state is left to regulate its own citizens. *Tarrant Regional Water Dist. v. Herrmann*, 133 S.Ct. 2120, 2133 (2013). Here, for example, the Compact does contain restrictions on depletions above Otowi Bridge, but none below Elephant Butte (N.M. Mot. to Dismiss at 42).

Depletion Provisions

The customary practices of other contemporaneous compacts and the course of dealing of the parties may also be relied upon. For example, both the Pecos River Compact and the Arkansas River Compact contain express maintenance of depletion provisions requiring the upstream state to maintain an historic level of depletions. The course of conduct of the parties also confirms that each state understood the Compact to allow additional groundwater depletion — so long as the Compact delivery obligations are met. Since the Compact, Texas has developed significant groundwater resources near the stateline, which admittedly have a direct effect on Project efficiency (N.M. Mot. to Dismiss at 46-47). In addition, unlike New Mexico, Texas still has no legal limit on any amounts of groundwater pumping.

Express Limitations

Thus, all of the applicable Compact interpretation principles point to the same conclusion — New Mexico did not silently cede her jurisdiction to regulate and develop water in the Lower Rio Grande. The bargain it made was to deliver water to Elephant Butte. From there, the United States would, in compliance with state law and federal law, distribute water to the Project beneficiaries. The predecessor compact to the 1938 Compact did have express limitations on New Mexico depletions below Elephant Butte. These were intentionally removed from the 1938 Compact. In fact, one of the purposes of the 1938 Compact was to lift development restrictions in Colorado and New Mexico, in exchange for the express restrictions stated in the Compact. Joint Investigation at 12.

Project Rights

The US Complaint does not include a claim for relief against New Mexico. The United States' rights in the Project to store and deliver water for farmers with the appropriative rights, is defined under state law as required by the Reclamation Act and the McCarran Amendment (N.M. Mot. to Dismiss at 49-53). The ongoing state adjudication is currently adjudicating the Project rights along with all other water rights in the Lower Rio Grande, and, as required by federal and statutory law, the US has been a party to that case for over twenty years. Thus, New Mexico argues, the Supreme Court should allow the normal judicial process to proceed, requiring the US to continue pressing its claims in the appropriate court.

TX v. NM

Groundwater Rights

New Mexico points out that the state adjudication court held that the US did not appropriate groundwater for the Project. Order Granting the State's Motion to Dismiss the United States' Claims to Groundwater and Denying the United States' Motion for Summary Judgment, *New Mexico ex rel. State Engineer*, No. CV-96-888 (Aug. 16, 2012). Because Congress severed groundwater from the public domain long ago, the US has no claim to groundwater for a project simply arising from title to land overlaying the groundwater. Instead, the US must file and perfect a valid state or territorial law appropriation of groundwater. "What we hold is that following the act of 1877, if not before, all non-navigable waters then a part of the public domain became publici juris, subject to the plenary control of the designated states, including those since created out of the territories named, with the right in each to determine for itself to what extent the rule of appropriation or the common-law rule in respect of riparian rights should obtain." *California Oregon Power Co. v. Beaver Portland Cement Co*., 295 U.S. 142, 55 S.Ct. 725, 79 L.Ed. 1356 (1935), cited in *California v. United States*, 98 S. Ct. 2985, 2992 (1978).

Conflicting Laws?

In addition, the US does not have a basis to argue New Mexico law must be preempted. This is because it has never identified any New Mexico law that conflicts with the Reclamation Act to justify preemption. It cannot. New Mexico law is not inconsistent with the Reclamation Act. Both are based on the Prior Appropriation Doctrine. *See* N.M. Const. art. XVI, § 2; NMSA 1978, §§ 72-1-1 through -12, 43 U.S.C. § 372.

Appropriating Groundwater

New Mexico asserts that, contrary to the implications raised in the US briefs, pumping groundwater in accordance with state water rights clearly is not equivalent to obtaining delivery of Project water. Reclamation is empowered by the Reclamation Act to appropriate water pursuant to state and territorial law, and it has done so. It has not, however, appropriated groundwater in New Mexico, nor has it claimed to have done so until quite recently. In New Mexico, groundwater is not the same as "return flows" (which by definition return to the stream following use of the water) or seepage — both of which New Mexico concedes the US may use in the Project. The United States is not free, therefore, to conflate groundwater with return flows or seepage for its operational convenience. Compliance with state law is not just a suggestion — it's a Congressional mandate to comply with state and territorial laws "relating to the control, appropriation, use, or distribution of water." 43 U.S.C. § 383. *See* also *Nebraska v. Wyoming*, 65 S.Ct. 1332, 1348-1350 (1945).

Injury Option

Even assuming, for the sake of argument, that New Mexico groundwater pumping is injuring the Project surface water right, the remedy for that under state law is for the US to bring an impairment action or seek enforcement of priorities by the New Mexico State Engineer.

Project Deliveries

New Mexico argues it has no Compact created duty to protect Project deliveries. Reclamation law provides adequate protection for impairment by junior groundwater pumpers through state law remedies (N.M. Mot. to Dismiss at 63). For all of the reasons stated, New Mexico argues both Complaints should be dismissed and the state and federal courts in the process of addressing these matters should be allowed to proceed in the usual course to address the issues the Plaintiffs seek to raise here in the first instance.

Texas opposed the Motion to Dismiss, expanding on arguments it raised in earlier briefs. The US similarly opposed the Motion. The same slate of amici mentioned above also filed at this stage. The matter is fully briefed and awaiting Court disposition by the Special Master.

Project Claims

FINAL THOUGHTS

The United States entry into the case with its apparently independent Project-based claims creates significant uncertainty into how the case will evolve. The complexity of the case demonstrates why most scholars and lawyers who work in this area suggest that settlements are a better means of adjusting disputes among sovereigns than is litigation. Now the matter will be before the Court from which there is no recourse, and the states will be burdened with the enormous costs of litigation in the Supreme Court. Surely there is a better way of resolving disputes over dwindling resources, especially in the face of climate change and the evolving reality all states face and for which none of the parties is alone responsible.

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Pleadings available at: www.nmag.gov/home/texas-v-new-mexico-and-colorado-no141-original-rio-grande-compact-litigation

Sarah Bond is counsel of record for New Mexico in the Original Action No. 141, *Texas v. New Mexico and Colorado*. Prior to working in the New Mexico Attorney General's Office she was a Montana Assistant Attorney General, and while there was counsel of record in *Montana v. Wyoming and North Dakota*, No. 137 Original. Throughout her career, she has specialized in Indian jurisdiction, gaming, general civil litigation, alternative dispute resolution, multi-jurisdictional law enforcement agreements, and water. She has a B.A. and M.A. in history/economics and a JD. In 2000 she was awarded the Jim Jones public service award by the Conference of Western Attorneys General.

Gila Water Storage

GILA RIVER WATER STORAGE

INNOVATIVE BANKING CREATES "LONG-TERM STORAGE CREDITS"

Edited/condensed from Gila River Water Storage LLC documents
With additional information provided by
Christa McJunkin, Principal Water Resource Analyst, Salt River Project

INTRODUCTION

Community Water Rights

The Gila River Indian Community (Community) is located on 372,000 acres between Phoenix and Casa Grande. Established in 1859, it is one of the oldest American Indian communities in Arizona. As inhabitants of the region for centuries, the Community has a rich history of managing water supplies for its members and the Community as a whole. The Community's water rights are some of the most extensive in Arizona and include water from the Gila River, water received from Salt River Project resources (Salt River, Verde River, and East Clear Creek), groundwater, reclaimed water, and Colorado River water delivered through the Central Arizona Project (CAP) canal. The single largest component of the Community's water rights is the water derived from the CAP — more than 300,000 acre-feet per year. Currently, the primary use of water by the Community is for agriculture.

