Walks through History
Mammoth Spring Dam & Lake
June 12, 2010
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Intro

Hi, my name is Rachel Silva, and I work for the Arkansas Historic Preservation Program. Welcome to the June Walks through History tour of the Mammoth Spring Dam & Lake. I'd like to thank Dave Jackson and Glynda Pryor for their help gathering research materials on the dam and for allowing us to tour the facilities today. The Mammoth Spring Dam was listed on the National Register of Historic Places in July 2009.

Brief History of Mammoth Spring

Fulton County was established on December 21, 1842, from part of Izard County. Fulton County was named after William Savin Fulton, who was the last territorial governor of Arkansas (1835-36).

Early white settlement in the area that would become Mammoth Spring started a few miles north of the Arkansas-Missouri state line in 1818 when Ridley Thomas built a cabin near the Harry Turnstall spring. This area is now called "Old Town" because many people relocated when it became clear that the Kansas City, Fort

Scott, and Memphis Railroad would run their lines a few miles to the south through the current location of Mammoth Spring in 1883.

However, some people did settle immediately around the Mammoth Spring head beginning in the late 1820s. At that time, Mammoth Spring was referred to as "the Big Spring," and the surrounding area was called "Head of the River." William Lindley held an unofficial claim on a 40-acre tract that included the springhead, or so he thought. When Lindley sold his unofficial claim to William Allen in 1830, Allen attempted to secure a formal legal title to the land. Much to his dismay, Allen discovered that the section lines running north-south and east-west went directly through the center of Mammoth Spring. Therefore, property disputes arose over the ownership of Mammoth Spring, with as many as four people claiming the actual springhead and even more claiming the outflow of the spring downriver. This ownership dispute continued until the late 1880s when the property was consolidated into a single tract. Meanwhile, the Lindley and Allen families built cabins on a hillside just to the north of the spring, and Allen constructed the first mill in 1836. This mill did not stimulate commercial development because it was small and intended for the family's private use.

The area known as "Head of the River" slowly began to grow in 1850, when brothers William and Joe Mills constructed a larger grist mill and dam on the spring. The Mills brothers also opened the first store in the region, which was operated by William's father-in-law, Daniel Woolford. The settlement had about 25 residents in the early 1850s, but the population would increase by the end of the decade as a result of a state report promoting the geological resources of the area.

Arkansas's first state geologist, Dr. David Dale Owen, conducted the first official survey of Arkansas's northern counties in 1857. In his report, Dr. Owen referred to "the Big Spring" as "Mammoth Spring" because it was thought to be the world's largest spring (actually the world's 7th largest spring). Owen determined that the source of the Spring River was Mammoth Spring, which was an up swell of water from an extensive system of underground rivers beginning in Missouri. Mammoth Spring is the largest natural spring in Arkansas and one of the largest springs in the world. Mammoth Spring produces an average of 9.78 million gallons of water per hour at a constant temperature of 58 degrees Fahrenheit. The spring's dependable flow year-round would make it ideal for powering manufacturing industries in the late 19th and early 20th centuries.

In 1874 the Deaderick family purchased the spring and improved the settlement by adding a flour mill and cotton gin to the existing corn mill, and in 1880, J. Smith

Deaderick opened a store. By 1881, the Kansas City, Fort Scott, and Memphis Railroad planned to construct its lines through Fulton County as it completed its route between Memphis, TN, and Springfield, MO. Because the Deadericks knew that their village was not prepared to make the transition to a bustling railroad town, J. Smith Deaderick platted the town of Mammoth Spring the same year. The plat was recorded at the county courthouse in Salem in 1883, just in time for the arrival of the railroad.

