

# OKLAHOMA Water News

2nd Quarter 2010

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## OU Showcases OWRB Green Roof Project

On Earth Day, April 22, the University of Oklahoma's National Weather Center (NWC) showcased the state's first university experimental vegetative roof system. The innovative project is funded by the OWRB through federal American Recovery and Reinvestment Act (ARRA) funds.

Green roofs, also known as vegetative roof systems, are roofs partially or completely covered with vegetation. According to Reid Coffman, NWC Experimental Green Roof project principal investigator who is leading the effort to examine the technology for Oklahoma, green roofs reduce storm water runoff and improve its quality. The

systems intercept solar radiation, cooling structures during the summer months and reducing air conditioning costs. Coffman points out that studies indicate green roofs can lower heat island temperatures by up to 3 degrees Fahrenheit.

Coffman anticipates that the plants will remain in the current location for about three

*(continued on page 3)*



*The "green roof" on top of the National Weather Center in Norman. Eventually, the young sedums and other hardy plants will cover the planting area. (Photos courtesy OU.)*



## From the Director

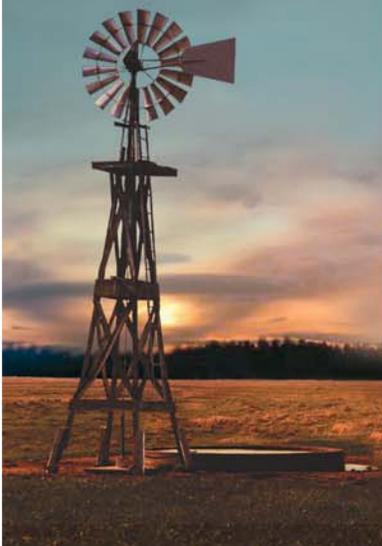
At the Board's June meeting, we welcomed Marilyn Feaver, of Chickasha, as the latest member of the OWRB. Marilyn brings with her a varied background mostly involving economic development in rural Oklahoma, which she will draw from as she makes some undoubtedly tough water decisions over the next seven years. Jack Keeley will be missed as a very active and valued member of the Board.

Board members were faced with a very difficult decision at our special meeting on June 11. The Board voted 5-2 in favor of an agreement to transfer Sardis Lake water storage to the Oklahoma City Water Utilities

*(continued on page 2)*



*J. D. Strong, Interim Executive Director  
Oklahoma Water Resources Board*



*From the Director (continued)*

Trust, which is seeking to secure a long-term water supply for central Oklahoma in order to meet projected shortages by 2030. Though controversial, the agreement not only resolves the state's long-standing obligation concerning construction of the lake but also preserves a significant amount of lake storage for present and future needs in the region.

Duane Smith, who has been on assignment with the Corps of Engineers in Afghanistan, also announced his retirement in June. Duane's accomplishments are almost too numerous to mention, but most in the Oklahoma water community are well aware of the significant impact he has made on our state's water management and planning programs. On behalf of the Board and agency staff, I wish Duane the best of luck as he progresses on to other endeavors.

The State Legislature adjourned on May 28. The OWRB received a 7.5 percent cut in appropriations, as expected. Fortunately, our appropriation included funds to cover some of our ongoing litigation expenses. We'll continue to streamline services to accommodate the reduction in expenditures.

With legislators consumed by budget issues, there was little formal water legislation considered, and nothing of note was passed, including the water center and pit water regulation bills.

Probably the most consequential result of this year's session for the OWRB was ratification of all rulemaking,

including several new fees, which should provide much-needed revenue to support critical water use permitting activities and hydrologic studies. Agency consolidation was proposed by the Legislature late in the session and failed to gain the necessary momentum for passage.

