



THE TIME IT NEVER RAINED

How Texas water management has changed because of recurring droughts

It crept up out of Mexico, touching first along the brackish Pecos and spreading then in all directions, a cancerous blight burning a scar upon the land.

Just another dry spell, men said at first. Ranchers watched waterholes recede to brown puddles of mud that their livestock would not touch. They watched the rank weeds shrivel as the west wind relentlessly sought them out and smothered them with its hot breath. They watched the grass slowly lose its green, then curl and fire up like dying cornstalks.

Farmers watched their cotton make an early bloom in its stunted top, produce a few half-hearted bolls and then wither.

Men grumbled, but you learned to live with the dry spells if you stayed in West Texas; there were more dry spells than wet ones. No one expected another drouth like that of '33. And the really big dries like 1918 came once in a lifetime.

Why worry? They said. It would rain this fall. It always had.

But it didn't. And many a boy would become a man before the land was green again.

Prologue, *The Time It Never Rained*, by Elmer Kelton →

Dust storms inundate Amarillo from January through March. Seven times, the visibility declines to zero. One complete blackout lasts 11 hours, and one storm rages for 3 1/2 days.

The highest temperature of 120°F is recorded in Seymour on August 12.

LCRA board of directors approves the installation of 50 rain gauges, which initiates the first comprehensive watershed reporting system in Texas.

The Texas State Soil and Water Conservation Board is established to enforce the state's soil and water conservation laws.

1935

1936

1937

1938

1939

Drought

TIMELINE OF DROUGHTS IN TEXAS



The Time It Never Rained, a historical novel by Elmer Kelton, embodies Texas' drought of record that lasted from 1950 to 1957. The book reflects many of the experiences Texans, especially rural Texans, had during the worst drought in recorded history.

Ranchers sold entire herds of livestock. Farmers watched as their crops shriveled and blew away.

Comal Springs stopped flowing out of the Edwards Aquifer for the first and only time in recorded history.

Rural towns turned into ghost towns when the agricultural population fell by 35 percent. Dallas built pumping stations to pump water out of the salty Red River, making it flow by gravity to Lake Dallas. Once the water arrived in Dallas, people were afraid to drink or use it because of the damage it might do to their families, their water pipes and their laundries. In 1952 the Cotton Bowl, the stadium at Fair Park in Dallas, drilled its own water well within the stadium to water its turf because Dallas could not furnish the water.

By the end of the drought, 244 of 254 counties in Texas were classified as disaster areas. The cost of the drought is estimated at about \$3.5 billion (in 2008 dollars) for each year from 1950 to 1957.

Those experiences are etched into the minds of Texans. And those memories were translated into major changes in the way the state of Texas managed and regulated its water.

TWDB formed

One of the first actions the Texas Legislature took after the 1950s drought was the establishment of the Texas Water Development Board (TWDB) in 1957. The new state agency was charged with forecasting water supply needs and providing funding for water conservation and water supply projects. Today, the

TWDB is responsible for state water plans that, in part, forecast the water needed by the state in times of drought.

Reservoirs built

To help the new water board with its mission, the Texas Legislature also presented Texans with a constitutional amendment in 1957, authorizing the issuance of \$200 million in general revenue bonds for TWDB to make loans to municipalities for use in the conservation and development of water resources.

“Because of that and subsequent bonding authority, as well as water providers stepping up themselves to respond to that drought, there was quite an increase in reservoir construction across the state,” said Dr. Robert Mace, deputy executive administrator of TWDB’s Water Science and Conservation program area.

More than 126 major reservoirs were constructed from 1957 to 1980.

Water planning

Along with the creation of the TWDB, the Legislature passed the Water Planning Act of 1957, which mandated that the Texas Board of Water Engineers (later renamed the Texas Water Commission) develop a plan to meet the state’s future water needs.

“That plan was published in 1961. So that really formally kicked off what we would call state water planning in Texas,” Mace said.

“This blueprint of how the state would deal with another drought of record showed how seriously everyone took that drought,” said Dr. Todd Votteler, executive manager of intergovernmental relations and policy for the Guadalupe-Blanco River Authority.

Having been twice destroyed by floods, the Austin Dam (later renamed the Tom Miller Dam) is reconstructed by LCRA and is owned by the city of Austin.



