

OKLAHOMA Water News

1st Quarter 2014

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Hot Spot Meetings Help Target Conservation Projects

OWRB and other planning specialists held a series of public meetings in March to share information and obtain feedback on water conservation strategies that could mitigate projected water shortages in Oklahoma's most compromised areas.

Agriculture producers, water providers, and citizens residing in and around twelve "Hot Spot" planning basins—those determined to have the most significant water supply challenges within the next 50 years—were offered the opportunity to shape actions that could collectively satisfy future water demands and thus avoid substantial water shortages projected in those areas. Input meetings were held in Goodwell, at Quartz Mountain Resort (north of Altus), and in Duncan in March, and will be held in Yukon on April 16.

Investigations conducted for the 2012 Update of the Oklahoma Comprehensive Water Plan (OCWP) indicate that many of the state's 82 watershed planning basins are likely to experience surface water and/or groundwater deficits by 2060. While the magnitude or probability of projected shortages is relatively minor in many areas, each of the dozen Hot Spot basins are facing potentially large and recurring water deficiencies that require more immediate attention. In addition to traditional conservation measures (irrigation efficiencies, plumbing codes, tiered rate structures, educational programs, etc.), planning studies indicate that the use of marginal quality waters and other unconventional sources of supply, along with the regionalization of select water systems, could be particularly promising in circumventing future water crises. These options and their anticipated effectiveness in each planning basin, as determined by more detailed evaluation

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Quartz Mountain Resort public meeting on March 12. OWRB Executive Director J.D. Strong explains goals of the state's Water for 2060 initiative and particular efforts to implement conservation strategies in OCWP Hot Spot basins in western and central Oklahoma.

From the Director

From our friends at the Oklahoma Climatological Survey, I just learned that March was the 7th consecutive month—and the 30th out of the last 42—that Oklahoma's statewide average precipitation total dipped below normal. Since this devastating drought began around October 2010, the cumulative statewide precipitation deficit is 29 inches.

There appears to be no end to the drought, which is already responsible for billions of dollars in damages to the state's economy. While all Oklahomans hope and pray that conditions improve, Water Board staff work tirelessly to address an increasing number of drought-related issues. We are processing a record number of permit applications—many within

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

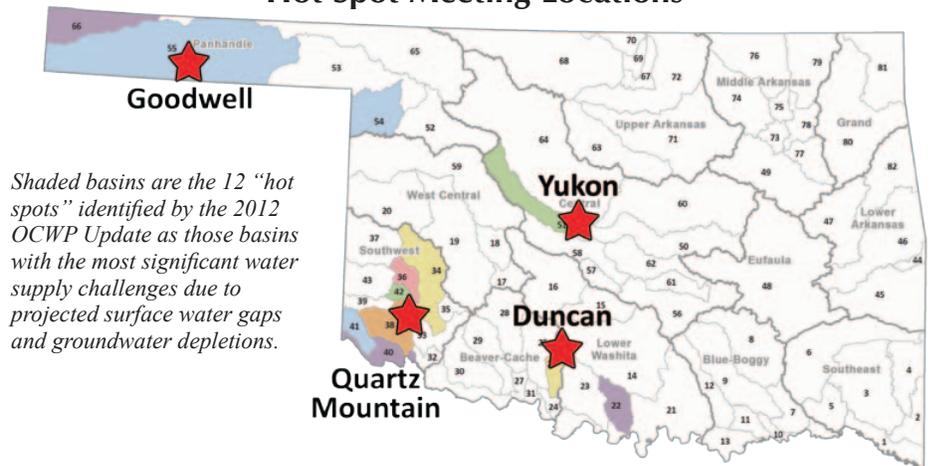


Hot Spot Meetings (continued)

conducted as part of the ongoing OCWP “Water for 2060” initiative, were discussed in detail at the four public meetings.

“In 2006, when we initiated the Water Plan update, our overriding goal was to meet the long-term water needs of every Oklahoman,” says J.D. Strong, OWRB Executive Director. “If we can address the looming water supply problems of those citizens and water users at greatest risk—those residing in identified Hot Spots—then we can certainly implement effective strategies wherever water challenges exist in Oklahoma.” ♦

Hot Spot Meeting Locations



From the Director (continued)

days of receipt—and responding to dozens of citizen complaints.

Fortunately for particularly hard-hit areas of western Oklahoma, on March 20, the Oklahoma Emergency Drought Relief Commission awarded more than \$1 million to the community water systems of Altus, Guymon, Hollis, and Tipton. These Emergency Drought Relief grants, which were made available through Governor Fallin’s drought declaration in those respective counties last October, should at least temper local impacts through implementation of much-needed drought mitigation and related water projects. In addition to the Governor’s leadership, this critically important funding received strong support from Senators Mike Schulz, Don Barrington, and Bryce Marlatt, as well as State Representatives Don Armes, Charles Ortega, and Gus Blackwell, whose districts are currently facing exceptional drought-related problems.

Speaking of Sen. Schulz, his Drought Proof Communities Act of 2014 (Senate Bill 1430) has passed the Senate and has been referred to the House Appropriation and Budget Committee. The proposed act would improve the OWRB’s ability to provide financial assistance to small communities with aging and deteriorating water infrastructure. Monies appropriated through the act to the OWRB’s Financial Assistance Program would be expended solely for the benefit of public systems serving fewer than 7,000 customers with priority afforded to municipalities or rural water districts serving less than 1,750 customers. Available monies may also be expended for community efforts to identify drought vulnerabilities and implement various water conservation strategies, including system water loss audits, implementation of water reuse, and related measures.

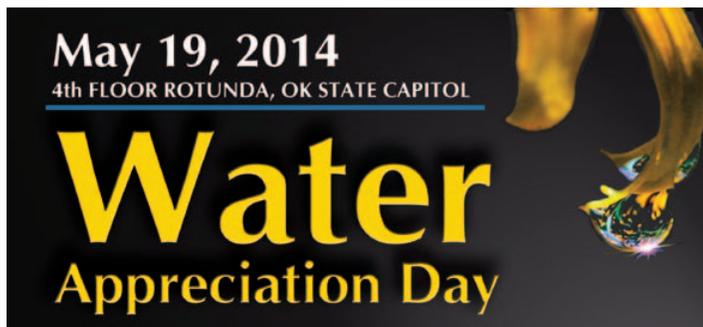
In February, Water for 2060 Advisory Council members heard from Fred Fischer, a Panhandle irrigator and member of the Oklahoma Panhandle Agriculture and Irrigation Association. Joined by Jerry Wiebe, fellow Panhandle irrigator and council member, and Mark Nichols, former OWRB chairman from the Lugert-Altus Irrigation District, the three gentlemen provided impressive examples of

conservation measures that are collectively resulting in significantly reduced water usage. The crop irrigation sector, which is responsible for almost 40 percent of statewide water use, will play a major role in achieving our statewide goal of consuming no more fresh water in 2060 than we consume today. OWRB staff and partners attending last month’s “Hot Spot” meeting in Goodwell were also afforded an opportunity to tour Mr. Fischer’s state-of-the-art farming operation.

The Hot Spot meetings, hosted by the OWRB in March and April, provided us with invaluable public input as we research the most effective ways to address anticipated water supply deficits in our most water-challenged areas. I’ve been pleasantly surprised that so many Oklahoma citizens are open to expansion of water recycling and reuse projects. These projects have tremendous promise in reducing Oklahoma’s water footprint and will no doubt be well-represented in the Water for 2060 Advisory Council’s final report to the Governor and Legislature in 2015. ♦



Center-pivot irrigation systems retrofitted with low-impact nozzles (see inset) positioned just above the crop, such as on this farm near Guymon, significantly reduce evaporative losses.



OWRB Financing Programs Receive Another Top Rating

OWRB bonds sold on February 25 received an "AAA" rating from all three major ratings services: Moody's, Standard & Poor's, and Fitch. Citing a number of program and oversight credit strengths in both ratings, the rating services also reaffirmed the AAA rating of the OWRB's current outstanding debt totaling approximately \$581 million.

The three ratings agencies praised the OWRB for its "strong" and "experienced" financial program management, its "sound" underwriting standards, its "extremely strong" program reserves, and the programs' "excellent history of borrower repayment" with "no loans in default."

The OWRB remains the only entity in Oklahoma to hold an AAA rating from all three major ratings services on all financial obligations. Because of the excellent ratings, the OWRB bonds of approximately \$56.1 million will command a low interest rate from bond buyers.

"This rating is a boon to our borrowers," says Joe Freeman, chief of the agency's Financial Assistance Division. "Because we can provide loans to Oklahoma communities and rural water districts at lower interest rates than from conventional financing sources, it helps them maintain lower water and sewer rates for their customers."

The February sale of revenue bonds, which specifically supports the state's Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) programs, also helps Oklahoma meet its projected multi-billion dollar water and wastewater project financing requirement. Recent passage of SQ 764 also authorizes the OWRB to issue up to \$300 million of state general obligation bonds to address that need.

"For more than 30 years, the OWRB's financial programs have benefitted Oklahoma water users by providing water districts and communities with a stable resource for financing water and wastewater projects," said OWRB Executive Director J.D. Strong. "We take our commitment to serving Oklahoma's water needs very seriously, and the funds generated by these bonds are important to that mission."

In addition to the CWSRF and DWSRF programs, the OWRB also administers a third program for waste water and drinking water treatment loans—the State Revenue Bond Loan Program. In November 2013, Standard & Poor's reaffirmed the AAA rating on that program as well. 💧

Gov. Fallin Urges Water Conservation as Drought Continues

Dry conditions persist across Oklahoma and impact water availability throughout the state. In January, Governor Mary Fallin continued to encourage all Oklahomans to implement water conservation practices that can help to ensure future water availability.

"Low water levels due to drought are having serious effects on our economy, and are particularly harmful to communities that rely on Oklahoma lakes for tourism and recreation," said Fallin. "Industries as diverse as tourism, agriculture, and energy are all directly affected by the state's water supply."

Drought conditions are particularly acute in southwest Oklahoma where sustained, exceptionally dry conditions have lead to record low lake levels in the Red River System.

"It's important that the state government, municipalities, and individuals do everything in their power to conserve water. Residents in all corners of the state have a major impact on water levels. As we examine ways to make state government more efficient in its water use, I am continuing to encourage all Oklahomans to consider common-sense water conservation. Things as simple as fixing leaks around the house and limiting the amount you water your lawn can help to preserve our reservoirs and lakes," Fallin pointed out.

A list of conservation techniques is available on the OWRB website.

Fallin said she will continue to monitor lake levels and the drought across the state and work with stakeholders to take measures to reduce utilization of fresh water. State agencies are working with water managers to coordinate approaches to address water challenges across the state.

"Oklahoma has been blessed with outstanding water resources," Fallin added. "We must take steps now to make sure that these will be available in the future to allow our state to continue to prosper."

Fallin has tasked Secretary of Energy and Environment Michael Teague to work with the state's water agencies to expedite development of best practices for water reuse and recycling, a priority recommendation of the 2012 Oklahoma Comprehensive Water Plan. These strategies will provide additional tools to water users that allow the state to meet its goal of using no more fresh water in 2060 than it did in 2012. 💧

GMAP Adds Eight Aquifers for Year Two Sampling

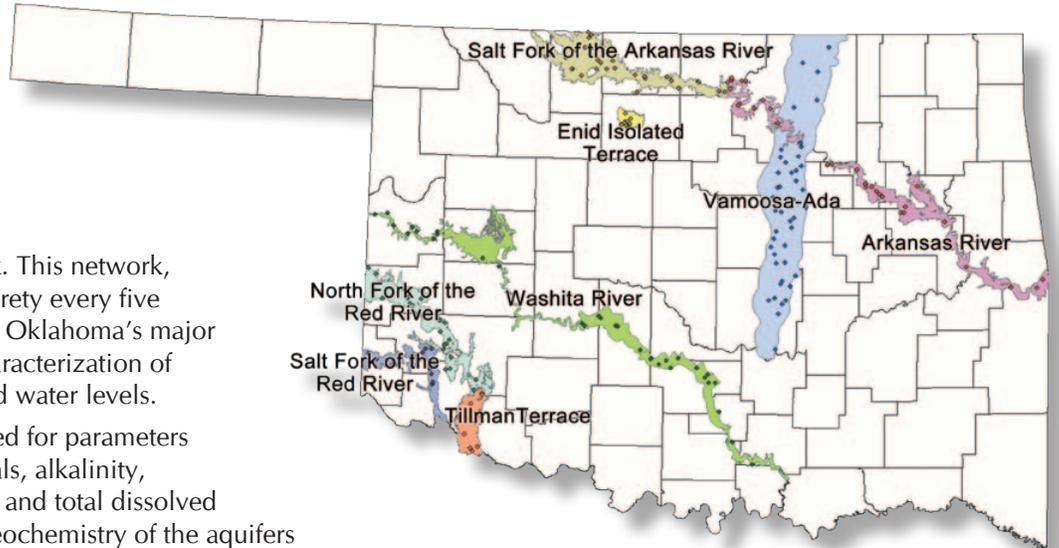
The OWRB’s Groundwater Monitoring and Assessment Program (GMAP) is now entering its second year of sampling and will add wells in eight additional aquifers (see map) to its baseline network. This network, which will be sampled in its entirety every five years, will include wells in all of Oklahoma’s major aquifers, providing a general characterization of regional groundwater quality and water levels.

Water samples are being analyzed for parameters such as nutrients, dissolved metals, alkalinity, hardness, dissolved oxygen, pH, and total dissolved solids, from which the natural geochemistry of the aquifers can be assessed to identify concerns.

The first year of sampling included more than 200 wells in the Ogallala, Canadian River, Washita River, Elk City, Rush Springs, Gerty Sand and Garber-Wellington aquifers.

Data collected through the program will be made available to the public in a variety of formats, including a yearly report as

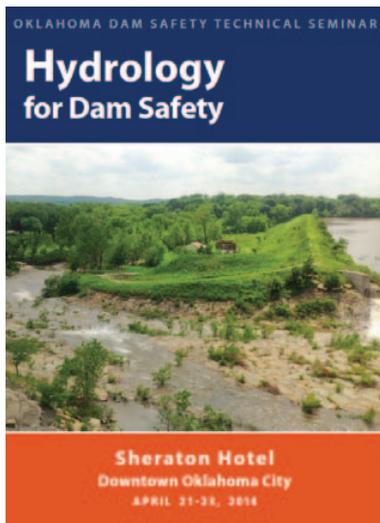
Baseline Network of Groundwater Monitoring Sites for 2014



part of the Beneficial Use Monitoring Program (BUMP) report available on the OWRB website.

