A History of Flooding, Flood Control, and Hydropower on the Neosho (Grand) River

Submitted to: Grand River Dam Authority

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Introduction

The Neosho (Grand) River moves from north to south through Morris, Marion, Lyon, Coffey, Woodson, Allen, Neosho, Labette, and Cherokee Counties in Kansas, and Craig, Ottawa, Delaware, Mayes, Wagoner/Cherokee, and Muskogee Counties in Oklahoma (Figure 1). The river is commonly known as the Neosho River in Kansas and the Grand River (not to be confused with other Grand Rivers in Iowa, Michigan, Missouri, South Dakota, or Wisconsin) in Oklahoma. The official division between the two is where the Spring River merges with the Neosho River upstream from Pensacola Dam near Wyandotte, Oklahoma; downstream from this junction, the river is more commonly known as the Grand. For consistency, we use the term *Neosho River* throughout this report unless a historical document uses or quotes the term as *Grand River*.

The Neosho River is 460 miles long, with 297 of those miles in Kansas and the other 163 in Oklahoma.[1] The Neosho River floodplain "embraces about 264,300 acres, of which about 223,100 are in the reach above the Pensacola Dam site (mile 77) and 41,200 below that locality."[2] All major tributaries of the Neosho are upstream of the Pensacola Dam. From north to south, they are as follows: "Cottonwood River (mile 380), with a drainage area of 1,830 square miles in Kansas; Lightning Creek (mile 185), with 230 square miles in Kansas; Spring River (mile 131), with 2,655 square miles in Missouri, Kansas, Arkansas, and Oklahoma; and Elk River (mile 114), with 1,015 square miles in Missouri, Arkansas, and Oklahoma." Minor tributaries between Pensacola and the Fort Gibson Dam are "Cabin Creek (mile 68), with a drainage area of 490 square miles in Oklahoma; Spavinaw Creek (mile 61), with 400 square miles in Arkansas and Oklahoma; and Pryor Creek (mile 40), with 270 square miles in Oklahoma."[3] Only the last 2 miles of the Neosho River above its junction with the Arkansas are considered by the U.S. Army Corps of Engineers (USACE; the Corps) to be navigable.[4]

This report outlines two historical threads related to the Neosho River: the sheer number of floods that have occurred on the river since before non-Indigenous people arrived in the watershed and the development of the river for power production and flood control. The contours of the story are captured in three parts: Part 1 provides a detailed chronology from 1826 through 1919 of flooding on the Neosho River from its headwaters in Kansas to its junction with the Arkansas River. Part 2 tracks the parallel flood control efforts that people made at the state level in Kansas, at the territorial and then state level in Indian Territory/Oklahoma, and at the federal level in Washington, DC, and various regional agency or district offices prior to the creation of the Grand River Dam Authority in 1935. Part 3 traces the early history of attempts to develop power production on the Neosho River and how those efforts ultimately led to the creation of the Grand River Dam Authority (GRDA) and construction of the Pensacola Dam and Reservoir. Woven into the narrative of Part 3 is the complicated interplay between local, state, and federal entities as pertained to hydroelectric development versus flood control on the river, as embodied in the Pensacola Dam and

Reservoir (and subsequent dams and reservoirs on the Neosho and within the greater Neosho watershed). The planning, construction, and subsequent operation of the Pensacola Dam occurred during not only a time of great national economic, social, and political flux but also during a sea change in federal policies that would ultimately cement the role of the U.S. Army Corps of Engineers as primary overseer of all flood control efforts in the nation.

Despite a long history of flooding on the Neosho River in both Kansas and Oklahoma, the original designers and promoters of what would become the Pensacola Project were pushing for its use as a purely power-generating facility with the potential for only ancillary flood control benefits. By the late 1920, decades of attempts to construct a private power-producing facility on the Neosho River at the Pensacola site had failed; and although the Corps had determined that the plans were viable, it refused to vet the project on grounds that it was economically infeasible and thus not in the national interest. By the mid-1930s, however, in the depths of the Depression, the newly formed GRDA received financial support for the Pensacola project from the Public Works Administration (PWA) as a local New Deal–era relief program. In an apparent about-face regarding the Neosho River, the Corps had simultaneously (and surprisingly) begun to make its own plans for using the dam and its reservoir for flood control. This reversal created a bifurcation (and ultimate conflict) between the power- and jobs-producing role GRDA, PWA, Federal Power Commission (FPC), and later Department of Interior saw for Pensacola and the flood-control role the Corps wanted. Modifications to the final FPC license for the Grand River Dam and Reservoir created a "compromise" that allowed GRDA to move forward and complete construction and fill the reservoir.

