OKLAHOMA
Water News
1st Quarter 2013

Inside

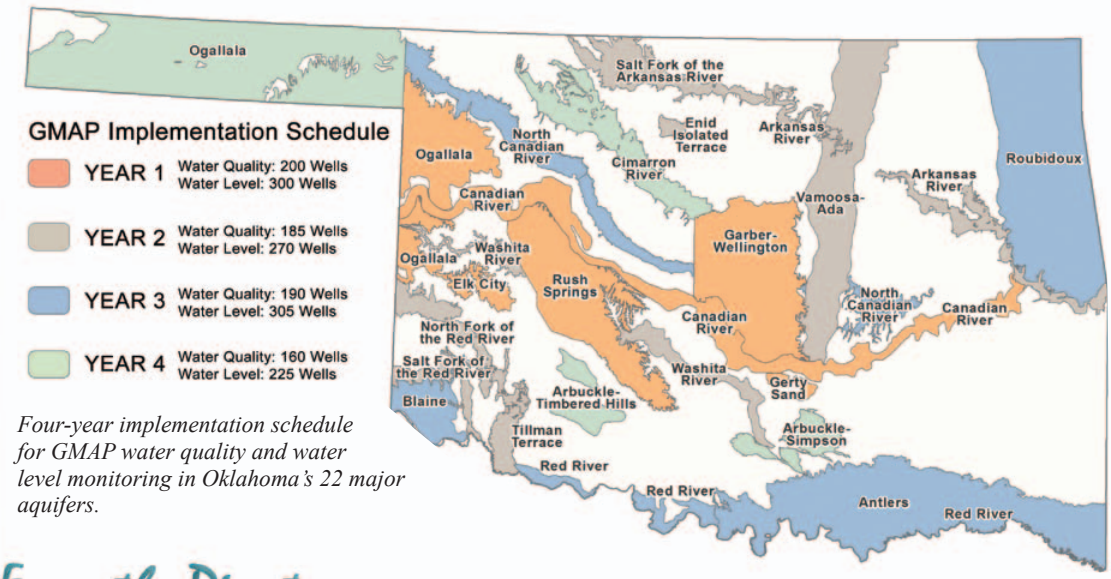
OWRB Initiates Groundwater Monitoring and Assessment Program (GMAP)

With approximately 386 million acre-feet of groundwater in storage, Oklahoma's aquifers provide enormous benefits to agriculture, industry, drinking water suppliers, and other users.

Interest in the formal assessment of Oklahoma's groundwater resources began with groundwater level data collection in the 1950s, and it continued with allocation studies in the early 1970s and an attempt to characterize ambient groundwater quality conditions in the late 1980s. For more than four decades, the OWRB has directed an annual winter (January-March) well measurement program, used to relate changes in groundwater levels in some areas of the state with departures from normal (mean) precipitation levels.

This information has been extremely useful but somewhat limited in scope. Most groundwater quality monitoring activities have focused on compliance with specific regulations. Historically, overall funding for groundwater studies has been limited. In general, insufficient data exists today

(continued on page 3)



Four-year implementation schedule for GMAP water quality and water level monitoring in Oklahoma's 22 major aquifers.

From the Director

While last year's unprecedented passage of water legislation provides reassurance that Oklahoma is on a constructive path toward a more secure water future, this current session has been much more subdued from a water perspective. As always, OWRB staff are assisting our lawmakers as they address constantly evolving water issues, especially in light of a third straight year of statewide drought.

Notable bills filed early on referenced such topics as individual drought relief funding for farmers, ranchers and other rural citizens, establishment of regional water planning groups, wastewater reuse, and expanded Water Board membership and representation. Some of these ideas were included

(continued on page 2)

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

From the Director (continued)

in priority and supporting initiatives identified in the 2012 Update of the Oklahoma Comprehensive Water Plan and deserve attention.