GMAP was initiated in 2013 through money appropriated by the Oklahoma Legislature and Governor as a result of a priority recommendation of the Oklahoma Comprehensive Water Plan (OCWP). 💧

OWRB to Host Hydrology for Dam Safety Seminar



The OWRB will host a technical seminar on “Hydrology for Dam Safety” at the Sheraton Hotel in Oklahoma City on April 21-23.

The three-day course will provide participants with the necessary background to understand and perform hydrologic analysis for dam safety studies.

Participants will gain an understanding of how to develop the probable maximum precipitation for a particular region and

model-based predictions of the probable maximum flood. HEC-HMS computer modeling will be used to demonstrate hydrologic principles and analysis techniques.

Featured instructors include Dr. Baxter Vieux, OU Professor and expert in dam design and construction, specializing in radar rainfall and distributed hydrologic modeling, and Dr. Jonathan Looper, expert in hydrologic/hydraulic modeling using GIS and radar rainfall.

For registration information visit www.owrb.ok.gov/damsafety. 💧

OWRB Dam Safety Program

The Oklahoma Dam Safety Act is administered by the Oklahoma Water Resources Board (OWRB) through its Dam Safety Program. The goal of the program is to ensure the safety of more than 4,600 dams in the state with a focus on dams that could impact downstream life and property. Inspections are required for all jurisdictional size dams based on hazard-potential classification:

Hazard-Potential Classification	Risk Involved with Dam Failure	Inspection Frequency
High	probable loss of human life	annually, by a registered professional engineer
Significant	no probable loss of human life but can cause economic loss or disruption of lifeline facilities	every three years, by a registered professional engineer
Low	no probable loss of human life and low economic losses	every five years by the dam owner to review hazard classification

In addition, owners of high hazard dams are required to have an emergency action plan (EAP) in place. Copies of the EAP must be submitted to local law enforcement agencies and emergency management officials. OWRB staff require submittal and subsequent approval of plans and specifications prior to all new dam construction and modifications to existing dams.

The OWRB coordinates periodic training sessions and workshops for dam owners and engineers to update them on pertinent dam safety issues and regulations. Schedules are posted at www.owrb.ok.gov. 💧

Water-Smart Landscaping Tips

Spring is here and it's time to consider a "water-smart" landscape.

PLANTS

Plan ahead for a water-smart landscape.

Whether you're designing a new landscape or rethinking your current one, plan your landscape for water-efficiency.

Use low water-using and native plants.

Once established, these plants require little water beyond normal rainfall and minimum fertilizer.

Group plants according to their water needs.

Grouping vegetation with similar watering needs into specific "hydrozones" reduces water use.

Recognize site conditions and plant appropriately.

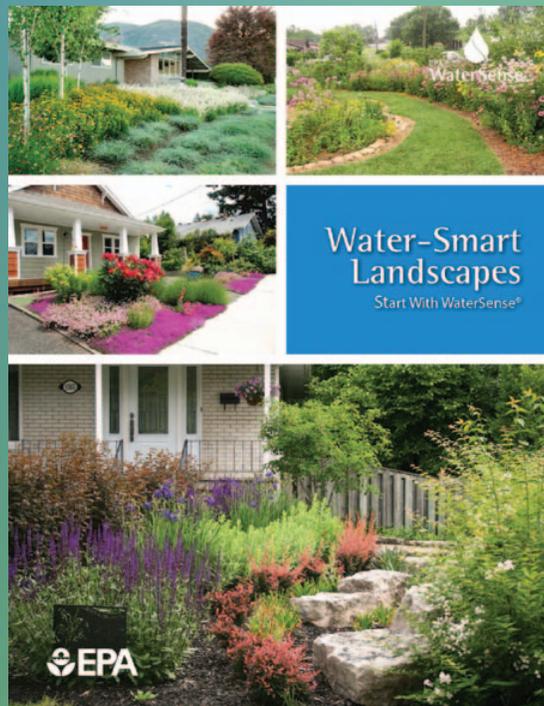
Be mindful of a site's soil type and exposure to the sun and wind, and then choose plants that are appropriate.

Place turfgrass strategically.

Turfgrass receives the highest percentage of irrigation water in traditional landscapes and homeowners commonly overwater grass areas. To reduce outdoor water use, plant turfgrass only where it has a practical function, such as a play area. Choose drought-tolerant turfgrass types that don't use a lot of water.

Minimize steep slopes.

Slopes have higher potential for erosion and runoff.



For more specific information, download the "Water-Smart Landscapes" guide from EPA's WaterSense website at www.epa.gov/watersense/outdoor/landscaping_tips.html.

SOIL

Aerate your soil.

Aerating with a simple lawn aerator can increase the infiltration of water into the ground, improving water flow to the plant's root zone and reducing runoff.

Use mulch around shrubs and garden plants.

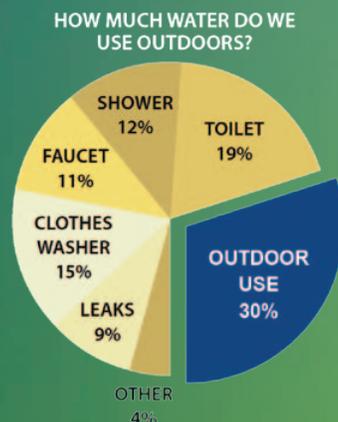
This will help to reduce evaporation, inhibit weed growth, moderate soil temperature, and prevent erosion.

Grasscycle.

Leave the grass clippings on your lawn after you mow. They will quickly decompose and release valuable nutrients back into the soil.

Keep your soil healthy.

Healthy soils effectively cycle nutrients, minimize runoff, retain water, and absorb excess nutrients, sediments and pollutants. Have your soil tested for nutrient content, pH, soil composition, and organic matter content. Contact the Oklahoma Cooperative Extension Service to learn about soil testing services.



MAINTENANCE

Raise your lawn mower cutting height.

Raise your lawn mower blade. Longer grass promotes deeper root growth, minimizes weed growth and reduces evaporation.

Provide regular maintenance.

Replace mulch around shrubs and garden plants, remove weeds and thatch as necessary.

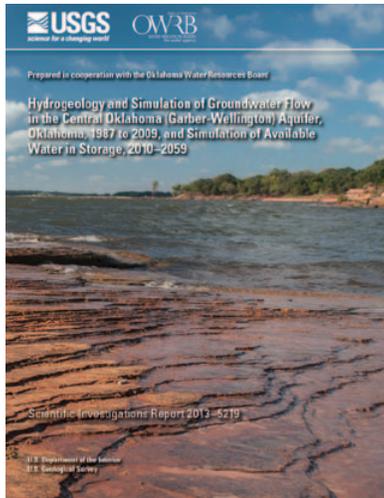
Minimize or eliminate fertilizer.

Fertilizer encourages thirsty new growth, increasing your landscape's dependence upon additional water. Minimize or eliminate the use of fertilizer where possible, or use products that contain "natural organic" or "slow-release" ingredients that feed plants slowly and evenly.



Garber-Wellington Hydrology Study Report Now Available

The Garber-Wellington Aquifer Water Management Study report is now available on the website of the U.S. Geological Survey (USGS). The report compiles data that will assist the OWRB in determining the amount of water that can be withdrawn from the groundwater basin, .



The study was coordinated by the OWRB with federal assistance from the USGS and Bureau of Reclamation. The Association of Central Oklahoma Governments (ACOG), Oklahoma Geological Survey (OGS), Tinker Air Force Base, and other state and federal agencies also contributed the investigation.

Initiated in 2008, the Garber-Wellington Study included a characterization of the geohydrology of the aquifer and construction of a digital groundwater flow model to simulate various water management strategies. Eventually, the OWRB will utilize this information to determine the Garber-Wellington's maximum annual yield and the amount of water that may be allocated to permitted water users (referred to as the equal

proportionate share or EPS). Until the final EPS determination is made and approved by the Board, users will continue to be issued temporary permits for two acre-feet of water per acre annually.

The Garber-Wellington aquifer, also referred to as the Central Oklahoma aquifer, underlies about 3,000 square miles in central Oklahoma and is used for municipal, industrial, commercial, agricultural, and domestic water supplies.

With the exception of Oklahoma City, all the major communities in central Oklahoma rely either solely or partly on groundwater from this aquifer. In addition to these municipalities, more than 20,000 homeowners use well water from the aquifer for household or yard use. With a population of approximately 1 million over the aquifer, which is expected to increase 30 percent by 2060, sufficient water supply for the future is a major concern of water planners and managers.

Study results indicate that in the 169 wells analyzed, the aquifer's water level declined an average of 3.75 feet during the period of 1987 to 2009. Annual groundwater use in 2008, including domestic use and permitted use reported to the OWRB, was estimated to be about 52,000 acre-feet. Annual average recharge to the aquifer was estimated to be 1.84 inches per year from 1987 through 2009.

The Rush Springs Hydrologic Investigation, a similar priority study of note, is in its final year. Since 2011, staff have been collecting water levels from groundwater wells and compiling other data to help develop an associated groundwater-flow model. The Rush Springs Hydrologic Investigation is part of the Upper Washita Basin Study (UWBS) being conducted in cooperation with the Bureau of Reclamation. 💧

Water Quality Improving at Thunderbird

Recently collected data (2013 to present) indicate a noticeable and significant improvement in water quality at Lake Thunderbird. Dissolved oxygen levels have increased and algae levels have declined. Consequently, lake water quality now complies with the state's dissolved oxygen standard and has demonstrated significant improvement in both its ecology and drinking water supply.

Declining water quality has historically been the dominant trend at Lake Thunderbird. The lake suffers from eutrophication, in part due to the introduction of human by-products into the watershed. The resulting overload of nitrogen and phosphorus has led to increased algae growth and depleted oxygen levels—the major causes of taste and odor problems for drinking water.

The OWRB began monitoring water quality at the lake in 2000 through its Beneficial Use Monitoring Program (BUMP). Data analyses resulted in a Category 5 (303d list) classification of the lake in the State's Integrated Report, which cites excessive turbidity, low dissolved oxygen, and excessive Chlorophyll-a as the primary impairments.

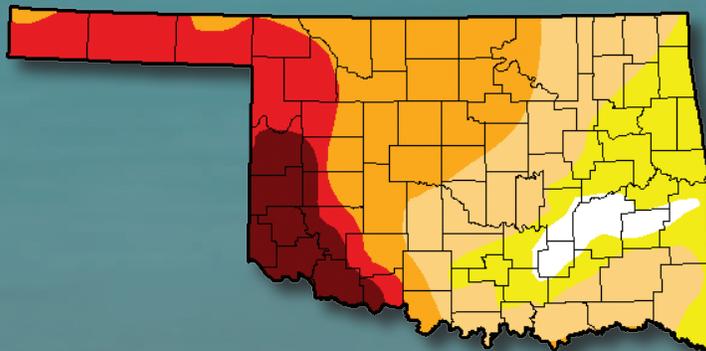
In 2008, in an effort to reverse this trend, a lake restoration project was initiated through a partnership between the OWRB and Central Oklahoma Master Conservancy District (COMCD), which manages the dam and maintains and operates the raw drinking water lines to the cities of Norman, Del City, and Midwest City. Historical BUMP data were used to create a reservoir response model, serving to highlight both the long-term benefits of nutrient reductions in the watershed and the immediate benefits that in-lake management could provide. This information was in turn utilized by COMCD to obtain funding through the American Recovery and Reinvestment Act of 2009 for the purchase of a supersaturated dissolved oxygen (SDOX) injection unit, which functions to mitigate high sediment phosphorous loads by oxygenating the hypolimnion (isolated deep waters), especially around the water supply intake.

Other lake restoration projects resulting from the partnership have included shoreline planting to establish aquatic habitat and decrease shoreline erosion, stormwater controls, and numerous additional activities focused on reducing nonpoint source pollution from the watershed.

More information about Lake Thunderbird can be found in the final project report, now available on the OWRB's website at www.owrb.ok.gov/studies/reports/reports.php. 💧

Drought Update

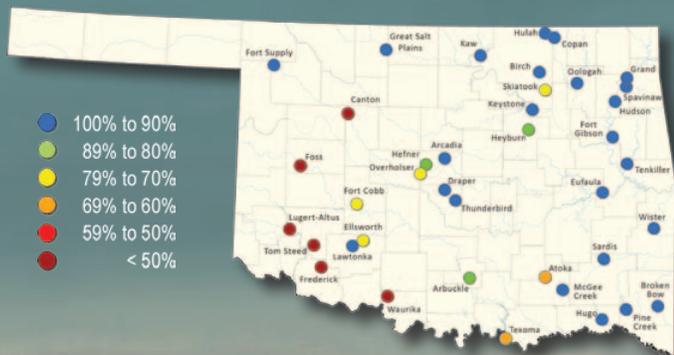
U.S. Drought Monitor April 1, 2014



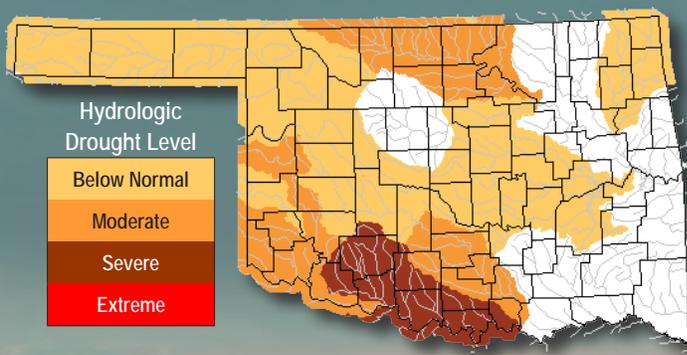
Drought Intensity & Percent of State in Drought Category

Abnormally Dry	95.95
Moderate Drought	77.48
Severe Drought	50.67
Extreme Drought	24.03
Exceptional Drought	8.61

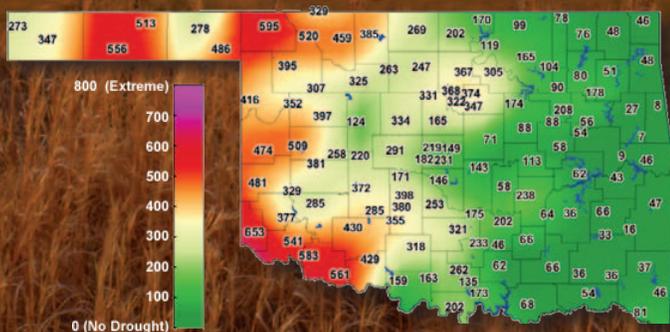
Reservoir Storage April 1, 2014



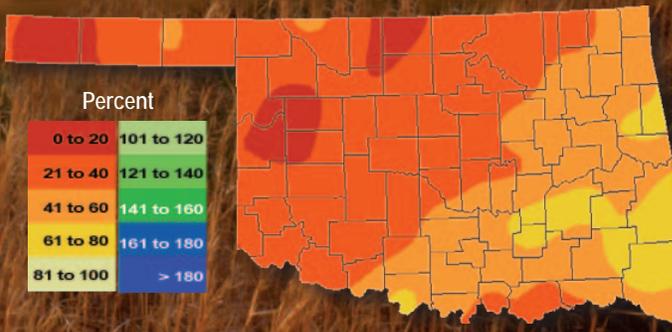
Streamflow (7-Day Average) March 31, 2014



Keetch-Byram Drought Index March 31, 2014



Percent of Normal Precipitation Last 90 Days (January 1 through March 31)



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

www.owrb.ok.gov

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Bob Drake • Ford Drummond • Marilyn Feaver • Ed Fite • Jason Hitch • 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.



