

Oklahoma

Water
News

MONTHLY NEWSLETTER OF THE OKLAHOMA WATER RESOURCES BOARD

A Gold Thread of Water Ties State to Ports of the World

If the old steamboat captains could see her now!

Would they believe these were the same waters that the steamboat Comet dared in her historic 8-day voyage from New Orleans to Arkansas Post in 1820?

If they could see today's McClellan-Kerr Arkansas River Navigation System, would they believe it once was the fickle stream that swallowed trusty steamers on its shoals or crushed them in deadly torrents? An early, incomplete list tallied 117 steamboats lost to the river, most victims of snags hidden in the treacherous channel.

Despite the dangers, an exciting era settled on the rivers with the coming of the steamboats and their courageous captains. In 1828, the steamboat Facility ventured as far as Fort Gibson landing on Grand River with two keelboats in tow carrying 300 immigrating Creek Indians. Although the head of navigation only went to Fort Gibson, a few intrepid captains challenged the river frontiers above the mouth of the Verdigris.

At best, the early Arkansas River was a crucible for navigators, so unruly that travel was possible only a few months of the year. The capricious river gnawed at its banks, moved its course, heaped enormous sediment loads onto sandbars and shoals and bred rag-

ing currents. Before development of the waterway, the Canadian River and Arkansas River upstream from Tulsa choked the lower reaches of the Arkansas with 105 million tons of sediment in an average year.

It was the coming of another steam leviathan—the locomotives of the Missouri, Kansas and Texas Railroad in 1870—that finally docked the great riverboats. The colorful days of steamboat navigation on the Arkansas were all but finished.

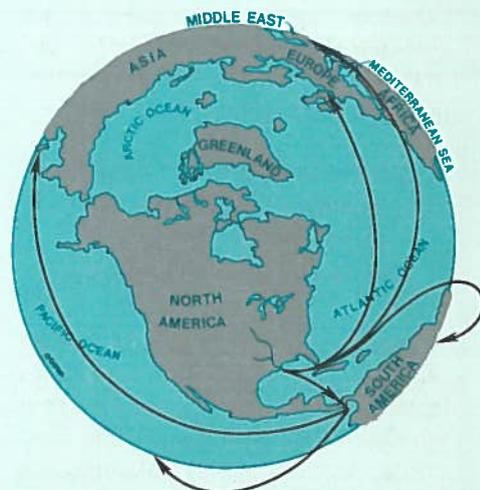
But the troublesome river would not be forgotten. It lashed the lowlands with flood after flood, and in 1927, water levels on the Arkansas River were the highest in 99 years. Beyond it, the entire Mississippi Valley was an enormous muddy spill a thousand miles long and 50 to 150 miles wide. Again in 1943, 16 inches of rain in two days drove the Arkansas River six feet over flood stage at Muskogee. The raging river flowed at 700,000 cubic feet per second.

However cruel, these years of flooding in the east and drought in the west served to unify soil and water conservationists, flood control advocates and navigation interests and called them to march. In 1946, a comprehensive plan of development for

the Arkansas River was authorized by the U.S. Congress in the Rivers and Harbors Act.

Largely through the persistent and persuasive efforts of U.S. Senators Robert S. Kerr and John L. McClellan of Arkansas, construction of the Arkansas River Navigation System began in 1957. At the time, it was the largest civil works project ever undertaken by the Corps of Engineers. Navigation reached Little Rock in December 1968, Fort Smith in December 1969, and the Port of Catoosa, at the head of navigation, in December 1970. A cen-

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The McClellan-Kerr Arkansas River Navigation System links inland areas with foreign markets through New Orleans, the nation's second busiest port.

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tury and a half after the Comet's voyage had captured the imagination of river navigators, the waterway was completed. The heartland was linked to the ports of the world by a 445-mile-long ribbon of water.

At last, the dream of the steamboat captains began to come into focus.

The McClellan-Kerr waterway is not a single river, but rather, three rivers and a canal. It begins in Arkansas at mile 599 on the Mississippi River, halfway between New Orleans and St. Louis, using the first 10 miles of the White River as its entrance channel. The next nine miles is the manmade Arkansas Post Canal, a navigation channel that connects the White and Arkansas Rivers. Then, for the next 337 miles, through Arkansas and into Oklahoma, the navigation system is the Arkansas River. The waterway branches from the Arkansas once again at Muskogee to follow the Verdigris River north for the last 50 miles to the head of navigation at the Port of Catoosa, 445 miles distant and 420 feet higher than the Mississippi River.

The slope from New Orleans 500 miles upstream on the Mississippi is gradual—only about 100 feet. However, a boat climbing the Arkansas River Valley faces a 420-foot slope, or roughly, a grade of about one foot a mile. To lift vessels 40 stories, the Corps of Engineers designed an ingenious "stairway of water." A series of gated spillway dams create navigation pools connected by 17 locks.

Seventeen 100 × 600-ft. single-chamber locks make entire length of the waterway accessible.