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*"I honestly don't know that I've ever seen such a diverse, informed, and engaged group of individuals gathered together in one place to discuss water issues."*

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The special Water Town Hall, hosted by the Oklahoma Academy, was both extremely productive and enlightening for all involved, including myself. I honestly don't know that I've ever seen such a diverse, informed, and engaged group of individuals gathered together in one place to discuss water issues. The result was an impressive product containing the opinions of about 172 people fashioned over three days of meetings. Now we are tasked with integrating the Academy's final report, including recommendations, into the considerable input and technical information compiled over the past three years (and counting) of OCWP public input sessions and technical studies. The resulting, unprecedented comprehensive plan will chart a new and well-vetted course for Oklahoma's water future. ♦

## Duane Smith Retires

OWRB Executive Director Duane Smith has announced his retirement after 32 years of service with the State of Oklahoma and the OWRB. Smith, who began a six-month leave of absence from the Board in February, has been working for the U.S. Army Corps of Engineers overseeing water and infrastructure development in Afghanistan. He informed the OWRB of his decision while home on leave in early June.

J.D. Strong, who has served as interim executive director in Smith's absence, will continue in that capacity until the nine-member Board can consider a permanent replacement.

Smith joined the agency as a hydrologist in 1978 and became executive director in 1997. Under his leadership, the agency's Financial Assistance Program has experienced enormous success, providing more than two billion dollars in water and wastewater system improvements to more than two-thirds of Oklahoma communities and rural water districts. Smith also helped establish the state's first statewide water quality monitoring program and well drillers' certification program. More recently he played an instrumental role in the OWRB's initiation of the ongoing update of the Oklahoma Comprehensive Water Plan. He has been recognized as a national leader in the development of water policy, serving as Chairman of the Western States Water Council from 2006 to 2008. At the time of his deployment to Afghanistan, his goal was to help establish water and wastewater services for the Afghan people to help ease tensions in the war-torn region.

Strong commented that Duane has capably served the OWRB for over 30 years, and his leadership on numerous water initiatives of significant importance to the state has earned him well-deserved respect both in Oklahoma and nationally. ♦

*Green Roof Project (continued)*

years while students monitor various factors that could affect the vegetative sustainability, such as wind, temperature, and moisture. The 1,280 square-foot area primarily contains sedums, a succulent plant that holds water and tolerates extreme conditions; native grasses and wildflowers will soon be added. The study will also evaluate the technology for food production, species habitat, and other benefits.

The green roof is a collaborative project between the OU colleges of Atmospheric and Geographic Sciences and Architecture and co-sponsored by the OWRB and Oklahoma Conservation Commission. Representatives from numerous organizations were present at the event.

The project is funded by \$86,500 in ARRA stimulus funds approved last year by the OWRB. The vegetative roof system is one of ten OWRB ARRA "Green Projects" that advocate water and energy efficiency, green infrastructure, and other innovations beneficial to the environment. Total OWRB Green Project funding in Oklahoma amounts to almost \$8 million. ♦

## Thunderbird Green Project Improves Water Quality

Through a partnership with the Central Oklahoma Master Conservancy District, the OWRB is utilizing more than \$1.5 million in ARRA funds to improve the drinking water for the nearly 200,000 residents of Norman, Del City and Midwest City as well as recreation in a popular central Oklahoma lake.

For many years, Lake Thunderbird has been listed as impaired (through EPA's 303d list) for turbidity, algae, color and low dissolved oxygen levels due to excessive nutrients accumulated mostly from nonpoint pollution sources throughout the watershed. In addition, local residents have complained about taste and odor in drinking water supplied by the lake. As a result, the cost of treatment has increased substantially.