1st Quarter 2014

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FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of March 18, 2014

FAP Loans—360 for \$901,465,000

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—280 for \$1,232,479,409

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—164 for \$868,303,300

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—604 for \$51,969,016

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—566 for \$33,776,351

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—6 totaling \$418,848

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 funds to establish the Program.

**Total Loans/Grants Approved: 1,981 for \$3,088,411,924
Estimated Savings: \$1,055,769,900**

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

2nd Quarter 2014

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State of the Art Water Treatment Plant Opens in Broken Arrow

OWRB's Financial Assistance Team Wins Best Display at Capitol

ISF Activity Summary Report Available Online

Wasinger Selected for EPA Financial Committee

Brian Vance Retires

Water for 2060: Water Reuse

OWRB Publishes Report on Oklahoma Monitoring Activities

New BUMP Report Features Groundwater Component

Drought Update

Ninth Annual Water Day Draws Interest at Capitol

The ninth annual Water Appreciation Day was held on May 19 in the state capitol's 4th floor rotunda. Hosted by the OWRB, the event featured 31 exhibits by agencies and organizations with various water interests, including public water supply, agriculture, tourism and recreation, environmental protection, wildlife conservation, soil conservation, energy and industry, as well as occupations, such as well drilling, floodplain management, environmental engineering, and environmental law.

Water Appreciation Day represents a unique opportunity for groups to demonstrate the importance of Oklahoma's water resources and provide information on their programs for government officials and others interested in the management and protection of Oklahoma's water resources.

J.D. Strong, OWRB Executive Director, was interviewed during the event by NPR State Impact correspondent Logan Layden and by Telemundo Oklahoma City. "This exhibition on Oklahoma's diverse water resources is especially appropriate now as we wrestle with a fourth straight year of drought and continue implementation of Water for 2060, our major statewide water conservation campaign," commented Strong.

The Water for 2060 Advisory Council is currently studying innovative incentives and voluntary solutions to help meet this ambitious goal, while at the same time meeting increasing demands for water and avoiding forecasted water shortages. ♦



Water-related exhibits fill the 4th floor rotunda of the State Capitol on May 19 for the ninth annual Water Appreciation Day. At right: OWRB Executive Director J.D. Strong is interviewed by State Impact's Logan Layden.

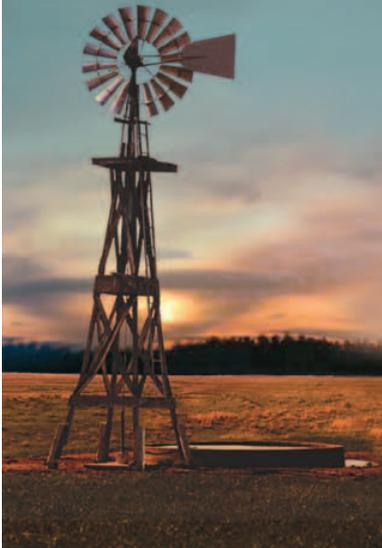
From the Director

Summer is officially in full swing, which means another session of the Oklahoma Legislature is behind us. With the exception of a 5.5% cut in state appropriations to the OWRB and most other agencies, the 2014 session was mostly positive. Importantly, the Legislature ultimately failed to act on the OWRB's proposed rules, including important well-spacing rules for sensitive sole-source aquifers like the Arbuckle-Simpson. After Board approval last March, agency rules were submitted to the State Legislature for consideration. Though the Legislature failed to act on the OWRB's proposed rule package, along with those of most other state agencies, recent law changes provide the Governor with final authority to certify them



(continued on page 2)

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



From the Director (continued)

as approved or not approved. I am pleased to report that Governor Fallin approved the OWRB's proposed rules on June 19, and they are expected to take effect later this fall.

In other water policy news, every legislator I met with this session remained focused on the affects of the state's on-going drought. This focus, reflected in a number of proposed bills, was most apparent in the Legislature's appropriation of an additional \$1.5 million for emergency drought grants despite the slight decrease in funds for agency appropriations. We look forward to working with community water systems in the most drought ravaged parts of Oklahoma to help them develop more reliable water supplies for our citizens. Additional help in this regard should come from SB 1187 by Senator Rob Standridge and Representative Scott Martin, which calls for a more expedited process for water reuse projects in Oklahoma. Several communities across the state have expressed increasing interest in water reuse projects as a means to combat water shortages and develop alternative supplies. Ultimately signed into law by Governor Fallin on May 28, SB 1187 aligns nicely with the mission of Oklahoma's Water for 2060 .

While on the subject, the Water for 2060 Advisory Council held its third meeting on May 20 to focus largely on compiling and prioritizing recommendations on water conservation best-practices and technology for both irrigators and public water systems. The next meeting will be held early this fall and will feature presentations on commercial and industrial water conservation. The council's final report is due to the State Legislature by the end of 2015, and I have no doubt we will meet that deadline. The Water for 2060 Advisory Council's work is even more significant as we witness the continued impacts that long-term drought is having on fresh water supplies in many Oklahoma communities.

Speaking of the drought, some much-needed rain fell in May and June in areas of the state that had received relatively no precipitation for many months. According to the Oklahoma Climatological Survey, May 21 was an important turning point for much of the state's drought impacted areas. In fact, the period from May 21 to June 17 was the 24th wettest period since at least 1921 with an average of 5.49 inches of observed rainfall across the state. Even so, much of southern Oklahoma has seen lower rain totals during this short-term "wet" period, and the long-term drought remains firmly in place throughout a large portion of Oklahoma. The OWRB recently launched a drought related website—drought.ok.gov—to help bring together the most commonly used state and federal drought related tools and information. I encourage you to check it often and to send us any drought related information you'd like to see added.

On the Federal front, I had the honor of testifying to Congress in mid-June on behalf of the Western Governors' Association, Western States Water Council and the State of Oklahoma. The Water and Environment Subcommittee of the House Committee on Transportation and Infrastructure held a hearing focused on the EPA and Corps of Engineers' proposed

rule for defining "Waters of the U.S." (WOTUS) under the Clean Water Act (CWA). My testimony focused on the lack of meaningful consultation between the Federal agencies and the states. As co-regulators of the CWA, multiple programs that are administered by the OWRB and ODEQ could be significantly impacted by the proposed definition. Similarly, many water users, businesses, agriculture producers, and public water systems will be impacted by this new definition and its concomitant regulatory ramifications. While the Corps and EPA's stated goal for this rule is to bring greater clarification to the WOTUS definition, the lack of consultation with states and myriad ambiguous provisions in the current proposed rule leave me convinced we may be better off without it.

In conclusion, I'm excited to announce that we have finalized the dates and location for the 35th Annual Governor's Water Conference. This year's conference will be held October 22-23 at the Renaissance Hotel and Cox Convention Center in downtown Oklahoma City. Already, we are booking an exciting lineup of speakers and looking forward to another great conference with our fellow Oklahomans. ♦

35th Annual
**Oklahoma Governor's
 Water Conference &
 Research Symposium**
October 22-23, 2014
 Cox Convention Center
 Oklahoma City

**EVERY
 DROP
 COUNTS**

**EFFICIENCY • CONSERVATION
 RECYCLING • REUSE**

*Hosted by the Oklahoma Water Resources Board
 and Oklahoma Water Resources Center.*

Online registration begins September 1.

State-of-the-Art Water Treatment Plant Opens in Broken Arrow

The City of Broken Arrow celebrated the opening of the Verdigris Water Treatment Plant with a ribbon cutting ceremony on June 5. The new plant replaces the city's existing facility, which was built in 1966.

The plant utilizes a state-of-the-art membrane filtration system that forces water through extremely fine, porous tubes and is capable of filtering out tiny particles and microorganisms, including giardia cysts and cryptosporidium oocysts, to meet new EPA requirements. It is the largest membrane water treatment facility in Oklahoma and one of the largest in the United States.

The footprint of the new pre-treatment basin has been reduced, which allows for lower land and material costs. The new plant also features a raw water pump station, two pre-sedimentation basins, a six-million-gallon finished water tank, a high service pump station, and three emergency generators that can support the entire plant in the event of a power failure.

Up to 20 million gallons of water per day (MGD) can be produced by the new plant, and this is readily expandable to 40 MGD if necessary. Broken Arrow currently averages 12 MGD, with a peak flow of 27 MGD during the summer months.

For more than thirty years the City of Broken Arrow has purchased water from the Oklahoma Ordnance Works Authority in Pryor. With the completion of the Verdigris Water Treatment Plant this July, Broken Arrow will be able to support its customer's water needs independently, and will even be positioned to sell water to other nearby providers.

Financing for this state-of-the-art plant was made possible by Oklahoma's Revenue Bond Loan Program and the Drinking



Above: Pretreatment units at Broken Arrow's new Verdigris Water Treatment Plant. The plant is capable of treating up to 20 MGD and can be expanded to treat up to 40 MGD.



At Right: Advanced membrane filtration system, capable of filtering out extremely small particles and microorganisms, including giardia cysts and cryptosporidium oocysts, to meet new EPA requirements.

Water State Revolving Fund (DWSRF) loan program, which provided \$29,755,000 and \$35,000,000, respectively.

When compared to traditional financing, OWRB's Financial Assistance Division expects that Broken Arrow Municipal Authority's customers will save an estimated \$1,618,073 in interest charges over the life of the 20-year DWSRF and 30-year Revenue Bond Program loans. ♦

OWRB Financial Assistance Program Team Wins Best Display at Capitol

On May 8, the OWRB's Financial Assistance Program (FAP) was awarded "Best Booth" during *Quality Oklahoma Team Day* at the capitol. The booth highlighted savings of more than \$16 million through the 2013 bond refunding of Series 2003 SRF Bonds. OWRB staff were depicted as "Agents of Savings" in a comic strip featuring superheroes battling a giant (inflated) percentage rate villain and shrinking it down to size.

The Office of Management and Enterprise Services hosts the annual event, recognizing successful projects completed by agency work teams that demonstrate employee initiative, collaboration, and accomplishment, such as saving tax-payer dollars. ♦



The OWRB's award-winning Quality Oklahoma Team Day display depicting OWRB staff as "Agents of Savings" highlighted savings of more than \$16 million through the 2013 bond refunding of Series 2003 SRF Bonds.

ISF Activity Summary Report Available Online

A summary of the activities of the Instream Flow (ISF) Advisory Group is now available on the OWRB website at www.owrb.ok.gov/isf.

The report contains a brief summary of the recommendations made during the development of the 2012 Update of the Oklahoma Comprehensive Water Plan (OCWP), and the resulting report titled *Instream Flow Issues and Recommendations (2011)* that outlines steps to be taken in evaluating an ISF program for Oklahoma. These steps were later refined into an OCWP “priority” recommendation.

The advisory group reconvened in 2013 and has since met four times to discuss the complex issues that surround the assessment of whether and how an ISF program could be implemented in Oklahoma. These issues include a lack of consensus on basic questions, such as the need for and benefits of an ISF program.

Although there was no clear consensus of the Advisory Group on many topics, the following themes became evident during the four meetings and through input received from the Advisory Group:

- Existing consumptive water rights should have priority over ISFs.
- A “one size fits all” approach will not work across Oklahoma. An adaptive process that reflects local hydrology and locally unique uses of water in the watershed is required.
- Science supports sound policy decisions.
- There is legal authority for ISF protection in designated Scenic Rivers in Oklahoma, but there is uncertainty regarding authority in other watersheds.
- Questions and concerns regarding ISFs cannot be answered in the abstract. They must be put in the context of an actual watershed, thus the proposed pilot study.

The Summary Report recognizes the ongoing role of the Advisory Group to provide guidance and feedback as the assessment moves into the pilot study phase. The Group has selected the upper Illinois River watershed for the pilot study, but the timing of the study will depend on available funding. The goal of the study will be to help define a conceptual framework and study process that could be used for development of ISF recommendations for planning purposes in other watersheds. Local stakeholders in the Upper Illinois Basin will be engaged as the study considers local needs, issues, and conditions, an inherent aspect of the Instream Flow Incremental Methodology (IFIM) process.

The Report also contains information about ISF programs in other states; responses to ISF Advisory Group questionnaires; a compilation of input received from the Group regarding legal and policy questions; and agendas, powerpoint presentations, and summaries of the four meetings.

For more information on the ISF Advisory Group, please visit www.owrb.ok.gov/isf.

Wasinger Selected for EPA Committee

In May, the Environmental Protection Agency (EPA) announced the selection of Jennifer Wasinger, Assistant Chief of the OWRB’s Financial Assistance Division, to serve on its Environmental Financial Advisory Board (EFAB).



Jennifer Wasinger

The EFAB is a federal advisory committee that provides stakeholder input directly to EPA’s Administrator and program offices regarding ways to lower costs and increase investments in environmental and public health protection. Wasinger joins 28 other members of EFAB from across the nation.

According to OWRB Executive Director J.D. Strong, Wasinger’s appointment provides an excellent opportunity for Oklahoma to have direct input on improving the efficiency and effectiveness of its infrastructure financing programs. The board will also clearly benefit from her experience in managing and operating the OWRB’s Financial Assistance Program, one of the nation’s premier water financing programs.