The purely coincidental timing of when GRDA went officially online in early 1941 with the onset of World War II later in the year exacerbated the tensions that already existed among GRDA, PWA, FPC, the Corps, and Interior over whether Pensacola's primary purpose would be power or flood control and whether it was best operated by a private, state, or federal entity. The reluctant compromise these entities had struck during licensing of the Pensacola Project in 1939 to allow both power generation and flood control on the Neosho River led to a series of federal enactments that ultimately gave the Corps full responsibility for and authority over flood control operations at the Pensacola Dam. The reverberations of these decisions are still felt today.

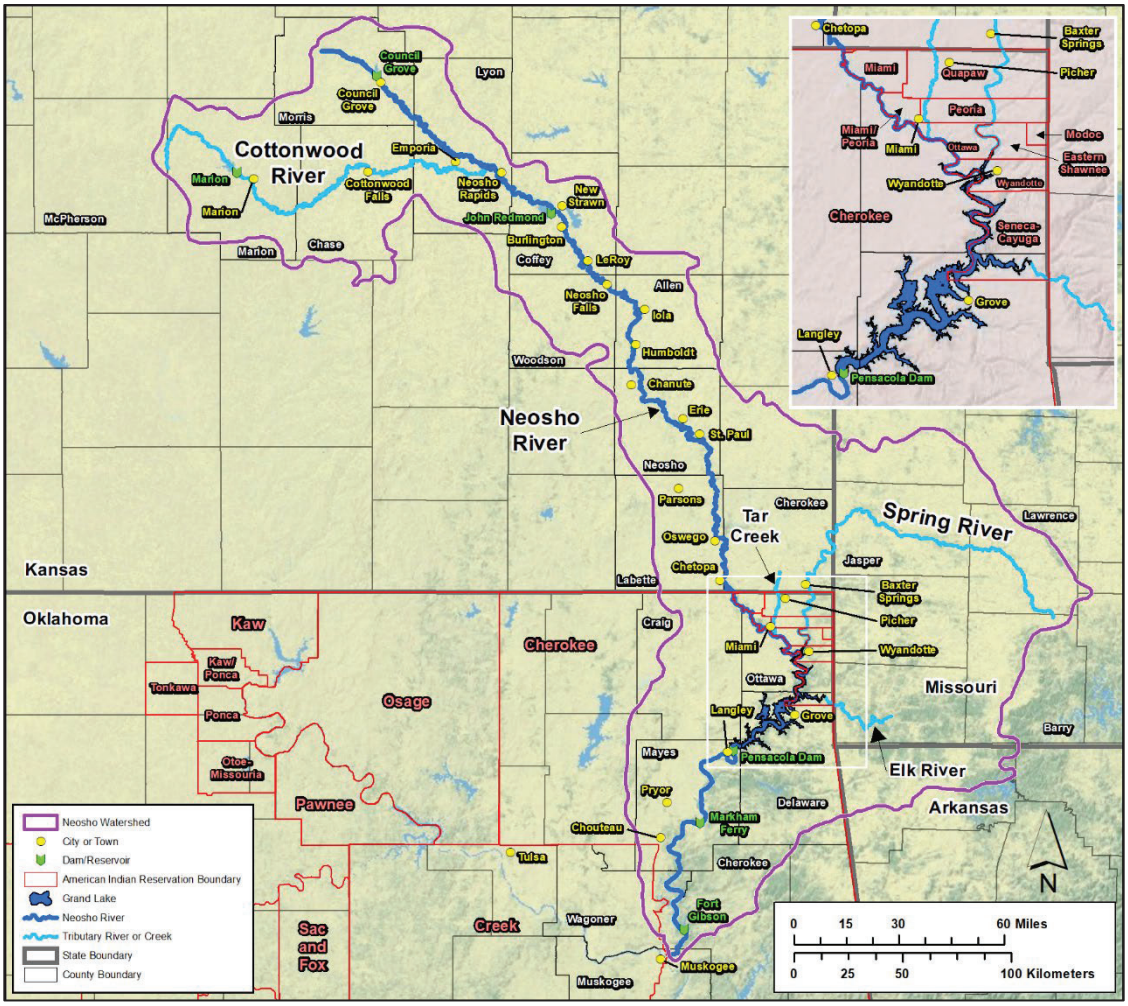


Figure 1. Topographical map of the Neosho River watershed in Kansas and Oklahoma, with major tributaries.

