

Oklahoma

# Water News

MONTHLY NEWSLETTER OF THE OKLAHOMA WATER RESOURCES BOARD

## Board Nears End of 11-year Restoration of OKC Zoo Lake

*Effort sees fruits of city, county and state labor*

In late fall, Oklahoma City residents will again be able to enjoy what was once one of the capital city's most popular attractions. The former beauty of Northeast (Zoo) Lake that had been spoiled by nearby development will be restored through more than a decade of attention from the OWRB and federal Clean Lakes Program.

Built in 1908, spring-fed Zoo Lake soon became a popular attraction for fishing, boating and swimming enthu-

siasts but, ironically, the notoriety threatened the lake's very existence. Residential development, construction of a golf course in 1921 and establishment of one of the nation's largest zoos greatly accelerated the lake's natural aging process. Tons of sediment and animal and human waste—along with harmful pesticides and herbicides—were added to its once clear waters, causing massive algal blooms and precluding swimming in 1945. The years that followed saw the slow, sad death of an Oklahoma City landmark.

Perhaps the lake would have perished if Congress had not, in 1975, appropriated \$4 million for the devel-

opment of a program to clean up the nation's publicly owned lakes. The Environmental Protection Agency's Clean Lakes Program provided the very infusion Zoo Lake needed when,

*Continued on page 2*

## Board Closes First Loan from New Fund

The City of Tulsa is the first community to participate in a new state program, the Wastewater Facility Construction Revolving Loan Program, which provides financing for the construction of sewage treatment facilities in Oklahoma. Last month, numerous leaders in city and state government—including officials of the State Water Resources Board and State Department of Health, the two agencies which administer the program—were on hand at the loan closing and project's ground-breaking

*Continued on page 5*



Bill Cauthron of the OWRB Water Quality division watches the dredging operation at Zoo Lake. A cylindrical cutter mounted on the front of the floating dredge excavates material on the lake bottom, forcing it into a vacuum intake which then moves the sludge via pipeline to disposal pits on the shore.

**Zoo Lake, continued from page 1**

in 1979, a federal grant was awarded to the OWRB to identify pollutant sources and their impact on the lake. Extensive studies then began to target the source of ailments at Northeast Lake.

Once the Water Board identified problems, water quality specialists made plans to dredge the lake and divert sediment- and fecal-laden runoff. A Phase II grant was awarded in 1986 and the OWRB began restoration. In addition, Zoo officials considered more responsible land, animal and waste management practices and groundskeepers at Lincoln Park Golf Course agreed to limit applications of pesticides, herbicides and insecticides.

However, federal budget restraints thwarted the lake's initial two-year-long renovation. After an auspicious beginning, five years of federal funding woes, coupled with dam failures in 1982 and 1984, severely hampered progress. But again, fate would smile on Northeast Lake as it was promised a new neighbor which would revitalize interest in the restoration.

The Remington Park horseracing facility promised to bring a tremendous influx of visitors to a newly created recreational complex. Renewed concern in the completion of the Zoo Lake project came in the form of funds and in-kind services from city and county governments, the Oklahoma City Zoo, Remington Park and the OWRB. Congress renewed federal funding of the project and county monies allowed construction of a new dam—with guidance from OWRB engineers—and implementation of remedial measures to clean up the lake and short-circuit pollution problems in the watershed.

Unfortunately, unseasonably cold and wet weather precluded bulldozers and backhoes from completing the task of removing tons of sediment from the lakebed. Therefore, a floating dredge is now being utilized to pump the material from the lake and deepen it by several more feet. The material is being deposited in disposal pits via a flexible pipeline

attached to the dredge. The deepening strategy will create a smaller surface area for the lake—returning it to near its original size—and allow the zoo to reclaim 7-10 acres of land. In addition, the zoo's unsightly swamp has been drained and filled, and the stream feeding Zoo Lake has been cleared of accumulated sediment.

The zoo plans to establish two exhibits on much of the reclaimed acreage, according to Connie McCoy, Administrative Services Manager. The "Oklahoma Trail," south and west of the lake will support various species of native plants and animals as it winds through two distinct habitats, a swamp and plains. The swamp path meanders along the shore, featuring exhibits for wolves, bears and alligators and view blinds through which visitors can observe native waterfowl which routinely use the lake. McCoy said another exhibit, the "Big Cat Forest," will be constructed on the lake's north shore on fill material dredged from the lake bottom. Various exotic cats—including tigers, leopards and jaguars—will be on display throughout the low-lying swamp/forest habitat.

