

OKLAHOMA Water News

3rd Quarter 2015

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Altus Commended for Drought-Proofing Investment

Earlier this year, for the first time ever, the City of Altus had to enact stage-three water rationing. With daily average water use of about four million gallons and record low rainfall totals since about 2010, the city had been in stage one and stage two water rationing off and on for several years, but the situation was growing dire. Stage-three restrictions included limiting outside watering to one day a week, prohibiting the filling of swimming pools, and shutting down car washes one day a week, among other drastic measures.

Fortunately for the city, historic rains brought desperately needed relief to the area beginning last spring. In fact, April 28 to May 27 ranked the wettest on record for the Southwest climate region, which received 372% of normal rainfall. However, this relief quickly proved to be temporary. In a matter of months, extremely dry conditions were back. Data for the period between August 29 and September 27 show the region at only 34% of normal rainfall, ranking it the 18th driest for this period on record.

Before the rains, Altus officials were putting together plans to make their community more drought resilient by applying for financial assistance through the Emergency Drought Relief (EDR) grant program and Oklahoma's Drinking Water State Revolving Fund (DWSRF) loan program. On September 26, state officials gathered near Altus to present ceremonial checks and commend the city for doing their part to invest in drought-proofing through a \$575,000 EDR grant and a \$2.3 million DWSRF loan to fund the construction of several miles of

(continued on page 2)



Ceremonial check presentation in Altus (left to right): Andy Allen, OWRB; Jim Reese, Secretary of Agriculture, Food & Forestry; Trey Lamb, Conservation Commission Executive Director; Matt Wojnowski, Assistant City Manager; J.D. Strong, OWRB Executive Director; Chris Ribble, City Councilman; Dwayne Martin, City Councilman; Jack Smiley, Mayor; Jason Winters, City Councilman; Scott Thompson, ODEQ Executive Director; Representative Charles Ortega; Senator Mike Schultz; Jerri Hargis, OWRB.

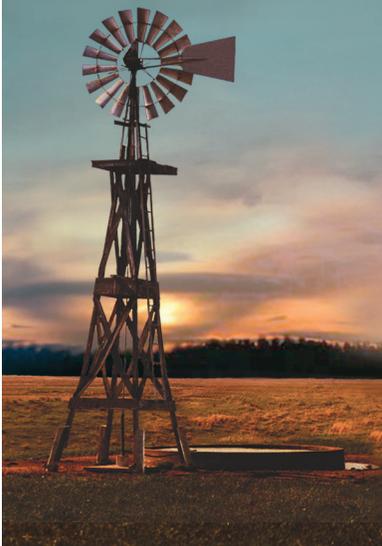
From the Director

What a difference a year makes! It's hard to imagine that at this time last year, approximately three-fourths of Oklahoma was covered by drought with one-fifth of the state in the most extreme category. At that time more than two million Oklahomans, or over half the state's population, were affected by drought conditions. The impacts were dire at many of Oklahoma's western reservoirs, and even some lakes and streams in the eastern half of the state were increasingly showing the effects. Other less visible but equally significant impacts included stressed public water supplies and infrastructure, agriculture production losses, added industrial costs, and limits on recreational use, to name a few.



(continued on page 2)

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



Altus Commended for Drought-Proofing (continued)

new water line that will bring groundwater to the city to supplement existing surface water supplies and increase distribution capacity. This additional water supply source is expected to yield about one-third of the city's daily use.

Preparing for and combating drought by connecting to an additional water supply source, whether surface water or groundwater, is a strategy recommended for many basins in the 2012 update of the Oklahoma Comprehensive Water Plan (OCWP). The City of Altus recognized that this strategy was a viable option and took advantage of available funding. This "drought-proofing" project will provide much needed relief both now and during future droughts, giving the city a means to minimize the economic hardships that are the inevitable result of long-term water shortages. ♦

From the Director (continued)

It's equally hard to imagine that after the historic rains this past spring, which were largely credited with ending our five-year drought, drought conditions are again creeping back into the state. Beginning several weeks ago in southeastern Oklahoma and spreading west, regions of the state that surpassed their entire annual average rainfall before summer began are now witnessing the unwelcome return of drought conditions. Water planners, agriculture producers, public water system managers, and other water practitioners never really doubted that drought would return. Oklahoma's precipitation history is littered with both wet and dry periods that extend through multiple years and seasons. Following the historic rains this summer, the question was not if, but when drought would return. The goal for Oklahoma's most pragmatic water users and communities must be to continue conserving and diversifying their water resources and not let up in their efforts to plan for the inevitable droughts ahead.