Part 1: Historical Flooding on the Neosho River

Introduction

Along its entire course and over likely millennia, the Neosho River has overflowed its banks countless times. Both the archaeological and historical records document these events and their ongoing damage in detail. Furthermore, the river has continued to flood despite the many interventions that people have made to minimize its damage, especially once non-Indigenous settlers entered the area and decided to establish homesteads and farms and locate growing communities along the riverbanks.

In a 1931 assessment, the Corps estimated that floods on the Neosho River above the mouth of the Spring occurred "with an average frequency of one major flood every 7 years; one moderate flood every 2 years; and one minor flood per year."[5] As one person explained, the area around Miami had "been inundated by every major flood on the Neosho River before [Pensacola Dam] was built."[6] By comparison, the Neosho below the Spring (technically, the Grand River) only experienced about "one major flood every 10 years, one moderate flood every 4 years, and one minor flood every 2 years."[7] Weather patterns in the watershed and the geology of the riverbed and its surrounding environs both contribute to the regular flooding. The Corps later described the area as "subject to intense single storms over limited areas, as well as to general storms over large portions of the watershed."[8] Both types of storms can cause overflow on limited reaches of the river or flood conditions over extensive portions of the river valley. As a result, a flood or floods occurred somewhere on the Neosho or one of its tributaries most years on record. These floods varied in location and magnitude. Various Corps reports noted the difference in flood frequencies in the Neosho River watershed between the reaches above and below the mouth of the Spring River just south of Miami, Oklahoma. As the Corps explained in their 1931 report—ten years before construction of the Pensacola Dam—this difference was due to two conditions. One was "the fact that due to the large amount of channel storage in the Kansas [and far northeastern corner of Oklahoma] area[s], flood flows in the upper reach are reduced in peak flow with consequent increase in duration."[9] The other was "the large channel capacity in the main stem below the mouth of Spring River," which made it "capable of carrying any flood from the Kansas area without overflow except when augmented by a considerable flow from Spring and Elk Rivers and other tributaries in Oklahoma."[10]

Archaeological documentation makes clear that the Neosho River has cycled through flooding and drought for millennia. The archaeological record of Indigenous peoples who lived in

the watershed in Kansas (which includes the tributary Cottonwood River) indicates that many groups moved seasonally from semipermanent settlements in the floodplain to higher locations, depending on the season and level of the river.[11] As growing numbers of non-Indigenous people forced Indigenous peoples off their traditional lands and onto reservations over the course of the nineteenth century, people of mostly European descent entered and occupied the area that would become Kansas and Oklahoma. Many settled permanently in the Neosho floodplain to take advantage of the rich agricultural and grazing lands they found there; others populated growing communities and towns where they established or worked for the businesses, schools, churches, and other organizations that supported their economy.

Western concepts of land use and property laws, which focused on individual or familial ownership on delineated parcels of land, were not conducive to the seasonal migrations that Indigenous peoples long employed to cope with floods and drought. Thus, along the entire course of the Neosho River and its many tributaries, non-Indigenous farmers, industrialists, and townspeople alike found themselves occupying land subject to almost annual flooding—sometimes, multiple times per year—that varied from nuisance water on fields or in basements to floods of epic and disastrous proportions. Anecdotes from the nineteenth century indicate that the Indigenous peoples of Kansas had warned non-Indigenous people against permanent occupation of lands in the floodplain. As one observer from Council Grove reported after the 1903 flood swept away the Main Street Bridge,

> The tradition of the Kaws, who lived here from 1817 till 1873, that "once the valley was washed from hills to hills" was verified, but no one dreamed of a wave of water high enough to carry off this strong structure and to flood every business house in the city. The Kaws used to tell of this tradition, and say, "White man heap big fool to build big house near river," and for a time last spring we thought they were correct.[12]

So too, these people grappled with periods of extreme drought in which rivers, creeks, and smaller waterbodies would dry up, creating shortages of fresh water because the remaining water was often polluted with raw sewage and other waste. Although extreme weather events compelled some people to give up and move away, most non-Indigenous people who settled along the Neosho and its tributaries resigned themselves to coexisting with the cycle of flooding and drought. Individuals, local groups, municipalities, state officials, and eventually, federal agencies participated in flood-control measures in the area that became Kansas and Oklahoma. Indeed, flood control became (and remains) a ubiquitous feature of life for those living and working along the Neosho.