Napoleon Hill

The year 1886 represented a major turning point in the history of Mammoth Spring. Napoleon Hill, a wealthy investor from Memphis, TN, first arrived in Mammoth Spring in the summer of 1886. Hill was en route to Kansas City when his train stopped briefly in Mammoth Spring. The Kansas City, Fort Scott, and Memphis Railroad Depot in Mammoth Spring (NR-listed 6/11/1992) was completed in 1886, just to the southeast of the Mammoth Spring head. When Hill stepped off the train at the depot on that hot summer day, he felt the cool breeze coming off the 58-degree spring water and never forgot it. Hill returned to Mammoth Spring later that year with a group of wealthy businessmen, and because he realized the potential of harnessing the spring's water power, the group bought the spring and a significant amount of land throughout the town.

The Memphis capitalists formed the Mammoth Spring Improvement and Water Power Company and resurveyed the town to encompass a larger area. These investors also began construction of the town's first substantial brick buildings. Just 6 months after the creation of the improvement company, the population increased to 500, and the town shipped 3,000 bales of cotton and $20,000 in fruits and vegetables. The town also boasted three hotels, a lodge hall, and several boarding houses.

Mammoth Spring Dam constructed

The Mammoth Spring Improvement and Water Power Company, headed by Napoleon Hill, invested $200,000 in the construction of a dam, flour mill, and cotton mill. The Mammoth Spring Dam was completed in 1888 and powered the Mammoth Spring Roller Mill and Elevator, which ground soft wheat into flour, and the Mammoth Spring Cotton Mill and Cotton Gin (roller mill & cotton mill completed about 1889). The dam created a 16-acre water reservoir called Spring Lake, and water from Mammoth Spring constantly ran over the top of the dam weir. The Mammoth Spring Dam was made of cut limestone set in a concrete

footing on solid rock. Turbines, which provided power to the mills, were located in 30' x 30' cut limestone turbine wells on each end of the dam; the roller mill was located adjacent to the south turbine well, while the cotton mill was near the north turbine well. The dam measured approximately 198' in length, including the two turbine wells, with a 10' base and a 7' spillway. Three sluice gates were located in each turbine well, and two deep sluice gates were evenly spaced along the spillway.

The Mammoth Spring Dam is a unique intact example of an early stone masonry gravity dam, initially constructed to divert water to power a grist mill and cotton mill and later a hydroelectric power plant. Dams have historically been built for the purpose of either diverting or storing water. Diversion dams typically redirect water for use elsewhere, such as in irrigation channels or toward smaller canals where hydroelectric power can be generated. The Mammoth Spring Dam powered the grist mill and cotton mill with a system of turbines connected to gear systems, which ran mechanical belt drives that turned a shaft inside each factory that powered the necessary machinery. Following the development of electric generators in the late nineteenth century, the Mammoth Spring Dam was retrofitted with new turbines and a generator in 1927 to generate hydroelectricity. Diversion dams are usually built to allow water to periodically over-top the dam, or in the case of the Mammoth Spring Dam, water is constantly allowed to over-top the dam because the spring constantly replenishes Spring Lake.

Gravity dams are those in which "the force of gravity acting on the dam is what provides structural stability." In other words, the construction of a gravity dam is based on using enough construction material to resist the force of the stored water to push it downstream. Early gravity dams were constructed with earth, rock, or timber. The Mammoth Spring Dam is made of six large limestone slabs, which are stacked on top of each other with the widest slab at the bottom and the thinnest slab at the top, creating a series of steps.

Three other nineteenth century stone masonry gravity dams in Arkansas are listed on the National Register of Historic Places—the Osage Mills Dam in Benton County (NR-listed 1/28/1988), the Ruddell Mill Site in Independence County (NR-listed 8/28/2007), and the Spring Mill in Independence County (NR-listed 3/1/1974). However, these dams are much smaller in scale than the Mammoth Spring Dam, and the bodies of water controlled by the dams cannot compare to the volume of water produced by Mammoth Spring and Spring Lake. In addition, the Mammoth Spring Dam is unique because it was later converted into a hydroelectric power plant and provided electricity to a sizeable population. For

these reasons, the Mammoth Spring Dam and Spring Lake have statewide significance.