Salt River Project

Created in 1903, Salt River Project (SRP) is one of the first US Reclamation Act projects. It delivers nearly one million acre-feet of water annually to the Phoenix area. SRP is the nation's third-largest public power provider, with nearly one million electric customers in the Phoenix metro area. Initially, SRP's focus was on the operation and management of Theodore Roosevelt Dam, the cornerstone of SRP's water supply infrastructure, and the water delivery system comprising the network of canals, laterals, and delivery gates in the Salt River Valley. Over the past 100 years, SRP's expertise has grown into the conjunctive management of the 13,000-square-mile Salt River and Verde River watershed. This conjunctive management provides for: SRP's surface water supplies; seven dams and reservoirs; more than 250 groundwater wells; three water-banking projects; and a vast electric generation, transmission, and distribution system spanning multiple states to serve a 2,900-square-mile electric and water service area in central Arizona.

Conjunctive Management

CAP Banking

The Community's vast land resources are prime areas for agricultural production, and the Community has plans to further develop its agricultural enterprise in the future. However, more water delivery infrastructure is needed, and construction of these facilities is still many years away. While this infrastructure is being completed, the Community has expanded its water management expertise through innovative banking of its unused CAP water to provide for future use, coordinating with SRP to create Gila River Water Storage LLC (GRWS). Under GRWS management, some of the Community's CAP water is stored underground in central Arizona's vast aquifers and earns marketable "long-term storage credits" under Arizona's Underground Water Storage, Savings, and Replenishment Program.

LONG-TERM STORAGE CREDITS

Storage Credits

In Arizona, long-term storage credits are earned when water is stored or banked underground for more than one year. These credits grant the holder the right to recover the water in the future. The long-term storage credits created by the storage of CAP water or reclaimed water represent a renewable water supply. Many CAP subcontractors bank CAP water they do not need today for future use. Likewise, many water providers bank reclaimed water not needed today to yield long-term storage credits that can be used in the future. Long-term storage credits are recovered using a well that has been permitted by the Arizona Department of Water Resources (ADWR) as a recovery well. As discussed further below, Arizona has established five Active Management Areas (AMAs) throughout the state. Long-term storage credits can be recovered only from within the AMA in which they were stored. Although they do not have to be recovered from within the exact area they were stored, there are cost and management advantages for doing so. Long-term storage credits can be bought and sold and are thus an available water supply to support new municipal and industrial development in central Arizona.

Most holders of significant amounts of long-term storage credits have earned the credits for their own future use. GRWS is the largest holder of long-term storage credits available for purchase by municipal water providers, residential developers, and industrial water users.

Gila Water Storage

Groundwater Regulation

Assured Supply

Renewable Supplies

Replenishment Cost

Credits Purchase

Conservation Programs

Recovery Wells

REGULATORY BACKGROUND

Throughout much of Arizona's history, groundwater has been relied upon in areas without access to surface water supplies. Over-reliance on groundwater resulted in groundwater reserves being depleted faster than they were being replenished through natural recharge.

Arizona Groundwater Management Code

To counter the groundwater depletion trend, Arizona adopted the Groundwater Management Code in 1980 to regulate groundwater use. Under the Code, groundwater receives targeted regulation in the five AMAs and is carefully managed to prevent groundwater depletion. The purpose of the Code is to reduce reliance on groundwater in favor of the use of renewable water supplies, such as surface water and reclaimed water. Two major management outcomes of the Code are the Assured Water Supply Program and requirements to conserve groundwater through various regulatory programs.

Assured Water Supply Program

Arizona's Assured Water Supply Program is a cornerstone of the state's sustainable water management regulation and sets Arizona apart from other states. Before new residential or commercial development of six lots or more can be built within an AMA, the developer must obtain either a commitment of water service from a water provider designated as having an **a**ssured **w**ater **s**upply (AWS) or obtain a Certificate of Assured Water Supply (CAWS) for the development. Proving AWS means showing that enough renewable water supplies exist to meet the development's demands for 100 years. This unique program ensures that new development does not compromise the water supply available for existing development.

One of the essential requirements of AWS is the use of renewable water supplies. Groundwater, on its own, cannot be the basis of AWS. Instead, new development must be based on the use of renewable water supplies. This is done through either the direct use of renewable supplies, which requires surface water treatment, or membership in the Central Arizona Groundwater Replenishment District (CAGRD). Most of the large municipal water providers in central Arizona have been designated as having AWS. Developers that receive service from these providers do not have to meet the AWS requirements on their own. As municipal growth reaches farther and farther away from these large water providers, much of it is served by water providers that do not have AWS designation. With CAP water all but fully allocated, the only available water supply for these subdivisions is groundwater. In order to make groundwater meet the AWS requirements, the subdivision must be enrolled in the CAGRD.

Since the AWS rules were adopted in 1995, most new subdivisions not receiving water from a designated water provider have enrolled as members of the CAGRD. The groundwater used by members is reported, and the CAGRD recharges a like amount of renewable water to replenish groundwater supplies and avoid groundwater depletion. Member lands pay for the cost of replenishment on their property taxes. Although this option still exists for new growth, there are some limitations. First, there must be sufficient groundwater supplies to meet projected demand for 100 years. This is not true in all areas of central Arizona. Second, the CAGRD water acquisition plans have been outstripped by the pace of development. As a result, the CAGRD has considered changes to the CAGRD, which range from enrollment limitations to significant cost increases. Lastly, the cost for CAGRD replenishment is currently $574 per acre-foot and the provisional rate for tax year 2015/2016 is $644, with annual increases expected.

GRWS long-term storage credits from the recharge of CAP water are a renewable water supply that meets the AWS requirements for both water providers seeking an AWS designation and developers seeking a CAWS. GRWS credits can be purchased in advance to both secure a supply and control costs. Furthermore, credits can be recovered from the area they were stored to ensure they are physically available. For existing CAGRD members, there are options for using credits from GRWS to offset the cost of CAGRD membership.

Groundwater Conservation Requirements

The 1980 Groundwater Management Code ushered in regulations that sought to reduce overall groundwater consumption in all areas of water use. There are separate conservation programs and targets for agricultural, municipal, and industrial water use. In most instances, these conservation targets can be attained through careful water management. However, in some cases there are certain site conditions or special circumstances in which the conservation requirements cannot be met easily or cost-effectively. A common response to these circumstances is to eliminate groundwater use and replace it with a renewable supply, because the conservation requirements apply only if groundwater is used. Thus, industrial water users with large turf areas subject to conservation requirements, such as golf courses or homeowners' associations, may seek out renewable water supplies.

GRWS long-term storage credits from recharged CAP water are a renewable water supply that can be used in these situations. An existing groundwater well can be permitted as a recovery well, and the water that comes from the well is then reported as recovered long-term storage credits. The water retains the legal character of the stored supply — in this case, CAP water.

Underground Water Storage, Savings, and Replenishment Program

Arizona has an innovative program called the Underground Water Storage, Savings, and Replenishment Program. Managed by ADWR, this program allows surface water and reclaimed water not

Gila Water Storage

needed today to be banked or stored underground for future use. Water is stored underground through two methods.

"Direct" Recharge

The first method is "direct recharge" — in which water is delivered to specially constructed basins that facilitate the infiltration of water into the ground. The water percolates and eventually reaches the existing groundwater aquifer, storing the water underground for future use. The Community is permitted to recharge CAP water at the Granite Reef Underground Storage Project, the New River-Agua Fria River Underground Storage Project, and the Superstition Mountains Recharge Project, all of which are located in the Phoenix AMA. The Community is also conducting tests to locate suitable direct recharge facilities on the reservation.

"Indirect" Recharge

The second recharge method is called "indirect recharge" and is performed at irrigation districts that are permitted by ADWR as groundwater savings facilities. The concept is that irrigation districts with legal rights to pump groundwater can use CAP or reclaimed water in lieu of pumping groundwater. Thus, groundwater is "saved" (hence the name "groundwater savings facility") and long-term storage credits are issued to the entity that delivered the CAP water or reclaimed water to the irrigation district. To date, the majority of the long-term storage credits managed by GRWS have been earned at groundwater savings facilities in the Phoenix and Pinal AMAs.