ARRA funds have fostered a partnership between the OWRB and COMCD to address the problem. Using technology patented by BlueInGreen, an Arkansas-based engineering solutions company, an oxygenation pump, "SDOX", will draw water from the oxygen deprived part of the lake (hypolimnion), supersaturate it to near 300 percent, and then return it to the hypolimnion. The addition of dissolved oxygen enhances the breakdown of chemicals causing the taste and odor issues and reduces dissolved metals and nutrients in the water column. As a result, overall drinking water treatment costs will be reduced. The technology has been shown to lower energy and operating costs by up to 80 percent compared to conventional oxygenation methods. By increasing the total volume of well oxygenated water in the lake, fish and other aquatic life, and ultimately lake visitors, will reap the benefits. OWRB officials are cautiously optimistic that this project will result in delisting Lake Thunderbird from EPA's impaired waters list. The OWRB will monitor the first two seasons of operation. Treatment costs will be tracked to compare with previous in-lake treatment methodologies. ♦

### OWRB Green Projects

Fund Recipient	Project Description	Total Assistance	ARRA Green Amount
Central Oklahoma Master Conservancy District	Design, engineering, and construction of Hypolimnion Aeration device at Lake Thunderbird	\$1,501,285	\$1,501,285
Duncan Public Utilities Authority	Wastewater treatment plant improvements	\$340,000	\$304,136
Oklahoma Conservation Commission	Streambank stabilization in the Illinois River and Eucha/Spavinaw watersheds	\$2,000,000	\$2,000,000
Oklahoma Conservation Commission/ University of Oklahoma	Green Roof at the National Weather Center	\$86,500	\$86,500
Oklahoma Conservation Commission/ Oklahoma State University	Stabilization of Cow Creek in Stillwater	\$2,000,000	\$2,000,000
Owasso Public Works Authority	Regional stormwater detention basin	\$1,785,000	\$75,925
Perkins Public Works Authority	New wastewater treatment plant	\$7,225,000	\$1,250,000
Stillwater Utilities Authority	Wastewater treatment system upgrades	\$1,875,000	\$249,975
Sulphur Municipal Authority	New wastewater treatment plant	\$10,200,000	\$233,973
Tulsa City-County Library System	Green Roof at Tulsa's Central Library and rain garden at the Sperry Library	\$202,800	\$202,800
		<b>\$27,215,585</b>	<b>\$7,904,594</b>

## OWRB Approves Transfer of Sardis Storage to Oklahoma City

On June 11, the OWRB approved a transfer agreement that will resolve Oklahoma’s 36-year-old water storage contract obligation to the federal government for construction of Sardis Lake in southeastern Oklahoma and provide options to help satisfy central Oklahoma’s long-term water supply needs. In addition to satisfying the State’s immediate need to make its next court-ordered payment to the federal government by July 1, significant water will be reserved to meet local needs well into the foreseeable future.

The Sardis Lake storage contract transfer agreement, which was considered and approved by the Oklahoma City Water Utilities Trust (OCWUT) on June 7, was similarly approved, with minor modifications, by the OWRB on June 11. The agreement effectively transfers the State of Oklahoma’s water storage rights at Sardis to Oklahoma City, along with the State’s existing obligation to the federal government. OCWUT would also reimburse the State for past Sardis water storage payments and costs. A recent federal district court order requires Oklahoma to pay off, within five years, its \$27 million obligation for the construction of additional water supply storage in Sardis Lake, with the next payment due by July 1.

“This agreement was constructed with three critically important objectives in mind—to satisfy the state’s long-standing Sardis Lake obligation, secure water supply options for central Oklahoma’s water needs, and preserve the lake’s considerable value to the citizens of southeast Oklahoma,” said J. D. Strong, OWRB Interim Executive Director.

Through the transfer agreement, coupled with an existing application for water rights in the basin, which will be considered next, OCWUT seeks to acquire 136,000 acre-feet of drinking water per year to share with central Oklahoma communities, which collectively face near-term water deficits. In a critical facet of the agreement, 20,000 acre-feet of water is reserved for both current and future water needs in the Sardis Lake region. This significant set-aside, coupled with a requirement for a lake level management plan, will help ensure that Sardis Lake continues to provide important flood control, recreation, water supply, and related benefits to the local area.