The construction of the Mammoth Spring Dam, Roller Mill, and Cotton Mill spurred additional commercial and industrial development in the area, which ultimately led to the settlement formerly known as "Head of the River" adopting the name Dr. Owen had given the spring in 1857—Mammoth Spring. The city of Mammoth Spring incorporated on June 15, 1889, and enjoyed a booming economy based on industry and tourism from the 1880s until the 1920s. By March 1897, Mammoth Spring had a population of 950 and various amenities in addition to the cotton mill, gin, and roller mill, such as an opera house, three hotels, numerous boarding houses, groceries, banks, hardware/furniture stores, dry goods stores, millineries, and a lumber yard. The Mammoth Spring Roller Mill and Elevator, which consisted of a 4-story brick Second Empire-style building, a large grain elevator, and two warehouses, operated successfully for many years. It was destroyed by fire in the late 1920s. The Mammoth Spring Cotton Mill and Cotton Gin was a large-scale operation and the city's largest employer in 1889; it included a 2-story brick building with 132 looms as well as a gin and several ancillary structures. The cotton mill ran for at least six years before "antiquated machinery" forced it to close. The mill building remained vacant until 1906 when the Arkansas Shoe Manufacturing Company leased it and began operations in July 1907. Financial difficulties caused the shoe factory to close after only six months. The building remained vacant for a period, but by 1914, the brick cotton mill building was used as an electrical supply and repair shop and the Planter's Gin Company moved into the old gin building. These buildings were demolished sometime after 1926. Only the Mammoth Spring Dam remains as evidence of the town's industrialization.

Tourist destination

In addition to providing power for the factories, the Mammoth Spring Dam created Spring Lake and became a popular tourist destination itself, with visitors often having their photo taken on or near the dam. After the railroad's completion in 1883, people traveled to Mammoth Spring to witness the spring's impressive flow and enjoy the cool breezes coming off the 58-degree water. The Nettleton Hotel was completed in 1889, followed shortly by the Culp Hotel and the Charlton Hotel, providing up-scale accommodations for tourists. Just as Arkansas cities like Hot Springs (Garland County), Eureka Springs (Carroll County), and Heber Springs (Cleburne County) attracted people by touting the curative powers of their natural spring water, Mammoth Spring "profited from the health crazes of the late

nineteenth century, which recommended bathing in hot natural springs as a cure for a host of physical ailments."

Napoleon Hill and his business associates heavily promoted Mammoth Spring as a resort town, and Mammoth Spring soon became the summer destination of choice for wealthy Memphians and residents of the Arkansas Delta. A circa 1934 pamphlet entitled "Mammoth Spring in the North Arkansas Ozarks Invites You Here, Where the Spring Pours from the Earth" advertised the Spring Beach Playground on Spring Lake, which was "equipped with amusements of various kinds, including a high-powered motor boat, row boats, cheereo to accommodate 30 to 40 kiddies, spring boards, dressing rooms with lockers for women and girls, men and boys, [and] a band stand out in the water where regular concerts make merry the surrounding." In addition, the pamphlet advertised Baertel's Log Cabin Tourist Camp, which was a group of 12 log cabins located on the west bank of the Spring River within sight distance of the spring. These cabins were equipped with the most modern conveniences, including running water, electric lights and fans, dishes, bedding, and showers. The advertisement invited tourists to spend time near "the most beautiful stream in America," where they could enjoy free shower baths, free swimming, free boats, good fishing, and a nearby golf course.

Bridge across Lake:

In order to provide access from downtown Mammoth Spring to the railroad depot, a wooden bridge (later replaced by a steel frame bridge) was constructed across Spring Lake. It was privately owned and was sold for scrap metal in the 1960s. You can still see the bridge abutment and a picture of how the bridge appeared.