Long-Term Credits

ADWR tracks water banked underground through either direct or indirect recharge. The holder of long-term storage credits can withdraw them from the ground using a well that has been permitted by ADWR for recovery. Oftentimes, recovery can use existing infrastructure. Although in most cases it is advantageous to recover long-term storage credits from within the same area they were stored, it is not expressly required. Nevertheless, the Community has planned its water storage to ensure the resulting long-term storage credits will be recoverable in growing areas where new water supplies are needed. These credits do not expire or diminish over time. They can be purchased ahead of time and used when needed. Long-term storage credits are protected under Arizona law and meet the renewable water supply requirement of both the Assured Water Supply program and other various regulatory programs.

Renewable Water Supply

GILA RIVER WATER STORAGE LLC (GRWS)

Water is a critical resource. Nowhere is this more true than in central Arizona, where water supplies delivered through SRP, CAP, and the San Carlos Project sustain the region's economic development — from agriculture and industry to cities and towns. Although the rights to these water supplies have long been fully established and the water is being used for a variety of purposes, it is clear that additional dependable, renewable water supplies are needed to continue to grow and further diversify the region's economy. Securing these additional supplies in a competitive land and business development environment has been a great challenge. It has been an area of concern for investors, who see the region's economic potential but often ask about the water needed to sustain it. In response to the mounting challenges to secure dependable, renewable water supplies, two of the region's long-standing water management entities — the Community and SRP — created GRWS. This project was formed to bring five million acre-feet of additional dependable, renewable water supplies to central Arizona. These supplies are created from the community's vast CAP water resources and are targeted for landowners, industrial interests, and municipal development interests that are in need of additional dependable, renewable water supplies in central Arizona.

Gila Water Storage

Recharge Facilities

Community's Role

SRP's Role

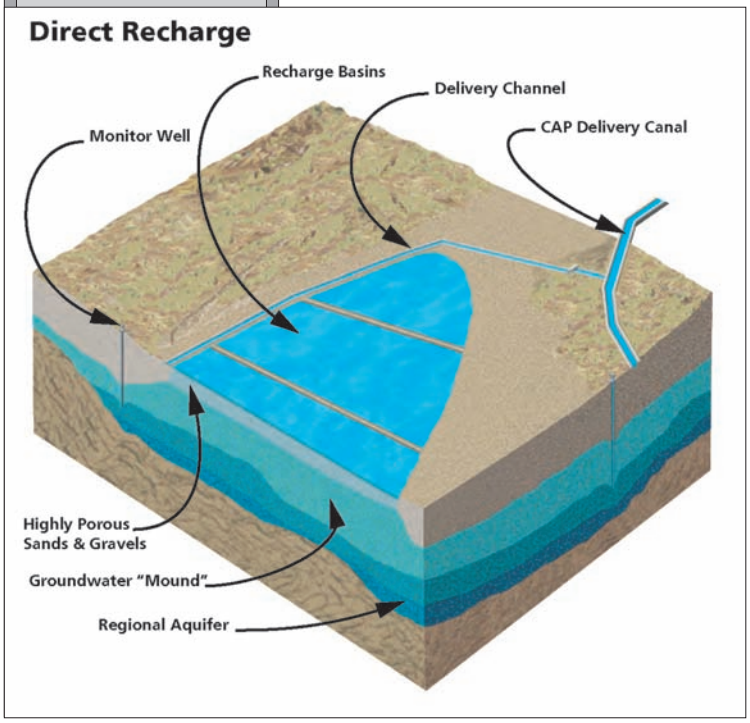
GRWS is a limited liability company of the Community and SRP. It was formed in 2010, and it is managed by representatives of both entities. The Community's role in the company is to work in collaboration with SRP to plan where portions of the Community's CAP water will be banked each year. The Community acquires and maintains water storage permits from ADWR to bank water at various recharge facilities in central Arizona. ADWR is the state agency responsible for enforcing Arizona's Groundwater Management Code and issuing recharge and well permits. Additionally, the Community coordinates the delivery of its CAP water supplies with the Central Arizona Water Conservation District and with operators of recharge facilities. The Community also keeps track of water storage on a monthly basis and reports the amount of water banked each year to ADWR. SRP's role is to: work alongside the Community in water-banking planning; identify and work with various types of current and prospective water users who are in need of renewable water supplies to meet state renewable water supply requirements; and to meet regularly throughout the year to ensure coordination, collaboration, and communication in the banking and marketing of long-term storage credits earned by the Community.

Supplementing Available Water Supplies

In addition to long-term storage credits being used to meet AWS and conservation requirements, these credits are also useful in providing a water supply in areas where locally available water supplies are limited. In certain areas of central Arizona, increasing density in developed areas has stressed available water supplies. GRWS long-term storage credits can be used to fill in the gaps and still take advantage of existing infrastructure to control costs. GRWS long-term storage credits are also useful to meet non-potable demands when potable water supplies are exceptionally expensive.

100-Year Leases

The Community has committed to making 30,000 acre-feet of its CAP water available under 100-year leases. This leased water retains its "Indian priority" — i.e., very senior water rights which result in a low risk of being affected by shortages on the Colorado River. In addition to the leased water, the Community has committed to storing at least two million acre-feet of CAP water underground to create long-term storage credits by 2029. Over a 100-year period, these credits will yield a renewable water supply of 20,000 acre-feet per year. Between these two supplies, a total of five million acre-feet of renewable supplies are available.

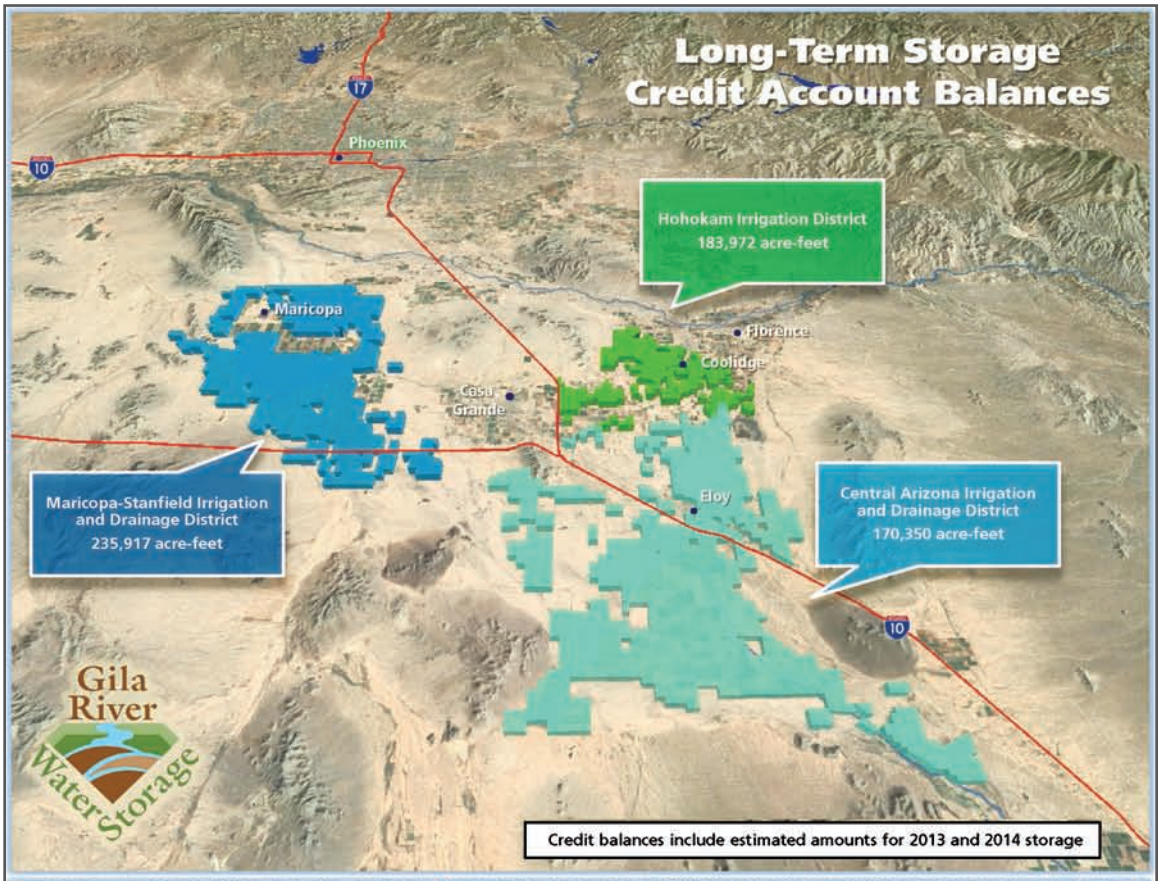


CAP water stored for and managed by GRWS has been carefully planned with new municipal and industrial growth in mind. Credits have been earned in a variety of locations in the Phoenix and Pinal AMAs. The intent behind this plan is for credits to be available when and where needed. Having access to stored water in growth areas ensures prudent water management. State law allows stored water to be recovered from outside the area where it was stored — in some cases depending on water level conditions, where it may be prudent to do so. However, having water stored in areas where growth will occur provides confidence that the necessary water supply will be available to meet future demands.