While serving on EFAB, Wasinger will provide EPA with advice and recommendations on lowering the cost of environmental regulations, removing financial and programmatic barriers that raise costs, increasing public and private contributions to environmental facilities and services, and building state and local financial capacity to meet environmental laws. ♣

Brian Vance Retires

Brian Vance, OWRB Director of Communications, retired at the end of May following a 29-year career at the agency. Vance was hired in 1985 and spent several years in the agency’s planning division, playing a lead role in the development of the 1995 *Oklahoma Comprehensive Water Plan (OCWP) Update* and the state’s Drought Management Plan. He later developed the *Oklahoma Water Resources*



Brian Vance

Bulletin. As head of the agency’s public information section, Vance authored and developed numerous agency strategic plans, established and developed the agency website, served as the agency’s lead media contact, edited and contributed to hundreds of issues of the *Oklahoma Water News*, served as planning coordinator for the annual Governor’s Water conference and Water Appreciation Day at the capitol, developed the award-winning *Lakes of Oklahoma* atlas, and was a major contributor to the completion and implementation of the 2012 OCWP Update. ♣

The OWRB’s new media contact is Cole Perryman, who joined the agency in January. Kylee Wilson joined the public information section in May and will assist with publications development and management of the agency’s website.

Water Reuse

According to the Oklahoma Comprehensive Water Plan (OCWP), recapturing highly treated wastewater from municipal water reclamation facilities for beneficial use, often referred to as “water reuse” or “water recycling,” is a potentially viable source of supply for many communities. Already, many communities in Oklahoma are putting recycled water to beneficial use for non-potable uses, and several communities are considering augmenting their potable water supply sources with recycled water to increase reliability and efficient use of supplies.

In fact, the OCWP found that the greatest near-term opportunity to increase the beneficial use of marginal quality water (MQW) is the use of recycled water in urban settings for certain non-potable applications.

Public water suppliers and users are encouraged to consider treated effluent reuse where it is both cost-effective and supported by the public. The OCWP recommends continued support for the development of more detailed reuse regulations to provide a framework for utilizing this MQW source while recognizing downstream uses of that water.

In 2012, the Oklahoma Department of Environmental Quality (ODEQ) issued regulations for non-potable uses of recycled water to ensure continued protection of human health and the environment. Today, the ODEQ and OWRB are actively working on regulations for potable water reuse.

There are several water reuse systems in Oklahoma. A few examples are included below:

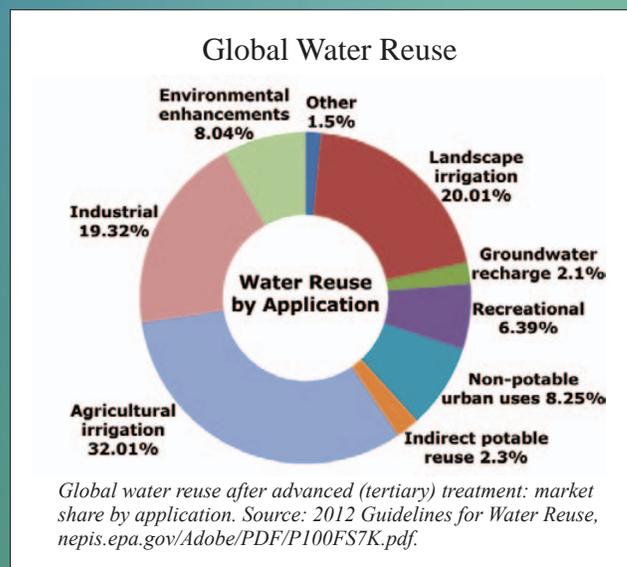
Industrial Use

The City of Oklahoma City, in partnership with wastewater treatment company Veolia Water, has been offering recycled water to large industrial water users since 1996. Three out of the city’s four wastewater treatment facilities have been retrofitted to deliver recycled water, producing about 15 million gallons of recycled water per day (mgd). This saves more than 1 billion gallons of drinking water each year.

Golf Course Irrigation

The Gaillardia Country Club began receiving recycled wastewater from Oklahoma City’s Deer Creek wastewater treatment facility in 1996. To transport the water, a 5-mile pipeline was built. Today, up to 3 mgd of treated effluent can travel through this pipeline from the Deer Creek facility to the golf course, where it is used to irrigate more than 600 acres of greens and landscaped property.

The City of Norman also utilizes treated wastewater to irrigate a golf course on the campus of the University of Oklahoma. The university pays for electricity and pumping costs, and utilizes this water instead of potable



water, helping reduce Norman’s peak day potable water demands.

Cooling Towers

In 2003, the Redbud Electrical Company outside Luther, OK, built a 10-mile pipeline from Oklahoma City’s North Canadian wastewater treatment facility to their operations to transport treated effluent for cooling tower use. In 2004, OG&E began utilizing treated effluent from Oklahoma City’s South Canadian plant through a two-mile pipeline to its facilities. The pipelines ensure that the recycled water stays separate from municipal drinking water and wastewater collection. Together, these two customers use up to 13 mgd of recycled water for cooling towers.

Crop Irrigation

In the City of Guymon, water reuse has been ongoing since 1985. Guymon is located in Texas County in the Panhandle region, the state’s largest agricultural producer with accompanying high demands for water. The city reuses treated wastewater by pumping it onto crops such as alfalfa and wheat, and is exploring additional opportunities for beneficial reuse.

For more information on water reuse, see the EPA’s “2012 Guidelines for Water Reuse” report at nepis.epa.gov/Adobe/PDF/P100FS7K.pdf.

The WaterReuse Association also offers a wealth of information on water reuse at <http://www.athirstyplanet.com>.



OWRB Publishes Report on Oklahoma Monitoring Activities

The *Status of Water Quality Monitoring in Oklahoma: Surface Water Monitoring Strategy Document (2013-14)*, developed by OWRB Water Quality staff, is now available online at www.owrb.ok.gov/quality.

In addition to providing a synopsis of current statewide water monitoring, including summaries of activities performed by each state and federal agency involved in monitoring activities, the report serves as a tool for the coordination of future monitoring activities.

Monitoring activities are conducted across the state for numerous reasons, including identifying pollution sources, monitoring regulatory compliance, and determining beneficial use support status, water quality trends, and the effectiveness of Best Management Practices (BMPs).

The report emphasizes that further improvements to statewide monitoring efforts should be pursued to ensure that the best available data is collected to assist decision makers in managing, protecting, and improving Oklahoma's water resources. The following recommendations for enhancing the state's monitoring efforts were highlighted:

- Additional monitoring should be implemented on Oklahoma's rivers and streams. Biological monitoring on lakes should be expanded to enhance use support determinations.
- Further work should be pursued in the development of Use Support Assessment Protocols (USAP). New protocols need to be developed for all beneficial uses and current protocols need to be refined.

- Diurnal dissolved oxygen monitoring should be conducted on a widespread basis.
- Ambient sampling for metals and organics should be expanded. In particular, toxics monitoring related to fish consumption by humans is critical if the Fish Consumption Beneficial Use is to be assessed in a holistic manner.
- More resources need to be spent on monitoring Oklahoma lakes, many of which are of enormous value to the state both as water supply sources and for recreation.
- The OWRB/U.S. Geological Survey (USGS) Cooperative Program for stream flow monitoring should continue to be a priority for Oklahoma. It is critical to know if stream flow is at seasonal base flow to make numerous beneficial use support determinations. More exact measurements are also necessary for such activities as calculating a Total Maximum Daily Load (TMDL) and other technical studies.
- Monitoring activities in Oklahoma should continue to be closely coordinated with implementation of the Oklahoma Comprehensive Water Plan (OCWP), which is vital to mapping the state's water future.
- Partnerships between state and federal agencies should be further enhanced and initiated to help meet the needs of all parties and allow for effective utilization of available resources.

The report emphasizes the importance of statewide monitoring activities for a better understanding of water quality conditions and to allow resources to be focused in areas where adverse water quality impacts are greatest or where our most outstanding water resources are threatened. 💧

New BUMP Report Features Groundwater Component

The annual Beneficial Use Monitoring Program (BUMP) report is now available online. In addition to lakes and streams monitoring components, this year's report includes a groundwater monitoring component.

The OWRB's Groundwater Monitoring and Assessment Program (GMAP) was established in 2013 as the state's first comprehensive groundwater quality and quantity monitoring program. A network of approximately 750 wells in Oklahoma's 21 major aquifers will be phased in by 2016 and sampled on a four-year rotation. This year's report contains data from phase one of GMAP sampling, including an assessment of concentrations of nutrients, metals and major ion species as well as groundwater level data. A total of 203 wells were sampled for water quality and 299 for water level in 6 major aquifers—the Canadian River, Elk City, Garber-Wellington, Gerty Sand, Ogallala-Northwest, and Rush Springs.

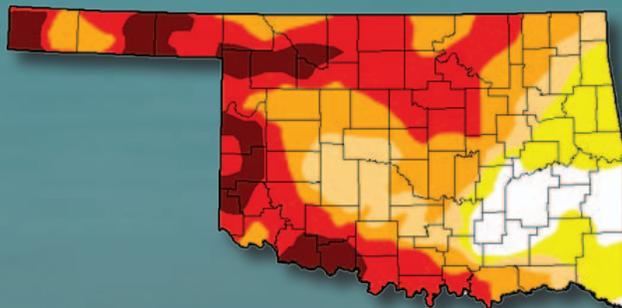
Physical, chemical, and biological data for approximately 130 lakes and 100 river and stream sites is available in the report, along with an assessment of beneficial use impairments or threats for each site.

Each of BUMP's three components has a separate report available for download at www.owrb.ok.gov/bump. The BUMP web page also includes an interactive water quality data viewer, a clickable map with all BUMP surface water monitoring sites. Sites for all three BUMP components are also listed on the web page; clicking on a site opens a pdf summary sheet that contains general site information, maps, sample parameters, and data links for that site. 💧



Drought Update

U.S. Drought Monitor June 24, 2014



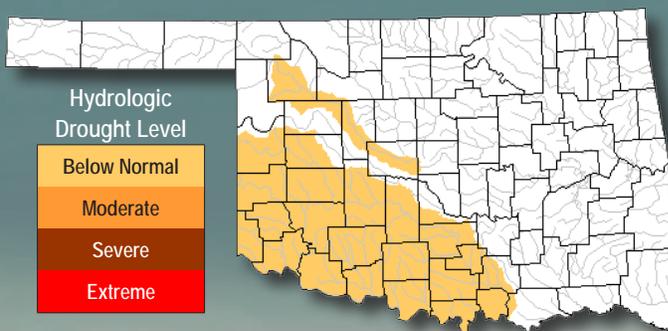
Drought Intensity & Percent of State in Drought Category

Abnormally Dry	95.95
Moderate Drought	77.48
Severe Drought	50.67
Extreme Drought	24.03
Exceptional Drought	8.61

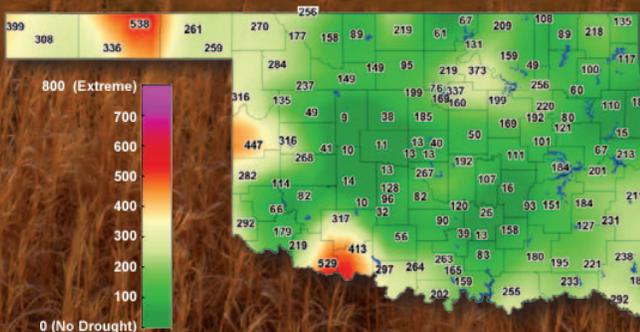
Reservoir Storage June 24, 2014



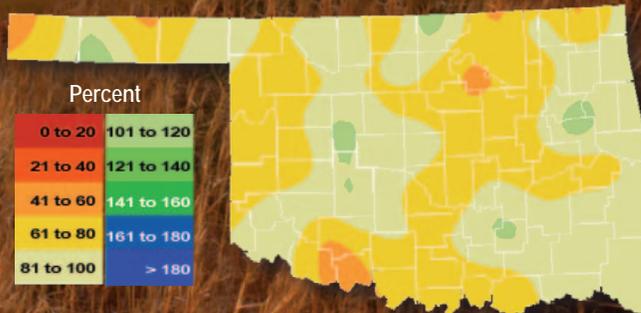
Streamflow (7-Day Average) June 24, 2014



Keetch-Byram Drought Index June 25, 2014



Percent of Normal Precipitation Last 90 Days (March 27 to June 24, 2014)



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

www.owrb.ok.gov

*Rudy Herrmann, Chairman • Linda Lambert, Vice Chairman • Tom Buchanan, Secretary
Bob Drake • Ford Drummond • Marilyn Feaver • Ed Fite • Jason Hitch • 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.



2nd Quarter 2014

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or article submissions to
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FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of June 17, 2014

FAP Loans—362 for \$901,650,000

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—278 for \$1,280,038,416

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—166 for \$870,165,300

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—609 for \$54,051,197

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—568 for \$33,822,821

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 funds to establish the Program.

**Total Loans/Grants Approved: 1,993 for \$3,141,271,581
Estimated Savings: \$1,076,508,273**

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 2014

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OWRB and Bureau of Reclamation Host Drought Challenge

Garber-Wellington Presentation Preps Board for Upcoming Tentative Determination

Drought Update

35th Annual Water Conference to Feature Patricia Mulroy

The 35th Annual Oklahoma Governor's Water Conference and Research Symposium will be held at the Cox Convention Center in downtown Oklahoma City on October 22-23. Pat Mulroy will help open the conference with her keynote, "The Las Vegas Story: Adapting to a New Normal."

As general manager of the Southern Nevada Water Authority (SNWA) from 1993 until retiring in February 2014, and as general manager of the Las Vegas Valley Water District from 1989 until retirement, Mulroy was responsible for acquiring, treating, and delivering water to Southern Nevada. Mulroy was a principal architect of the Authority, which allowed Southern Nevada not only to weather the stresses of growth, but also to thrive during one of the worst droughts of record in the Colorado River basin.

Lieutenant Governor Todd Lamb will help kick off the two-day conference, while Governor Mary Fallin will welcome attendees and provide the keynote address on the morning of Day 2.

Other Conference highlights include expert panels on the following topics: Regional and Local Planning for Future Droughts, Water Reuse Issues, Oklahomans Solving Global Water Crises, Federal Updates, and Water Fuels Oklahoma's Economy. Oklahoma Water Pioneer awards will be presented at the luncheon on October 22, followed by updates from Congressmen James Lankford, Frank Lucas, and Markwayne Mullin.

A roundtable discussion on water rights administration in Oklahoma will be held at 1:30 p.m. on October 23, featuring experts in Oklahoma water law debating the pros and cons of the state's current system.

(continued on page 2)



Pat Mulroy, keynote speaker for the 2014 Oklahoma Governor's Water Conference

35th Annual
Oklahoma Governor's Water Conference & Research Symposium
October 22-23, 2014
Cox Convention Center
Oklahoma City

EVERY DROP COUNTS
EFFICIENCY • CONSERVATION
RECYCLING • REUSE

Hosted by the Oklahoma Water Resources Board and Oklahoma Water Resources Center.