The OWRB continues working with the Legislature to foster measures that protect and improve Oklahoma's water resources, especially the Water for 2060 Act, which was sponsored last session by House Speaker Kris Steele and passed with bipartisan support. This forward-thinking legislation arose from one of the Water Plan's most fundamental grassroots suggestions in recommending water usage levels and conservation measures for the next half century. The Act establishes a statewide conservation goal, a funding mechanism for pilot conservation projects, and an advisory council to contemplate incentives and other measures that have promise in reducing Oklahoma's water footprint. Conservation, our cheapest source of water, remains Oklahoma's most viable and accessible planning strategy to avoid inevitable water deficits.

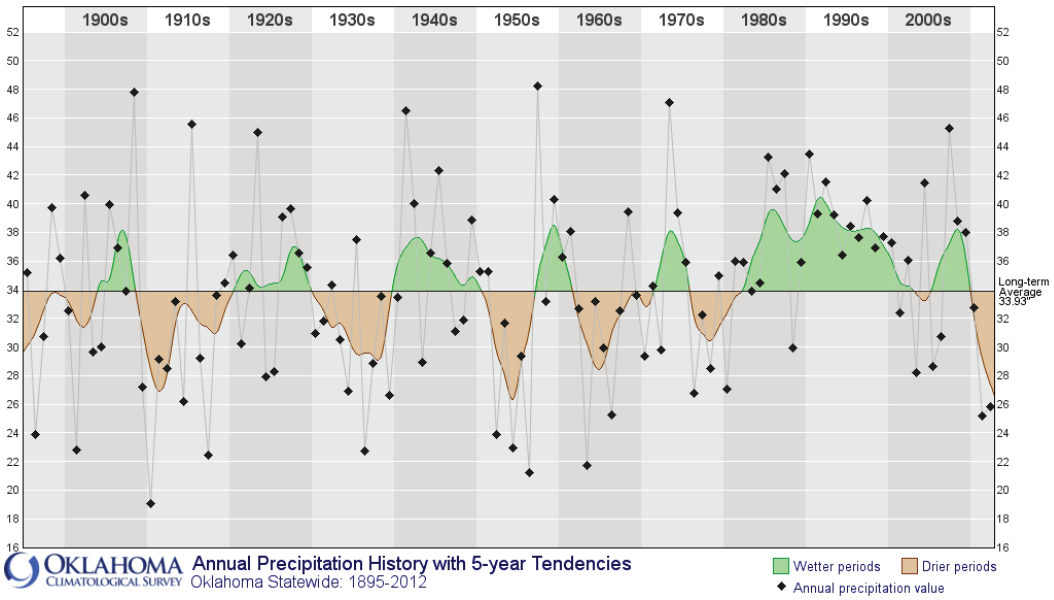
> *"We must all resist the tendency to accept the last several decades of plentiful water resources as "normal" and become lackadaisical–at precisely the wrong time if history is any indication–in planning for an inevitable and perhaps just as lengthy period of dryness."*

A commitment to conservation, along with dependable infrastructure, is our best defense against drought. By now, we should all be familiar with the extreme variability of Oklahoma's precipitation, both geographically and on an annual basis. What better example is there than this ongoing drought episode, which comes right on the heels of the longest sustained period of statewide precipitation in more than a century? We must all resist the tendency to accept these last few decades of plentiful water resources as "normal" and become lackadaisical—at precisely the wrong time if history is any indication—in planning for an inevitable and perhaps just as lengthy period of dryness.

On a related note, the OCWP Instream Flow Workgroup reconvened on March 1. You may recall that the group was originally commissioned during the OCWP update process to conduct an independent technical, legal, and policy analysis of a potential instream flow program in Oklahoma. At this initial meeting, we had very beneficial discussion concerning the development of recommendations that effectively balance the water needs of consumptive users with those relying upon water in our streams and lakes for economic development and recreation.

As drought conditions continue across the state, OWRB staff have responded to increasing numbers of inquiries from water users, concerned citizens, legislators, the media and others about dwindling water supplies. OWRB Hydrologist Maria Moreno shares information on the drought, conservation and planning with Telemundo (Spanish-language network) reporter Carlos Ortiz during a recent interview on the shores of Lake Hefner in Oklahoma City.