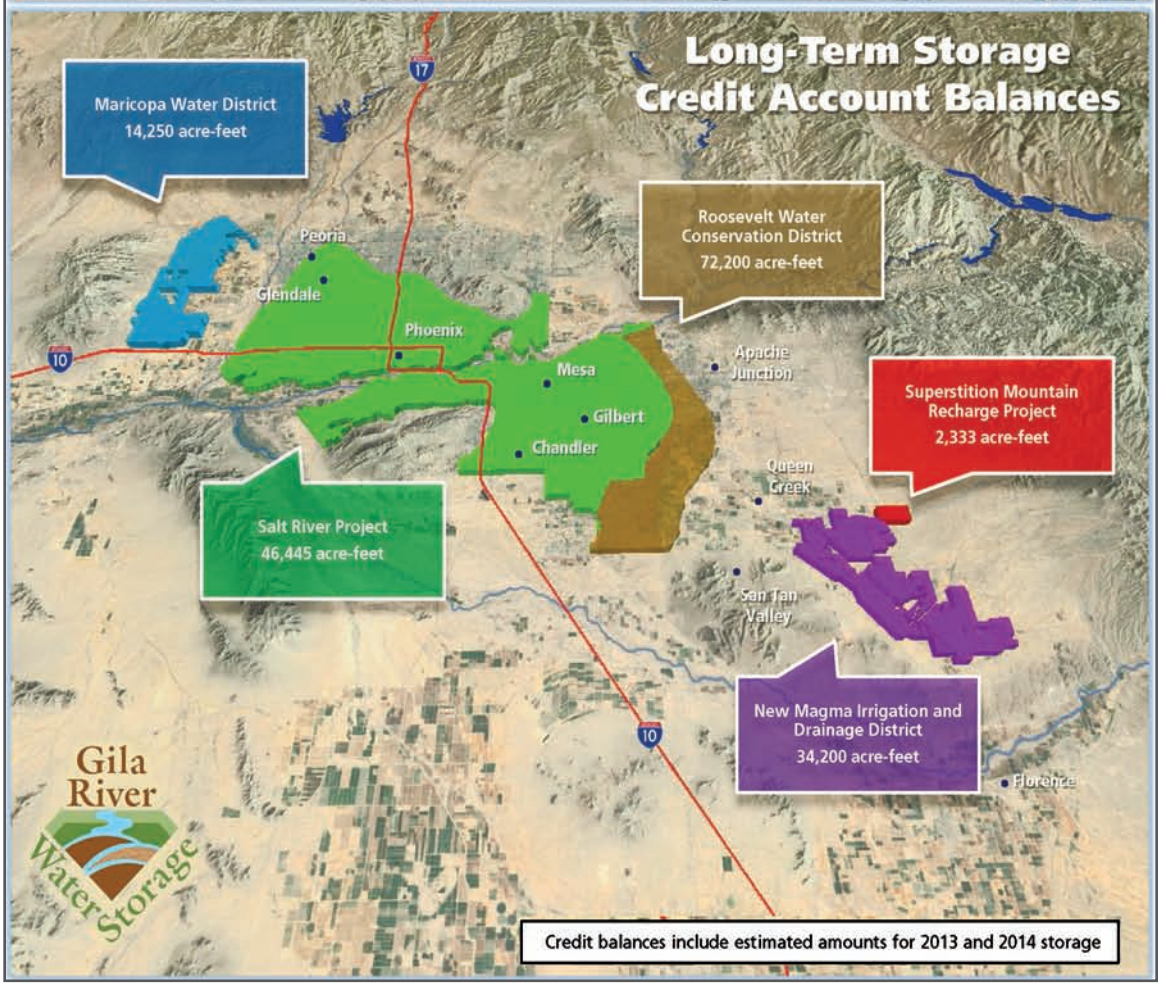
Long-term storage credits have also been stored in areas with access to existing infrastructure for recovery and conveyance. For example, water stored within an irrigation district can be recovered by existing wells and delivered through the district's existing irrigation systems.

Gila Water Storage

Credit Accounts



Irrigation Districts



Gila Water Storage

LONG-TERM STORAGE USES

Renewable water supplies are a critical component in the management of water in central Arizona and are required to meet several regulatory requirements adopted to ensure the sustainability of the region's water supplies. Three broad categories of water users may need access to renewable water supplies: 1) municipal water providers; 2) residential developers; and 3) industrial water users. However, renewable water supplies can be difficult to secure in central Arizona.

Water Sources

Local surface water supplies available in the Phoenix area include the Agua Fria, Salt, and Verde rivers. Agua Fria River water is stored and delivered by the Maricopa Water District (MWD) for agricultural purposes on the west side of Phoenix. Water from the Salt and Verde rivers is managed by SRP and available for use by landowners within SRP's water service area. In fact, all of the 10 municipal water providers located within SRP's water service area use surface water from SRP, as do countless industrial water users and residential subdivisions. A portion of the water diverted by SRP from the Salt and Verde rivers is available under contract to the Roosevelt Water Conservation District (RWCD), located in the Southeast valley. New developments within the service areas of MWD, RWCD, and SRP should be able to make use of existing surface water rights. However, these water rights are attached to the land. This means that areas outside of these service areas must look elsewhere for renewable water supplies.

Renewable Sources

Reclaimed Water

The three main sources of renewable water supplies outside of MWD, RWCD, and SRP are: 1) CAP water; 2) reclaimed water; and 3) long-term storage credits. CAP water is almost fully subscribed, and demand is high for the small amount left to be allocated. Reclaimed water is available only in certain areas and is being used by those that produce and treat the water. This leaves long-term storage credits as the main readily available source of renewable water supplies for central Arizona. Various types of water users could benefit from the use of long-term storage credits from GRWS.

Non-Potable Use

Industrial Water User Located Within an Existing Water Service Area

Many industrial water users, such as data centers, manufacturing facilities, and facilities with large turf areas, such as golf courses, can use non-potable water supplies to meet water demands. In most cases, long-term storage credits from GRWS can be used less expensively than potable water supplies from a municipal provider. For example, industrial water users within SRP's service area can benefit from access to SRP's existing water delivery infrastructure (wells, canals, and laterals) to provide recovery of long-term storage credits and delivery of recovered credits through SRP's non-potable system. There are other irrigation districts in central Arizona with similar recovery and delivery infrastructure, and arrangements for recovery and delivery could be made with them.

Credit Trading

Industrial Water User Without Access to Wells or Sustainable Groundwater

Parts of central Arizona have limited access to wells or groundwater supplies but are located in proximity to the CAP canal. It is not feasible for industrial water users in these areas to recover long-term storage credits for use in their operations. However, long-term storage credits can still be put to use by trading them with a CAP subcontract holder. Many of these subcontract holders recharge all or part of their CAP supplies to earn long-term storage credits for future use. For these subcontractors, there is no difference between obtaining long-term storage credits from someone else and receiving CAP water and recharging it themselves. If such a trade can be arranged with a third party, the industrial water user can purchase long-term storage credits from GRWS and trade them with the third-party CAP subcontractor. In return, the CAP subcontractor can order a like amount of CAP water to be delivered to the industrial water user from the CAP canal.

