

Oklahoma

Water News

MONTHLY NEWSLETTER OF THE OKLAHOMA WATER RESOURCES BOARD

High Plains Council Asks Funds to Conserve, Augment Ogallala

8-State Council asks funding to implement research, demo projects authorized in 1986

The Ogallala Aquifer underlies parts of eight heartland states, watering crops and livestock from the plains of eastern New Mexico to the grasslands of southern South Dakota. In Oklahoma the Ogallala underlies all of Beaver, Texas and Cimarron Counties and parts of Harper, Woods, Ellis, Woodward, Roger Mills, Beckham and Dewey Counties.

Although the High Plains Region contains only one percent of the nation's population and six percent of the land area, it produces more than 15 percent of the country's wheat, corn, sorghum and cotton and 38 percent of the livestock. In good times, the Ogallala is an important water source; in drought times, it is a critical buffer for the grain-cotton-cattle economy.

In this region lie 14 million irrigated acres nourished by 170,000 water wells. Additionally, the region supports 18 million acres of dryland agriculture. Since the High Plains relies on agriculture, economic development closely parallels irrigated agriculture. Increases in irrigated agriculture between 1950 and 1989 tripled withdrawal of water from the Ogallala—from seven million to 21 million acre-feet a year. Groundwater

mining has pressed the aquifer beyond the limits it can maintain over the long term.

Concern for the diminishing water source prompted the Congress to fund the Ogallala Aquifer Regional Study in 1976. Completed in 1982, the study projected that over five million irrigated acres would revert to dryland farming by the year 2020 unless water management is aggressively practiced. It also projected \$1.5 billion losses in the value of the region's agricultural commodities, similar losses in food and fiber exports and the potential loss of 36,000 jobs.

Economic vitality rests on the well-being of the aquifer

The Ogallala Aquifer Regional Study addressed these problems and offered alternatives. An enhanced data collection effort had been put in place by the U.S. Geological Survey in 1978, and the Bureau of Reclamation established a Groundwater Recharge Demonstration Program for the western states.

The Study explored dozens of alter-



The vibrant grain-cattle-cotton economy of the eight states overlying the Ogallala Aquifer is threatened unless water conservation and augmentation measures can be put in place in time to staunch the flow from the aquifer.

natives including interstate and intra-state water transfer, conservation and other water augmentation strategies. In 1982, the High Plains Study Council reported to the Congress that education, research and demonstration programs seemed to hold the greatest promise for managing groundwater mining problems and maintaining the economic vitality of the region.

Study results and recommendations of the High Plains Study Council caused the inclusion of Title III of the Water Resources Research Act in Public Law 99-662 in 1986. Although the Congress authorized all sections of PL 99-662, it has not yet funded

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Sections 303-305.

Section 301 established a High Plains Study Council composed of the governors of the eight Ogallala states, plus representatives of the U.S. Departments of Agriculture and Interior;

Section 302 established in each state a 5-member technical advisory committee appointed by the governor;

Section 303 authorized \$4.3 million annually to be divided among the eight states for research in water management;

Section 304 authorized \$2.2 million annually to be divided among the eight states for research in enhancing water supplies;

Section 305 authorized \$5.3 million per year for grants to farmers for demonstration projects in soil and water conservation and the growing of water-efficient crops;

Section 306 authorized \$600,000 for use by the USGS in monitoring water levels in the Ogallala; and

Section 307 required of the participating states a 25 percent cost-share in programs.

OWRB Executive Director James R. Barnett, Governor Bellmon's designee to the Council, has been working

with committee members from the other seven Ogallala states to develop funding strategies. The committee is currently looking to the 101st Congress to fund Sections 303, 304 and 305 of PL 99-662.

On the mark, get set . . .

Each state is poised at the starting line with research, education and demonstration project priorities, once funding is available. Oklahoma's priorities were set out by the University Center for Water Research under the direction of Dr. Norman Durham at Oklahoma State University.

