



OKLAHOMA

water news

MONTHLY NEWSLETTER OF THE OKLAHOMA
WATER RESOURCES BOARD

Gerald E. Borelli, Chairman

Earl Walker • Ervin Mitchell • Bill Secrest • Ralph G. McPherson • Gary W. Smith • Ernest R. Tucker • Robert S. Kerr, Jr. • R.G. Johnson

Take Another Look! Oklahoma Water Use is Full of Surprises

If someone asked you where the most water is used in the state, would you guess Oklahoma City or Tulsa? If you guessed either of those, you'd be wrong. The correct answer is Texas County in the panhandle, where irrigation in the spring and summer draws enormous amounts of ground water from the Ogallala Aquifer. And the race between Texas County and the rest is not even close, with Texas County using an equivalent of 250 million gallons a day — more water than those two populous counties combined.

According to water use reports received by the OWRB, 55 percent of the total use is ground water; 45 percent, water from surface sources. Most of the state's use of stream water centers on the largest cities and on industrial, power generating and timber and paper industries, shown by the peaks on the map.

Jim Schuelein of the OWRB presented these figures in mid-March in Oklahoma City at the USGS Conference on Water Information Needs. He said Oklahoma water data collected by the Board by all means — well measurement, stream gaging, permitting, sampling, water use surveys —

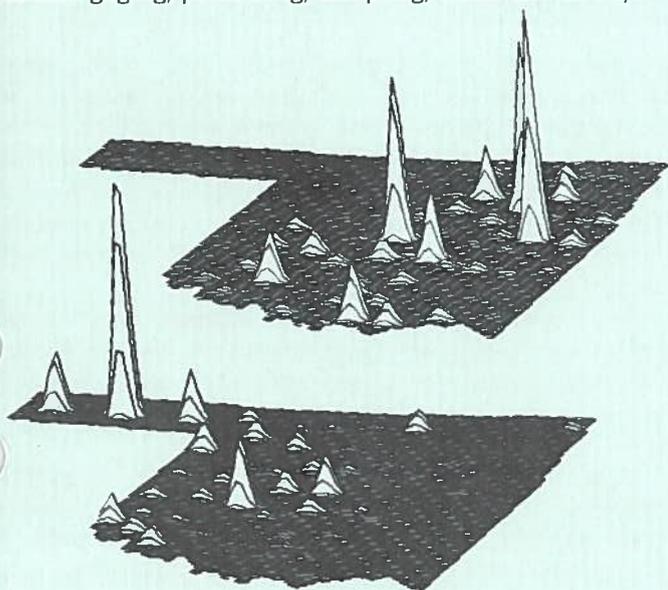


This sign, rusted and pierced by buckshot, has stood sentry over Preacher Creek in Kingfisher County since 1951, recalling the years prior to 1957, when the Oklahoma Water Resources Board was created to replace the Planning and Resources Board. Although this site was abandoned more than 30 years ago, the OWRB and the USGS continue to cooperate in a stream gaging program.

Water use from surface sources towers over the municipal and industrial areas of the state, shown in the top figure, lower left. Ground water use, pictured in the lower left graph, peaks over Texas County in the Panhandle, the state's biggest user.

are published each year by the USGS as part of the cooperative federal-state National Water Use Program. As a result of this program set in place by Congress in 1977, 47 states participate in compiling accurate, timely, consistent and accessible information.

Permitting water use and gaging streamflow rank as "old reliables" in gathering water information, the issue of permits going back to days of territorial government and the measurement of streamflow predating the present OWRB. Shown above is a sign retrieved in March by OWRB's Dannie Spiser from a fence near Preacher Creek in Kingfisher County, recalling the years between 1935 and 1957 when today's OWRB was the Oklahoma Planning and Resources Board. Spiser, who participated in the stream gaging program as a member of the Planning and Resources Board, believes the sign was set out in about 1951.



Board Studies Water Depletion in Blaine Aquifer Near Hollis

If there's anyplace left where cotton is king, it is that quiet wedge of Oklahoma nestled between the Red River on the south and the Texas panhandle, a stone's throw away to the west. The snowy bolls nourished by the rich red soil and the waters of the Blaine Aquifer have sustained a sturdy economy for 40 years or more.