Municipal Credit Purchase

Municipal Provider Located in the Phoenix AMA or Pinal AMA

Municipal water providers needing to expand their Assured Water Supply (AWS) portfolio will find long-term storage credits easily added to their AWS designation. Long-term storage credits stored at recharge facilities located closest to their wells are available from GRWS. A municipal provider can purchase a 100-year supply of credits in a lump-sum transaction or over a five-to-10-year period. Once the credits are purchased, the municipal provider would use its existing wells and delivery infrastructure to recover the long-term storage credits.

Developer Pledge

Subdivision Developer in the Phoenix AMA or Pinal AMA

A developer of a subdivision without access to water service from a designated water provider must obtain its own CAWS. For areas without sufficient groundwater or in cases where the developer wishes to avoid the costs of the CAGRD, the developer can purchase enough long-term storage credits to cover the 100-year demand of the subdivision and pledge the credits to the CAWS. The credits would be recovered by the municipal provider and delivered to the subdivision just as groundwater would have been.

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Trading Credits

Converting Long-Term Storage Credits Into Wet Water

If a user is located in close proximity to the CAP canal, they can trade credits for CAP water with a CAP subcontractor. In this arrangement, an entity with a CAP subcontract would order a portion of its CAP water to be delivered to the user's turnout facility, and in trade, the user transfers a like amount of long-term storage credits to the entity. Such an arrangement may involve additional costs, but it is an innovative way to convert long-term storage credits into wet water directly from the CAP canal.

CONCLUSION

BENEFITS OF LONG-TERM WATER STORAGE

As noted above, municipal water providers, industrial water users, and land developers who need an additional source of renewable water can all benefit from long-term storage credits. Gila River Water Storage (GRWS) credits have been stored with recovery in mind. GRWS water has been banked in areas expected to need renewable supplies and, in many cases, in areas with existing infrastructure for recovery and delivery.

Long-Term Benefits

Long-term storage credits represent a renewable water supply that can serve those purposes, but beyond merely being a renewable water supply, long-term storage credits have a host of unique benefits. Long-term storage benefits include:

- They can be purchased in advance. Advance purchases allow you to control and predict costs while providing the security of an established water supply.
- Long-term storage credits do not evaporate or otherwise diminish in value over time.
- Unlike direct-delivery CAP water, long-term storage credits are not a "use it or lose it" supply. This means that a stockpile can be purchased and used as demand fluctuates over time.
- Credits are a renewable water supply that does not require surface water treatment if recovered from a well. Directly delivered CAP water requires surface water treatment for potable use. Such recovery from a well thus represents a significant cost savings.
- In many instances, credits can be recovered using existing groundwater wells and delivery infrastructure. In fact, GRWS credits have been stored to take advantage of existing infrastructure as much as possible.
- GRWS credits have been stored in a variety of locations in both the Phoenix and Pinal AMAs; thus, users can purchase credits in their location of use to ensure physical availability of a water supply.

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WATER BRIEFS

BASIN PERSPECTIVE WEST

COLORADO RIVER RESEARCH GROUP

A new research group focusing on the Colorado River Basin has formed. The Colorado River Research Group (CRRG) is a self-directed team of ten veteran Colorado River scholars. Each member has led a research program concerning water resources management, river science, or water law and public policy, or has written widely on these topics. The purpose of the CRRG is to provide a non-partisan, basin-wide perspective on matters pertaining to the Colorado River, helping all those with a stake in the river identify, justify, and implement actions that sustainably meet society's demands for water while maintaining the distinct attributes of the Colorado River ecosystem.

The CRRG is composed of the following experts in the field: Robert Adler (University of Utah), Bonnie Colby (University of Arizona), Karl Flessa (University of Arizona), Doug Kenney (University of Colorado), Dennis Lettenmaier (UCLA), Larry MacDonnell (University of Colorado), Jonathan Overpeck (University of Arizona), Jack Schmidt (Utah State University), Brad Udall (Colorado State University), and Reagan Waskom (Colorado State University).

The group has issued its initial Summary Report, entitled "The First Step in Repairing the Colorado River's Broken Water Budget" (December 2014). The report is available at: www.coloradoriverresearchgroup.org/uploads/4/2/3/6/42362959/crrg_summary_report_1_updated.pdf.
For info: CRRG website at: www.coloradoriverresearchgroup.org

WATER IN THE WEST WEST

COLORADO RIVER COURSE

Western Water Assessment's Eric Gordon and Anne Gold from the Cooperative Institute for Research in Environmental Sciences (CIRES) are co-teaching an online course entitled "Water in the Western United States." This college-level course is available free and provides a broad overview of the history of water development in the region and relevant hydrology and climatology.

The course will use the Colorado River, often referred to as the most controlled and most litigated river in the world, as an in-depth case study. This course should be a helpful resource to send to anyone in your network looking for a brief survey of western water issues; specific lectures may also be of interest. The course is designed for those living in the region as a fascinating look at how water gets to your tap; for those from elsewhere in the world the Interior West makes for a fascinating case study in management of a scarce resource.
For info: wwa.colorado.edu/index.html: Western Water Assessment; Course at: www.coursera.org/course/waterwestus

DUWAMISH CLEANUP WA

SUPERFUND FINAL PLAN

On December 2, the US Environmental Protection Agency (EPA) released the final cleanup plan for the Lower Duwamish Waterway Superfund site, a major industrial waterway that includes the mouth of the Duwamish River on the south end of Elliott Bay, in Seattle, Washington. As part of the cleanup plan, the Washington State Department of Ecology will continue leading source control efforts that reduce incoming pollution to the river and support the EPA in-waterway cleanup. *See* Water Briefs, *TWR* #21, Nov. 15, 2005; Lockert, *TWR* #57: Nov. 15, 2008.

The cleanup plan will remove 90% of pollution in the river with active cleanup of 177 acres by dredging, capping, and other methods. The remaining low levels of contamination will be addressed by the river's natural processes bringing in clean sediments to cover the contamination. The cleanup timeframe is estimated to be 17 years with an estimated cost of $342 million, with seven years of active cleanup and 10 years of natural recovery.

Industrial activity, stormwater, and combined sewer overflows have polluted the Lower Duwamish Waterway surface water and sediments over the past 100 years. Over 40 hazardous substances were found in sediments at concentrations that pose a risk to people and marine life. Resident Duwamish fish and shellfish, which are consumed by local communities, accumulate contaminants that are harmful to human health. The primary contaminants of concern are PCBs, dioxins/furans, arsenic, and carcinogenic polycyclic aromatic hydrocarbons.

As a result of early action work already underway, pollution in Duwamish surface sediments will be reduced by 50% in 2015. The City of Seattle, King County, the Port of Seattle, Boeing, and Earle M. Jorgensen recognized the need for a healthier Duwamish River and stepped up to do the work in parts of the river that contained the most contamination. Early action areas for cleanup are Slip 4, Terminal 117, Boeing Plant 2, Jorgensen Forge, and the Duwamish Diagonal and Norfolk combined sewer overflows. EPA used scientific studies completed by these parties to determine the extent of contamination and develop a final cleanup plan.

The Duwamish River drains into Puget Sound, and this cleanup will add to a long line of previous cleanups that support Puget Sound protection. For Pacific Northwest tribes in particular, Puget Sound and the Duwamish River are a link to their culture, history, and tradition that goes back thousands of years.
For info: EPA Lower Duwamish Waterway Superfund Site at: http://yosemite.epa.gov/r10/cleanup.nsf/sites/lduwamish

AQUIFER STORAGE US

LESSONS LEARNED

"*Lessons Learned from Aquifer Storage and Recovery (ASR) Systems in the United States*" was just published in November in the Journal of Water Resource and Protection. *See* Bloetscher, F. , Sham, C. , Danko III, J. and Ratick, S. (2014), *Lessons Learned from Aquifer Storage and Recovery (ASR) Systems in the United States.* Journal of Water Resource and Protection, 6, 1603-1629.