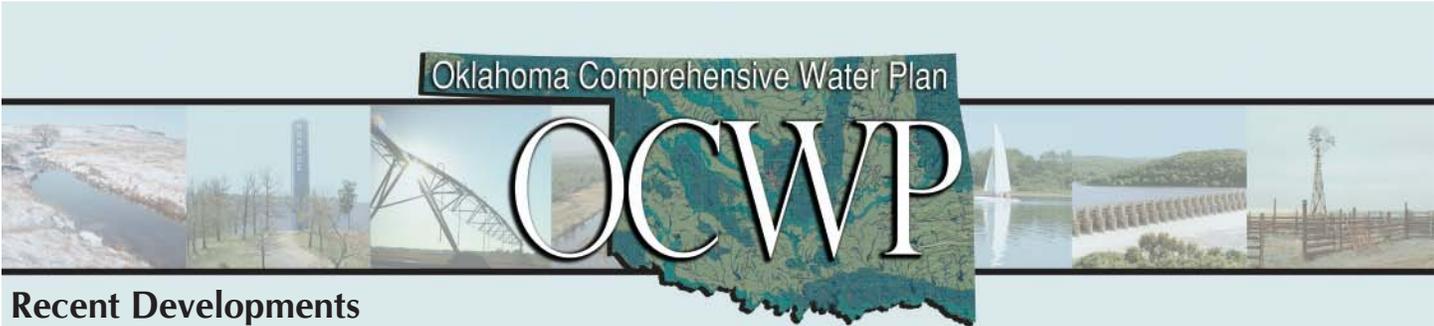
Through a separate public hearing process, the OWRB will address Oklahoma City’s permit application for the right to use water

from the basin. “As with all applications for surface water, the OWRB will hold formal public proceedings to ensure that sufficient water is available and existing rights are not impaired,” added Strong.

Preliminary information compiled as part of the ongoing Comprehensive Water Plan (OCWP) process suggests that Oklahoma City’s request can be met without impacting other uses or projected future needs in the area, but all data and information will be thoroughly examined before a final decision is made by the OWRB. The Regional Raw Water Supply Study for Central Oklahoma, an engineering study commissioned by the Oklahoma Regional Water Utilities Trust (ORWUT) in 2009, determined that central Oklahoma possesses insufficient water supply to meet projected needs in the region beyond 2030, and a new water resource will be required. The study identified Sardis Lake as the most feasible option for meeting this water deficit. ♦



More than 100 citizens and other interested parties attended the Board’s special meeting on June 11 in Oklahoma City. Jim Couch, Oklahoma City Manager (top) and Choctaw Nation Chief Greg Pyle (middle) address the Board.



## Recent Developments

- The special Water Town Hall was a rousing success as participants met over three days in Norman to generate a wide array of state water policy recommendations that address 11 specific categories varying from conservation and water sales to land use and the scientific nature and legal consequences of stream and groundwater interaction. The 172 citizens invited to attend the Town Hall were selected by the OCWP Planning Advisory Board from existing participants in the Water Plan public input process as well as Academy members. To help prepare them in advance for the meetings, participants were sent a 200-page resource document as well as materials outlining strategies and analysis resulting from the previous OCWP Planning Workshops. Results of the Town Hall will be available on the Academy's website at [www.okacademy.org](http://www.okacademy.org).
- The Marginal Quality Water and Recharge Workgroup final reports will soon be available on the OWRB website.



## Upcoming

- The Governor's Water Conference and Research Symposium will be held October 26-27 at the Embassy Suites Conference Center in Norman. The program will feature six sessions highlighting various policy and technical aspects of the OCWP.
- Regional feedback meetings will be held in early 2011 (dates and locations to be determined).