The goal for Oklahoma's most pragmatic water users and communities must be to continue conserving and diversifying their water resources and not let up in their efforts to plan for the inevitable droughts ahead.

Importantly, drought-proofing Oklahoma is not merely a goal; it's the key to the future viability our state. Perhaps most central to this mission is water conservation. Though water is a resource that we cannot create, we can increase its availability through its wise and efficient use. During Oklahoma's recent five-year drought, many regions and communities made significant strides both on near-term drought management and on careful long-term planning, infrastructure improvement, and new approaches to local water management. Unfortunately, just as many communities did not make such strides and in some instances quickly returned to the types of wasteful practices that exacerbated the recent drought and led to the need for more drastic and costly measures to confront it.

The OWRB is pleased and humbled to have led development of the 2012 Update of the Comprehensive Water Plan (OCWP) and to coordinate the efforts of the Water for 2060 Advisory Council, all made possible by the support

DROUGHT-PROOFING
OKLAHOMA

REGISTER ONLINE
www.owrb.ok.gov/gwc
2015 Oklahoma Governor's Water
Conference and Research Symposium
December 1-2
Embassy Suites, Norman, OK

of our Governor, State Legislature and multiple partners. In October, the Advisory Council will submit its final report of recommendations for meeting the bold, statewide goal of consuming no more fresh water in 2060 than was consumed in 2010, while at the same time supporting Oklahoma's continued economic growth and prosperity.

With both of these plans as our guide, we will continue highlight the most overlooked, and without a doubt cheapest source of water—conserved water. Water conservation, recycling, and reuse are no longer catch phrases, but rather real strategies for local communities to deploy in order to withstand the inevitable dry years to come. Innovative measures such as wastewater reuse, use of marginal quality waters, innovative stormwater practices, low impact development, and other water and energy efficiency measures are just a few of the pioneering concepts that will ensure more efficient use of our shared, finite water resources.

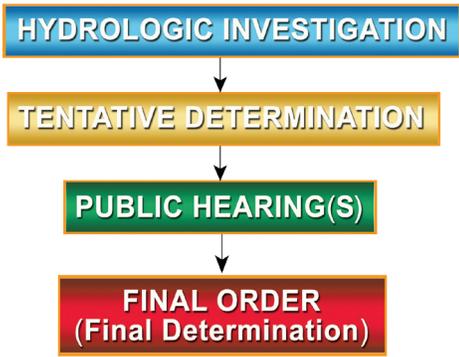
I look forward to exploring with you many of these issues regarding Oklahoma's water resources at the upcoming 36th Annual Oklahoma Governor's Water Conference and Research Symposium. The theme for this year's conference highlights our continued focus and resolve—"Drought-Proofing Oklahoma." For more details on this year's conference, which will be held December 1-2 at the Embassy Suites Conference Center in Norman, OK, please check the OWRB's conference page regularly for updates. As always, we will have a great line-up of speakers, presentations, and discussions featuring a wide range of water-related topics. For more details or to register, visit our website at www.owrb.ok.gov/GWC or call us at 405-530-8800. ♦

Hydrologic Investigations Underway on Five Major Aquifers

The OWRB is currently conducting hydrologic investigations on five state aquifers. For two of these aquifers—the Rush Springs and Cimarron River—this will be the first Maximum Annual Yield (MAY) study ever completed.

The MAY is a determination of the amount of water that may be withdrawn from an aquifer (groundwater basin) by permitted water users in a year. Once the MAY has been established and approved by the Board, the amount of water allocated to each permit applicant will be proportionate to the amount of land owned or leased by that applicant. This is referred to as the landowner’s “equal proportionate share” or EPS. Until then, temporary permits will continue to be issued for these aquifers at 2 acre-feet per acre per year (ac-ft/ac/yr). Temporary permits must be reissued on an annual basis.