Finally, I want to thank everyone who participated in our annual Water Appreciation Day at the State Capitol on March 19. Each year, this popular event serves to remind Oklahomans that dozens of state and federal water organizations are constantly working on their behalf and improving the management and protection of Oklahoma's invaluable water resources. I am personally reminded each Water Day how proud I am to lead a key agency in this worthwhile endeavor.

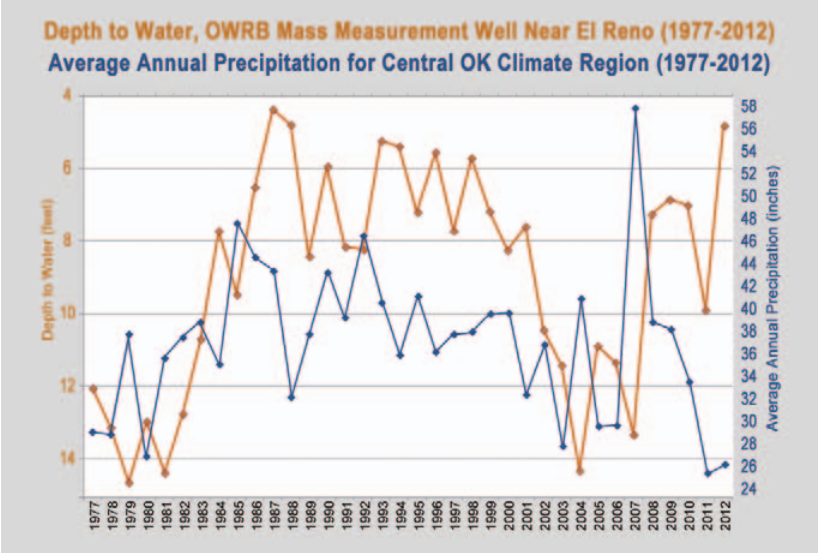


This graph, updated to include 2012 data, plainly demonstrates Oklahoma's often dramatic wet and dry cycles, which frequently confound state water users and planners alike. Since modern climatological record-keeping began in the 1890s, the state has seen five major multi-year, regional drought events. These occurred in the late 1890s, from 1909-18, 1930-40, 1952-58 and, to a lesser extent, 1962-72. It is interesting to note that each of these episodes contained at least one year of above-normal rainfall.

GMAP Initiated (continued)

to manage and protect groundwater resources adequately in the majority of the state's major aquifers.

In 2012, due to a priority recommendation of the Oklahoma Comprehensive Water Plan (OCWP), the Oklahoma Legislature and Governor recognized the importance of Oklahoma's groundwater resources. Concerns about groundwater susceptibility to depletion and pollution were legitimized through appropriation of funding to initiate Oklahoma's first holistic, long-term, aquifer-based Groundwater Monitoring and Assessment Program (GMAP). GMAP will examine the ambient quality and quantity of Oklahoma's groundwater resources to identify areas that are impaired and improve understanding of the effects of seasonal and climatic usage patterns. This data will aid water resource planners and managers in making informed decisions that ultimately result in improved sustainability of water supplies.



Hydrograph of an OWRB Mass Measurement Program well near El Reno shows 36 years of water level data (red line). Average annual precipitation for the Central OK Climate Region is also plotted (source: OK Climatological Survey). GMAP will significantly increase the number and distribution of wells monitored for water level and add a water quality data collection component to allow for much improved ability to analyze the state's groundwater resources.

Through both baseline surveillance and long-term (trend) monitoring networks, GMAP will provide information on individual aquifers as well as general information at a regional and statewide level. By 2016, staff will complete a general characterization of water levels and geochemistry of all major aquifers. The aquifers will then be placed on a five-year sampling schedule. A minimum of 30 wells per aquifer will be monitored for water quality and at least 40 additional wells monitored for water levels. Water samples will be analyzed for parameters such as nutrients, dissolved metals, alkalinity, hardness, dissolved oxygen, pH, and total dissolved solids. A sub-set of these wells will be used for continuous monitoring and evaluated multiple times per year to facilitate characterization of seasonal changes; a select number of wells will be equipped with water level data loggers to monitor changes on the scale of weeks, days, and even hours.