From the Director

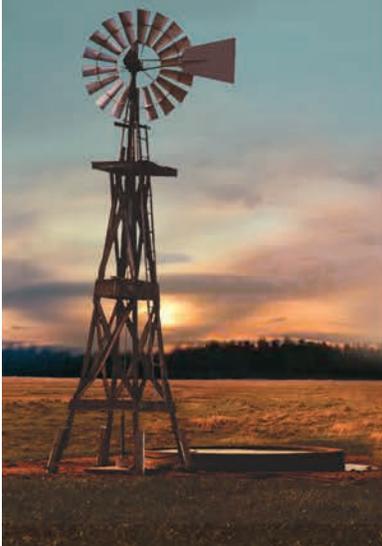
Summer is winding down, and it's probably been one of the mildest that I can remember in a long time. With the the milder temps and most welcome moisture through most of June and July, many Oklahomans may have forgotten that there are still large swaths of western Oklahoma facing the crippling effects of four years of drought.

Fortunately, Governor Fallin's recent announcement of the Water for 2060 Drought Grant Program is welcome news. Through the grant program, we will have \$1.5 million available for cities, counties, water districts, and other public entities to help fund drought relief projects that highlight responsible use of water. Those interested should apply for grants prior to

(continued on page 2)



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



35th Annual Conference (continued)

The OWRB's regular monthly meeting will be held at the Cox Convention Center at 3:30 on October 23 following Water Conference adjournment.

The Conference will once again be held in conjunction with the Water Research Symposium, hosted by the Oklahoma Water Resources Center. The Symposium agenda includes six sessions on current water-related scientific research and developments in Oklahoma.

For the latest agenda, online registration, and hotel information, visit owrb.ok.gov/GWC. ♦

From the Director (continued)

the November 26, 2014 deadline. With the grant program announcement, the Water for 2060 Advisory Council's work throughout the summer, the OWRB and Bureau of Reclamation's Drought Challenge event in September, several water-related interim studies at the State Legislature, and planning for the 35th annual Governor's Water Conference in October, it remains an exciting and busy time at the Water Board.

This summer the Water for 2060 Advisory Council continued work with its fourth meeting on August 19th. The meeting focused on water conservation practices and technology for industrial water use—specifically related to electrical power generation, oil and gas production, and other related industries. In addition to the meeting, several members of the Advisory Council joined the Oklahoma Panhandle Agriculture and Irrigation Association, the City of Guymon, and many other Panhandle stakeholders for a field tour in early August of various water conservation initiatives in the region. The Council will meet again on November 18th to begin finalizing recommendations to the Governor and Legislature on how Oklahoma can achieve its ambitious goal of consuming no more freshwater in 2060 than was consumed in 2010.

If the theme in August was largely related to the Water for 2060 Advisory Council, then drought was the focus for a number of events in September. On September 16, the OWRB and the Bureau of Reclamation teamed up to present Oklahoma's first-ever Drought Challenge at the National Weather Center in Norman. The Drought Challenge was an exciting new approach to promoting drought mitigation and planning. By using a competition format and a fictional water basin as the backdrop, the Drought Challenge aimed to encourage collaboration among water planners and users from various backgrounds and different parts of the state.

The Drought Challenge preceded a two-day Drought Forum hosted by the Western Governors' Association (WGA), Governor Mary Fallin, and the Office of the Secretary of Energy and Environment. Oklahoma kicked off the first of five planned WGA Drought Forum meetings by hosting "Managing Drought in the Energy Sector" at the National Weather Center on September 18-19. Nevada Governor Brian Sandoval, WGA's current Chairman, created the Drought

Forum series as part of the WGA Chairman's Initiative to foster a regional dialogue in which states and industry can share best practices on drought policy, preparedness, and management.

The Drought Challenge and the WGA Drought Forum weren't the only recent events to take a detailed look at water-related issues. The leadership of both the State House and Senate approved several water-focused interim studies for the late summer and fall. These interim studies are important forums during the legislative "offseason" for providing our state's elected officials with the opportunity to investigate a multitude of important issues facing water planning and water use throughout Oklahoma.

So far, I've had the honor of presenting at State Representative Steve Vaughn's interim study on groundwater use related to energy production in Oklahoma. In October, there will be additional interim studies that either focus on water solely, or that feature water-related topics on their periphery. For example, at an upcoming interim study to be lead by State Representatives Mark McBride and Jon Echols in October, I will provide attendees with an update on all that has been accomplished, as well as all that remains to be completed, since the 2012 Update of the Comprehensive Water Plan was completed. I look forward to providing the panel with several remaining legislative opportunities that are included in the OCWP's list of Priority and Supporting Recommendations.

Last, but never least, it's the time of year when we are fast approaching the 35th Annual Governor's Water Conference and Research Symposium. The theme for this year's conference is "Every Drop Counts." For a complete picture of this year's water conference, which will be held October 22-23 at the Cox Convention Center in downtown Oklahoma City, please check the OWRB's conference page regularly for updates. As always, we have a great lineup of speakers, presentations, and forums this year, including a keynote address from Patricia Mulroy, principal architect and former general manager of the Southern Nevada Water Authority. Governor Mary Fallin; Congressmen James Lankford, Frank Lucas, and Markwayne Mullin; EPA Deputy Regional Administrator Sam Coleman; and a number of other regional and national figures are also scheduled to discuss a wide-range of water-related topics.

To register, visit our website at www.owrb.ok.gov/GWC or call us at 405-530-8800. Please take note that our next Board meeting has been moved to coincide with that event following adjournment on the conference's last day. ♦

The October regular monthly meeting of the Oklahoma Water Resources Board will be held at 3:30 p.m. on October 23 at the Cox Convention Center, 1 Myriad Gardens, Oklahoma City, Oklahoma 73102.

Moore Celebrates Opening of New Wastewater Treatment Plant

State water planning officials and local officials from Moore gathered on September 16 to celebrate the opening of the community's new and improved wastewater treatment plant. The new plant doubles the community's treatment capacity and addresses several necessary infrastructure improvements.

Situated within a heavily developed residential and industrial area, the treatment project presented some unique challenges for planners: the new wastewater facility had to be constructed directly on top of the old one. Old portions of the plant were dismantled while new ones were erected, all while keeping Moore's existing systems operational.

Several new challenges were introduced as a result of the tragic tornado in May 2013. However, planners and state officials never wavered in their commitment to completing the project.

Many improvements included in the new plant are aimed at increasing both the capacity and effectiveness of wastewater treatment. Specifically, the new ultraviolet light disinfection system and other facilities have increased capacity from 4.5 million gallons per day (mgd) to 9 mgd. With the current technologies in place, the new facility could one day increase capacity of treatment up to 24 mgd. In addition to increased capacity, initial tests have demonstrated that the new plant is able to disinfect much more efficiently as well.

Perhaps the most noticeable improvement to the citizens living and working in the area, and motorists that frequently use I-35 or other area roads, is the elimination of odors around the facility. The new treatment plant contains state-of-the-art technology that helps detect and eliminate any odor issues that result from the plant's operations.

The project was made possible by a total of \$53,417,982 in loans through the OWRB's Financial Assistance Division. 💧



Moore Mayor Glenn Lewis cuts the ribbon at the city's new state-of-the-art wastewater treatment facility, assisted by (left to right) Satish Dasharathy, consulting engineer; Rudy Herrmann, OWRB Chairman; J.D. Strong, OWRB Executive Director; Steve Eddy, Moore City Manager; Joe Freeman, OWRB; Sachin Mukerjee, consulting engineer; Jimmy Givens, ODEQ Deputy Executive Director; Mark Hamm, Ward 2 Council Member; and Robert Pistole, Plant Manager.

Water for 2060 Advisory Council Tours Panhandle

As part of Oklahoma's ongoing Water for 2060 initiative, several state and local officials and water planning specialists recently joined agricultural producers, industrial enterprises, and municipal officials from the Panhandle region for a review of water conservation practices and a tour of water reuse opportunities.

The tour focused specifically on the Water for 2060 Advisory Council's review of current water conservation and reuse practices, in addition to cutting edge irrigation practices at several Panhandle agricultural operations, including Fischer Farms, and livestock operations at Hitch Feeders.

The tour also included a visit to the City of Guymon's wastewater treatment facility and High Plains Bioenergy's biodiesel refinery near Guymon, both of which included discussions regarding prospective water reuse projects. 💧



Oklahoma Water for 2060 Advisory Council and other partnering organizations tour Oklahoma's Panhandle region August 7 to review water conservation and reuse efforts by irrigators and municipalities.

Wetland Water Quality Standards Under Development

The OWRB is currently sharing information and seeking stakeholder input at public meetings for the development of Oklahoma's first wetland water quality standards.

Although Oklahoma's wetlands are considered "waters of the state" and are currently protected with default water quality standards, these standards were developed for lakes and streams and are often not suitable for wetlands, leading both to scientific and regulatory challenges. New water quality standards for wetlands would provide a scientifically sound foundation for Oklahoma's wetland programs, as well as regulatory relief from overly stringent standards that were not developed to protect the unique characteristics of wetlands.

Additional information, including Work Group meeting notices and a schedule for the 2014-15 standards revision process, is available at www.owrb.ok.gov/standards. 💧

Gov. Fallin Announces Drought Grants for Projects Highlighting Responsible Water Use

Governor Mary Fallin announced in September that the state of Oklahoma has \$1.5 million available in drought grants to help fund projects highlighting responsible use of water.

Eligibility requirements must be met to receive funding from the Water for 2060 Drought Grant Program. Eligible entities include counties, towns and municipalities, public works authorities, and rural water/sewer districts. Grants are capped at \$500,000. The deadline for application this year is November 26, 2014.

Projects to be considered must demonstrate water efficiency and support drought resiliency within the community or water/wastewater system. Water efficiency is defined as the use of improved technologies and practices to deliver equal or better services with less water. Water efficiency encompasses responsible water use and water reuse efforts, as well as water loss reduction and prevention to protect water resources for the future.

Eligible categories of water efficiency projects include the following:

- Installing or retrofitting water efficient devices in public buildings, such as plumbing fixtures and appliances.
- Installing any type of water meter in previously unmetered areas.
- Leak detection and associated replacement of leaks within the distribution system.
- Replacing existing broken/malfunctioning water meters, or upgrading existing meters, with automatic meter reading systems.
- Retrofitting/adding automatic meter reading capabilities or leak detection equipment to existing meters.
- Water audit and water conservation plans, which are reasonably expected to result in a capital project.
- Recycling and water reuse projects that replace potable sources with non-potable sources, including gray water, condensate and wastewater effluent reuse systems (where local codes allow the practice) and extra treatment costs and distribution pipes associated with water reuse.
- Retrofitting or replacing existing public landscape irrigation systems with more efficient landscape irrigation systems, including moisture and rain-sensing equipment.
- Retrofitting or replacing existing public irrigation systems with more efficient irrigation systems.

With passage of the Water for 2060 Act in 2012, Oklahoma became the first state to establish a statewide goal of consuming no more fresh water in 2060 than is consumed today. Appointees to the Water for 2060 Advisory Council are studying a wide range of innovative conservation measures, incentives, and related project financing options to solidify Oklahoma's water future.

"Governor Fallin has shown unwavering leadership when it comes to stewardship of Oklahoma's invaluable water resources," said J. D. Strong, OWRB Executive Director. "From signing the Water for 2060 Act into law to helping us provide this opportunity to encourage more widespread adoption of water efficiency measures, it helps our water conservation campaign immensely to have the state's chief executive on board."

For more information, go to www.owrb.ok.gov/2060 and click on "Water for 2060 Drought Grants." 💧



OWRB and Bureau of Reclamation Host Drought Challenge

Oklahoma's inaugural Drought Challenge was held on September 17 at the National Weather Center in Norman. Hosted by the OWRB and Bureau of Reclamation, the event offered an exciting new approach to promoting comprehensive drought mitigation, preparedness, and planning. Collaboration was encouraged among water planners and other stakeholders, and participants were educated on the multidisciplinary and multi-sector implications of drought.

During the event, teams with representatives from agriculture, tourism and recreation, public water supply, energy, environment, and industry sectors were given water shortage scenarios for a fictitious watershed. Team members worked together to develop solutions to meet the challenges.

The winning team, "Up the Creek," included the following members: Bud Ground, PSO; Ken Komiske, City of Norman; Fred Fischer, OK Panhandle Agriculture & Irrigation Association; Shelly Morgan, Lake Texoma Association; Amber Zimmerman, Washita National Wildlife Refuge (Foss); and Daniel Fenner, US Fish & Wildlife Service. 💧



Teams participate in Oklahoma's inaugural Drought Challenge at the National Weather Center in Norman.

What is Water Efficiency?

Water efficiency is one of the core components of Oklahoma's Water for 2060 initiative to consume no more fresh water in 2060 than is consumed today. The term "water efficiency" refers to the practice of using less water to provide the same results. Water efficiency can be achieved by reducing waste through the smart use of water-saving techniques and technologies.

Save Water, Save Energy

It takes a considerable amount of energy to deliver and treat the water you use every day. For example, letting your faucet run for five minutes uses about as much energy as letting a 60-watt light bulb run for 22 hours!

5 min. = 22 hrs.

How much energy is used when running a faucet for 5 minutes?

About the same amount a 60-watt light bulb would use in 22 hours!

WATER FOR 2060
EFFICIENCY • CONSERVATION • RECYCLING • REUSE

Save Water, Save Money

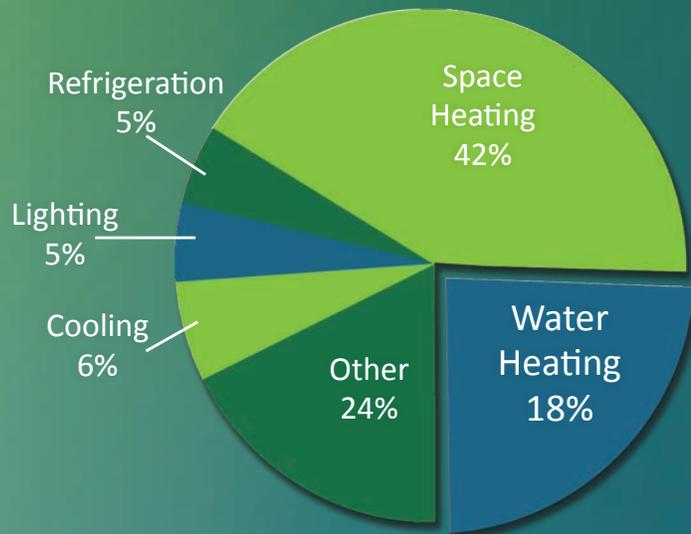
The average family spends \$1,100 per year in water costs, but can save \$350 from retrofitting with WaterSense labeled fixtures. Products bearing the WaterSense label have been independently certified to perform well; help save water, energy, and money; and encourage innovation in manufacturing. Also, when we use water more efficiently, we reduce the need for costly investments in water treatment and delivery systems.