The lift along the "stairway" from one navigation pool to the next varies from 14 feet at Lock No. 4 to 54 feet at the Dardanelle (Arkansas) Lock. Each one is large enough to accommodate several vessels or a single tow as large as 108 feet wide by 585 feet long—or enough lockage for a towboat and eight 35 × 95-foot barges.

Locks work like elevators, lifting or lowering vessels from one pool to the next. No pumps are used, and the filling or emptying of a lock by gravity flow requires only about 15 minutes. It is the sole purpose of the 17 dams associated with the locks to maintain pool elevations.

A part of the country's 25,000-mile inland waterway system, it attracts clients and cargoes from all over the world. Its channel links vast inland areas west of the Mississippi with major domestic markets from Texas to the northeastern U.S., as well as foreign markets through New Orleans, the country's second busiest port.

"It continues to grow toward its capacity to handle 35–45 million tons of cargo a year," points out Glen Cheatham, Jr., director of the Waterways Division of the Oklahoma Department of Commerce. It is Cheatham's job to promote shipping on Oklahoma's segment, and that's a job he tackles with enthusiasm.

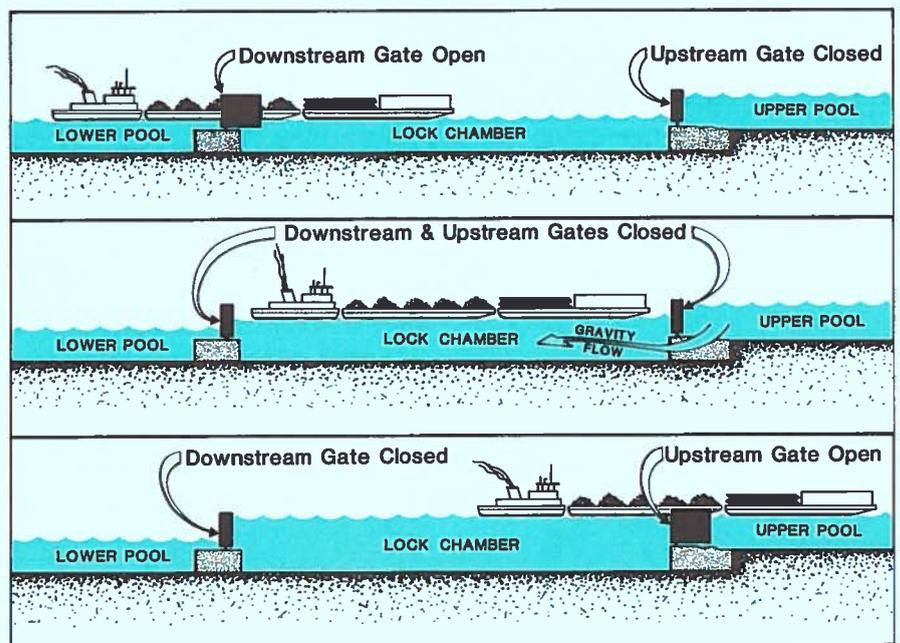
"In 1971, the first year the waterway was open, barges moved 4.3 million tons, and by 1981, the annual volume had reached 10.2 million tons," says Cheatham. "Early on, half the traffic on the navigation system was from one

point on the channel to another. Now about three-fourths of the tonnage comes from outside the system or is destined for places outside the Arkansas River Valley. And that's a good sign the waterway is strong and growing," says Cheatham.

Shippers of petroleum, coal, grains and other agricultural products, construction materials, steel products, chemicals and minerals understand the economy of barge transportation. And the entire outbound trip from Catoosa to the Mississippi takes only three to five days; to New Orleans, six to 10 days.

Two foreign trade zones enliven commerce along the waterway.

The waterway boasts two foreign trade zones—designated geographic areas—at the Ports of Catoosa and Little Rock. There goods can be imported, stored, sold, displayed or manufactured without being subject to quota restrictions, most customs formalities, duty or bonding. Products manufactured in the zone using foreign materials may be exported again without any import duty. Meanwhile,



To move upstream, a vessel enters the lower lock chamber with the upstream miter gate closed and the downstream miter gate open. (top) Then the downstream miter gate is closed behind the vessel in the lock and water from the upper pool flows by gravity into the lock through the valves until it fills the lock to the same level as the upper pool. (center) The upstream miter gate is opened and the vessel moves out into the upper pool. (bottom) A lock can be filled or emptied in just 15 minutes and no pumps are used.

American buyers can inspect and sample foreign goods before purchasing them and paying duty. And since foreign goods can be stored indefinitely, cash flow may improve because buyers will pay duty only on the portion of the shipment imported into the U.S. from the zone. Storage for any length of time lets the seller import goods now and hold them until the next quota period or until the best price is offered on the U.S. market.

A seven-member Waterways Advisory Board, appointed by Oklahoma Secretary of Commerce Don Paulson, advises Cheatham on matters relating to the development of the McClellan-



Chouteau Lock & Dam 17 on the channelized Verdigris River near Muskogee.