Data collected through GMAP will be made available to the public in a variety of formats through the OWRB's website at www.owrb.ok.gov/gmap.

OWRB Approves New Rules for Oversight of Water from Mines

On February 19 the OWRB adopted new rules to implement provisions of SB 597, regulating use of groundwater trapped in a producing mine pit that emanates from a sensitive sole source groundwater basin. This decision was preceded by more than 20 stakeholder meetings during two years, a formal public hearing process, and several modifications in response to comments.

The Oklahoma Legislature passed SB 288 in 2003, establishing specific rules for withdrawal of groundwater in sensitive sole source basins. As a result, conflict and litigation arose regarding provisions of the Oklahoma Groundwater Law that exempted the "taking, use, or disposal of water trapped in producing mines" from water permit requirements. In 2010, meetings were held with stakeholders, including the Citizens for the Protection of Arbuckle-Simpson Aquifer, Oklahoma Aggregates Association, National Park Service, Chickasaw and Choctaw Nations, and various cities and mining companies.

In 2011, SB 597 placed new monitoring, management, and reporting requirements on mining operations that take, use, or dispose of water trapped in producing mines. The OWRB was directed to adopt implementation rules to meet these requirements. Additional stakeholder meetings were then held to address SB 597 directives, OWRB authority under agency rules, and technical criteria.

For more than a year, the OWRB continued working with stakeholders to provide a path for existing mining companies to remain exempt from groundwater permitting and regulation if they are able to demonstrate that they are not over-taxing vulnerable groundwater supplies. Since rule adoption, several mining operations have exhibited a willingness to work with OWRB staff in developing their water management plans and initiating monitoring and reporting of activities.

The new statute and subsequent agency rule essentially evens the playing field between mining companies, whose operations may dewater aquifers, and other state water users, such as public water suppliers, who are required to obtain a permit to withdraw groundwater. It also results in increased drinking water reliability, specifically for residents in the Arbuckle-Simpson region, and in added protection for the Chickasaw National Recreation Area.

2013 Water Appreciation Day

The eighth annual Water Appreciation Day was held on March 19 at the State Capitol. Dozens of state, federal, tribal, and local governmental agencies, as well as private organizations, showcased their various water programs and related educational efforts, many of which support "Water for 2060" measures for efficiency, conservation, recycling, and reuse.

2013 Water Appreciation Day Participants

Alan Plummer Associates, Inc.
American Farmers and Ranchers
C. H. Guernsey & Co.
Canton Lake Association
Carollo Engineers
Chickasaw Nation/Choctaw Nation
Citizens for the Protection of the Arbuckle-Simpson Aquifer
Financial Assistance Program (OWRB)
Oklahoma Aggregates Association
Oklahoma Climatological Survey
Oklahoma Conservation Commission
Oklahoma Department of Environmental Quality
Oklahoma Department of Mines
Oklahoma Environmental Services, Inc.
Oklahoma Floodplain Managers Association
Oklahoma Geological Survey
Oklahoma Municipal League
Oklahoma Rural Water Association
Oklahoma Scenic Rivers Commission
Oklahoma Water Law
Oklahoma Water Survey
Oklahoma Water Resources Center (OSU)
Oklahomans for Responsible Water Policy
OWRB Monitoring and Studies
Save The Illinois River
Tulsa District, US Army Corps of Engineers
US Bureau of Reclamation
Water for 2060 (OWRB)

The

The cheapest and most
wide range of innovativ
available to solidify Ok
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Water Reuse
As part of a larger wastewater treatment plant upgrade, Guymon Utilities Authority implemented a land application system to dispose of greywater.

Water Reus
Hennessey Pub
added a greywa
system as part o
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Conserving Indoors

- Repair dripping faucets, toilets, and other leaks.
- Turn off the tap while shaving or brushing teeth.
- Use a stopper in the sink when washing dishes.
- Do not use running water to thaw food.
- Make sure the dishwasher is fully loaded.
- Add food wastes to your compost pile instead of using the garbage disposal.
- Wash only full loads of laundry or use the washing machine's load size selection.

Leak Repair
The El Reno Municipal Authority replaced leaking water lines thr
the city to increase efficiency.