Heating water for bathing, shaving, cooking, and cleaning also requires a lot of energy. Homes with electric water heaters, for example, spend one-quarter of their electric bill just to heat water.

According to the US Department of Energy, water heating is the second largest energy expense in your home. It typically accounts for about 18% of your utility bill after heating and cooling.

Household Energy Use



<http://energy.gov/energysaver/articles/tips-your-homes-energy-use>

Look for ways to heat your water more efficiently and use less.

Activity	Gallons per Use
Clothes Washer	25
Shower	10
Automatic dishwasher	6
Kitchen faucet flow	2 per min
Bathroom faucet flow	2 per min
Total daily average	64

There are four ways to cut your water heating bills: use less hot water, turn down the thermostat on your water heater, insulate your water heater, or buy a new, more efficient model, such as an ENERGY STAR qualified traditional water heater or whole-home tankless heater.

For more information, visit www.owrb.ok.gov/2060.

Garber-Wellington Presentation Preps Board for Upcoming Tentative Determination

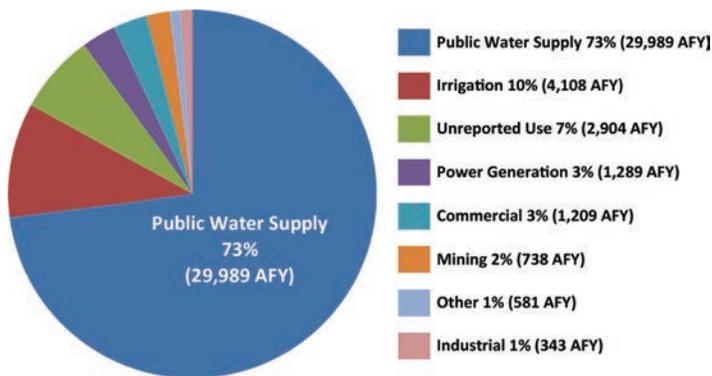
During the August Board meeting, Oklahoma Water Resources Board (OWRB) members were given a presentation on pertinent results of the Garber-Wellington Aquifer Management Study, which began in late 2008 and concluded in 2014.

Chris Neel, OWRB Geologist and study coordinator, provided the Board with details about the geology of the aquifer, current permitted and domestic use, and recharge rates. Together, these factors are important components for ascertaining the tentative and final determination of the aquifer's maximum annual yield (MAY) and subsequent setting of the equal proportionate share (EPS), which will ultimately govern the amount of water that can be permitted to each landowner in the basin.

According to Neel, the geology of the aquifer is extremely diverse, consisting of fine-grained sandstone interbedded with siltstone and shale. Depth to water varies from less than 200 to 350 feet; saturated thickness ranges from 200 to 1,000 feet. Non-domestic wells completed in the aquifer can yield as much as 600 gpm but generally yield from 200 to 400 gpm.

From 1995 to 2008, 73% of the aquifer's permitted use was for public water supply. The largest users included the cities of Edmond, Moore, Norman, Bethany, Yukon, Nichols Hills, Mustang, and Purcell, along with Tinker Air Force Base, and Oklahoma Gas and Electric Company. There is also a significant amount of domestic use of the aquifer, accounting for an estimated total of 15,000 to 20,000 acre-feet per year (AFY).

Average Groundwater Use by Type
Garber-Wellington Aquifer (1995-2008)



As part of the study, a digital groundwater-flow model was created by the USGS to determine the amount of water in storage and other important parameters. The model takes into consideration the rate of natural recharge, total discharge, and aquifer transmissivity. While providing general information about the aquifer's storage, the model can also pinpoint areas of localized drawdown.



Consistent with state law, the OWRB conducts maximum annual yield (MAY) studies to determine amounts of water that may be withdrawn from Oklahoma's groundwater basins by permitted water users. For more information, go to www.owrb.ok.gov and click on "Groundwater Studies." This page has information on the Garber-Wellington and other current studies and a fact sheet on MAY.

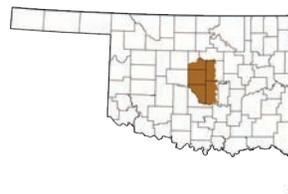
The MAY determination process includes the following steps: Hydrologic Investigation, Tentative Determination, Public Hearing(s), and Final Order. With completion of the Hydrologic Investigation phase for the Garber-Wellington Aquifer, the next step will be Tentative Determination.

Maximum Annual Yield Determination Process

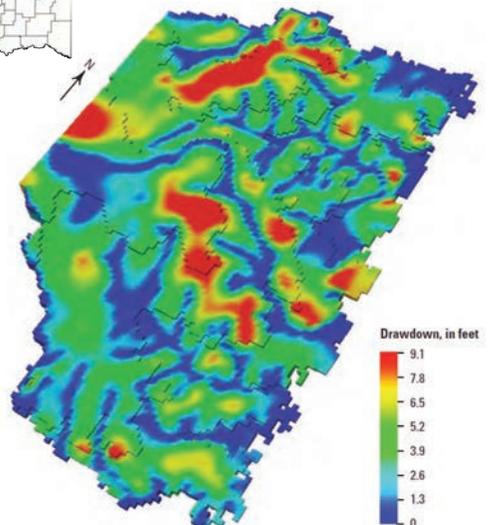


Development of the digital groundwater-flow model helps facilitate the testing of various scenarios developed by OWRB staff. These scenarios typically assume 100% development of the aquifer and interpret "life of the basin" under various pumping rates, which ultimately will help the OWRB determine an appropriate MAY and rates of withdrawal.

For more information, including the complete study report published by the USGS, visit www.owrb.ok.gov and click on "groundwater studies."

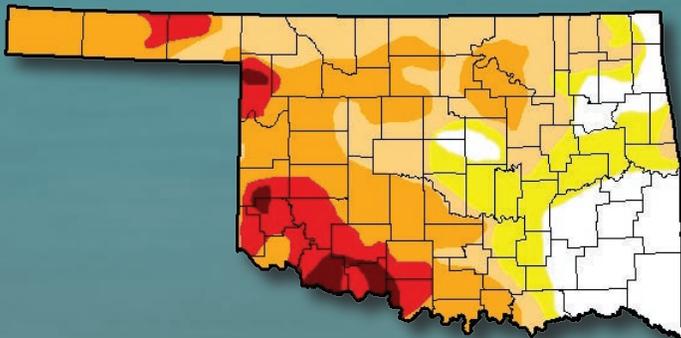


Drawdown in the Garber-Wellington numerical model after 50 years of pumping at 2009 rates.



Drought Update

U.S. Drought Monitor
September 16, 2014

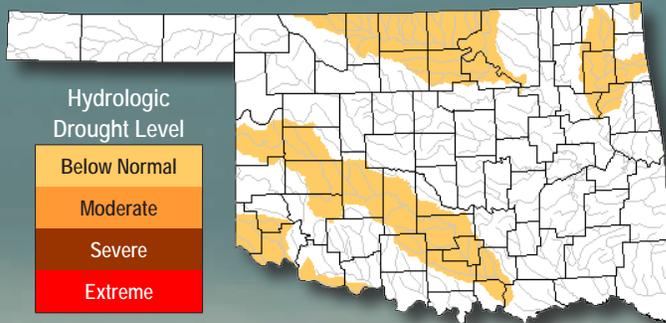
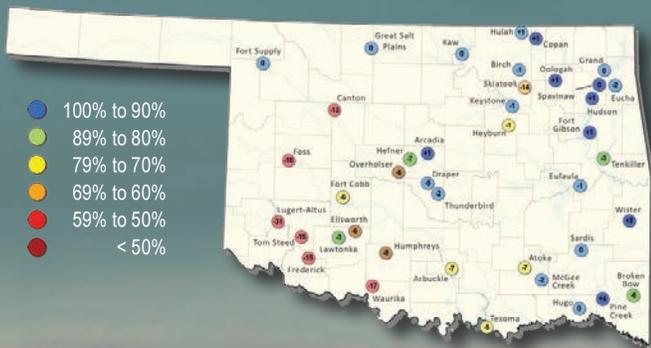


Drought Intensity & Percent of State in Drought Category

Abnormally Dry	95.95
Moderate Drought	77.48
Severe Drought	50.67
Extreme Drought	24.03
Exceptional Drought	8.61

Reservoir Storage
September 16, 2014

Streamflow (7-Day Average)
September 17, 2014

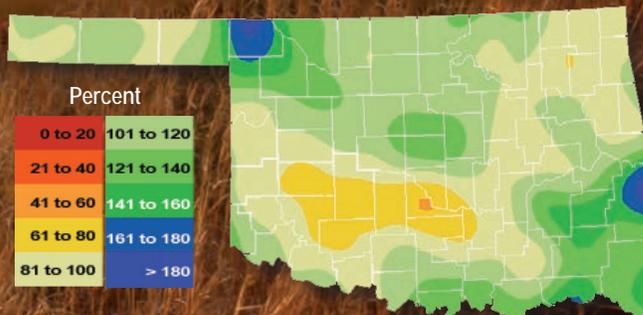
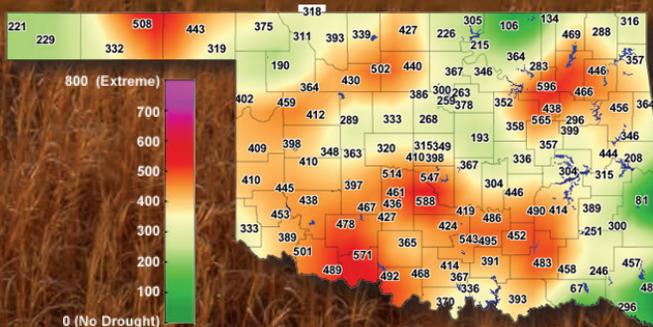


Hydrologic Drought Level

Below Normal
Moderate
Severe
Extreme

Keetch-Byram Drought Index
September 18, 2014

Percent of Normal Precipitation
Last 90 Days (June 20 to September 17, 2014)



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

www.owrb.ok.gov

*Rudy Herrmann, Chairman • Linda Lambert, Vice Chairman • Tom Buchanan, Secretary
Bob Drake • Ford Drummond • Marilyn Feaver • Ed Fite • Jason Hitch • 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.



3rd Quarter 2014

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FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of September 16, 2014

FAP Loans—364 for \$932,425,000

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—283 for \$1,289,784,409

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—170 for \$875,520,300

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—618 for \$54,805,938

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—568 for \$33,822,821

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 funds to establish the Program.

**Total Loans/Grants Approved: 2,013 for \$3,187,902,316
Estimated Savings: \$1,091,629,605**

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

4th Quarter 2014

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Report of OWRB Activities for 2014

Throughout 2014, the OWRB fulfilled its mission of enhancing the quality of life for Oklahomans by managing, protecting, and improving the state's water resources to ensure clean, safe, and reliable water supplies, a strong economy, and a healthy environment.

Water for 2060

The Water for 2060 Advisory Group met quarterly in 2014 to review current information and discuss future strategies for meeting the goal of consuming no more fresh water in 2060 than is consumed today. During the meetings, public water supply managers, agriculture producers, and experts from other water use sectors provided insights to the group on existing conservation, efficiency, and reuse practices, encouraging the development of ideas for supporting and extending these activities. In November, the group began structuring an outline for recommendations that will be included in a report to the Legislature and Governor in 2015.



Advisory Group member meeting. The Water for 2060 Status Report, available online at www.owrb.ok.gov/2060, contains meeting summaries and other Advisory Group information.

Legal Developments

Permits for Water Reuse Projects Authorized by Legislature

Senate Bill 1187, enacted in May of 2014, authorizes the Oklahoma Department of Environmental Quality (ODEQ) to consider and issue permits for point-source discharges into sensitive public and private water supplies. This new development was vital for communities like Norman, whose long-term water plan through 2060 relies heavily on water reuse. Norman intends to discharge its "highly

(continued on page 2)

From the Director

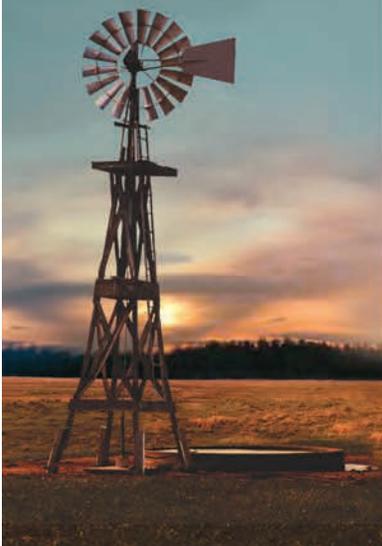
Another productive and rewarding year is in the books for the Oklahoma Water Resources Board, and on behalf of our staff here I hope each of you had a great holiday season and will have an even better year to come.

First, I'd like to thank all the attendees, sponsors, speakers, and staff for making this year's 35th Annual Governor's Water Conference & Research Symposium a resounding success. I especially want to thank Governor Mary Fallin, US Congressmen Frank Lucas and Markwayne Mullin, Senator-elect James Lankford, as well as our keynote speaker, Patricia Mulroy, and a multitude of other presenters. I also appreciate our Symposium partners, OSU's Oklahoma Water Resources Center, for their contributions to making



(continued on page 2)

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



Report of OWRB Activities for 2014 (continued)

treated” wastewater effluent into Lake Thunderbird, which is one of the primary sources for its municipal water supply.

Well Spacing Rules: Sensitive Sole Source Groundwater Basins

In October of 2013, the OWRB issued its order determining the Maximum Annual Yield from the first sensitive sole source groundwater basin or subbasin (“Sensitive Basin”) recognized since the enactment of Senate Bill 288. Pursuant to the terms of that Order, the OWRB amended its administrative rules in 2014 by adding spacing restrictions for new wells overlying the Sensitive Basin. The new amendments interpret and implement 82 O.S. sections 1020.9, 1020.9A, and 1020.9B,

which were enacted as part of Oklahoma’s first legislative act addressing the connection between groundwater and stream water.