## Water Plan Objectives

1. Characterize demands by water use sector.
2. Identify reliable supplies to meet forecasted demands.
3. Perform technical studies in support of the evaluation of emerging water management issues.
4. Engage comprehensive stakeholder involvement to make recommendations regarding the management of Oklahoma's water resources.
5. Make "implementable" recommendations regarding the future of water management in Oklahoma based upon technical evaluations and stakeholder input.



## Goals of the OCWP Update

- To provide safe and dependable water supply for all Oklahomans while improving the economy and protecting the environment.
- To provide information so that water providers, policy-makers, and water users can make informed decisions concerning the use and management of Oklahoma's water resources.

For more information on the OCWP, visit the OWRB's website at [www.owrb.ok.gov](http://www.owrb.ok.gov). For questions and comments concerning policy development and public meetings, contact the OWRRI at 405-744-9994, by e-mail at [waterplan@okstate.edu](mailto:waterplan@okstate.edu), or go to <http://okwaterplan.info>.

## Feaver Appointed to Board

Governor Henry has appointed Marilyn Feaver to succeed Jack Keeley on the nine-member Oklahoma Water Resources Board.

Ms. Feaver resides in Chickasha and is the Executive Director of the Southern Oklahoma Impact Coalition. Like Keeley, who attended his final Board meeting in May after seven years of service, Feaver represents municipal water use. Her term ends in May 2017. ♦

## Tulsa District Gets New Commander

Col. Michael Teague has assumed command of the U.S. Army Corps of Engineers, Tulsa District from Col. Anthony Funkhouser, commander for the past three years.

Col. Teague began his career with the Corps in 1985 and most recently was the Third Army/U.S. Army Central Engineer responsible for all Army construction throughout the Middle East and Central Asian States.

Col. Funkhouser has taken command of a Corps of Engineers District in Afghanistan. ♦

## Dam Safety Program Committed to Education

The OWRB is committed to offering educational opportunities for Oklahoma dam owners. In June, the agency sponsored the second annual dam safety workshop by the Association of State Dam Safety Officials. The workshop, "Engineering for Non-Engineers," was attended by dam owners and engineers. Participants discussed various engineering design aspects, conditions that contribute to the possible failure of a dam, dam maintenance techniques, repair considerations, and emergency notification systems to respond to dam failures.

A session on the legal liability of dam owners in Oklahoma is planned for this year's Governor's Water Conference. OWRB staff are also in the process of developing guidance documents on inspections, maintenance, and emergency action plans for dam owners in Oklahoma. These documents will soon be available on the OWRB's website.

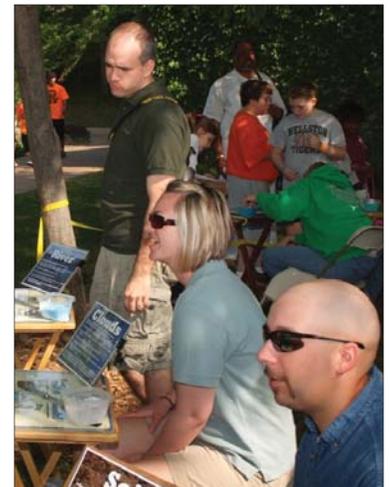
During the past year, with funding from the Dam Safety Program, OWRB staff completed hydrographic mapping studies of eight lakes in Oklahoma, including Guthrie, Liberty, Pawnee City, Ponca, Claremore City, Healdton City, Carl Albert, and Lone Chimney Lakes. These studies are important to dam owners for the determination of sediment infilling of the lake, for use in conducting dam breach analysis, and for lake yield determination. OWRB staff will be scheduling meetings with dam owners over the next few months to present the results of these studies and discuss how owners can benefit from the information. ♦



## OWRB Assists With ScienceFest

On April 22, more than 6,000 4th and 5th grade students statewide participated in ScienceFest 2010. Held annually at the Oklahoma City Zoo, the event featured twenty-five activity stations where students could experience exciting exhibits, presentations, and hands-on demonstrations. These activities were developed to show the importance of scientific applications in the environment and teach children how science, including basic geology, biology, and physical sciences, impact their everyday lives.