However, in recent years, the wells that seemed bottomless in watering the region's cotton and grain began to show alarming declines in water levels. The irrigators' concern over a shrinking water table and possible depletion of the bountiful aquifer has set a new task before the Oklahoma Water Resources Board.

Duane Smith, OWRB Ground Water Division chief, said a new study will estimate depletion and cope with the decreasing water supply of the Blaine Aquifer in Greer, Jackson and Harmon Counties. He said the study will seek ways for irrigators to use the water effectively without stressing the aquifer. According to Smith, the study will first focus on a 90-square mile area south and southeast of Hollis, where wells show declines ranging from 13 to 42 feet in the past nine years. He said overdevelopment and overpumping could deplete the water supply of that area, where 127 of the 173 active wells are high-capacity irrigation wells.

Jim Gopal, senior water resources engineer in the Oklahoma City office who is overseeing the study, said in addition to wells measured annually by the OWRB in cooperation with the U.S. Geological Survey, the Board will measure others in the area on which historical data are available. Geologist Karen Dyrberg of the Board's Lawton Branch office completed additional well measurements, so the Board has accurate data on approximately 45 wells in the study area near Hollis. Gopal will translate data gathered in the field into a computer SYMAP form. "Numerical data entered in the computer will produce a map to precisely show us areas of ground water depletion," he pointed out.

The Blaine Aquifer which underlies Greer, Harmon and Jackson Counties is made up largely of the Dog Creek Shale and Blaine Gypsum interspersed with beds of gypsum, limestone and dolomite. Subsurface solution and removal by percolating waters have produced many water-filled cavities in these rocks, and it is these cavities which yield great quantities of water for irrigation.

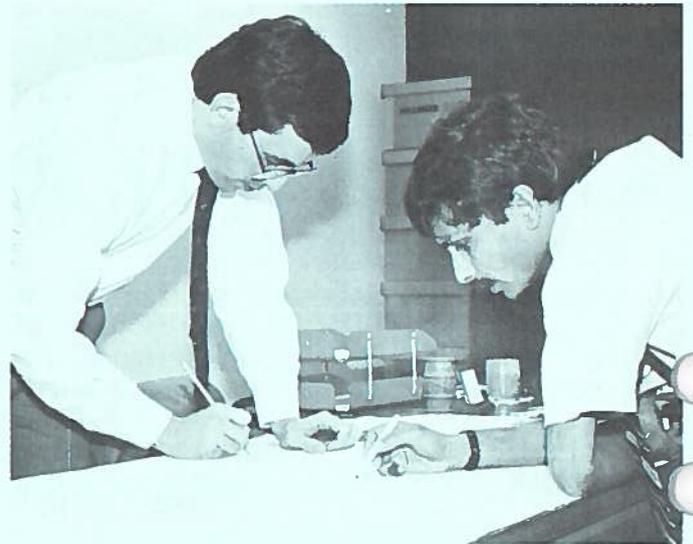
Gopal pointed out that high sulfate levels in the water preclude its use as drinking water, but make it a reliable source for irrigation and stock water. He said that most towns in the area rely on ground water from alluvial and terrace deposits along streams, or on surface water for municipal supplies.

Ground Water Division chief Smith said that before 1942, the bedrock underlying the three counties was believed incapable of yielding significant quantities of water — certainly not enough for irrigation. However in 1942, a successful irrigation well was drilled near Duke in western Jackson County, and by 1955, 327 irrigation wells

were drawing water from the solution cavities of the bed rock. "Today, we know of some 463 wells in the Blaine Aquifer and more than half of them are used for irrigation," Smith said.

From the study centered on the Hollis area, the Board will expand to a more extensive survey of the aquifer. According to Smith, these are the planning stages — collecting data and reviewing all literature available on the area and the aquifer. Phase One will be a study of hydrology and geology; and Phase Two will be the creation of a computer model as a guide in determining the maximum yield and equal proportionate share.

Smith said the study will produce maps of base of the aquifer, saturated thickness and the water table.



Duane Smith, left, chief of the Ground Water Division, and Jim Gopal, water resources engineer overseeing the Blaine Aquifer study near Hollis, plot well measurement data on topographic map of Greer, Harmon and Jackson counties.