The new rule language prohibits the OWRB from authorizing the drilling of groundwater wells which are “likely to degrade or interfere with springs or streams emanating in whole or in part” from the Sensitive Basin. The rules now prohibit drilling new groundwater wells within 1320 feet from any spring which emanates from the Sensitive Basin and flows 50 or more gallons per minute (gpm), prohibit new groundwater wells within 2 miles from any spring which emanates from the Sensitive Basin and which flows 500 or more gpm, and

(continued on page 3)

From the Director (continued)

the conference Oklahoma’s premiere water policy and research event. And last but not least, congratulations again to our 2014 Oklahoma Water Pioneers, Jack Keeley and Mike Thralls.

I hope everyone enjoyed our format this year, especially with the added focus on roundtable discussions and more opportunities to engage presenters and ask questions. I particularly enjoyed moderating our final session on water rights administration in Oklahoma. In any discussion, whether on topics ranging from water rights to drought preparedness, it’s always important to have diverse perspectives from experts who are working closely on these issues every day. We’re already looking forward to another great conference next year, so I hope you will join us again.

As always, there are several important agency initiatives from 2014 that will continue throughout 2015, many of which you’ll see noted in the “Annual Report” portion of this issue of the *Water News*. Of particular note, the Water for 2060 Advisory Council held its fourth meeting of the year on November 18. The Council focused on finalizing the draft recommendations for the public water supply, crop irrigation, and industrial/power generation/oil and gas sectors. It was a productive session, and the Council is still on target to complete its report by the fall of 2015 for submission to the Governor and Legislature. I encourage you to check out some of the new resources we’ve created on the OWRB’s Water for 2060 information page at www.owrb.ok.gov/2060.

Another important development from the past few months is the finalization of this year’s updates to the OWRB’s Strategic Plan for 2016-2020. Each year, the OWRB undertakes the strategic planning process to make sure we’ve set a clear path for successfully meeting our mission on behalf of all Oklahoma citizens. I invite you to review the OWRB’s Strategic Plan in the “About Us” section of our website.

I’m especially proud of this year’s iteration of the Strategic Plan as each of our four Divisions have really taken ownership of the overall agency mission and goals, as well as what the plan outlines for each of their respective programs. The divisions also wanted to ensure that the objectives and key performance measures outlined in the Plan are closely aligned with the Priority and Supporting Recommendations featured in the 2012 Update of Oklahoma’s Comprehensive Water Plan. The

result, in my opinion, is that we have an agency strategy that is a cohesive and effective resource for managing the OWRB’s multitude of programs and projects.

As we close the chapter on 2014, I’d like to take a moment to acknowledge some important personnel changes and staff activities from the last year. First, the OWRB became a two-time winner of The Oklahoman’s “Top Oklahoma Workplaces Award.” We remain the only state agency to have achieved the distinction for two consecutive years. As Governor Fallin said herself, “Once again, the OWRB epitomizes the type of efficient and responsible government that our citizens deserve.” However, most important to me is the fact that the OWRB was named a Top Workplace as a result of the anonymous, candid results of employee surveys.

Also, a special thanks to our OWRB staff for another banner year of giving and community involvement. As anyone who follows the OWRB on Twitter has likely seen (follow us at [@OKWaterBoard](https://twitter.com/OKWaterBoard)), our employees are committed to public service both in their careers and on their own dime. Whether it’s volunteering for educational programs like ScienceFest and H2Oklahoma, surpassing our agency-wide goal in the State Charitable Campaign, bell-ringing to raise money for the Salvation Army of Oklahoma, or participating in the United Way of Central Oklahoma’s Day of Caring event, our staff gives back with impressive generosity. I’m extremely fortunate to work with a close-knit family of employees that always sacrifices for the betterment of others.

And last but never least, several dear friends and colleagues here at the OWRB retired and moved on to bigger and better pastures. I’d be remiss if I didn’t take a moment to acknowledge the contributions of our 2014 retirees: Jerry “Rowdy” Barnett, Barry Fogerty, Anita Ray, Kim Sullivan, Brian Vance, and Shelly Whitmire. Thanks to each of you, and indeed to all of our retirees, for helping shape the OWRB into an agency that serves the public with such distinction and commitment. 💧



The OWRB was awarded a consecutive “Top Workplaces” rating for 2014. The Top Workplaces program recognizes good employers based purely on employee opinions gathered through anonymous surveys.

Report of OWRB Activities for 2014 (continued)

prohibit new wells within 1 mile from any stream segment which emanates from the Sensitive Basin and has a base flow of 500 gpm and is identified as perennial in the USGS National Hydrology Dataset.

While the new rule language permits certain exceptions to the new well spacing requirements, it puts the burden on applicants seeking an exception to show that the new well is not likely to degrade or interfere with springs or streams emanating from the Sensitive Basin. Specifically, applicants seeking an exception will have to demonstrate that the dimensions of the applicants' land preclude them from complying with the new well spacing restrictions. Applicants must also demonstrate that the cumulative impact of pumping from the proposed well combined with pumping from existing wells will cause less than a 25% reduction of flow in the subject spring or stream to qualify for the exception.

Finally, the administrative rules governing the taking and use of groundwater were further amended to add tables that identify and describe springs known to emanate from the Sensitive Basin by name, USGS Identification Number, GPS coordinates, and legal description. The tables are organized to identify which springs flow at least 50 gpm and which springs flow at least 500 gpm.

Sale of "Surplus" Water under OK Stream Water Statutes

A recent Oklahoma Court of Civil Appeals opinion, Rural Water, Sewer & Solid Waste Mgmt Dist. No. 1 v. City of Guthrie, rejected a claim that Oklahoma's stream water laws required a municipality to sell surplus treated water to a rural water district. The plaintiff in that case, a rural water district, argued that the defendant, a municipality adjacent to the district's service area, was required to sell its surplus

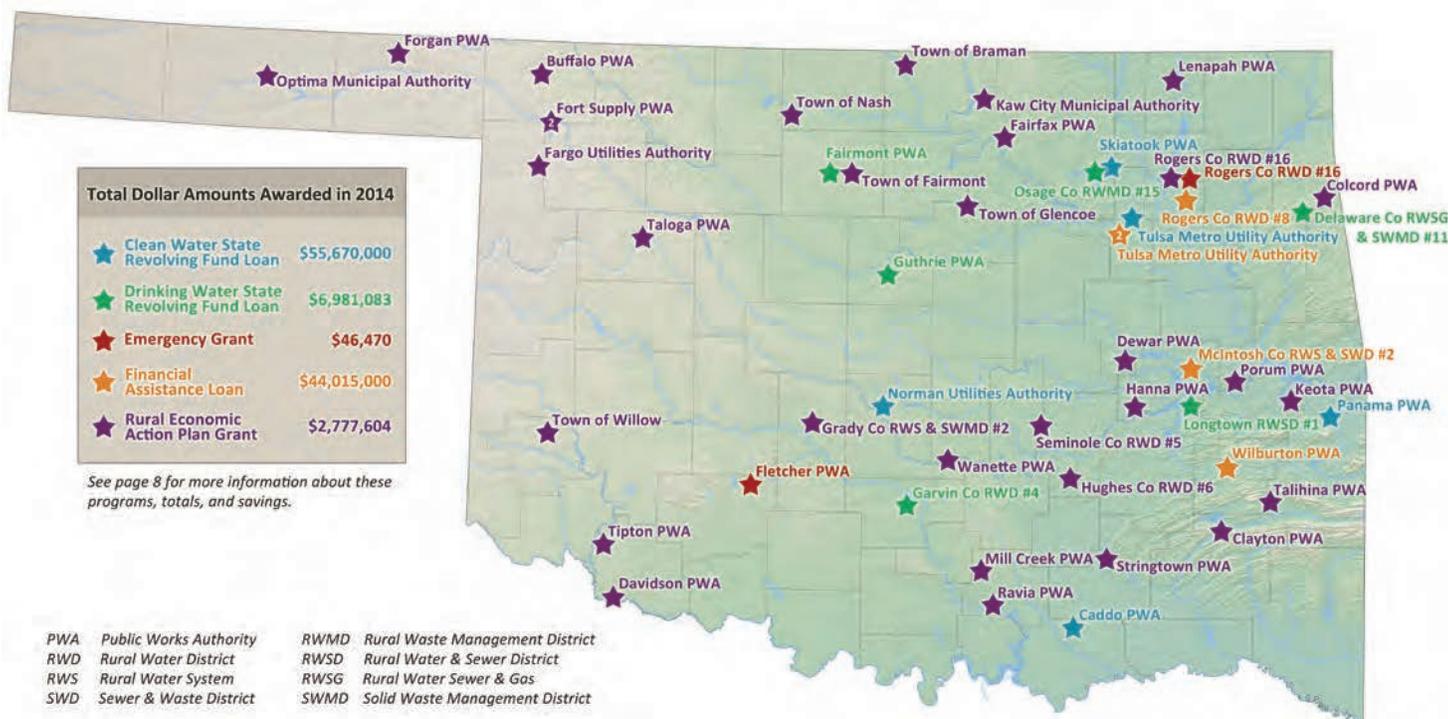
treated water to the rural water district, which would then be sold to customers in the rural water district's service area. Section 105.21 of Title 82 of the Oklahoma Statutes requires the owner of any works for storage, diversion or carriage of water containing water in excess of the owner's appropriation for beneficial use shall be required to sell such water at reasonable rates. The Oklahoma Court of Civil Appeals affirmed the District Court's grant of summary judgment to the municipality, holding that section 105.21 applied only to stream water, and did not apply to "water that has been appropriated by or is in treatment facilities of a municipality."

In a related case between the same rural water district and the same municipality filed in the US District Court for Western District of Oklahoma, the rural water district obtained a \$1.27 million jury verdict and injunctive relief against the municipality. In that case, the district sued for the return of customers and for damages suffered when the neighboring municipality encroached upon the district's service area, in violation of 7 U.S.C. §1926(b), which mandates that districts must be allowed to operate free of competition within their respective service areas during the term of repayment of their loan from the federal government.

Financial Assistance Program

During 2014, the OWRB's Financial Assistance Program provided more than \$100 million in financing to Oklahoma communities and water systems for water and wastewater infrastructure projects. This included 34 grants for the year totaling \$2,823,075 and 16 loans totaling \$106,666,083, saving borrowers an estimated \$30,702,133 when compared to traditional financing options.

(continued on page 4)



Report of OWRB Activities for 2014 (continued)

Water Quality Standards

The 2014-15 proposed amendments to Chapter 45 include the following: clarification and modification of language associated with dissolved oxygen criteria, the addition of several amendments regarding the development of water quality standards applicable to wetland waterbodies, and the addition of site-specific Water Effect Ratio and Dissolved Translator for use in calculating permit limits for copper and zinc for Broken Bow Public Works Authority’s permit related to discharge of municipal and industrial wastewater to a tributary of Yanubbe Creek. The proposed amendments to Chapter 46 include clarification of language associated with Fish and Wildlife use support assessments for dissolved oxygen. A public hearing will be held on January 20.

The OWRB continues its joint participation in a study of phosphorus levels and Oklahoma’s scenic rivers to determine the total phosphorus threshold response level at which algae production results in undesirable or harmful conditions. In 2002, the Oklahoma Water Resources Board promulgated into its Water Quality Standards a total phosphorus criterion of 0.037 mg/L for all of its Scenic Rivers. Both Oklahoma and Arkansas have since worked to reduce phosphorus inputs into these waters, resulting in substantial reductions, but falling short of achieving full compliance with the criterion. The two-year, \$600,000 study has been funded by stakeholders in Arkansas, with both states’ Governors appointing three members to a committee overseeing the effort. The OWRB’s Water Quality Division Chief, Derek Smithee, is serving as co-chair. Several update meetings were held in 2014; the next meeting is scheduled for the spring of 2015 in Tahlequah and will be open to the public.

OWRB FY14 Expenditures and FY15 Budget

Activity Name	FY14 Expended	FY15 Budgeted
Administration	\$2,153,505.46	\$2,516,576.00
Water Quality	3,984,921.51	4,181,859.00
Financial Assistance	2,564,282.51	5,475,516.00
Planning & Management	3,899,275.27	5,372,367.00
Information Technology	650,842.56	997,815.00
Totals	\$13,252,827.31	\$18,544,133.00
Fund Name		
General Appropriations	\$5,365,456.38	\$5,068,102.00
Drillers & Installers Indemnity Fund	0.00	20,000.00
OWRB Revolving Fund	1,389,057.52	2,814,951.00
Water Resources Revolving Fund	1,000,636.89	1,171,092.00
Drillers & Installers Regulation Fund	25,000.00	32,798.00
Water Infrastructure Development Fund	1,196,390.76	2,284,137.00
Federal Funds - OWRB	1,774,834.32	1,822,943.00
USGS Cooperative Agreement	279,154.00	275,275.00
DW Loan Administration Fund	480,942.43	2,090,539.00
CW Loan Administration Fund	1,741,355.01	2,534,296.00
CW Loan Fund	0.00	400,000.00
Totals	\$13,252,827.31	\$18,514,133.00

Monitoring

Through the Beneficial Use Monitoring Program (BUMP), lake sampling was conducted quarterly at 75 lakes across Oklahoma in 2014 (as part of a five-year rotation for the 130 lakes included in the program). Stream sampling was conducted at 84 stations on a 6-week rotation. The physical, chemical, and biological data collected at these sites are used to identify water quality trends, document impairments to beneficial uses, and identify sources of pollution in support of Oklahoma’s Water Quality Standards and federal Clean Water Act requirements.

Staff faced several challenges due to low water levels, particularly in southwestern and western Oklahoma. For example, two sites at Waurika Lake were inaccessible due to shallow water conditions.



As of mid-December, the conservation pool at Waurika Lake was only at about 30%, leaving two out of five sampling sites inaccessible to OWRB monitoring staff.

In July, a Nutrient Limited Watershed (NLW) pilot study was initiated at Crowder Lake, which is currently listed in the Water Quality Standards as nutrient threatened. This study is designed to assess water quality in the reservoir and streams in the watershed to determine which beneficial uses are impacted and if the impairment is due to elevated nutrients.



OWRB biologist Josh Bailey collects winter macroinvertebrate (aquatic insect) samples from the Mountain Fork River near Smithville in southeast Oklahoma. An analysis of these samples provides critical information about the water quality conditions of the stream segment.