The United States signs a water treaty with Mexico for allocation of the waters of the Rio Grande below Fort Quitman, Texas.



Surface water rights overhaul

Droughts in Texas have also brought major changes in the state’s surface water rights management. A water right is a legal right to divert surface waters for a beneficial use. Although today the state owns the surface water in Texas and grants the right to use this water to different people and entities, it was not always that way.

Dr. Ronald Kaiser, chair of the Texas A&M University Interdisciplinary Graduate Water Degree Program, said the state’s challenges with water rights go back further than the 1950s drought, to the droughts of the late 1880s and early 1890s.

The riparian doctrine that Texas used at the time, in which landowners adjacent to a stream or river had a right to use the water, “proved unworkable in resolving water scarcity conflicts, forcing the Texas Legislature to change its water allocation law,” he said. “Relying on the water law experiences of western states, the Texas Legislature incrementally adopted the prior appropriation doctrine. In adopting appropriation principles, the Legislature preserved water rights granted under civil law and riparian.”

Prior appropriation is based on “first-in-time, first-in-right,” which gives the water first to the most senior water rights holder, or the entity or person that had a water right in the river or stream earlier in time, before junior water right holders during times of scarcity and drought.

“This system presented few problems when water was available to satisfy all users,” he said. “However, during drought conflicts arose.”

Those conflicts were brought to a head in a massive lawsuit filed in 1953. The state of Texas filed a lawsuit, referred to as the Valley Water Case,

against a Rio Grande Valley irrigation district. The state asked the court to adjudicate the water rights in the Rio Grande Valley because the water rights claims based on civil law, riparian law and the prior appropriation system exceeded the amount of water available in the Rio Grande, said Kaiser, who is also a professor in Texas A&M’s Department of Recreation, Park and Tourism Sciences.

The suit took years to resolve and involved about 3,000 parties seeking rights to a limited supply of water in the Rio Grande.

“This case illustrated that 78 years of legislative and judicial attempts to reconcile the two systems were expensive and lengthy, and that another approach was needed,” Kaiser said.

A district court judge took possession of the United States’ share of Rio Grande waters, reassigning the rights and establishing the Rio Grande Watermaster.

Carlos Rubinstein, head of the Texas Commission on Environmental Quality (TCEQ), said that by reassigning the rights, the judge “created the new way of managing water in the lower Rio Grande where priority was based on the type of water use, with municipal uses having the highest priority.

“Because of the lawsuit, water rights in the Rio Grande downstream of Amistad Reservoir, unlike the rest of Texas surface water rights, are not based on seniority,” he said. “Instead, the Rio Grande Watermaster controls water allocations under a complex system that is designed to apportion water first for municipal, domestic and industrial uses, then to irrigation districts and agriculture uses.

“It was a significant departure on how water rights in the West are managed,” Rubinstein said. “For the lower Rio Grande below Amistad now, we don’t ⇒

The Legislature authorizes the Texas Department of Health to enforce drinking water standards for public water supply systems.

Of the 194 electric power plants in Texas, 26 are hydroelectric, generating about 15 percent of the state’s electric power.

Of the nearly 30 million acres in Texas agriculture, about 3 million acres are irrigated. Almost 30,000 farms use irrigation systems.

The Texas Legislature declares groundwater to be private property. The Legislature also provides for the voluntary establishment of underground water conservation districts.

1945

1946

1947

1948

1949

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have a priority date. Everywhere else in Texas we have a priority date when it comes to water rights.”

Today the state has two additional watermaster programs—South Texas Watermaster Program and Concho River Watermaster Program—that manage, monitor and enforce surface water rights based on priority date and ensure compliance with water rights by monitoring stream flows, reservoir levels and water use.

In 1967, the Texas Legislature passed the Water Rights Adjudications Act, merging the riparian rights system into the prior appropriations system, thus consolidating the allocation of surface water into a unified water permit system, Kaiser said. The Texas Water Rights Commission, a predecessor to TCEQ, was given charge of surface water rights.

Comal Springs and groundwater

When Comal Springs dried up in 1956, another conflict eventually ensued.

In 1991, the Sierra Club filed a lawsuit under the Federal Endangered Species Act. The federal judge in the case, *Sierra Club v. Babbitt*, ruled that limits on the use of the Edwards Aquifer were needed to protect endangered species found in Comal and San Marcos springs. The best solution, he said, was for the state to manage the aquifer, and in 1993, the Texas Legislature created the Edwards Aquifer Authority (EAA) to regulate groundwater in the aquifer.