Oklahoma's priorities for project needs in the Ogallala region include:

Development of improved irrigation equipment and techniques;

Development of water-efficient and drought-tolerant crop alternatives;

Development of new tillage systems and management practices to conserve water and protect water quality;

Assessment of the impact of new systems and management practices on the quality and quantity of groundwater;

Assessment of farm-level, commu-

nity and regional economic impacts of crop alternative, tillage practice and irrigation technology decisions;

Impact of new regulatory schemes designed to extend the economic life of High Plains groundwater supplies;

Estimate of impacts of weather modification in the region;

Development of information programs to educate farmers about new alternatives in crops, tillage systems and irrigation;

Informing policy-makers on economic impacts on farmers and rural communities of alternative futures for the region;

Demonstration of water conserving irrigation technologies and practices;

Demonstration of pump efficiency testing and irrigation water management techniques;

Demonstration of the interaction between reduced tillage systems and irrigation practices.

The weeks ahead are critical for the High Plains Study Council. It is imperative that the Council enlist Congressional sponsors and muster support. Implemented, PL 99-662 could rekindle bright hopes in the region and ensure its economic vitality. □

Ag Program Improves Water Quality

The U.S. Department of Agriculture's innovative Conservation Reserve Program (CRP) has successfully accomplished its intended purpose of reducing soil erosion and curbing the over-production of surplus cotton, sorghum, wheat, corn, soybeans and small grains. But now, the strategy is being hailed for what was originally a side-benefit—lowering non-point source pollution from farmlands.

A vital, early goal of the Conservation Reserve Program—created by the Food Security Act of 1985—was to reduce wind and water erosion of valuable topsoil from agricultural areas. Each year, approximately two billion tons of sediment from some 400 million acres of cropland enter the nation's waters. The sediment in this runoff carries fertilizers, pesticides and other harmful pollutants.

Alarmingly high concentrations of these substances have been detected in surface and groundwater supplies across the country. But many experts now believe that land management practices advocated by the CRP are

impacting these pollutant loadings.

The U.S. Environmental Protection Agency has acknowledged the Program's potential benefits to water quality by recommending that local water managers work with soil conservation officials to integrate the CRP with 1987 Water Quality Act require-

Each year, wind and water erode two billion tons of soil from the nation's croplands.



ments. EPA hopes that such a cooperative effort will increase the water quality benefits of cropland retirement. Section 319 of the Act calls for states to assess their non-point pollution problems and develop management programs for affected waters. To complete Oklahoma's assessment, which is now under EPA review, information was gathered from a variety of state and federal agencies and local groups with water quality responsibilities. The OWRB contributed information from past water quality studies to help target specific water bodies whose beneficial uses are impaired or threatened by non-point source pollution. Once problem waters and pollutants are identified, best land management programs can be implemented to reduce non-point contributions.

Members of the U.S. Senate Agriculture Committee have also recognized potential water quality benefits of the CRP by calling for expansion of the Program "to include croplands whose continued intensive use threatens surface and groundwaters." USDA officials say the program is already meeting this challenge; in 1987, they extended CRP eligibility to parcels of land adjacent to waterways, or "filter strips."

During sign-up periods, farmers and/or landowners voluntarily submit bids for the annual rental payment they desire in order to take eligible land out of production for a 10-year period. In return, the Program requires participants to limit cattle grazing and put the land into perennial grass, wildlife plantings, windbreaks or trees. Such conservation methods provide a foothold for life-giving topsoils, which are vulnerable to erosion when loosened and exposed by field plows and other machinery. Past studies have shown that these land management practices may reduce sediment pollution 50 to 90 percent. Conservation measures also provide food, cover and nesting areas for a wide variety of fish and wildlife species.

Since 1985, the CRP has taken approximately 28 million acres of vulnerable American land out of pro-

duction—nearly two-thirds its original goal of 45 million acres.

In Oklahoma, more than one million acres of land representing 7,234 farm units have been assigned to the CRP, according to Mason Mungle, executive director of the Oklahoma Conservation Commission. In the Program's fifth sign-up period—completed in mid-March—58,781 acres were added (subject to eligibility).

Mungle pointed out that land eligible in the latest sign-up period was expanded to include wetlands. In addition to being valuable habitat for a wide variety of wildlife, wetlands serve as efficient pollutant filters and water purifiers. Between 1950 and 1980, more than 11 million acres of wetlands had been lost to croplands and urban projects.

OWRB Executive Director James R. Barnett says the state will try to ascertain just how well the Conservation Reserve Program has enhanced water quality in Oklahoma through an ongoing, statewide monitoring program.



USGS Report Available

"Bibliography of Oklahoma Hydrology—Reports Prepared by the U.S. Geological Survey and Principal Cooperating Agencies, 1901–88," published by the USGS, is now available.