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Report of OWRB Activities for 2014 (continued)

The OWRB's biological monitoring team completed a two-year National Rivers and Streams Assessment in September. Funded through the US Environmental Protection Agency (EPA), the probability-based study included collection of a variety of biological samples, including fish, benthic macroinvertebrates, and benthic algae, as well as a stream habitat assessment at each site. Water quality samples were also collected to determine concentrations of various nutrients, cations, anions, turbidity, and toxicants. During 2013-14, 57 sites were sampled for the study; an additional 100 sites will be sampled over the next three years using the same probability-based design.

Sampling has been completed for year two of the Groundwater Monitoring and Assessment Program (GMAP), the OWRB's new statewide groundwater quality and quantity monitoring program. Staff visited more than 170 quality monitoring sites during the year, and collected data from more than 1,000 sites for water-level measurements. Data from six aquifers monitored in 2013 are currently available online in the 2014 BUMP Report. Data from the eight aquifers monitored in the second year of the program will be published next spring in the 2015 BUMP Report.



OWRB groundwater specialist Kevin Kilhoffer measures and samples an irrigation well at a GMAP site in the Arkansas River alluvial aquifer.

Hydrologic Studies

The OWRB continued several ongoing hydrologic studies during 2014. The Rush Springs aquifer study, initiated in 2011 in support of the Upper Washita River Basin project, is scheduled to be completed by the end of 2015. A 20-year update of the Enid Isolated Terrace aquifer hydrologic investigation is nearing completion as well.

Hydrologic investigations of the Elk City Sandstone and Gerty Sand aquifers are now underway. Through a contract with the US Geological Survey (USGS), the OWRB is also conducting hydrologic investigations on the North Canadian River and Canadian River alluvium and terrace aquifers (due for completion in 2015), North Fork of the Red River aquifer (due for completion in 2016), and Salt Fork of the Red River aquifer (due for completion in 2017).

Lake Rehabilitation

Despite the extreme drought in Southwest Oklahoma, EPA-funded aquatic plantings at Fort Cobb Lake have done well. The Oklahoma Department of Wildlife Conservation (ODWC) will continue to maintain these founder colonies of plants with hopes for their spread in the next several years.

OWRB staff surveyed and supplemented aquatic plantings in Lake Stanley Draper after an extended draw-down period (approximately 6 years). Unfortunately the invasive species *Phragmites australis*, Common Reed, has also survived the drawdown and will require additional treatment for control. Work on Stanley Draper is a cooperative effort between the City of Oklahoma City, the ODWC, and the OWRB.



OWRB staff team up with the Oklahoma Department of Wildlife Conservation and the OKC Parks and Recreation Department in September to plant both emergent and submersed plants at various sites around Lake Stanley Draper.

An evaluation of Lakes Hefner and Overholser was completed in 2014 to determine the feasibility of implementing in-lake best management practices to improve water quality for water supply and fish and wildlife beneficial uses. This project showed that withdrawing deeper water from Lake Hefner during the stratified period would improve water quality; however, wholesale improvements cannot be expected for either lake until significant reductions of nutrient loads from the North Canadian River are made.

Staff continued to work cooperatively with the Central Oklahoma Master Conservancy District (COMCD) to monitor and improve water quality in Lake Thunderbird, where an innovative system to oxygenate lake water has been installed. COMCD operation of the system has resulted in progressively improved quality of the raw water supplied to Norman, Del City, and Midwest City over the last three years.

Dam Safety Program

In accordance with last year's initiative, OWRB staff completed 22 low hazard-potential dam inspections and provided inspection reports with breach inundation maps to dam owners at no cost. Staff also developed more than 2,300 simplified breach inundation maps for low hazard dams across the state. This process allowed the OWRB to determine which dams may require further hazard classification analysis. Breach inundation maps of 13 high hazard-potential dams were developed, provided to

(continued on page 6)

Report of OWRB Activities for 2014 (continued)

dam owners at no cost, and integrated into site-specific Emergency Action Plans to assist emergency managers in the event of dam failure. Technical workshops on hydrology and hydraulic dam breach modeling were conducted for engineers, and Emergency Action Plan training was conducted for high hazard-potential dam owners.



OWRB dam safety staff measure the elevation of a dam in Adair County to determine its hazard classification.

Floodplain Management Program

The OWRB is continuing with seven FEMA RiskMAP Discovery projects throughout Oklahoma. The first preliminary Flood Insurance Rate Maps for portions of the Polecats-Snake Watershed in the City of Broken Arrow and Wagoner County will be released in late 2014. Options for converting remaining communities with paper FIRM maps to a digital format are being explored.

The OWRB continues to train and accredit floodplain administrators in Oklahoma's 398 participating National Flood Insurance program (NFIP) member communities. With assistance from the Oklahoma Floodplain Managers Association, the OWRB conducted 15 Community Assistance Visits and more than 50 Community Assistance Contacts during the year.

Permitting

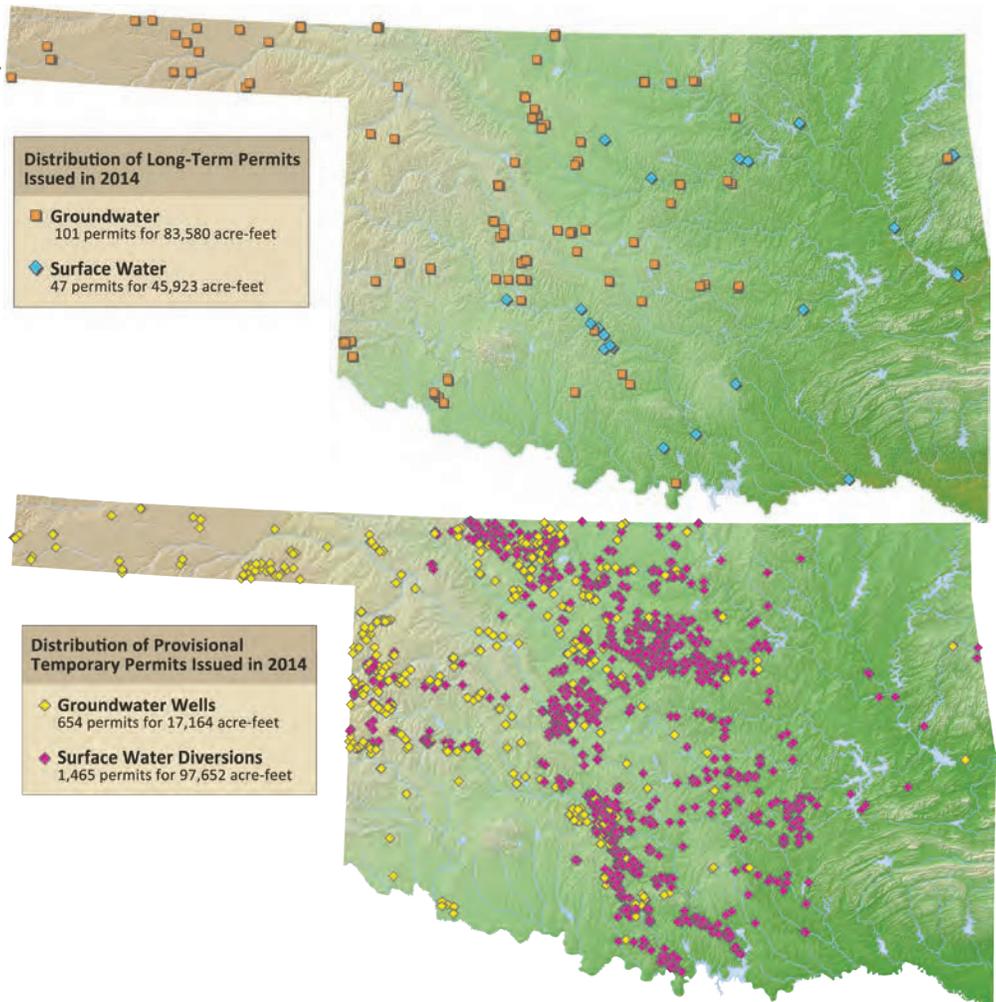
In 2014, OWRB permitting staff processed 101 regular groundwater permits and 47 surface water permits for a total of 129,503 acre-feet of water. More than 2,000 Provisional Temporary permits were also processed in 2014 for 114,816 acre-feet. (Provisional Temporary permits allow use for up to 90 days and do not require public notice and hearing.)

Well Driller/Pump Installer Program

During 2014, OWRB staff licensed 14 new Well Drilling and Pump Installer firms and 57 new operators. Staff maintained licenses for 386 licensed firms and 678 licensed operators. The OWRB also received more than 8,500 well completion, boring, geothermal, and plugging reports for the year. There are currently more than 163,000 records in the OWRB's well log database, accessible to the public via the OWRB website. OWRB staff processed multiple variance applications and performed routine well inspections and firm visits, resolving complaints and discussing violations of minimum construction standards. Additionally, staff conducted multiple training sessions for well driller continuing education. 💧

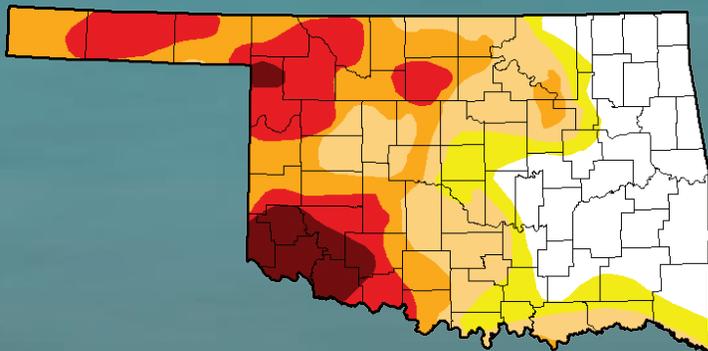
OWRB Fact Sheets

Eleven new OWRB fact sheets have been created on the following topics: Water for 2060, Dam Safety, Floodplain Management, Groundwater Monitoring, Lakes Monitoring, Lake Restoration, Provisional Temporary Permitting, Rivers & Streams Monitoring, Water Quality Standards, Water Use Permitting, and Well Driller Licensing. The fact sheets are available online at www.owrb.ok.gov/factsheets.



Drought Update

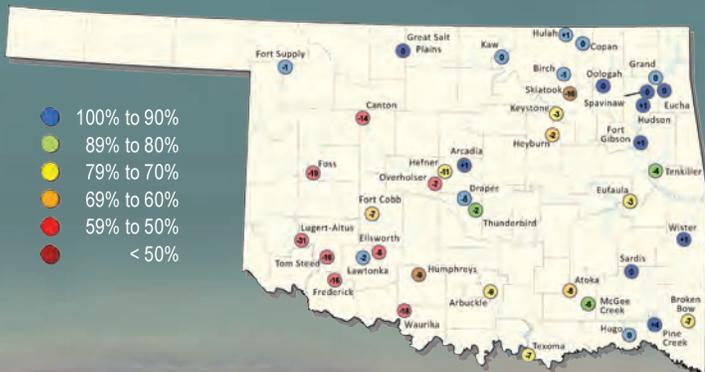
U.S. Drought Monitor
December 18, 2014



Drought Intensity & Percent of State in Drought Category

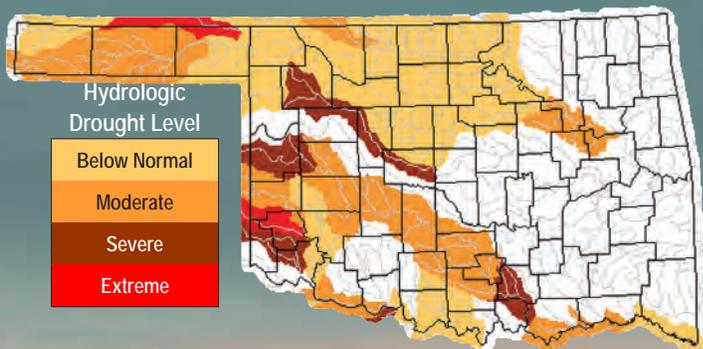
Abnormally Dry	95.95
Moderate Drought	77.48
Severe Drought	50.67
Extreme Drought	24.03
Exceptional Drought	8.61

Reservoir Storage
December 16, 2014



- 100% to 90%
- 89% to 80%
- 79% to 70%
- 69% to 60%
- 59% to 50%
- < 50%

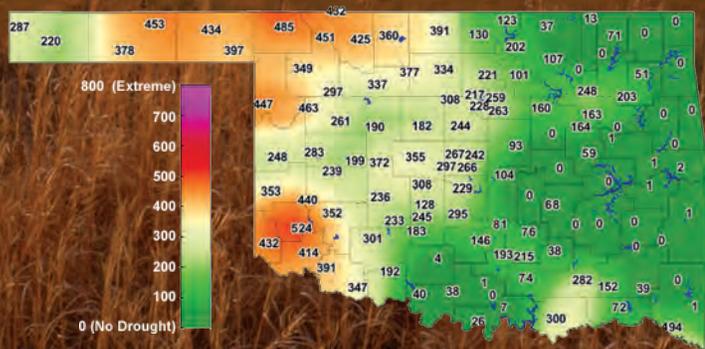
Streamflow (7-Day Average)
December 21, 2014



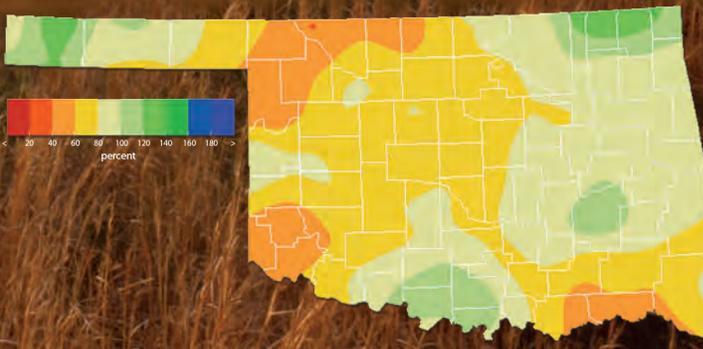
Hydrologic Drought Level

- Below Normal
- Moderate
- Severe
- Extreme

Keetch-Byram Drought Index
December 22, 2014



Percent of Normal Precipitation
Last 90 Days (September 23 to December 21, 2014)



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

*Rudy Herrmann, Chairman • Linda Lambert, Vice Chairman • Tom Buchanan, Secretary
Bob Drake • Ford Drummond • Marilyn Feaver • Ed Fite • Jason Hitch • 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 16, 2014

FA Loans—366 for \$935,065,000

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—281 for \$1,288,818,416

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—171 for \$877,520,300

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—628 for \$55,671,358

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—568 for \$33,822,821

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 funds to establish the Program.

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

Total Loans/Grants Approved: 2,024 for \$3,192,441,742 Estimated Savings: \$1,203,414,463

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.