The Legislature directed the EAA to regulate pumping from the aquifer, implement critical period management restrictions and pursue measures to ensure minimum continuous springflows of the Comal and San Marcos springs are maintained to protect endangered and threatened species,

according to the Edwards Aquifer Recovery Implementation Program website.

“Giving the Edwards Aquifer Authority the authority to regulate groundwater changed the landscape and represented a fundamental change in groundwater law in Texas,” Votteler said. “You saw an explosion in creation of groundwater districts once the Texas Supreme Court decided the regulatory powers of the Edwards Aquifer Authority were constitutional. The Court gave the Legislature the green light to create districts that could regulate groundwater.”

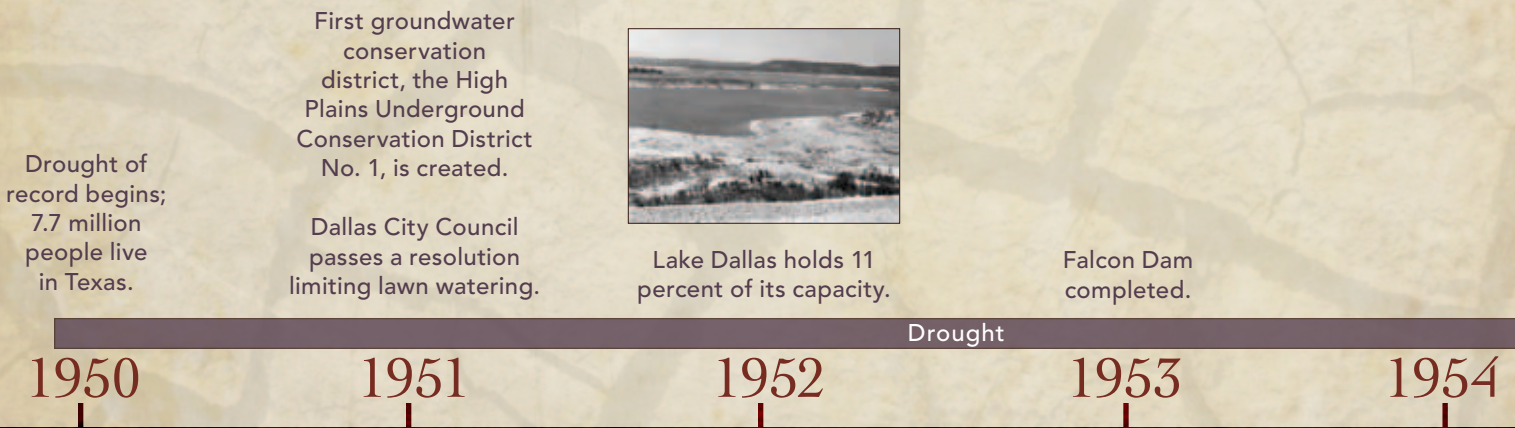
More droughts, more changes

After the drought in 1995–1996, the Texas Legislature passed Senate Bill 1, probably the most comprehensive water bill in the state’s history. One of the major changes was the state water planning process.

“Initially the planning process was a top-down approach,” Mace said. “It wasn’t until 1997, after another drought in 1996 and the passage of Senate Bill 1, that a regional water planning concept—a ‘bottom-up’ approach—was developed.”

Senate Bill 1 established 16 regional water planning groups that include members representing agriculture, industry, the environment, cities, water utilities, power companies and other interests. The bill also required the TWDB to publish a comprehensive state water plan every five years and base its projections on a 50-year planning horizon.

Mace said the drought in 1996 served as a wake-up call that perhaps the state wasn’t as ready for a drought as it should be, and the state water planning approach needed revising.



Lake Dallas holds 11 percent of its capacity.

“The concern was that the stakeholders, the local folks, weren’t familiar with the plan and hadn’t participated in the development of the plan,” Mace said. With the regional water planning adopted in Senate Bill 1, the local groups “were in the driver’s seat of the planning process with state oversight. The regional water planning groups now make decisions on what projects or strategies need to get used to make sure the state was ready for a drought.”