This paper is the result of a survey and analyses of available data from 204 Aquifer Storage and Recovery (ASR) sites in the United States. This ASR site survey included all active and inactive sites and collected both operational and construction details. The inactive sites are of particular interest here because these are the projects from

WATER BRIEFS

which valuable lessons can often be learned. The intent of this paper is to examine the reasons those projects were terminated. Statistical analyses indicated that there were certain factors associated with terminated ASR projects: general geographic location (e.g., region), operational issue, storage cycle, casing material, and injection formation. The injection formation involves local geology and aquifer characteristics (i.e., whether the aquifer is leaky and/or unconfined, and if water can be displaced to surface water bodies or adjacent aquifers). Operational problems associated with inactive projects include well clogging, metals mobilization, a low percentage of recovery for injected water, and disinfection byproducts in the recovered water.

For info: Paper at: www.scirp.org/journal/PaperInformation.aspx?PaperID=51949&utm_campaign=linkedin&utm_medium=sx#.VH-mkygqY-Y

RESTORATION PROGRAM US

2015 FIVE STAR/URBAN WATERS

The National Fish and Wildlife Foundation (NFWF), the National Association of Counties, and the Wildlife Habitat Council (WHC), in cooperation with the US Environmental Protection Agency (EPA), USDA Forest Service (USFS), the US Fish and Wildlife Service (USFWS), FedEx, Southern Company, Bank of America, and PG&E are pleased to solicit applications for the 2015 Five Star/Urban Waters Restoration Program. NFWF anticipates that approximately $2,100,000 in combined total funding will be available for this round of grants. The Full Proposal due date is February 3, 2015.

The Five Star & Urban Waters Restoration Grant Program seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships for wetland, riparian, forest and coastal habitat restoration, urban wildlife conservation, stormwater management as well as outreach, education and stewardship. Projects should focus on water quality, watersheds and the habitats they support. NFWF may use a mix of public and private funding sources to support any grant made through this program. NFWF is pleased to partner with the Corporation for National and Community Service to offer support from AmeriCorps VISTA to achieve project outcomes that enhance anti-poverty efforts.

Competitive proposals should address each of the five priorities set out in the Program's information: On-the-Ground Restoration and Planning; Environmental Outreach, Education & Training; Partnerships; Measurable Results; and Sustainability. Eligible applicants include non-profit 501(c) organizations, state government agencies, local governments, municipal governments, Indian tribes, and educational institutions. Ineligible applicants include: unincorporated individuals; businesses; international organizations; and US Federal government agencies.

Approximately $2,100,000 is available nationwide for projects meeting program priorities. There is one round of full proposals annually for this program. Awards range from $20,000 to $50,000 with an average size of $30,000 and 40-50 grants awarded per year. Grants should span one to two years in length with a start date in July 2015. Applications requesting more than $30,000 should propose projects longer than one year. See the website regarding additional funding availability and limitations.

For info: Program website at: www.nfwf.org/fivestar/Pages/2015RFP.aspx#.VH4KcygqY-a

WATER USE REPORT US

WITHDRAWALS DROPPING

The United States Geological Survey (USGS) issued a new report on November 5, which shows that water use across the country reached its lowest recorded level in nearly 45 years. Water withdrawals in the United States in 2010 were estimated to be about 355 **b**illion **g**allons per **d**ay (Bgal/d), which was 13% less than in 2005.

Water withdrawn for thermoelectric power was the largest use nationally, with the other leading uses being irrigation, public supply, and self-supplied industrial water, respectively. Withdrawals declined in each of these categories. USGS reported that most of the savings resulted from reductions in withdrawals for thermoelectric power generation, self-supplied industries, and agricultural irrigation. Factors that affect water use include demographics, new manufacturing and cooling-system technologies, economic trends, legal decisions, and climatic fluctuations.

Acting USGS director Suzette Kimball said, "By providing data down to the county level, we are able to ensure that water resource managers across the nation have the information necessary to make strong water-use and conservation decisions."

The USGS has been tracking water-use statistics and releasing water use estimates every five years since 1950. It is the world's largest provider of water data and the premier water research agency in the federal government.

For info: Full Report at: http://pubs.usgs.gov/circ/1405/

COLUMBIA RIVER REPORT WA

SUPPLY INVENTORY

On October 30, the Washington Department of Ecology (Ecology) released the 2014 Columbia River Basin Water Supply Inventory Report (Report). The Report updates how Ecology's Office of Columbia River (OCR) is making more water available for Eastern Washington's farmers, communities, industries and fish. Since the 2006 passage of Chapter 90.90 RCW, OCR has funded projects that have developed 375,815 acre-feet of water available for both instream and out of stream uses, with an additional 245,132 acre-feet or more in near-term development (one-three years).

For info: Report available at: https://fortress.wa.gov/ecy/publications/publications/1412002.pdf

INTERSTATE DISPUTE FL/GA

SUPREME COURT TO HEAR

The US Supreme Court (Supreme Court) will soon become even more familiar with interstate water disputes. On November 3, the Supreme Court agreed to hear *State of Florida v. State of Georgia*, No. 142, Original, wherein Florida is seeking an equitable apportionment of the waters of the

WATER BRIEFS

Apalachicola-Chattahoochee-Flint River (ACF River) Basin.

The US' brief in the case succinctly notes Florida's assertions, citing Florida's Complaint: "Florida alleges that the ecosystem and economy of the Apalachicola region 'are suffering serious harm' because of Georgia's consumption and storage of water from the Chattahoochee and Flint River Basins 'for municipal, industrial, recreational, and agricultural uses.' *Id.* para. 5. Florida alleges that 'storage, evaporation, and consumption of water' in Georgia have 'diminished the amount of water entering Florida in spring and summer of drought years by as much as 3,000-4,000 cubic feet per second,' and that, in recent drought conditions, the average flow of the Apalachicola has been less than 5,500 cubic feet per second from late spring through fall, conditions that 'were unprecedented before 2000.' *Id.* para. 50."

On November 19, the Supreme Court ordered that Ralph I. Lancaster of Portland, Maine, be appointed as Special Master in this case. He will have the "authority to fix the time and conditions for the filing of additional pleadings, to direct subsequent proceedings, to summon witnesses, to issue subpoenas, and to take such evidence as may be introduced and such as he may deem it necessary to call for. The Special Master is directed to submit Reports as he may deem appropriate." Special Master Lancaster will review the pleadings of the parties and propose a ruling to the Supreme Court.

In addition to requesting an apportionment of the flows of the ACF River, Florida is also requesting the Supreme Court to cap "Georgia's overall depletive water uses at the level then existing on January 3, 1992." Complaint at 21.

For info: Supreme Court blog at: www.scotusblog.com/case-files/cases/florida-v-georgia-2/

CLIMATE CHANGE REPORT US

IPCC SYNTHESIS REPORT

During the first week in November, the Intergovernmental Panel on Climate Change (IPCC) released its 5th and latest Synthesis Report, a combination and distillation of three reports that were released over the course of the past year assessing the causes, effects, and solutions to man-made climate change. The IPCC says the water cycle will intensify, leading to bigger storms, more droughts, and worsening water quality. The newest report highlights three major findings for water.

Finding #1: "Changes in precipitation in a warming world will not be uniform. The high latitudes and the equatorial Pacific are likely to experience an increase in annual mean precipitation by the end of this century under the RCP8.5 scenario. In many mid-latitude and subtropical dry regions, mean precipitation will likely decrease, while in many mid-latitude wet regions, mean precipitation will likely increase under the RCP8.5 scenario."

As it has in past reports, the IPCC found that dry areas are going to get drier and wet areas are going to get wetter if the world continues to fail to rein in heat-trapping greenhouse gas emissions — a scenario called RCP8.5. This means that, in already arid places such as the Middle East and the American Southwest, events like the severe drought in California will become more common. However, areas of increasing precipitation are not immune to the ill effects of climate change, as demonstrated in Finding #2.

Finding #2: "Extreme precipitation events over most mid-latitude land masses and over wet tropical regions will very likely become more intense and more frequent as global mean surface temperature increases." In other words, what previously might have been drizzle or moderate rains could turn into very intense precipitation. Current man-made water-storage and flood-prevention systems may not prove suitable for these intense storms of the future, because these systems were not designed with such weather extremes in mind.