The constant flow of cool water from Mammoth Spring and a close proximity to the railroad also made the area attractive to the United States Fish and Wildlife Service. They established the Mammoth Spring National Fish Hatchery in 1903 adjacent to the Roller Mill and Elevator. The fish hatchery obtains water directly from Spring Lake, drawing a constant flow of 3,500 gallons per minute. The reliable water supply allows the hatchery to raise a wide variety of fish. The hatchery stocked rivers and national wildlife refuges, including the Spring River and its tributaries, which added to the town's appeal as a tourist destination. The hatchery continues to operate in the same location and works to restore populations of endangered fish and aquatic species.

Ark-Mo Power Co.

The Arkansas-Missouri Power Company purchased the Mammoth Spring Dam in 1925 and converted it into a hydroelectric power plant. In 1927, the south turbine well was retrofitted with a new turbine and generator to provide electrical power, and a stone masonry powerhouse was constructed atop the south turbine well to house the equipment. The north turbine well was capped with a concrete slab at that time; however, the well still contains the original turbine and retains its three sluice gates. When the powerhouse started generating electricity in 1927, Mammoth Spring became the first town in the area to have electricity. The Mammoth Spring Dam powerhouse had an average annual net generation of 2,128,875 kilowatt-hours, eventually providing electricity to Mammoth Spring, AR, as well as Thayer, Koshkonong, Brandsville, and West Plains, MO. The Arkansas-Missouri Power Company operated the hydroelectric power plant until 1972, when it donated the plant to Arkansas State Parks.

See Ark-Mo Powerhouse (restored in 1993), which shows how the dam generated electricity—turbines and generator. Powerhouse has grapevine mortar.

Milling Company Vault

All that remains of the Mammoth Spring Milling Company is this concrete structure. It served as the company's vault, where they kept important documents and records. The company's safe and time clock are on display in the depot museum.

Mammoth Spring State Park established

Mammoth Spring State Park was established by an act of the Arkansas State Legislature in 1957, but the first land was not acquired until 1966. The abandoned Kansas City, Fort Scott, and Memphis Railroad Depot was leased to the park in 1968, and most of the land purchases were completed by 1975. Mammoth Spring State Park now encompasses a 62-acre tract of land, including the Mammoth Spring head; Spring Lake; the Mammoth Spring Dam and powerhouse; the Queen Anne-style Kansas City, Fort Scott, and Memphis Railroad Depot (1886); a Tourist Information Center; playground; picnic area; interpretive walking trail; and baseball field.

Depot

Built in 1886 as the Kansas City, Fort Scott, and Memphis RR Depot. Later the St. Louis & San Francisco or Frisco Depot. Influenced by the Queen Anne style of architecture with its steeply pitched dormer windows covered in decorative shingles. The railroad depot was completely restored as a museum in 1999. Also see a restored 1947 Frisco caboose.

Springhead:

Spring Lake was originally around 16 acres in size, but it has been reduced to about 9.5 acres. A weigh station was to be constructed near the springhead in 1972 just to the east of U.S. Hwy. 63, so the western portion of Spring Lake was filled with dirt to create enough space for it. The weigh station was never built, but the volume of Spring Lake was reduced. In addition, an island was built in the middle of the lake in the mid-1970s and a concrete cap was removed from the top of the dam, which further reduced the size of the lake. Even when the lake was larger, the power plant could only operate for 30 minutes out of every hour before it had to shut down and let the lake refill. After Spring Lake was considerably reduced in size, feasibility studies conducted in the 1980s and 1990s predicted that the powerhouse could only operate for 15 minutes out of every hour before stopping to let the lake refill. Therefore, the decision was made not to put the powerhouse back into operation.

Conclusion

When the St. Louis and San Francisco Railroad (now the Burlington Northern Santa Fe Railroad) stopped passenger service in 1968, Mammoth Spring became a relatively quiet community. However, a considerable amount of vehicular traffic still passes through the middle of Mammoth Spring since Hwy. 63 is the main route between Memphis, TN, and Springfield, MO. The City of Mammoth Spring still relies on the waters that gave it life in the late 1800s. Around 300,000 people visited Mammoth Spring State Park in 2008, and the Spring River is very popular among canoeists/kayakers and fishermen because of its reliable flow year-round.