Awards Highlight 15th Annual Rural Water Association Meeting

Gov. George Nigh commended some 400 delegates to the Oklahoma Rural Water Association Annual Meeting as powerhouses in effecting the passage of the state water question last year, and again asked their support for the three state questions on the April 30 ballot. In his luncheon address March 26, Nigh said, "We took on an issue that had been soundly trounced earlier and passed it in landslide proportions. Seventy-six of our 77 counties passed the state water question. Today I again ask that we agree. Yes all three," he encouraged.

The Governor pointed out that through the financial assistance program set in place by SQ 581, the OWRB has awarded 74 grants for improvements to water and sewer systems. Fifty-seven of those have been funded in an amount exceeding \$5 million.

Following Nigh's address, ORWA Awards Committee Chairman Marvin Johns recognized rural water districts and individuals with outstanding records of performance

Continued on page 4



Water Awareness Day at Capitol April 9

By proclamation of the Governor, the Fourth Annual Water Awareness Day will be observed in Oklahoma on April 9, with the activities centered on the fourth floor of the State Capitol.

Art Cotton of the OWRB Tulsa Branch office who is coordinating the day's activities, said state agencies, organizations, service clubs, municipalities and businesses will exhibit water conservation materials and devices in exhibits free and open to the public from 10:30 a.m. to 3 p.m. Gov. Nigh is scheduled to speak at approximately 11:30 a.m.

James R. Barnett, OWRB executive director, said, "It's important that Oklahomans make water conservation measures part of daily living. The solution to many of our water problems lies in a better educated and more aware public."

For more information, please call the OWRB at (405) 271-2573 in Oklahoma City.

Environmental Conference Slated June 7-8

On June 7-8, the Department of Pollution Control will coordinate the "Oklahoma Conference on Environmental Quality: Managing Our Resources; Air, Land and Water" in Oklahoma City at the Lincoln Plaza Forum.

Gov. George Nigh will open the conference with welcoming remarks at 9 a.m. on Friday. The day's activities will include keynote addresses on resource management from state and national perspectives, a luncheon speech by Congressman Mike Synar, and panels on air quality, land management and water quality and quantity. Saturday's session, scheduled to adjourn at noon, will consist of discussions of disposal of wastes and water quality management.

Further information is available from Mary Schooley at (405) 271-4677, Department of Pollution Control, P.O. Box 53504, Oklahoma City, 73152.

Drilling Wastes Topic of EGWI Conference

The University of Oklahoma Environmental and Ground Water Institute and Center for Continuing Education and Public Service will host a national conference May 30-31 on Disposal of Drilling Wastes. The conference will be presented in cooperation with the Interstate Oil Compact Commission, Oklahoma Corporation Commission and Oklahoma Conservation Commission.

Site of the conference will be the Sheraton Hotel at 1000 North Interstate Drive in Norman, and special conference rates are available by calling the Sheraton at (405) 364-2882.

Advance registration will cost \$100 until May 17; \$120 after that date. Registration for the conference includes coffee breaks, two luncheons and a reception May 30. Further information is available by calling Debby Fairchild at EGWI (405) 325-5202.

Objectives of the conference are to summarize state-of-the-art methods of drilling waste disposal and to identify

ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS AS OF MARCH 22, 1985

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
SOUTHEAST		
Atoka	130,100	100.0
Broken Bow	918,100	100.0
Pine Creek	77,700	100.0
Hugo	157,600	100.0
CENTRAL		
Thunderbird	105,925	100.0
Hefner	76,800	100.0
Overholser	17,200	100.0
Draper	86,300	86.3
SOUTHCENTRAL		
Arbuckle	62,571	100.0
Texoma	2,637,700	100.0
Waurika	203,100	100.0
SOUTHWEST		
Altus	20,877	15.7
Fort Cobb	68,707	88.0
Foss	144,004	59.0 ²
Tom Steed	65,577	74.0
EAST CENTRAL		
Eufaula	2,329,700	100.0
Tenkiller	627,500	100.0
Wister	27,100	100.0
Sardis	302,500	100.0
NORTHEAST		
Eucha	79,567	100.0
Grand	1,491,800	100.0
Oologah	544,240	100.0
Hulah	30,594	100.0
Fort Gibson	365,200	100.0
Heyburn	6,600	100.0
Birch	19,200	100.0
Hudson	200,300	100.0
Spavinaw	30,000	100.0
Copan	43,400	100.0
Skiatook	—	— ¹
NORTHCENTRAL		
Kaw	428,600	100.0
Keystone	616,000	100.0
NORTHWEST		
Canton	60,953	62.0
Optima	3,000	— ¹
Fort Supply	13,900	100.0
Great Salt Plains	31,400	100.0
STATE TOTALS	12,020,815³	95.2³