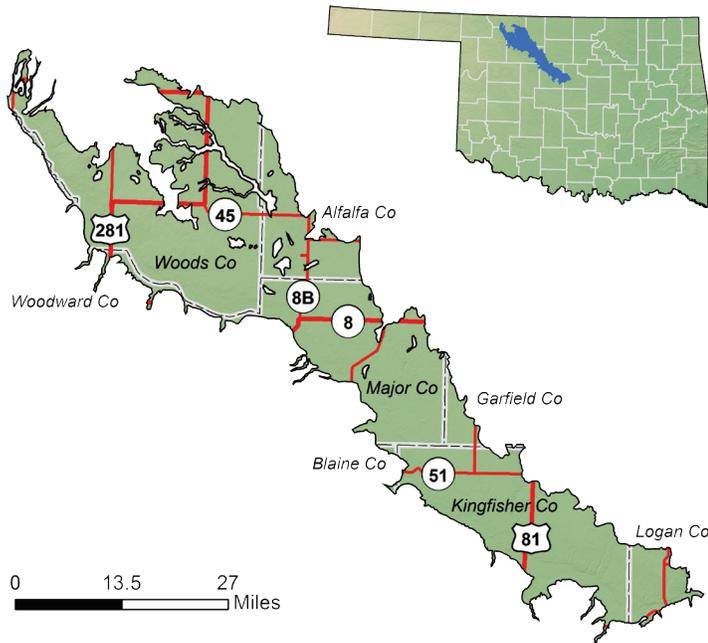
Maximum Annual Yield Determination Process



Certain factors must be considered in the determination of the maximum annual yield of a major groundwater basin, including total land area overlying the basin, the amount of water in storage in the basin, the rate of recharge to the basin and total discharge from the basin, transmissivity of the basin, and the possibility of pollution from natural sources.

Cimarron River Alluvial Aquifer Hydrologic Study

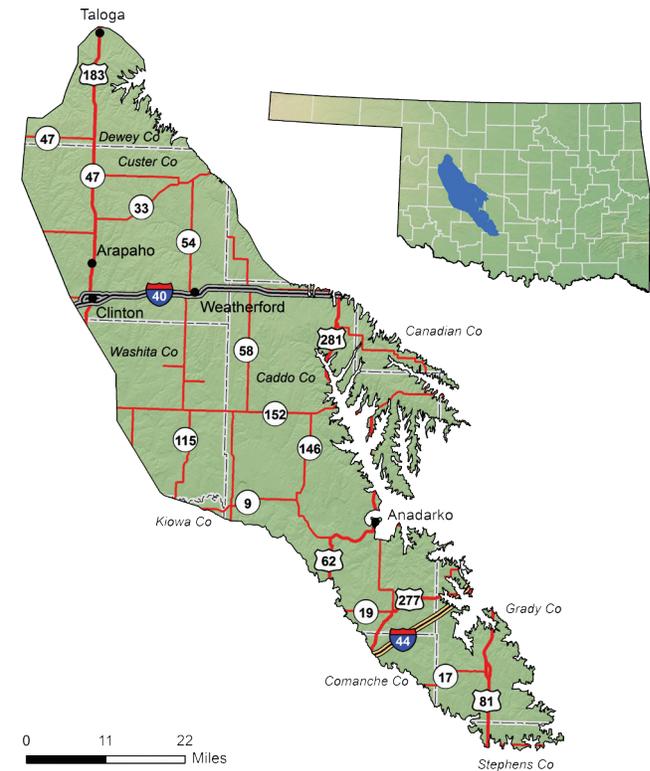
The Cimarron River hydrologic study was initiated in September 2015. The aquifer underlies portions of Woods, Alfalfa, Major, Woodward, Blaine, Garfield, Kingfisher, and Logan counties and is composed of alluvium and terrace



deposits that occur along or around the Cimarron River. Wells in the aquifer yield about 150 gallons per minute (gpm) on average. Agriculture is the primary land use in the aquifer area, making the aquifer highly vulnerable to nitrate contamination, according to the USGS. Currently, temporary permits for the aquifer are issued for 224,028 acre-feet per year (ac-ft/yr), 64% of which is used for irrigation and 27% for municipal supply. Goals of the study include characterization of the aquifer in terms of geological setting, aquifer boundaries, hydraulic properties, water levels, groundwater flow, and water budget. Altogether this information will facilitate the determination of the MAY based on proposed management scenarios.

Rush Springs Aquifer Hydrologic Study

The Rush Springs hydrologic study was initiated in 2011 and is nearing completion. The Rush Springs is located in west-central Oklahoma, underlying portions of Woodward, Dewey, Custer, Blaine, Washita, Caddo, and Grady counties. Temporary permits for the aquifer are currently issued for 502,696 ac-ft/yr, 86% of which is used for irrigation.