Automated Meter Re
Lawton Water Authority inst
automated meter reading (A
which allows them to identif
leaks more effectively while
efficiency.

Conserving Outdoors

- Sweep driveways and sidewalks rather than using a hose.
- Water in the early morning (4 to 7 a.m.) to reduce evaporation.
- Adjust sprinklers to water the lawn, not the house, sidewalk, or street.
- Do not over water. If you step on your lawn and the grass springs back, it does not require water.
- Check your garden hose for leaks and a tight connection to the spigot.
- Wash the car with water from a bucket, or consider using a commercial car wash that recycles water.
- Reduce the amount of turf grass in your yard by xeriscaping or using native and drought-tolerant plants that require less water.

cheapest source of water is
CONSERVATION.

accessible source of water is conservation. "Water for 2060" represents a
ve conservation measures, incentives, and related project financing options
lahoma's water future and minimize deficits projected by the 2012 Update
f the Oklahoma Comprehensive Water Plan (OCWP).

State of Oklahoma
OWRB
WATER RESOURCES BOARD
the water agency

Visit the OWRB's Water for 2060 web page:
www.owrb.ok.gov/conservation

Educating Citizens
Oklahoma City has produced a series of creative water conservation public service announcements. Education is an important and often overlooked conservation tool.

Streambank Stabilization
The Oklahoma Conservation Commission and Oklahoma State University partnered on a streambank stabilization project on Cow Creek. Among other benefits, restoring streams to their natural state reduces sediment loading and enhances water quality, leading to improved water supplies.

Green Infrastructure
Bixby Public Works Authority has embraced low-impact development innovations through the installation of rain gardens and permeable pavement to improve drainage and reduce wastewater treatment costs.

Water Reuse: just look for the purple water lines.

e
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ter land application
f the community's recent
n project.

Water Reuse
Gaillardia, a golf course community, has been irrigating with reclaimed water since 1996. This alternative to using potable water from Oklahoma City is also utilized by two electrical utilities. Collectively, these reuse programs save more than 1 billion gallons of drinking water annually.

Rainwater Harvesting
A modest OWRB Water Conservation Grant allowed Tahlequah High School to capture rainwater and store it in a 6,000-gallon cistern for use in watering the area's landscape.

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Green Roofs
At OU's National Weather Center, a vegetative roof system (green roof) reduces stormwater runoff, improves water quality, and reduces the building's energy demands.

Leak Detection
Grady County Rural Water District #6 has reduced system leakage by 25 percent by replacing old valves and meters and installing a new automated meter reading system, along with improved management techniques.

Incentives
- Tax benefits
- Low-interest loans
- Cost-sharing
- Tiered water pricing

Innovative Measures
- High efficiency plumbing codes
- Leak detection and prevention
- Education programs
- Green infrastructure
- Water recycling/reuse
- Control of invasive species
- Use of marginal quality waters

Water Providers
The best way to ensure good conservation is to have a well-managed system and one that takes advantage of eligible funding through the OWRB Financial Assistance Program. The CWSRF and DWSRF loan programs are helping Oklahoma meet Water for 2060 goals today.

ISF Advisory Group Reconvenes

The OCWP Instream Flow (ISF) Advisory Group, created in 2009 as a workgroup to address instream flow issues for the Oklahoma Comprehensive Water Plan (OCWP), reconvened on March 1 in Oklahoma City to continue deliberating how an instream flow program might be implemented in Oklahoma. Following the directive of an OCWP "priority recommendation" for ISFs, the first facilitated workshop was intended to implement the process developed by the Advisory Group to ascertain the suitability and structure of an ISF program.

The primary focus of the Group is to determine if and how Oklahoma—both legally and practically—can ensure protection for specific amounts of water in a river or stream that are integral to downstream environmental, social, and economic benefits. Early in 2011, the Advisory Group recommended the following process related to creation of a potential instream flow program: (1) address legal and policy questions; (2) study other mechanisms for protecting instream flows; (3) develop a draft methodology for instream flow studies; (4) conduct a study of economic impacts of instream flows; (5) perform an instream flow pilot study in a scenic river; and (6) preserve the instream flow workgroup.