Once work on Zoo Lake is complete, the OWRB will begin one year of monitoring to determine the renovation's success.

Zoo Lake is one of six lakes receiving attention from the federal Clean Lakes Program.



### Board Honors Employees

Longtime Water Resources Board employees with more than 20 years service were honored by the Board and presented jeweled service pins and certificates at the September 11 Board meeting.

Margaret Graham, honored for 21 years' service, came to the OWRB after working for the State Department of Libraries since 1969. James Leewright and Pat Hestand joined the OWRB in 1968 from the Highway Department. Leewright has completed 24 years of service; Hestand 31 years. Dannie Spiser was honored for 38 years, joining the Planning and Resources Board (a precedent agency of the OWRB) in 1952.

Earlier, employees who have worked for the State of Oklahoma for more than five years and less than 20 years were honored by Executive Director James R. Barnett at staff meeting August 31.

Three OWRB employees celebrating the greatest longevity are James Leewright, Pat Hestand and Dannie Spiser. Inset is an enlargement of the pin that commemorates service to the State of Oklahoma.



# THE FLOOD CURRENT

SEPTEMBER 1990

## WHAT IS THE NATIONAL FLOOD INSURANCE PROGRAM?

The National Flood Insurance Program is a government-backed insurance program, established by Congress in 1968, which provides local governments with a mechanism for implementing floodplain management techniques aimed at reducing or avoiding flood damages. The OWRB administers the National Flood Insurance Program on behalf of the Federal Emergency Management Agency (FEMA) through the Federal Insurance Administration.

This addition to the September issue of the Oklahoma Water News is published through assistance provided to the Water Board by FEMA under the Community Assistance Program, State Services Support Element Grant. It is the intent of this publication, as well as the goal of the NFIP, to increase public awareness concerning the awesome power of floods and the availability of affordable flood insurance to owners and renters of homes, businesses and farms.

## Assistance Outlined

The OWRB has scheduled 35 community assessment visits and 40 contacts with NFIP member communities for fiscal year 1991, according to Ken Morris, state NFIP coordinator.

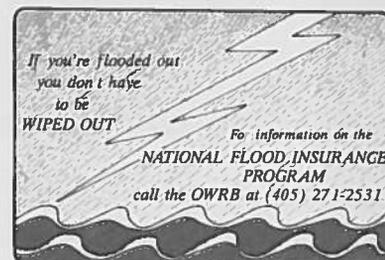
"Effective communication is vital to the success of the flood insurance

program. These two methods of reaching out to our member communities help us assess local floodplain management programs and assist program participants in understanding and implementing effective flood loss reduction measures," he said.

Community assessment visits usually consist of a tour of the flood

hazard areas, an audit of community records and a meeting with local floodplain management officials. Community assessment contacts are brief visits or telephone conversations with member communities to determine program-related problems or to offer needed assistance.

"We try to assist, rather than govern, communities involved in the NFIP," Morris said. "The meetings, tours and phone calls allow us an opportunity to point out structural and political modifications which must be made to retain eligibility in the program."



## GREAT FLOODS IN THE U.S. SINCE 1889

DATE	LOCATION	DESCRIPTION	LIVES LOST	DAMAGES (millions \$)
May 1889	Johnstown, PA	dam break flood	3,000	—
September 1900	Galveston, TX	tidal flood (hurricane)	6,000	30
March 1913	Ohio River & tributaries	riverine flood	467	147
September 1919	south of Corpus Christi, TX	tidal flood (hurricane)	600-900	22
September 1921	Texas rivers	riverine flood	215	19
spring of 1927	Mississippi River Valley	riverine flood	313	284
March 1928	St. Francis dam, southern California	dam break flood	450	14
September 1928	Lake Okeechobee, FL	flood wave generated in lake by hurricane	1,836	26
September 1938	New England	riverine flood	600	306
June 1957	Texas & Louisiana	riverine flood (Hurricane Audrey)	390	150
August 1969	Mississippi, Louisiana & Alabama	tidal and riverine floods (Hurricane Camille)	256	1,421
June 1972	Black Hills, SD	flash flood	237	165
June 1972	eastern U.S.	tidal and riverine floods (Hurricane Agnes)	105	4,020
September 1979	Mississippi, Alabama & Florida	tidal flood (Hurricane Frederic)	13	2,000
September 1989	southeastern U.S., Puerto Rico & Virgin Islands	tidal and riverine floods (Hurricane Hugo)	57	10,000

Sources: Hays, W.W., 1981, *Facing Geologic and Hydrologic Hazards, Earth Science Considerations*, U.S. Geological Survey Professional Paper 1240-B; and Federal Emergency Management Agency.