During the study, OWRB hydrologists took synoptic water-level measurements to determine aquifer boundaries, map the elevation of the water table, and determine hydraulic gradients. Pumping tests were conducted in observation wells to determine drawdown and estimate hydraulic properties. Continuous water-level recorders were installed in eight wells. The climatological history of the area was reviewed, along with an analysis of surface water and water use from the aquifer. Currently, the Rush Springs study team is constructing a hydrologic model and testing management scenarios. The final report is expected to be completed by the end of this year.

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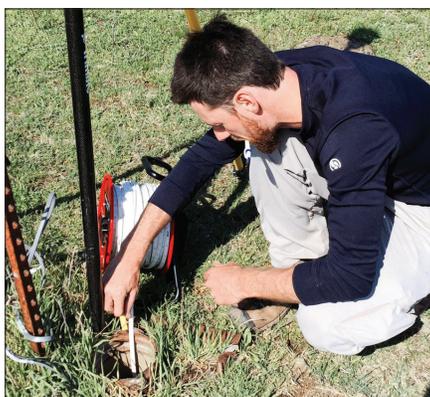
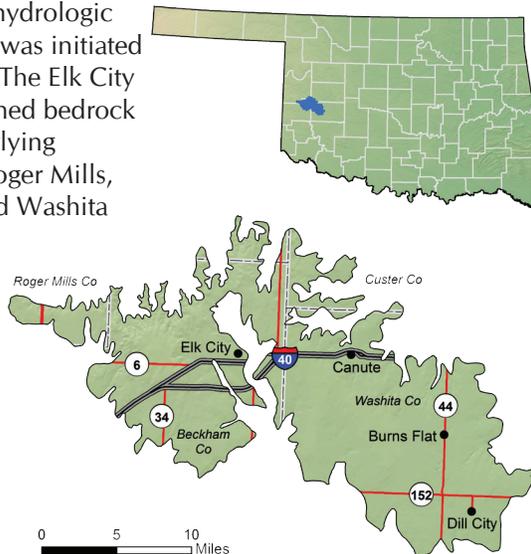
Hydrologic Studies Underway (continued)

Three other aquifers are currently being studied to update original MAY studies from the 1980s: the Elk City, Enid Isolated Terrace, and Gerty Sand.

Elk City Aquifer Hydrologic Update Study

The Elk City hydrologic update study was initiated in late 2014. The Elk City is an unconfined bedrock aquifer underlying portions of Roger Mills, Beckham, and Washita counties.

Wells in the aquifer commonly yield 25 to 300 gpm. The original study of the aquifer was completed



Above: OWRB geologists on the Elk City study team examine the formation at a road cutting, looking for irregularities, such as in the sample above, which are indicators of porosity, among other things, and helpful in determining aquifer recharge rates. Left: Geologist Kyle Spears takes a water level measurement in the Gerty Sand.

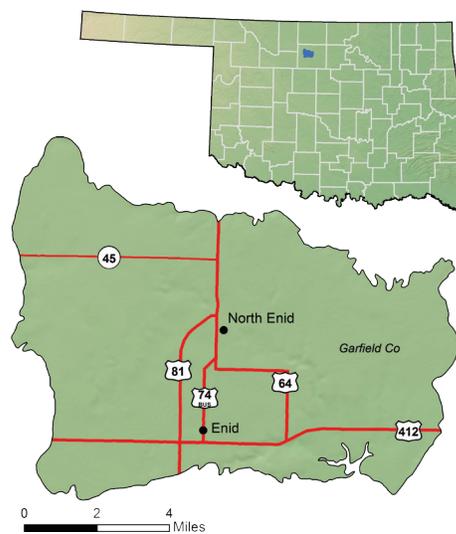
Read more about water quality in the Elk City, Enid Isolated Terrace, Gerty Sand, and Rush Springs aquifers in the latest Groundwater Monitoring and Assessment Program (GMAP) report at www.owrb.ok.gov/GMAP.

in 1982, resulting in an EPS of 1 ac-ft/ac/yr. A total of 20,821 AFY is currently permitted from the aquifer, 53% of which is for irrigation and 36% for municipal supply. The study will provide updated information to determine if the MAY of the aquifer has changed and if the EPS is still set at an appropriate amount. The study is expected to be completed by late 2017.