Kerr System and provides guidance to him, as director of the Waterways Division, on the formation, implementation and upgrading of a program of work. Four Board members are employed by a public or private inland river port having a terminal; one is an economist with a waterways background; the two remaining are associated with waterway development activities.

James R. Barnett, OWRB executive director, serves as an ex officio member of the Waterways Advisory Board.

Today, 150 years after the Comet's landmark voyage, the excitement lasts surrounding the McClellan-Kerr Arkansas River Navigation System. The enthusiasm of Oklahoma's waterway people in 1988 echoes the exuberance of the early river navigators.



Navigation Conference Set

The 18th Annual Navigation Conference will be held April 27-28 at the Camelot Inn in Tulsa. The meeting is jointly sponsored by U.S. Army Corps of Engineers and the Arkansas/Oklahoma Port Operators Association (AOPOA).

The theme of the conference is "The Challenges of the Future."

"Our waterway is now 18 years old," proclaimed AOPOA President Bob Portiss. "The glamour of our youthfulness must now make way for the challenges of responsibility and accountability. Our financial support will henceforth depend upon our proficiency, resourcefulness and wise investments."

According to Portiss, the meeting will include the unveiling of AOPOA's first strategic planning report for the entire McClellan-Kerr Arkansas River Navigation System. The report was the result of a strategic planning workshop held last month in Ft. Smith.

Red River Compact Meets

Oklahoma will be one of four states attending the eighth annual meeting of the Red River Compact Commission to be held April 26 in Texarkana, Texas.

The Compact Commission is made up of states in the Red River drainage basin—Texas, Oklahoma, Arkansas and Louisiana. Oklahoma is involved in four interstate stream compacts which serve to ensure fair shares of stream water for each member state. Increasingly though, these compact meetings have focused on present and potential pollution problems shared in interstate waters.

Oklahoma is represented by two compact commissioners, OWRB Executive Director James R. Barnett and L. L. "Red" Males of Cheyenne, Oklahoma.

Males, a lifelong soil and water conservationist, served on the nine-member Water Board for 23 years. He also helped initiate the Sandstone Creek Project, the world's first upstream flood prevention works. In February of this year, Males was appointed to an additional term as Red River Compact Commissioner.



OWRB employees (from left) Jerry Black, Terry Lyhane, Bill Swain, Lenora Guiles and Derrick Smithee prepare mixed samples of minerals, nutrients, metals and toxics for use in Oklahoma's semi-annual laboratory certification program. On April 6, samples were mailed to 210 participating labs to ascertain their ability to analyze industrial wastewaters. Results are due by May 6, according to Lyhane, program coordinator.

Texas Site Ruled Out

The U.S. Department of Energy has been ordered by Congress to stop studies at two of three proposed high level nuclear waste disposal sites.

Sites in Hanford, Washington and Deaf Smith County, Texas were re-

moved from the list of proposed locations for the controversial operation. The DOE was authorized by Congress to conduct a characterization study at the remaining site in Yucca Mountain, Nevada. The study will address the suitability of Yucca Mountain for nu-

clear waste storage.

The proposed site in Deaf Smith County received much criticism due to its location directly above the Ogallala Aquifer, the primary irrigation source for farms in the Texas and Oklahoma panhandles.

ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS AS OF MARCH 21, 1988

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY	PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
SOUTHEAST			Wister	27,100	100.0
Atoka	123,475	100.0	Sardis	302,500	100.0
Broken Bow	911,719	99.3	NORTHEAST		
Pine Creek	77,700	100.0	Eucha	79,567	100.0
Hugo	157,600	100.0	Grand	1,484,900	99.5
McGee Creek	_____	_____ ¹	Oologah	544,240	100.0
CENTRAL			Hulah	30,594	100.0
Thunderbird	105,925	100.0	Fort Gibson	365,200	100.0
Hefner	75,355	100.0	Heyburn	6,600	100.0
Overholser	14,329	89.9	Birch	19,200	100.0
Draper	78,235	78.2	Hudson	161,056	80.4
Arcadia	27,390	100.0	Spavinaw	30,000	100.0
SOUTH CENTRAL			Copan	43,400	100.0
Arbuckle	62,571	100.0	Skiatook	319,400	100.0
Texoma	2,637,700	100.0	NORTH CENTRAL		
Waurika	203,100	100.0	Kaw	428,600	100.0
SOUTHWEST			Keystone	616,000	100.0
Altus	132,886	100.0	NORTHWEST		
Fort Cobb	78,423	100.0	Canton	96,548	99.0
Foss	157,199	64.5 ²	Optima	3,000	_____ ¹
Tom Steed	88,971	100.0	Fort Supply	13,900	100.0
EAST CENTRAL			Great Salt Plains	31,400	100.0
Eufaula	2,329,700	100.0			
Tenkiller	627,500	100.0			
			STATE TOTALS	12,489,983	98.7³

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.

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