## NFIP Publication Offered

The Federal Insurance Administration, through FEMA, has recently published a booklet which should prove invaluable to NFIP participants and those interested in joining the program.

"Mandatory Purchase of Flood Insurance Guidelines" contains requirements and amendments of the Flood Disaster Protection Act of 1973. The guidelines are intended to provide guidance to federal regulatory agencies, lenders, borrowers and the general public. The publication includes a description, legislative history and current status of the NFIP; the six basic components of mandatory flood insurance purchase requirements; and an explanation of various coverages under the NFIP.

For copies of the guidelines, call the OWRB at (405) 271-2531 or write the Federal Emergency Management Agency at P.O. Box 70274, Washington, D.C. 20024, attn.: Publications.

## Floodplain Managers Organize

The Oklahoma State Association of Floodplain Managers, an independent organization promoting wise floodplain management, was formed in early August.

According to Ken Morris, state NFIP coordinator, the formation of the group is long overdue. "Creation of the floodplain managers' association will provide us with an avenue to promote the importance of floodplain management and allow for more efficient communication between floodplain management officials throughout the state. The organization will also generate a unified voice to protect the interests of communities involved in floodplain management and the National Flood Insurance Program."

At the group's organizational meeting in Tulsa, preliminary bylaws and a constitution were discussed. Carol Williams, community affairs coordinator for the Tulsa Department of Stormwater Management, was appointed interim chairperson.

For more information on the State Association of Floodplain Managers, call (405) 271-2531.

## Don't Drive into Floodwaters

Driving through moving floodwaters is one of the most common causes of accidental death and injury during a rainstorm or flood event, according to Harold Springer, chief of the OWRB's Engineering Division.

Springer points out that cars may be easily moved by deceptively powerful floodwaters. And although it may seem shallow, the depth of water on a flooded road's surface may be as deep as 18 to 24 inches -- enough to cause the vehicle to float.

"People often get a false sense of security while in their car during severe storms," he explains. "But driving through rapidly moving water—even as shallow as one foot deep—can pose a serious risk to the occupants of even the largest vehicle."

An automobile driven straight through a stream of water two feet deep will have about 18 square feet of car surface impacted by the water's flow. If the water is moving at 15 miles per hour, the side of the car will

be hit by more than 25,000 pounds of water every second, Springer says.

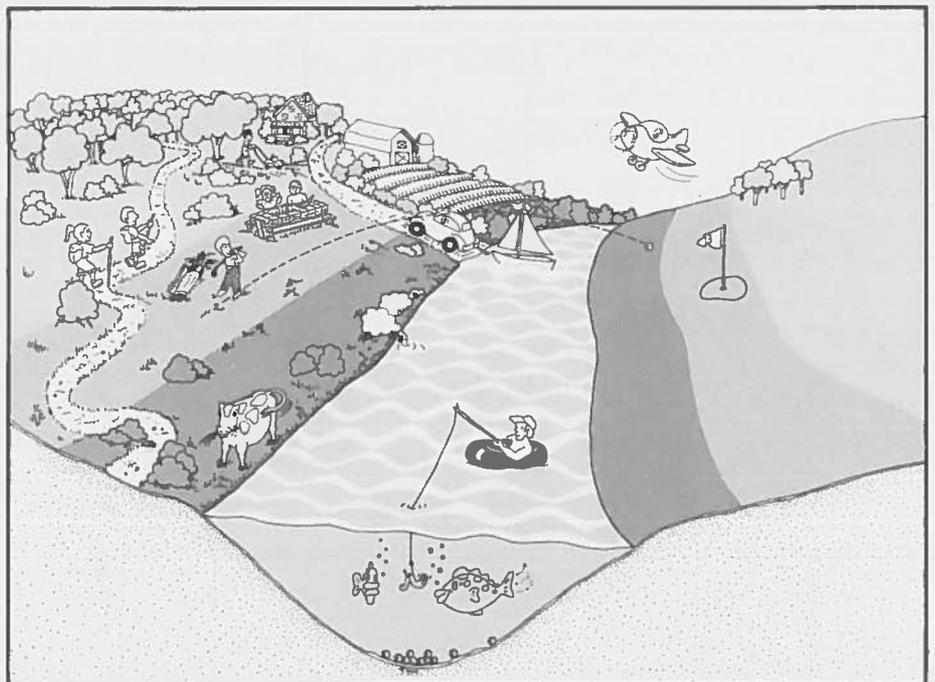
If conditions seem safe and floodwaters are receding, he says, the motorist should still proceed with caution—driving slowly through low-water areas.