Enid Isolated Terrace Hydrologic Update Study

The Enid Isolated Terrace (EIT) hydrologic update study was initiated in 2013 and is nearing completion. The EIT, located in north central Oklahoma and underlying Garfield County, is termed an “isolated” terrace aquifer because it is separated from the Cimarron River aquifer by erosion. The original

study of the Enid Isolated Terrace was completed in 1982, resulting in an EPS of .5 ac-ft/ac/yr. A total of 5,843 AFY is currently permitted from the aquifer, 52% of which is used for municipal supply and 36% for irrigation. The study will provide updated information to determine if the MAY of the aquifer has changed and if the EPS is still set at an appropriate amount.

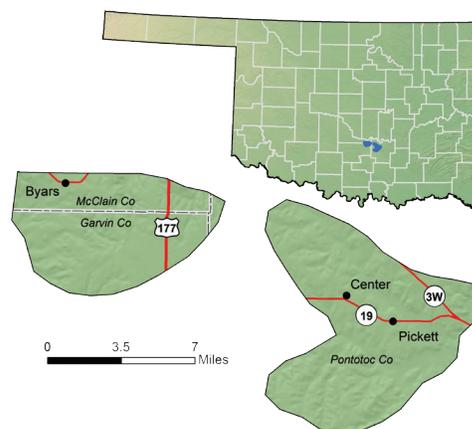


Gerty Sand Aquifer Hydrologic Update Study

The Gerty Sand hydrologic update study was initiated in late 2014 and is expected to be completed next spring. Located in south central Oklahoma and underlying portions of Garvin, McClain, and Pontotoc counties, the Gerty Sand is also an “isolated” terrace aquifer, separated from the Canadian River by erosion. The original study of the aquifer was completed in 1989, resulting

in an EPS of 1 acre-foot per acre. A total of 3,110 AFY is currently permitted from the aquifer, 51% of which is for irrigation and 49% for municipal use. The study will provide updated information to determine if the

MAY of the aquifer has changed and if the EPS is still set at an appropriate amount. 💧



CONSERVING WATER NOW TO PREPARE FOR THE FUTURE

While population and demand on freshwater resources are increasing, supply will always remain constant. And although it's true that the water cycle continuously returns water to Earth, it is not always returned to the same place or in the same quantity and quality.

Droughts happen somewhere in the country every year, and climate change has the potential to increase stress on water resources. In order to create a more sustainable water future, cities and states are coming together to encourage water conservation as a way to reduce demand.