Several OWRB staff members demonstrated the complexity of the water cycle at a hands-on activity station called "The Incredible Journey," while other staff members filled in at various activity stations as needed. ♦



OWRB staff members Chris Neel, Lori Johnson, and Darrin Martin at an activity station demonstrating the water cycle.

**North American Lake Management Society (NALMS)**  
**30th ANNUAL INTERNATIONAL SYMPOSIUM**

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**The Water Cycle: Managing the Challenges in Water Resources**

**November 3-5, 2010**

Cox Convention Center  
Oklahoma City, Oklahoma

For more information go to  
[www.nalms.org](http://www.nalms.org)

# Drought Update

## Reservoir Storage

As of June 16, ten reservoirs (of thirty-one selected major federal reservoirs across Oklahoma listed at right) are operating at less than full capacity, according to information from the U.S. Army Corps of Engineers (Tulsa District); nine reservoirs have experienced lake level decreases since May 17.

## Palmer Drought Severity Index

According to the latest Palmer Drought Severity Index (see table below), two climate divisions in Oklahoma are currently experiencing drought conditions.

## Standardized Precipitation Index

The latest monthly Standardized Precipitation Index (see table below) indicates near long-term dryness in three of Oklahoma's nine climate divisions. The Southeast is "very dry."



## Storage in Selected Oklahoma Lakes & Reservoirs (June 16, 2010)

LAKE	Change in Elevation (feet) 5/17-6/16/10	Current Flood Control Storage (acre-feet)
<b>North Central (2)</b>		
Fort Supply	-0.07	995
Great Salt Plains	1.43	17,041
Kaw	13.60	273,155
<b>Northeast (3)</b>		
Birch	4.81	6,497
Copan	3.06	26,643
Fort Gibson	0.13	-25,000
Grand	-1.92	44,619
Hudson	-0.06	19,137
Hulah	7.50	56,014
Keystone	8.88	268,812
Oologah	4.36	254,121
Skiatook	3.66	41,353
<b>West Central (4)</b>		
Canton	0.02	2,699
Foss	0.01	-668
<b>Central (5)</b>		
Arcadia	14.97	39,521
Heyburn	7.45	10,340
Thunderbird	0.41	4,819
<b>East Central (6)</b>		
Eufaula	0.45	194,214
Tenkiller	0.06	10,611
<b>Southwest (7)</b>		
Fort Cobb	-0.34	-74
Lugert-Altus	3.07	-32,346
Tom Steed	-0.48	-24,654
<b>South Central (8)</b>		
Arbuckle	0.37	4,227
McGee Creek	0.03	1,213
Texoma	0.13	-54,597
Waurika	0.21	5,373
<b>Southeast (9)</b>		
Broken Bow	0.58	-6,871
Hugo	-1.30	-13,019
Pine Creek	-4.28	-16,397
Sardis	-0.11	-803
Wister	-1.46	1,013

CLIMATE DIVISION	Standardized Precipitation Index (through May 2010)				Palmer Drought Severity Index
	3-month	6-month	9-month	12-month	June 12, 2010
Northwest (1)	Near Normal	Near Normal	Moderately Wet	Near Normal	Moist Spell
North Central (2)	Near Normal	Near Normal	Near Normal	Near Normal	Unusual Moist Spell
Northeast (3)	Near Normal	Near Normal	Near Normal	Near Normal	Near Normal
West Central (4)	Near Normal	Near Normal	Near Normal	Near Normal	Near Normal
Central (5)	Near Normal	Near Normal	Near Normal	Near Normal	Near Normal
East Central (6)	Near Normal	Near Normal	Near Normal	Near Normal	Mild Drought
Southwest (7)	Moderately Dry	Moderately Dry	Near Normal	Near Normal	Mild Drought
South Central (8)	Moderately Dry	Near Normal	Near Normal	Near Normal	Incipient Drought
Southeast (9)	Very Dry	Near Normal	Moderately Wet	Moderately Wet	Incipient Drought

For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, go to [www.owrb.ok.gov/supply/drought/drought\\_index.php](http://www.owrb.ok.gov/supply/drought/drought_index.php).