Votteler agreed that working on water issues through the state water plan is a priority for the state, but the plan is just half of the equation. “The other half of the equation is how we would finance the projects in the plan,” he said. “That has never been resolved. The Legislature has struggled with that issue and continues to struggle with it.”

He believes that lack of adequate funds is mainly because the state has not had another serious multiyear drought for a number of decades. “People were lulled into complacency,” he said. “Since the 1980s we have had many one- to two-year droughts, and they have terrible impacts, particularly on agriculture, but large municipal and industrial users of water have not been affected as seriously. And so it is not spurring people to action.”

Senate Bill 1 also required water suppliers to develop drought contingency plans that list how they are going to respond when drought comes.

Drought Preparedness Council

In the midst of another drought, the Drought Preparedness Council was created by the 76th Texas Legislature in 1999. The council is a collection of state agencies that coordinate activities on drought. The council develops and implements a comprehensive state drought preparedness plan, separate from the state water plan, for mitigating the effects of drought in the state.

Current drought

Have all the changes in policies, laws and agencies through the years made a difference in the current drought?

“They absolutely have,” Rubinstein said. “We learn from every drought. And each one leads to identification of things that you might need to look at in statutes or in rules to manage droughts in the future as well.

“That is indicative of what occurred in our sunset bill, where we actually got some additional clarifying authority on how we manage water rights,” he said, adding that the bill was a result of what the state learned from the 2009 drought.

TCEQ has curtailed junior water rights this year to meet at least 12 senior priority rights calls.

“What we would do in a watermaster area, relative to the monitoring of river conditions and ordering curtailments where needed, we’re doing that statewide,” Rubinstein said.

If the commission is not going to curtail the water rights, it can adjust the diversion rate, he said.

“We (the commission) can adjust the diversion rate of a water rights holder, and that’s a way of making it work for everyone,” Rubinstein said. “If you’re a junior rights holder and you can satisfy your demands and save over 30 percent of what you’re entitled to by not diverting other water so that we can make water available to senior water rights holders downstream, then it’s good for us to have the ability to do that rather than to cut you off entirely.

“When you’re dealing with an emergency, such as a drought, and trying to mitigate it, you don’t want to go create another emergency, such as curtailing water rights inappropriately and creating a public health concern,” he said. “We do take into account ➔



The Trinity River Authority is created by the Texas Legislature.

President Eisenhower declares 244 of the state’s 254 counties as drought disaster counties.

Heavy, general rains begin. Legislature creates Texas Water Development Board (TWDB), in part to protect against the devastating effects of this drought.

The Water Planning Act of 1957 mandates a process for developing a plan to meet the state’s future water needs.

Drought

1955

1956

1957

1958

1959

TIMELINE OF DROUGHTS IN TEXAS



what it means to shut down a city that happens to be a junior water rights holder.

“When you are in a drought, the watermaster has access to more current data and a constant interaction with the users that allows him to more quickly respond to water shortages,” Rubinstein said. “When you’re looking at how to best utilize state water, you’re able to determine where and what actions you could take to stretch that water as far as you can to meet the demands. We’ve taken the things that we’ve learned from watermaster areas, applied them not only in the 2009 drought but in the drought of this year, in the areas where we don’t have a watermaster.”

Mace said he believes the water planning process adopted by the state has made a difference in its ability to cope with the current drought. “Are we where we need to be with implementation?” he said. “No.”

“One thing to remember is that it’s a plan. So there’s still the responsibility of individual water suppliers and cities to implement that plan to make sure they’re ready for the next serious drought,” he said.

“The plan, at the very least, gets people thinking about the fact that we’ve had really bad drought in the past—therefore, we could have really bad drought in the future—and ask the question, ‘What do we need to do to make sure we have enough water?’ But then it’s contingent upon the local leadership to ensure that those strategies get employed, or put into place, before the next drought hits.”


Votteler agreed that the state is in better shape after the massive effort to develop the water planning process to get the state through the next drought of record. “However, once we achieved having those water supplies online in the 1980s, the effort didn’t continue,” he said. “As new residents have flooded into the state, the surplus has evaporated.”

A look to the future

Mace said he is concerned about how this drought is being conveyed to Texans as the worst drought on record. Because drought can be measured in different ways, this drought may be one of the most intense, but at least for now, it is not the longest, and the impact on water supplies and agriculture is not as great as the 1950s drought.