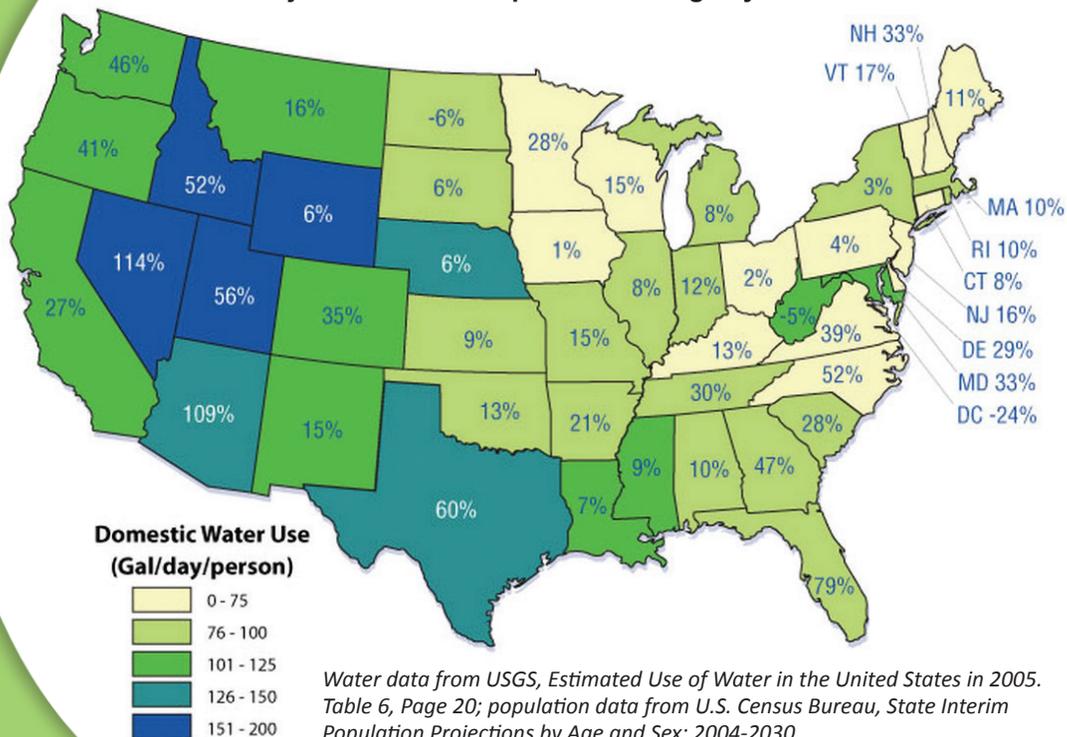
COMMUNITIES FACE CHALLENGES

Managing water is a growing concern in the United States. Communities across the country are starting to face challenges regarding water supply and a need to update aging water treatment and delivery systems, sometimes referred to as "water infrastructure." Many of the states that have higher projected population growth also have higher per capita water use and can expect increased competition for water resources.

Strains on water supplies and our aging water treatment systems can lead to a variety of consequences for communities:

- Higher water prices to ensure continued access to a reliable and safe supply;
- Increased summer watering restrictions to manage shortages;
- Seasonal loss of recreational areas like lakes and rivers when the human demand for water conflicts with environmental needs; and
- Expensive water treatment projects to transport and store freshwater when local demand overcomes available capacity.

Domestic Water Use in Gallons per Day per Person and Projected Percent Population Change by 2030



Water data from USGS, *Estimated Use of Water in the United States in 2005*, Table 6, Page 20; population data from U.S. Census Bureau, *State Interim Population Projections by Age and Sex: 2004-2030*.

CONSIDER THESE AT-HOME WATER SAVING TECHNIQUES

FOLLOW THE RULES

Your water utility must ensure water is available to fight fires and meet other critical needs, so help your community by following the rules. They will be lifted when water shortages end.

LOOK FOR LEAKS

The last thing you want to do during a drought is waste water through leaks. Look for leaks indoors and out, and if you find them, fix them.

TAKE A SPRINKLER BREAK

Outdoor water use can put a lot of stress on local water supplies. You can be water-smart by letting your grass grow longer and making other maintenance adjustments. Grass doesn't need to be green year round—you can cut back on watering and the green will return when rains return. WaterSense has lots of water-saving tips for drought resilient landscapes.

Adapted from EPA WaterSense

CONSIDER AN UPGRADE

If you have been thinking about a bathroom makeover, a drought is a great time to get busy. You will help your utility with immediate savings and save yourself money on future bills. WaterSense labeled products are a great way to save!

GO THE EXTRA MILE

If you want to go above and beyond in water savings, think about reusing water. You can collect water in a bucket while waiting for the shower to warm up or when washing pots, and use it to water container plants or flower beds. Use your imagination to come up with creative ways to save water!



WATER FOR 2060
EFFICIENCY • CONSERVATION • RECYCLING • REUSE

Perkins Receives Loan for Water Efficiency Project

In September, the Perkins Public Works Authority (PWA) received a \$545,000 loan from the OWRB's Clean Water State Revolving Fund (CWSRF) program to replace current water meters with meters containing encoded registers compatible with Automated Meter Reading (AMR) functionality and a "drive-by" receiver installed in a vehicle.

The new meters will allow the Perkins PWA to detect leaks, reduce waste and unintended flows to their wastewater system, and track customer usage more accurately.

The CWSRF loan program, administered by the OWRB with partial funding from the Environmental Protection Agency (EPA), provides low interest funding for water projects. By utilizing CWSRF funding, the Perkins PWA is expected to save an estimated \$380,000 over the life of the loan repayment period compared to traditional financing.

Water efficiency projects, such as the purchase and installation of AMR devices, are now eligible for CWSRF funding to help the state meet its Water for 2060 goal of using no more fresh water in 2060 than was used in 2010.



Lori Johnson, Assistant Chief of the OWRB's Financial Assistance Division (far left), and Connie Guinn, OWRB Financial Loan Analyst (far right), present a ceremonial check to the Perkins PWA for a \$545,000 CWSRF loan to purchase new automated meter reading units for their customers. Also pictured (left to right) are Board members Brian Norton, Robert Johnson (Chairman), Jason Shilling, David Lara, and Angela Johnston.