Finding #3: "The interaction of increased temperature; increased sediment, nutrient, and pollutant loadings from heavy rainfall; increased concentrations of pollutants during droughts; and disruption of treatment facilities during floods will reduce raw water quality and pose risks to drinking water quality." When water runs hard and fast over the Earth's surface, as happens with increased weather extremes, the runoff picks up a lot of pollution. Slower patterns of rainfall allow natural filters — such as wetlands, forests, and soil — to absorb and clean the water. Slower-moving water also does not pick up the same amount of pollution. As climate change shifts how this system functions, water-treatment plants will likely require more energy to clean the water for consumption.

Each finding is one facet of an intensifying hydrologic cycle, driven by rising global temperatures. Next year, parties to the United Nations Framework Convention on Climate Change will meet in Paris for the 21st Convention of the Parties, or "COP-21," in hopes of agreeing to some sort of coordinated action.

For info: Report at: www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_LONGERREPORT.pdf

WATER UTILITIES US

EPA CLIMATE ASSISTANCE

The US Environmental Protection Agency (EPA) is providing up to $600,000 in training and technical assistance to help water utilities in more than 20 communities bolster their climate change resilience and readiness. Drinking water, wastewater, and stormwater utilities will participate in a multi-year program to prepare for potential impacts from climate change. Challenges include droughts, more intense and frequent storms, flooding, sea-level rise, and changes to water quality. Communities will receive technical assistance in using EPA's Climate Resilience Evaluation and Awareness Tool, software that helps users identify assets, threats, and adaptation options to help reduce risk from climate change.

Communities receiving assistance from EPA include: Auburn, AL; Austin and Houston, TX; Blair, NE; Bozeman and Helena, MT; Faribault, MN; Fredericktown, MO; Haworth, NJ; Henryville, IN; Hillsboro, KS; Manchester-by-the-Sea, MA; Nome, AK; Norfolk, VA; Portsmouth, NH; Redwood Valley, CA; Sandpoint, ID; and the Seminole Tribe of Florida.

During each risk assessment, utilities will consider potential future climate change impacts in an effort to

build more climate-ready and resilient water services and infrastructure. Such risk assessments will, for instance, help utilities: use adaptation options to better protect critical pump stations from projected precipitation events; use conservation measures to prepare for projected reduced snowpack or less-frequent rainfall events; and prepare infrastructure for increased salinity to deal with projected sea-level rise. These examples illustrate the variety of adaptation options utilities can identify and build into planning based on their risk assessments.

For info: Robert Daguillard, 202/564-6618, daguillard.robert@epa.gov or http://water.epa.gov/infrastructure/watersecurity/climate/index.cfm

RECLAMATION CONTRACTS CA

ESA & RENEWAL CHALLENGE

On November 17, the US Supreme Court denied a request by California water districts that were attempting to overturn a ruling made by the Ninth Circuit Court of Appeals in April of 2014. The denial of the districts' petition by the Supreme Court allows environmentalists to continue their challenge to the US Bureau of Reclamation's renewal of 41 long-term contracts for irrigation water from the Sacramento-San Joaquin Delta. The challenge to renewal of the contracts was made to seek greater protection for the endangered delta smelt. *Glenn-Colusa Irrigation District et al. vs. Natural Resources Defense Council*, et al., Case No. 14-48 (Nov. 17, 2014). For additional details regarding the Ninth Circuit's unanimous decision, see Water Briefs, *TWR* #123.

The Ninth Circuit's decision reinstated a lawsuit filed by the Natural Resources Defense Council and other environmental groups. They claimed that the Bureau of Reclamation (Reclamation) renewal of water supply contracts violated Section 7(a)(2) of the US Endangered Species Act (ESA), which requires that federal agencies must consult with the US Fish & Wildlife Service or NOAA Fisheries prior to taking any agency action that could affect an endangered or threatened species or its critical habitat. *NRDC, et al., v. Sally Jewell, et al.*, Case No. 09-17661, Ninth Circuit (April 16, 2014). Reclamation granted the water supply contracts in 1964 for water from the Sacramento River and the Delta-Mendota Canal, and the contracts came up for renewal in 2004.

The eventual result of the lawsuit and its impact on renewal of the contracts remains to be seen. Reclamation must consult with the fisheries services and could revise the water contracts to include different allocation amounts, stronger pricing terms, enhanced water conservation requirements, or other changes to protect the delta smelt. The water districts, meanwhile, will be seeking renewal of the water contracts with as few restrictions as possible. More than two million acre-feet of water diversions are involved in the water districts' contracts with Reclamation.

For info: Ninth Circuit decision at: http://docs.nrdc.org/water/files/wat_14041601a.pdf

DRINKING WATER TOOLKIT US

WATER MANAGERS POLLUTION TOOL

In mid-November, the Association of Safe Drinking Water Agencies (ASDWA) and EPA announced the availability of a new resource, "Opportunities to Protect Drinking Water and Advance Watershed Goals Through the Clean Water Act: A Toolkit for State, Interstate, Tribal and Federal Water Program Managers." This Toolkit is designed to enable state and EPA water quality practitioners to better protect drinking water supplies using regulatory and non-regulatory provisions of the Clean Water Act and achieve mutual goals — better protected sources of drinking water and improved water quality.

The Toolkit is the result of a multi-year effort by state and EPA water quality managers across clean water and safe drinking water programs. The Toolkit identifies opportunities to reduce pollution in drinking water sources by using Clean Water Act tools, provides examples of on-the-ground implementation, and shows how state clean water programs can leverage the high value that consumers place on public health protection and safe drinking water to increase public support for addressing surface and ground water quality challenges more effectively. The Clean Water Act-Safe Drinking Water Act State/EPA Workgroup plans to distribute the document to EPA and will hold webinars to delve into the Toolkit in detail and promote implementation.

For info: Deirdre Mason, ASDWA, dmason@asdwa.org; Toolkit at: www.asdwa.org/document/docWindow.cfm?fuseaction=document.viewDocument&documentid=3007&documentFormatId=3779

STORMWATER PERMIT WA

INDUSTRIAL PERMIT UPDATED

The Washington Department of Ecology (Ecology) has updated the stormwater permit that protects lakes, rivers and Puget Sound from polluted runoff at industrial sites. The permit covers approximately 1,100 industrial facilities across the state, 70% of which are in the Puget Sound region. The updated permit goes into effect on January 2, 2015. Typical industries that need and use this permit include log yards, auto recyclers, marine terminals, and manufacturing facilities.

With the updates to the permit, certain facilities near cleanup sites around Puget Sound have additional pollution-prevention requirements. Examples include some sites in the Lower Duwamish Waterway in Seattle and some in the Thea Foss Waterway in Commencement Bay in Tacoma. In addition, the permit incorporates new federal regulations for airport de-icing at facilities with 1,000 or more annual jet departures. It streamlines engineering reports when stormwater treatment systems are needed. The permit requires electronic reporting, except in limited circumstances.

These changes aside, the updated permit is largely unchanged from the previous permit, Jeff Killelea, Ecology permit writer said, adding that Ecology staff will continue to support the implementation of the permit through inspections, technical assistance and training.