The document, which was compiled by John S. Havens, lists pertinent information on 350 reports issued from 1901 to 1988. Almost 200 of the hydrologic reports published have dealt primarily with groundwater; the remainder have been concerned with surface water, water quality or geology. In addition to USGS reports, the bibliography lists selected journal articles and reports issued by principal state cooperators, the Oklahoma Geological Survey and the OWRB.

Copies of the report may be purchased by contacting Books and Open-File Reports, U.S. Geological Survey, Federal Center, Building 810, Box 25425, Denver, CO 80225.

Drought Info Center Created

To deal with worldwide misconceptions about drought, the University of Nebraska—Lincoln has created an International Drought Information Center. The Center is supported by the International Affairs Branch of the National Oceanic and Atmospheric Association (NOAA) through a cooperative program with the World Meteorological Organization.

Dr. Donald A. Wilhite, Center director and an authority on global drought planning, says the organization will promote a better understanding of drought planning and management through improved communication among international scientific and policy-making communities.

Wilhite's past research efforts include a study of federal and state response to drought in the mid-1970s, believed to be the first comprehensive attempt at evaluating federal drought response efforts. In a similar study, he compared drought assessment and response efforts in Australia with those in the U.S.

For more than a year, Wilhite has been working with Oklahoma—and six other states—to develop a model drought contingency plan for use by state governments. The two-year study is supported by the Climate Dynamics Program of the National Science Foundation. According to Wilhite, 12 states now have formal drought plans (compared to three in 1982) and 10 are in the process of developing plans. Last year's drought in the U.S. has focused attention of state and federal governments on the need to plan for, rather than react to, periods of severe drought, he said.

How to Grow a Green Lawn

April is an ideal time to begin yard care and plan lawn needs.

A slow-release nitrogen fertilizer applied lightly in the spring and again in the early fall helps plants use less water. A lawn fertilizer with a 3-2-1 ratio of nitrogen (N)—phosphorus (P)—potassium (K) helps the grass withstand stress.

Water early in the morning. Use a sprinkler that emits large drops close

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to the ground instead of spraying a fine mist into the air. To determine how much water your sprinkler applies, set four of five small empty cans at different distances from the sprinkler, with the most distant near the

edge of the sprinkler coverage.

Run the sprinkler 30 minutes, then add the inches of water in the cans. To obtain an average, divide the total inches by the number of cans. Multiply the average by two to determine how many inches the sprinkler ap-

plies in an hour.

According to OSU extension agents, homeowners in all sections of Oklahoma can maintain a healthy lawn throughout the summer by applying one inch of water once each week.

**ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS
AS OF MARCH 22, 1989**

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY	PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
SOUTHEAST			Wister	63,250	100.0 ³
Atoka	120,568	97.6	Sardis	302,500	100.0
Broken Bow	915,690	99.7	NORTHEAST		
Pine Creek	77,700	100.0 ³	Eucha	79,567	100.0
Hugo	151,409	96.1 ³	Grand	1,412,950	94.7
McGee Creek	109,800	100.0	Oologah	541,940	99.6
CENTRAL			Hulah	30,594	100.0
Thunderbird	105,925	100.0	Fort Gibson	365,200	100.0
Hefner	65,681	87.2	Heyburn	6,600	100.0
Overholser	14,558	91.4	Birch	19,155	99.8
Draper	81,763	81.8	Hudson	199,444	99.6
Arcadia	26,305	96.0	Spavinaw	30,000	100.0
SOUTH CENTRAL			Copan	43,400	100.0
Arbuckle	62,548	100.0	Skiatook	242,584	75.9
Texoma	2,521,600	95.6	NORTH CENTRAL		
Waurika	203,100	100.0	Kaw	423,720	98.9 ³
SOUTHWEST			Keystone	614,842	99.8
Altus	113,106	85.1	NORTHWEST		
Fort Cobb	78,423	100.0	Canton	94,020	96.4
Foss	169,288	69.4 ²	Fort Supply	13,882	99.9
Tom Steed	77,258	86.8	Great Salt Plains	31,400	100.0
EAST CENTRAL			STATE TOTALS	12,366,970	96.0
Eufaula	2,329,700	100.0			
Tenkiller	627,500	100.0			

1. In initial filling stage
2. Conservation storage lowered for project modification
3. Seasonal pool operation

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.

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