Other eligible Water for 2060 projects include stormwater management, green infrastructure, and water reuse projects. For more information on Water for 2060 or CWSRF funding, visit www.owrb.ok.gov.

Smithee Honored with Service and Leadership Awards



The Association of Clean Water Administrators (ACWA) honored Derek Smithee of the OWRB with the Environmental Statesman Award last August during organization's 54th annual conference in Minneapolis, MN. This award is the ACWA's highest honor for individuals who have demonstrated outstanding

service and leadership over a multi-year period. Smithee has served the ACWA for many years, promoting public education and dialog with public agencies and officials to advance the goal of protecting and improving water quality across the nation. His knowledge and experience are of tremendous value to the organization, and he is one of only 34 recipients of the award since it was established in 1979.

Smithee has served as Chief of the OWRB's Water Quality Programs Division since 1995. In addition to overseeing statewide water quality monitoring and lake restoration activities, Smithee is in charge of the ongoing development of Oklahoma's Water Quality Standards (WQS), including the promulgation of WQS Implementation rules.

A second award was given to Smithee on September 26 at the annual meeting of Save the Illinois River (STIR), an organization dedicated to protecting and preserving the Illinois River, its tributaries, and Tenkiller Lake. Smithee was inducted into the Scenic River Hall of Fame for his current and previous work

on projects to develop limits on phosphorus loads into the Illinois River to impede algae growth. Excessive amounts of algae can lead to depleted oxygen levels and taste and odor problems, while damaging or destroying wildlife and their habitats and limiting opportunities for recreation, such as fishing and swimming.

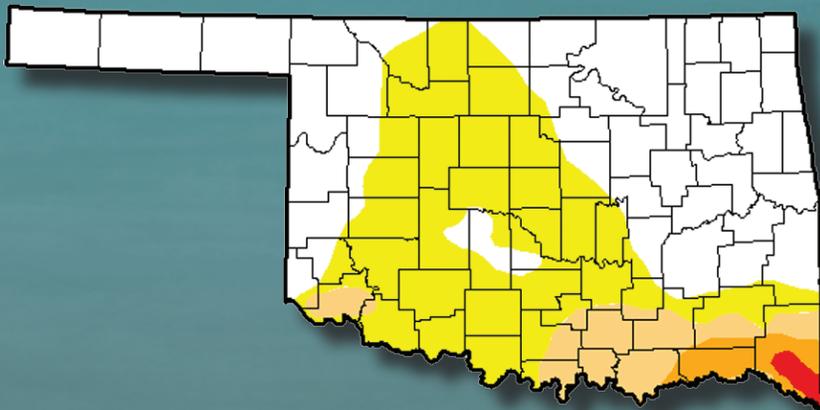
In 2013, Smithee was appointed by Governor Mary Fallin to lead the Scenic Rivers Joint Study Committee, charged with determining the total phosphorus threshold response level at which algae production results in undesirable or harmful conditions in Oklahoma's scenic rivers. Prior to the study, Smithee had actively participated in efforts to limit nutrient loading into scenic rivers since 2002, when he played a pivotal role in the OWRB's historic WQS promulgation of a total phosphorus criterion of 0.037 mg/L for all Oklahoma scenic rivers. ♦