Documents from the time of early non-Indigenous settlement of the area indicate that the Neosho River has experienced "seasons of flood" along its course almost every year since early non-Indigenous visitors and settlers people started keeping track.[13] Research indicates that especially disastrous floods occurred at various locations in the Neosho River watershed in 1826, 1844, 1885,

1895, 1902, 1903, 1904, 1909, 1927, 1941, 1943, 1948, 1951, 1986, and 1993. Specifically in the two southernmost Kansas counties (Neosho and Labette) and two northernmost Oklahoma counties (Ottawa and Delaware), the worst years were 1826, 1844, 1895, 1902–1904, 1917–1918, 1922, 1928, 1941, 1943, 1948, 1951, 1986, 1993, and 2007. (See Appendix A for photographs of Neosho River and tributary floods between 1885 and 2019; see Appendix B for a chronological timeline of flooding in the larger watershed between 1826 and 2019.)

Less is known about the exact locations of the 1826 and 1844 floods than later ones, but by all accounts, they were of epic proportions. A Commissioner of Indian Affairs 1826 annual report and a later chronicle of the history of what is now Neosho County indicate that the flood that year likely caused the greatest damage in present-day southeastern Kansas and northeastern Oklahoma, although at least one author reported that the Neosho did not flood in 1844.[14] Other reports, however, locate the 1844 flooding variously in today's Woodson, Coffey, and Neosho Counties (through all of which the Neosho runs) and indicate that Neosho County was hard hit. According to Superintendent Thomas Harvey, when he arrived at the Osage Subagency on May 22, 1844, the Neosho was "'very high, having overflowed its banks and covered the bottoms to a considerable depth, which [made] the river in most places more than a mile wide'"[15]

Early Non-Indigenous Settlement: 1857–1885

Between the epic flood events of 1844 and 1885, a series of floods varying in size and damage, occurred on the Neosho River and its tributaries in 1854,[16] 1855,[17] 1856,[18] 1857, 1858,[19] 1866, 1867,[20] 1868,[21] 1869, 1870,[22] 1871,[23] 1873,[24] 1875,[25] 1876,[26] 1877,[27] 1878,[28] 1881,[29] 1883,[30] and 1884.[31] Of these episodes, a few stand out.[32] The flood of 1857 "swept down the Neosho, carrying with it wigwams, houses, and crops."[33] Again in 1866, after an "extremely wet" summer, "the streams rose higher than they had been known to rise, by the Indians, for fifteen years."[34] According to Neosho Indian agent G. C. Snow, the Quapaws had suffered "severely [in 1866] for food and clothing. Their crops were quite all destroyed last year by the floods, and they have no annuities from the government."[35] The year 1869 again saw flooding on the Neosho, with a small flood in February followed by a much larger deluge in June, during which the river "rose twenty feet in nine hours," rushed "along over a stretch of a mile in width between its ordinary banks and the western limits of [St. Paul]," and "washed the ferry boats away."[36]

In 1885, the Neosho experienced one of its worst flood years up to that time. Citing the *Monthly Weather Review*, a 1908 report described the "unusually high and destructive flood" of 1885 on the Neosho, especially in Neosho Falls (Woodson County), Humboldt (Allen County), and Parsons (Labette County).[37] Another report described the 1885 flood as "the largest prior to that of 1904."[38] Neosho County endured three large floods in 1885: one "very high" on February 11, a series of floods between May 15 and May 29 that washed out the "nearly completed bridge south of