1. In initial filling stage
2. Temporarily lowered for maintenance
3. Conservation storage for Lake Optima not included in state total

Data courtesy of U.S. Army Corps of Engineers, Bureau of Reclamation, Oklahoma City Water Resources Department, and City of Tulsa Water Superintendent's Office.

technical and policy research needs for addressing potential environmental problems resulting from drilling wastes. Discussion topics will include Treatment and Disposal Options, Socio-political Impacts of the Changing Oil and Gas Industry, Soil (Land) Farming and Management and Regulation.

Mainstream, continued from page 3

If You Wonder Where the Water Goes . . .

When you drive to your favorite burger restaurant for a hamburger, fries and a soft drink, you've used approximately 131,000 gallons of fresh water without ever turning on the tap. Manufacture of the automobile you drove required 100,000 gallons, and the four tires under it took 30,000 gallons of water to make. The water required to serve up your hamburger, french fries and cola amounted to 1500 gallons.

Further, according to *U.S. Water News*, it takes 16,300 gallons of water to grow a 20-pound turkey; 4000 gallons to produce a single pound of beef; 300 to make a loaf of bread and 280 gallons to print the Sunday paper.

What does water cost delivered to your home? The average community provides your water at one-tenth of a cent a gallon.

New Aquifer Discovery to Supply Ruidoso

As many American cities faced with water demands exceeding supply by 1990, Ruidoso, New Mexico, set out to seek a new municipal water supply. According to *U.S. Water News*, the drilling firm engaged by the city encountered water at a depth of 80 feet in the first of five test wells on U.S. Forestry Service land north of the Mescalero Apache reservation. Further drilling indicated an aquifer thickness of about 600 feet, water quality four times better than that of Ruidoso's current city water and well capacity of 2,000 to 3,000 gallons per minute.

The potential yield of the five wells is estimated to be up to 12,000 acre-feet a year — four times the city's current available supply. Engineers on the project will continue to explore characteristics of the new aquifer to accurately predict long-term productivity.

ORWA Awards, continued from page 2

over the past year. The first award was presented to Gov. Nigh for his leadership and personal commitment to Oklahoma's water programs.

First of the awards made to ORWA members was that of Outstanding Secretary in Eastern Oklahoma, presented to Doris Peters of Kay County Rural Water District #3. The Western Oklahoma award went to Betty Wynn who serves as secretary for Stevens County RWD #3.

Outstanding Operator awards were presented to August (Gus) Mizera of Cherokee County Water Development Corporation in Eastern Oklahoma; and G.D. Adams of Caddo County RWD #1, Oklahoma's largest system with 1400 rural water customers on 2000 miles of line.

Outstanding Rural Water System Awards were presented to Rogers County RWD #6 in the East and Woodward County RWD #1, in Western Oklahoma.

Johns pointed out that 1985 had produced a new award, one that will be presented as it is deserved by exceptional achievement. It was presented to Mountain Fork Water Supply Corporation at Broken Bow.

Another special award presented in appreciation of service was given to Royce Jones, retired Oklahoma director of the Farmers Home Administration. Johns called Jones "the Big Brother of Rural Water," and credited him with being instrumental in securing funding for half the water systems in the state.

Twelve districts which had participated as members of ORWA for 10 years were recognized with certificates. They were Dover Public Works Authority, Nowata RWD#1, Nowata RWD #6, Reed Rural Water Corporation, Sapulpa Rural Water Corporation, Caddo County RWD #3, Spring Valley Rural Water Association of Garfield County, Rogers Mills RWD #1, Logan County RWD #1, 51 East Rural Water Corporation of Payne County, Wagoner RWD #1 and Hughes County RWD #2.

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