Oklahoma's Scenic Rivers



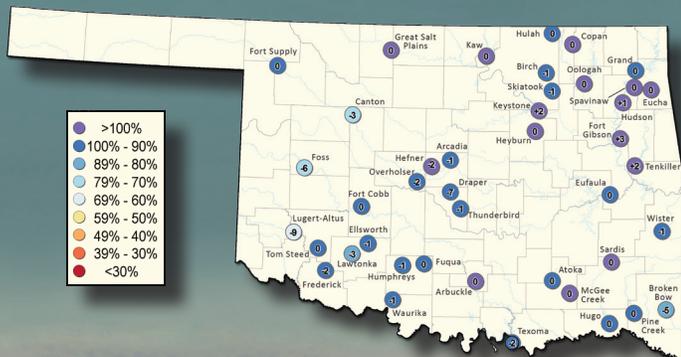
Drought Update

U.S. Drought Monitor
September 28, 2015

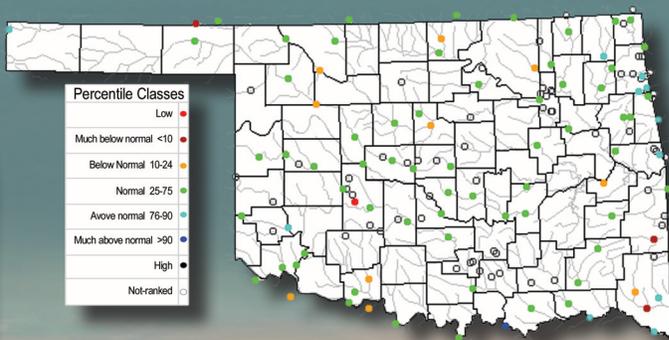


Abnormally Dry	47.2%
Moderate Drought	10.85%
Severe Drought	3.3%
Extreme Drought	.69%
Exceptional Drought	0%

Reservoir Storage September 28, 2015

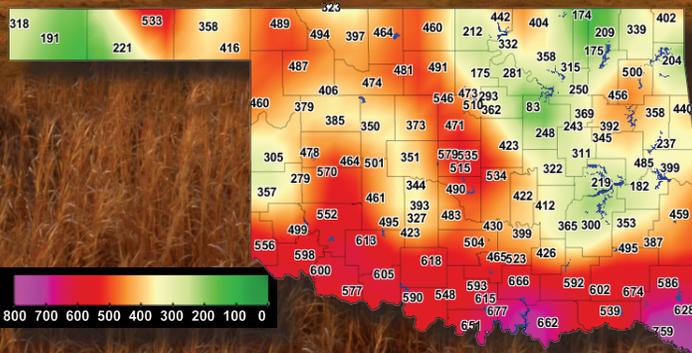


Monthly Streamflow Average September 2015*

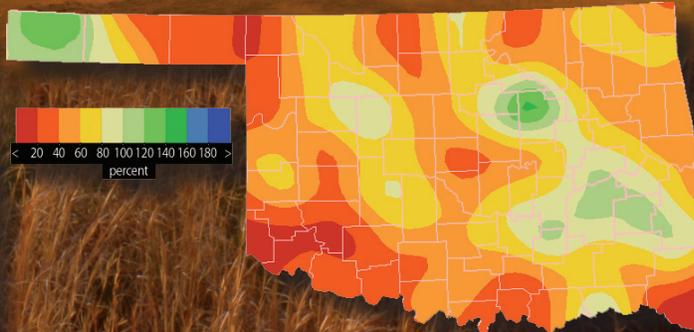


*compared to the historical average for the month

Keetch-Byram Drought Index September 28, 2015



Percent of Normal Precipitation Last 30 Days (Aug. 29, 2015, through Sept. 27, 2015)



Data obtained from the National Drought Mitigation Center, US Geological Survey, US Army Corps of Engineers and Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, visit www.drought.ok.gov.

*Linda Lambert, Chairman • Ford Drummond, Vice Chairman • Jason Hitch, Secretary
Stephen Allen • Tom Buchanan • Bob Drake • Marilyn Feaver • Ed Fite • Richard Sevenoaks*

Protecting and enhancing the quality of life for Oklahomans by managing and improving the state's water resources to ensure clean and reliable water supplies, a strong economy, and a safe and healthy environment.

FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of September 30, 2015

FA Loans—368 totaling \$958,885,000

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.

CWSRF Loans—289 totaling \$1,306,171,392

The Clean Water State Revolving Fund (CWSRF) loan program was created in 1988 to provide a renewable financing source for communities to use 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—175 totaling \$ 942,958,300

The Drinking Water State Revolving Fund (DWSRF) loan program is an initiative of the OWRB and ODEQ 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—644 totaling \$57,019,562

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

Emergency Grants—569 totaling \$33,863,163

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—10 totaling \$1,543,848

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 proceeds to fund the Program.

Water for 2060 Grants—4 totaling \$1,500,000

Through the Water for 2060 Grant Program, funding is available for municipalities, counties, water/sewer districts and other public entities for projects that highlight the responsible use of water.

Total Loans/Grants Approved: 2,059 totaling \$3,301,941,265

Estimated Savings: \$1,128,772,239

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.**

OKLAHOMA
*Water
News*

3rd Quarter, 2015

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