“Now if it rains this winter, people might walk away from it, going, ‘Well shoot, I just lived through the drought of record, and it wasn’t all that bad,’” he said. “But if conditions like this go on for another five years, you can imagine what that would do to stressing everybody’s water resources. This drought doesn’t have anything on the drought of the ‘50s yet.”

“The last year of that drought was still fiercer, as far as the Palmer Drought Severity Index is concerned, than this current drought, but its persistence is what was really damaging.”

“People need to ask themselves the question, ‘What if this drought lasted another five years? How would we be doing with our water supplies?’ These are the questions the water planners are asking.” 

The water planning process in Texas begins.

The Texas legislature prohibits the establishment of additional water districts except for water control and improvement and underground water conservation districts.

A disastrous cold wave comparable to the cold waves of 1899 and 1951 comes January 9–12. Low temperatures hit -15°F in the Panhandle. Agricultural losses are \$50 million.

In the case of Harris County Fresh Water Supply District, No. 55 v. Carr, the courts determine that the prohibition of creating certain types of water districts is unconstitutional.

Drought

1960

1961

1962

1963

1964



Remembering the past

Memories and recollections of the 1950s drought

The Time It Never Rained is a historical novel about the 1950s drought of record, written by Elmer Kelton, who was a novelist and longtime editor of *Livestock Weekly*. After the book was published, many people thought Kelton crafted the story after their parents or grandparents. He didn't, but the experiences in the book were realistic. The following are accounts from Kelton's book as well as from Texans who remember what it was like during those drought years.

"That was my growing up years. I graduated from college in '60. So I went (to that school) throughout the 1950s. I remember my dad saying subsequent to that time that we could always get feed up—high gear, what we call hay-grazer now, Sudan back then.

"We had more cattle on our place then than we've ever run since then; I'm not exactly sure how we did that because as many cattle as we had then and, of course, before that time, I don't know what it looked like in the 1940s. I do know that 1941 was the wettest year on record for all of the Southwest, so probably that had some impact on our abilities to run more livestock.

"Following the drought of the 1950s, in many areas in the Southwest, mesquite became much more of a problem, much more prevalent. We could drive anywhere we wanted to on our place; we had mesquite but we could still get around in a pickup anywhere we wanted to go. After the 1950s, we had

some wet years in the 1960s, and in the 1970s my dad looked out over the place and he said, 'Oh, where did all these mesquite come from?'"

Ron Sosebee

Professor Emeritus with Texas Tech University's Department of Natural Resources Management and 40-year expert on battling the brutal effects of Texas' droughts

"Six years," Charlie said, counting on his fingers. "It's a blessin' the Lord never gave us the gift of prophecy. If we'd known when we started that we'd still be in it six years later, I think we'd of all gone and jumped into the Concho River. I get to thinkin' sometimes that maybe drouth is the normal condition here and the rainy years are the freaks."

Charlie Flagg

Chapter 15

The Time It Never Rained, by Elmer Kelton

"The drought of the 1950s was a lot like the drought we are in right now. I don't remember as many trees dying in the 1950s as you see now, but then again, this 'ole prairie didn't hardly have any trees on it. There weren't even that many trees down in the creek bottoms then, either.

"The prairie land we farmed was so dry and cracked so bad that you literally had to watch your ⇒

The Sam Rayburn Dam and Reservoir is completed near Jasper, along with Lake Waco on the Bosque River in McLennan County.

Legislature passes the Water Rights Adjudication Act; it consolidates all surface water rights into a unified system by transforming previously held Spanish and Mexican grants, riparian water rights and claims into "certificates of adjudication."

TWDB adopts second state water plan, recommending 62 new reservoirs and addressing issues surrounding drainage, water quality, recreation, and fish and wildlife.

Amistad Dam on the Rio Grande is completed; Toledo Bend Reservoir in far East Texas is completed by damming the Sabine River.

Drought

1965

1966

1967

1968

1969

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step to make sure you didn't step in one of the cracks. There weren't too many water wells in the country back then, so folks would have to drive their livestock down to holes in the creeks for water. Eventually the creeks stopped running, and folks would dig big holes in the creek bottoms, board up the sides and let them fill in with water. That was really the only source of water for the livestock. Luckily, back then nobody really had many cattle. Mostly folks would have a few mules and a milk cow or two, so livestock water wasn't as important then as it is now.