Facilitated by consultants from CH2MHill and Carollo Engineering through funding from the Corps of Engineers, the Advisory Group made its initial attempt to implement this process at the March meeting. Prior to the meeting, members were asked to contribute responses to the following discussion topics/questions:

- What are the most significant potential consequences of an instream flow program in Oklahoma?
- How could any negative consequences be mitigated?
- What are the potential consequences of not implementing an instream flow program?
- What other approaches could be taken to mitigate those consequences?
- How could we measure the social and environmental consequences of an instream flow program?
- How could we measure the financial impacts of an instream flow program?
- How could a pilot project be used to evaluate and measure your benefits and concerns?
- Should an instream flow program be measured by potential economic impacts alone?
- If an instream flow program is developed, what would be the most important aspects for the program to protect or enhance?
- Should legal/regulatory protections be provided for those with existing consumptive water rights? How could those protections be provided?

Many responses focused on how a specific mechanism to protect instream flows might affect current and future water rights and availability for consumptive users. Several members emphasized the complexity of the issue, from both a legal and technical aspect, pointing out that any ISF program would likely require statutory changes.

The Group cited dozens of additional issues and impacts that must be addressed and mitigated prior to ISF implementation, including creation of "artificial shortages" for consumptive users, perception of wasting water by allowing more to flow out of state, reduced water availability for economic development, and impacts on current uses of reservoirs.

Among potential benefits of ISF program implementation, members listed protection of the health of ecosystems and streams, increased biodiversity, reduced endangered species issues, maintenance and enhancement of recreational and tourism opportunities and associated economic benefits, maintenance of adequate flows for wastewater discharges, more reliable lake levels, and increased ability to meet current permit needs.

ISF Advisory Group members will continue discussions and activities aimed at fostering a better understanding of this complicated and, at times controversial, issue at their next workgroup meeting scheduled for May 16, 2013.

Dean Couch Retires

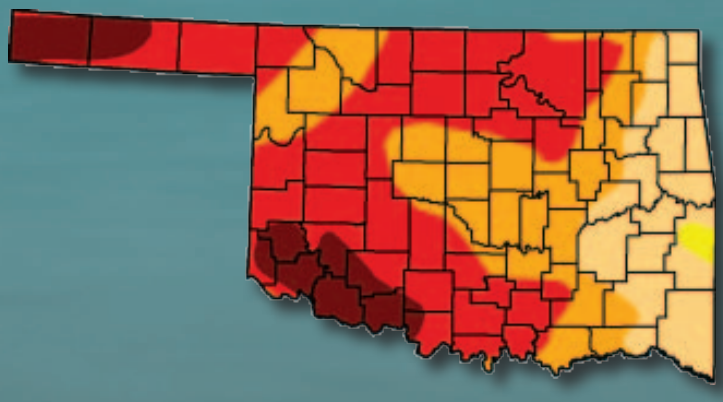
After 30 years of state service, including 27 years as General Counsel, Dean Couch retired from the OWRB on January 31. One of Oklahoma's most respected authorities on state water law, Couch represented the OWRB in countless important cases, including cases in the U.S. Supreme Court. Couch provided esteemed legal interpretation and scholarly advice to dozens of Board members, OWRB staff, and members of the State Legislature.

Veteran staff attorney Jerry Barnett will temporarily oversee the Office of the General Counsel as the OWRB continues to address a number of lawsuits involving the management and protection of Oklahoma's water resources.

Dean Couch (third from right) at his final board meeting in January. Pictured left to right are Board members Jason Hitch and Ed Fite, Executive Director J.D. Strong, Board Chairman Ford Drummond, and Board members Rudy Herrmann, Linda Lambert, Tom Buchanan, Marilyn Feaver, and Richard Sevenoaks.