For info: Jeff Killelea, Ecology, 360/407-6127, jeff.killelea@ecy.wa.gov or www.ecy.wa.gov/programs/Wq/stormwater/industrial/index.html

CALENDAR

December 16 TX
Edwards Aquifer Protection Program - Pollution Public Hearing, Austin. TCEQ Park 35 Office Complex, 2 pm. For info: Austin Bailey, TCEQ, 512/239-6956, austin.bailey@tceq.texas.gov or www.tceq.texas.gov/field/eapp/history.htm

December 17 TX
Edwards Aquifer Protection Program - Pollution Public Hearing, San Antonio. Tesaro Bldg., Alamo Area Council of Governments, 2 pm. For info: Austin Bailey, TCEQ, 512/239-6956, austin.bailey@tceq.texas.gov or www.tceq.texas.gov/field/eapp/history.htm

January 9 WA
SEPA & NEPA Seminar, Seattle. WA State Convention Ctr. For info: Law Seminars Int'l, 800/854-8009, registrar@lawseminars.com or www.lawseminars.com

January 14 AZ
Water: The Center of Debate! - Annual Workshop, Tempe. SRP PERA Club, 1 E. Continental Drive, 8:30 am - 4:30 pm. Presented by Arizona Water Resrouces Research Center. For info: https://wrrc.arizona.edu/

January 14 WEB
Transbasin Diversion Webinar: Part III - Changing Perceptions of Transbasin Diversions, WEB. Presented by the Colorado Water Congress, 9-10 am. For info: www.cowatercongress.org/cwt/external/wcpages/cwc_events/workshops.aspx

January 15-16 AZ
Tribal Water in the Southwest Seminar, Scottsdale. Courtyard Scottsdale Salt River. For info: Law Seminars Int'l, 800/ 854-8009, registrar@lawseminars.com or www.lawseminars.com

January 17-21 TX
2015 International Low Impact Development (LID) Conference, Houston. For info: www.asce.org/ewri/Conferences/

January 20 OR
The Fifth IPCC Assessment of Climate Change - Key Facts & Their Implications for Our Future (Brownbag), Portland. Wells Fargo Bldg., 21st Floor, 1300 SW Fifth Avenue, 12-1:15 pm. RSVP to cbodine@schwabe.com. For info: www.ipcc.ch/

January 22-23 WA
22nd Annual Endangered Species Act Conference, Seattle. Hilton Seattle. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

January 22-23 LA
Climate Change Law & Regulations: Planning for a Carbon-Constrained Regulatory Environment Institute, New Orleans. Hotel Monteleone. Presented by Rocky Mt. Mineral Law Foundation. For info: RMMLF, www.rmmlf.org

January 23 CA
Hydraulic Fracturing Conference, San Francisco. Hotel Nikko. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

January 24 CA
Wasted Water: Reasonable Use Law in 21st Century California - 11th Annual Symposium, San Francisco. Golden Gate University School of Law. For info: www.waterlawsymposium.com/

January 28 AZ
Colorado River Simulation System - Overview & Use in Planning & Operation of the Colorado River (Brown Bag Seminar), Tucson. WRRC Sol Resnick Conf. Rm., 350 N. Campbell Ave. Presented by Arizona Water Resources Research Center - Speaker Don Gross, Water Resources Engineer, Colorado River Management Section, Arizona Department of Water Resources. For info: https://wrrc.arizona.edu/

January 28-30 CO
Colorado Water Congress Annual Convention, Denver. Hyatt DTC. For info: www.cowatercongress.org/cwc_events/Annual_Convention.aspx

January 29 TX
Texas Wetlands Conference, Austin. Omni Southpark. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

February 1-3 TX
2015 Industrial & Commercial Water Reuse Conference, Austin. Hilton Austin. Presented by WateReuse Ass'n. For info: www.watereuse.org/industrial-commercial-2015

February 3-5 WA
River Restoration Northwest Symposium, Stevenson. Skamania Lodge. Presented by River Restoration Northwest. For info: http://rrnwsymposium.org/

February 10-12 NM
Advancing Riparian Restoration in the West: Tamarisk Coalition's Annual Conference, Albuquerque. Hotel Albuquerque at Old Town. For info: www.tamariskcoalition.org/about-us/events/2015-conference

February 11 CA
Climate Change Litigation Seminar, San Francisco. Le Méridien. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

February 11-13 CO
Snow School for Water Managers, Silverton. Presented by Center for Snow & Avalanche Studies. For info: www.coloradomesa.edu/watercenter/documents/CSASSnowSchoolFlyer2015.pdf

February 17-18 NV
Indian Water Rights & Water Law Seminar, Las Vegas. For info: www.falmouthinstitute.com/training/public/feb/NR002.html?utm_source=cc&utm_medium=email&utm_campaign=ccemailPUB1502

February 19-20 CA
Western Water Law Conference, San Diego. The Westin. For info: CLE Int'l, 800/873-7130 or www.cle.com

February 19-20 NM
Watershed CPR: Restoring Natural, Built & Human Environments - 2015 Land & Water Summit, Albuquerque. Sheraton Albuquerque Airport. Presented by Xeriscape Council of New Mexico. For info: http://xeriscapenm.com/

February 19-20 NV
Road Map 2015 - A Farmer's Guide to the Water Universe: Family Farm Alliance Annual Meeting, Las Vegas. Monte Carlo Resort. For info: www.familyfarmalliance.org

February 25-26 DC
ACWA 2015 DC Conference, Washington. The Liason Hotel. Presented by Ass'n of California Water Agencies. For info: www.acwa.com/events/dc-conference

February 27 GA
14th Annual Georgia Water Law & Regulation Seminar, Atlanta. Georgia World Congress Center. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

February 27 CO
Colorado Water Law Conference, Denver. Grand Hyatt. For info: CLE Int'l, 800/873-7130 or www.cle.com

February 27 OR
The Freshwater Trust 2015 Gala & Auction, Portland. Art Museum. For info: www.thefreshwatertrust.org

March 2-3 CA
Groundwater Law & Regulation Seminar, Sacramento. TBA. For info: Law Seminars Int'l, 800/ 854-8009, registrar@lawseminars.com or www.lawseminars.com

The Water Report
Water Rights, Water Quality & Water Solutions in the West
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CALENDAR

(continued from previous page)

March 3 GA
Key Environmental Issues in U.S. Environmental Protection Agency Region 4 Conference, Atlanta. State Bar of Georgia Conference Ctr. For info: http://shop.americanbar.org/ebus/ABAEventsCalendar/EventDetails.aspx?productId=135022897&sc_cid=NR15031-C1

March 5 AZ
UA Water Sustainability Program's Distingushed Speaker: Brian Richter, Tucson. UA Student Union, 1303 E. University Blvd. Presented by Water Resources Research Center & Water Sustainability Program. For info: wrrc@arizona.edu

March 5-6 NM
Law of the Rio Grande Conference, Santa Fe. La Fonda on the Plaza. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

March 5-8 OR
Public Interest in Environmental Law Conference: Changing Currents, Eugene. University of Oregon. Presented by Environmental & Natural Resources Law Center. For info: http://pielc.org/about-us/

March 10 WA
Hydrology and the Law Seminar, Seattle. TBA. For info: Law Seminars Int'l, 800/ 854-8009, registrar@lawseminars.com or www.lawseminars.com

March 11 WA
Managing Stormwater in Washington Conference, Tacoma. Presented by Northwest Environmental Business Council. For info: www.nebc.org/

March 12-13 DC
Natural Resources Damages Seminar, Washington. Thurman Arnold Bldg. For info: Law Seminars Int'l, 800/ 854-8009, registrar@lawseminars.com or www.lawseminars.com

March 15-17 CA
WateReuse California Annual Conference, Los Angeles. TBA. For info: www.watereuse.org/

March 15-18 OR
American Water Works Association Sustainable Water Management Conference, Portland. Marriott Downtown Waterfront. For info: www.awwa.org/conferences-education/conferences/sustainable-water-management.aspx

March 16-18 TX
National Groundwater Ass'n 2015 Groundwater Summit, San Antonio. Grand Hyatt. For info: http://groundwatersummit.org/

March 19-20 TX
Estimating Rates of Groundwater Recharge Course, San Antonio. Grand Hyatt. Presented by Nat'l Groundwater Ass'n. For info: www.ngwa.org/Events-Education/shortcourses/Pages/125mar15.aspx

March 19-20 TX
Fundamentals of Groundwater Geochemistry Course, San Antonio. Grand Hyatt. Presented by Nat'l Groundwater Ass'n. For info: www.ngwa.org/Events-Education/shortcourses/Pages/235mar15.aspx

March 22-25 DC
Ass'n of Metropolitan Water Agencies 2015 Water Policy Conference, Washington. The Liason Hotel. For info: www.amwa.net/event/2015-water-policy-conference