## Flood Maps Available

Maps delineating the floodway boundaries of various creeks, rivers and streams in Oklahoma are available at no cost to real estate agents, lenders and officials of federal, state and local governments.

Three types of map panels are offered—flood hazard boundary maps, flood insurance rate maps and flood boundary floodway maps. The maps are created to guide development in recognized floodplains across the state and nation.

Panels may be ordered by writing the Federal Emergency Management Agency (FEMA), Flood Map Distribution Center, 6930 (A-F), San Tomas Road, Baltimore, Maryland 21227-6227 or by calling toll-free 1-800-333-1363. In addition, the OWRB offers official FEMA map order forms. Call (405) 271-2531 for more information.



The OWRB suggests that floodplains be reserved for pastureland, parks, recreation areas, landing strips and other uses where people and structures are sparse.

## The Earth is Your Apple

If an apple were quartered, three quarters would represent the oceans of the world; the fourth, the land area. If the "land" section were cut in half lengthwise, you would have two one-eighth sections. One section represents deserts, swamps, mountains, arctic and antarctic regions. The other eighth represents the areas where man can live, but cannot grow food. Slice this one-eighth section crosswise into four equal parts. Three of these one-thirty-second sections represent areas so rocky, wet or hot or



contain soil too poor to grow crops. This also includes areas which have been developed.

Carefully peel the last one thirty-second section. This sliver of peeling represents the soil on which all mankind depends for food production!

## Compact Meets September 27

The Water Resources Board will host a meeting of the Arkansas-Oklahoma Arkansas River Compact Commission at Fountainhead Lodge on Lake Eufaula on September 27.

Representing Oklahoma will be Compact Commissioners Jacob B. Miljer, Cookson; J. Denny Moffett, Tulsa; and James R. Barnett, OWRB executive director. Representing the OWRB will be J.A. Wood, Stream Water Division chief and Dean Couch, Legal Counsel, of Oklahoma City and Andrew Husky and Donetta Blanlot of the McAlester branch office.

## Inmate Crews Clear Floodways

Inmates from Oklahoma's correctional facilities frequently participate in public works and environmental improvement projects. This work crew of minimum security inmates from the Lexington Assessment and Reception Center is shown removing brush and debris from Chouteau Creek, near Slaughterville. The material inhibits the creek's ability to assimilate floodwaters, according to Ken Morris, of the OWRB's Engineering Division. Morris is state coordinator for the National Flood Insurance Program.



## EPA Cites Two for Excellence

The U.S. Environmental Protection Agency has recognized two hazardous waste management facilities in Oklahoma for environmental excellence, according to Robert E. Layton, Jr., EPA Regional Administrator. A total of seven facilities were acknowledged in EPA Region VI which comprises Oklahoma, Texas, New Mexico, Arkansas and Louisiana.

Layton and Governor Henry Bellmon presented the Regional Administrator's 1990 Environmental Excellence Award to Ashland Chemical Company, in Tulsa, and Phillips Research Center, in Bartlesville, during ceremonies held September 5 at the

State Capitol in Oklahoma City.

"We cite polluters for violating environmental laws, so I'm pleased to recognize facilities for environmental stewardship," Layton said. The awards were established to recognize operations that exemplify environmentally safe hazardous waste management.

### *First Loan, continued from page 1*

ceremony held near the Arkansas River in Tulsa. Bill Secret, vice-chairman of the nine-member Water Board, signed the loan documents.

According to OWRB Executive Director James R. Barnett, the pivotal \$11.1 million loan is a result of legislation passed in 1988 which endeavored to satisfy federal Clean Water Act requirements and compensate for the federal government's diminishing role in the funding of state sewer projects. The State Wastewater Facility Construction Revolving Loan Fund replaces grants previously offered by the federal Environmental Protection Agency.