*Rudy Herrmann, Chairman • Mark Nichols, Vice Chairman • Linda Lambert, Secretary  
Ford Drummond • Ed Fite • Marilyn Feaver • Kenneth K. Knowles • Richard Sevenoaks • Joe Taron*

*The mission of the Oklahoma Water Resources Board is to manage and protect the water resources of the state and plan for Oklahoma's long-range water needs in a responsive, innovative, and professional manner to ensure that all Oklahomans have adequate quantities of good water.*



**2nd Quarter 2010**

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## FINANCIAL ASSISTANCE PROGRAM UPDATE

*Loans & Grants Approved as of June 8, 2010*

### **FAP Loans—325 for \$662,610,000**

The OWRB's Financial Assistance Program (FAP), created by the State Legislature in 1979, provides loans for water and wastewater system improvements in Oklahoma. The tremendous popularity of the bond loan program is due, in part, to extended payoff periods of up to 30 years at very competitive interest rates, averaging approximately 4.762 percent since 1986.

### **CWSRF Loans—227 for \$914,753,057**

The Clean Water State Revolving Fund (CWSRF) loan program was created in 1988 to provide a renewable financing source for communities to draw upon for their wastewater infrastructure needs. The CWSRF program is Oklahoma's largest self-supporting wastewater financing effort, providing low-interest loans to communities in need.

### **DWSRF Loans—117 for \$622,479,642**

The Drinking Water State Revolving Fund (DWSRF) loan program is an initiative of the OWRB and Oklahoma Department of Environmental Quality to assist municipalities and rural water districts in the construction and improvement of drinking water systems. These projects are often mandated for communities to obtain compliance with increasingly stringent federal standards related to the treatment of drinking water.

### **REAP Grants—537 for \$47,455,607**

The Rural Economic Action Plan (REAP) Program was created by the State Legislature in 1996. REAP grants, used for water/wastewater system improvements, target primarily rural communities with populations of 7,000 or less, but priority is afforded to those with fewer than 1,750 inhabitants.

### **Emergency Grants—556 for \$33,036,440**

Emergency grants, limited to \$100,000, are awarded to correct situations constituting a threat to life, health, or property and are an indispensable component of the agency's financial assistance strategy.

### **Drought Response Program Grants—2 totaling \$200,000**

Through the OWRB's Drought Response Program, funding is available for communities in most dire need during state drought emergencies declared by the Governor. A maximum of \$300,000 is diverted from existing OWRB Emergency Grant funds to establish the Program.

### **American Recovery & Reinvestment Act Funding—\$60,617,376**

Through the OWRB's conventional CWSRF and DWSRF loan programs, ARRA funds are utilized to provide additional subsidization to Oklahoma communities for water and wastewater infrastructure improvements as well as to provide benefits to the state's environment and create jobs for Oklahoma workers.

**Total Loans/Grants: 1,764 for \$2,280,534,747**  
**Estimated Savings: \$808,435,641**

*Applicants eligible for water/wastewater project financial assistance vary according to the specific program's purpose and requirements, but include towns and other municipalities with proper legal authority, various districts established under Title 82 of Oklahoma Statutes (rural water, master/water conservancy, rural sewage, and irrigation districts), counties, public works authorities, and/or school districts. Applications for agency financial assistance programs are evaluated individually by agency staff. Those meeting specific program requirements are recommended by staff for approval at monthly meetings of the nine-member Water Board.*

**For more information, call 405-530-8800  
or go to [www.owrb.ok.gov/financing](http://www.owrb.ok.gov/financing).**