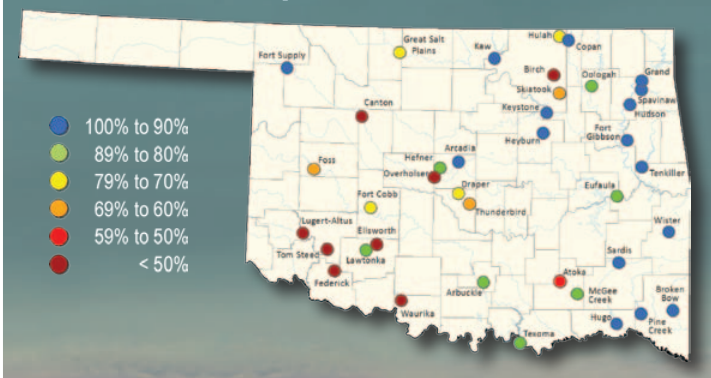
Drought Update

U.S. Drought Monitor
April 2, 2013

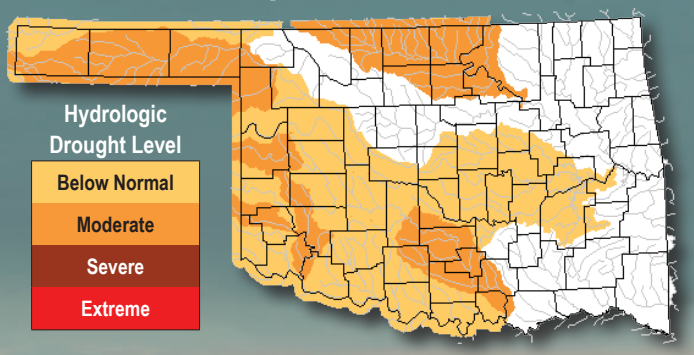


Drought Intensity & Percent of State in Drought Category	
Abnormally Dry	100.00
Moderate Drought	100.00
Severe Drought	83.07
Extreme Drought	53.07
Exceptional Drought	9.90

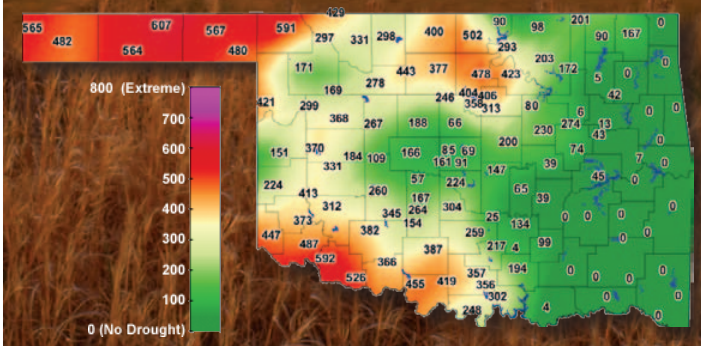
Reservoir Storage
April 1, 2013



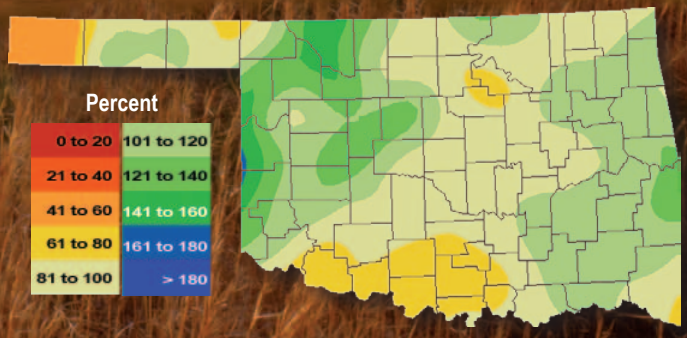
Streamflow (7-Day Average)
April 1, 2013



Keetch-Byram Drought Index
April 1, 2013



Percent of Normal Precipitation
Last 90 Days (January 1 to 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.

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www.owrb.ok.gov

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 2013

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E-mail comments, questions, or article submissions to pubinfo@owrb.ok.gov or call us at (405) 530-8800.

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Financial Assistance Program Update

Loans & Grants Approved as of April 1, 2013

FAP Loans—355 for $874,360,000
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—266 for $1,167,985,974
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—159 for $846,908,300
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—585 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—7 totaling $490,791
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: 1,938 for $2,975,490,432
Estimated Savings: $1,022,001,366
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.