"It got so dry that nobody really even planted; there wasn't any use in doing so."

Frank Oliver Gilbert, Jr.

Flynn, Texas, who lived in Leona in the 1950s
Grandfather of Lucas Gregory of TWRI and IRNR

For a long time Charlie Flagg had watched other men burn the thorns from prickly pear so their livestock could chew the pulpy green leaves. He had sworn that Rio Seco would have six inches of snow on the Fourth of July before he would subject his animals to eating cactus. Now he found himself face-to-face with necessity. The low-growing cactus he had fought for years was, finally, to be what saved him—if anything could.

Chapter 14

The Time It Never Rained, by Elmer Kelton

"I remember the drought of the 1950s as a 6- to 11-year-old boy living on a farm in the southern Rolling Plains of West Texas. 1952 was a particularly bad year with almost no measurable rainfall.

Sandstorms were very bad, and so bad on one occasion that near midday a dust storm rolled in and the sky was just black, so black that the chickens went to roost and we had to use lights in the house. My mother announced that it was a total eclipse of the sun.

"During that time, with no rain to grow grass to feed our cows, we had to resort to raking up mesquite beans to feed the milk cows. Also, with so little cotton and grain harvest from our fields, my father had to obtain work off the farm to keep his family of a wife and four boys fed.

"Those years from 1951 to 1957 were mighty lean years for farmers. Fortunately, we had understanding and patient bankers. Farm income almost came to an end, but in 1957 the rains returned and so did the bumper crops."

B.L. Harris

Former Acting Director and Associate Director of
Texas Water Resources Institute

Time was when an inch of rain would have brought fresh life, a greening to the land. But there had been grass then, a spongy turf to soak up and hold the moisture, and live roots to draw sustenance from it. Now the bare ground had nothing to soften the impact of rain, to catch and drink up the water. The first burst of precipitation would pack and seal the topsoil. The falling raindrops would strike hard and splash upward, brown with mud. Instead of soaking in, the water would swirl and run away, following the contours of the land, seeking out the draws and swales.

Chapter 14

The Time It Never Rained, by Elmer Kelton

The Texas Legislature authorizes the creation of municipal utility districts.

The U.S. Congress passes the Federal Clean Water Act, which requires standards for all point source discharges into receiving water bodies. The law requires a minimum of secondary treatment of all municipal sewage water.

The U.S. Congress enacts the Safe Drinking Water Act.

Drought

1970

1971

1972

1973

1974

“In 1956 the economy was very, very bad. Grandpa was Sheetrocking for our living from 1953, and jobs kept getting more scarce all the time, until we just were barely making it already. Since we lived here in Houston, we really can’t remember that much about a drought.... I guess we were watering so much anyhow since April of 1954 because we had to hand-plant our whole yard with squares of grass.

“Grandpa asked our longtime friend, Erwin Gross, what he remembered about drought around 1956; he said he remembered they were living on sandy land at the time, and it was so very dry that sand just flew on everything and stuck onto the roofs of everything. Then when it finally started raining, it was like it was raining mud ... so much sand had accumulated on the roofs and stuck so that it was actually like raining mud as it ran off the buildings.”



LaVerne Pivonka recounts memories of the 1950s drought with her granddaughter, Danielle Supercinski Kalisek of TWRI and IRNR.

LaVerne Pivonka

Houston resident
Grandmother of Danielle Supercinski Kalisek
of TWRI and IRNR

He (Charlie Flagg) turned his back on all he had lost, and they walked together through the cold rain.
Last paragraph in *The Time It Never Rained*
by Elmer Kelton

If you have memories of the 1950s drought, TWRI would like to hear from you. Please email twri@tamu.edu and send us your story. We'll feature them on our website with this story. 💧

Construction begins on the Lake Fork Dam and Reservoir to provide industrial and municipal water for the cities of Longview and Dallas.



A pair of sandstorms ruin \$6 million worth of Panhandle winter wheat and injure 20 people in El Paso.

Several reservoirs are completed, including Lake Limestone, Lake Granger, Lake Georgetown, and the Lake Fork Dam and Reservoir.

1975

1976

1977

1978

1979

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