"This new program will help many communities who are in dire need of funds to construct efficient sewage treatment facilities which directly affect the quality of our rivers, streams and lakes. In addition to the obvious environmental benefits the program will provide, it increases the potential for economic development and improves the overall quality of life in our state," Barnett said in an address at the ceremony.

The loan will help construct the first stage of a three-part project designed to alleviate the discharge of untreated sewage from overburdened lines during heavy rainfalls. The City of Tulsa is under an order from EPA to eliminate the overflows which discharge into the Arkansas River. The West Bank Interceptor Sewage Project will include construction of a 30-inch pipeline under the river from the 21st Street Lift Station, then installation of a 54-inch gravity line adjacent to the river to a proposed lift station and flow equalization basin. The flow equalization basin is already under construction.

**STORAGE IN SELECTED OKLAHOMA LAKES & RESERVOIRS  
AS OF AUGUST 27, 1990**

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (acre-feet)	PRESENT STORAGE (acre-feet)	PERCENT OF STORAGE		PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (acre-feet)	PRESENT STORAGE (acre-feet)	PERCENT OF STORAGE	
			conservation	flood				conservation	flood
<b>SOUTHEAST</b>					<b>EAST CENTRAL</b>				
Atoka	124,100	121,731	98.1	N/A	Eufaula	2,314,600	2,275,158	98.3	0.0
Broken Bow	918,070	901,988	98.3	0.0	Tenkiller	654,100	646,240	98.8	0.0
Hugo <sup>1</sup>	187,603	185,983	99.1	0.0	Wister <sup>1</sup>	58,601	58,601	100.0	0.1
McGee Creek	113,930	113,930	100.0	2.0	<b>NORTHEAST</b>				
Pine Creek <sup>1</sup>	73,346	73,346	100.0	1.0	Birch	19,200	17,714	92.3	0.0
Sardis	274,330	274,330	100.0	1.0	Copan	43,400	40,109	92.4	0.0
<b>CENTRAL</b>					Eucha	80,000	74,750	93.4	N/A
Arcadia	27,520	27,414	99.6	0.0	Fort Gibson	365,200	365,200	100.0	1.0
Hefner	75,400	65,441	86.8	N/A	Grand	1,672,000	1,566,920	93.7	0.0
Overholser	15,900	12,729	80.1	N/A	Heyburn	7,105	6,098	85.8	0.0
Stanley Draper	100,000	76,613	76.6	N/A	Hudson	200,300	200,300	100.0	1.0
Thunderbird	119,600	115,961	97.0	0.0	Hulah	31,160	26,925	86.4	0.0
<b>SOUTH CENTRAL</b>					Oologah	553,400	553,098	100.0	0.0
Arbuckle	72,400	72,284	99.8	0.0	Skiatook	322,700	300,598	93.2	0.0
Texoma	2,643,300	2,589,670	98.0	0.0	Spavinaw	30,590	29,585	96.7	N/A
Waurika	203,100	201,332	99.1	0.0	<b>NORTH CENTRAL</b>				
<b>SOUTHWEST</b>					Kaw <sup>1</sup>	428,600	427,948	99.9	0.0
Altus	132,830	88,657	66.7	0.0	Keystone	557,600	557,600	100.0	0.7
Ellsworth	72,490	60,060	82.9	N/A	<b>NORTHWEST</b>				
Fort Cobb	80,010	77,447	96.8	0.0	Canton	111,310	99,314	89.2	0.0
Foss <sup>2</sup>	256,220	176,518	68.9	0.0	Fort Supply	13,900	13,448	96.8	0.0
Lawtonka	56,574	53,920	95.3	N/A	Great Salt Plains	31,420	29,141	92.8	0.0
Tom Steed	88,970	82,460	92.7	0.0	<b>STATE TOTALS</b>	<b>13,130,879</b>	<b>12,660,561</b>	<b>96.4</b>	<b>0.2</b>

<sup>1</sup> Seasonal pool operation

<sup>2</sup> Conservation pool lowered to enhance project operation

N/A—not applicable; no flood storage allocation.

Data courtesy of the U.S. Army Corps of Engineers, Bureau of Reclamation, Oklahoma City Water Resources Department, Central Oklahoma Master Conservancy District, City of Tulsa Water Superintendent's Office, City of Lawton, City of Altus, Altus Irrigation District, Foss Reservoir Master Conservancy District and Fort Cobb Master Conservancy District.

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