St. Francis church" and "forty feet of the Erie mill dam," and a "record breaker" on July 4.[39] The July flood "spread over more territory and did more damage in the way of carrying away harvested crops and destroying growing crops" than had the 1869 flood in Neosho County.[40] Because the flood took out a half mile of railroad track, a steamer was needed to "convey passengers across the waters."[41] At Burlington, Rock Creek flooded into Neosho River, which achieved a crest of 35.2 feet on "present gage zero datum, making it one of the greatest on record at that place." At Oswego that year, the crest reached 25.2, "also close to the highest water ever known there."[42] Tragically, at least nine people lost their lives in the floodwaters, according to reports that three bodies had been found at Parsons, three more at Chanute, and three more at Neosho, with others still missing.[43]

1886-1904

Starting with the "unusually high and destructive" 1885 flood, reporting on Neosho River floods began to increase considerably.[44] After the 1885 flood, federal and state flood reports and state and local news coverage reveal the sheer volume of overflows that people in the watershed endured. Year after year, floods in the Neosho River watershed inundated towns, farms, homes, and businesses; destroyed roads, railroads, bridges, and other infrastructure; and caused countless dollars in damages, in addition to the death of people and countless numbers of animals and livestock. Between 1886 and 1894, the Neosho River flooded in 1888,[45] 1889,[46] 1890,[47] 1891,[48] 1892,[49] and 1894.[50]

In 1895, the Neosho River experienced two major floods. The September flood hit Neosho Falls (Woodson County), Emporia (Lyon County), and Strawn (Coffey County), Kansas, especially hard. According to the September 1895 *Monthly Weather Review*, for example, the Neosho Valley was flooded "for ten miles above Emporia."[51] The December flood wreaked particular havoc and "was confined largely to the Grand (Neosho) River Valley in Oklahoma" and Chetopa (Labette County), Kansas, immediately north of the Kansas–Oklahoma state line.[52] According to Corps engineer Major General J. L. Schley, the December flood (which he called "the greatest of record" prior to 1939, when he was writing), was "estimated to have had a peak discharge at Grove, Oklahoma, 29 miles above the Pensacola Dam site, of 250,000 cubic feet per second."[53] At Chetopa, around 15 miles upstream from Miami, the Neosho River was reported to be "six miles wide"; with the Neosho and its tributary, Labette Creek, "out of their banks," many residents were "preparing to leave."[54]

In the six years between the 1895 floods and those that began in 1902, flooding occurred in all but two. In May 1896, the Neosho River flooded Neosho, Coffey, and Allen Counties in Kansas.[55] From May 5 to 12, 1898, people along the Neosho River in Coffey and Neosho Counties experienced an "average size flood."[56] Neosho County experienced four separate floods in 1899, one each in June, July, August, and September. During the July flood, the Neosho River at Chanute was

"out of its banks . . . and steadily rising." The water had "nearly reached" the high-water mark from 1885, levees were "broken at several points," and "bottom lands for miles up and down the river are flooded. . . . Thousands of dollars worth of wheat is floating down the river with barns and outbuildings."[57] In 1900, only small floods occurred in Coffey and Neosho Counties in September.[58] In April 1901, the Cottonwood south of Emporia was a mile wide and the Neosho was up 22 feet.[59]

The years from 1902 through 1904 saw a series of disastrous floods along the Neosho and its tributaries from one end to the other, as well as along many other Kansas rivers. Floods were rampant in 1902. In late May and early June, "almost incessant rain for 10 days raised the Cottonwood River higher than it [had] been for several years," and by June 12, both the Cottonwood and Neosho floodwaters had "stalled" six Santa Fe trains at Emporia (Lyon County).[60] Neosho County again endured four separate floods that year.[61] In late May, the Neosho in Miami was to the top of its banks and filled with driftwood, a situation that had led to the drowning of a local man, Al Crooks.[62] According to press coverage, the "record-breaking" 1902 flood was the worst since 1885.[63] However, superlatives given to the 1902 floods would soon be surpassed in 1903 and 1904, two of the worst flood years on the Neosho River to that date.

Due to "almost continuous rains" over the region in May 1903, the entirety of the Neosho River flooded in late May and June 1903.[64] Council Grove endured one of its "most destructive" floods when "in one wild night the Neosho drew the curtain of distress over our city that surpassed all former records." Floodwaters destroyed the telephone and telegraph systems the Main Street Bridge and rendered the municipal waterworks inoperable and unable "to furnish relief and water for the thirsty hundreds." Additionally, "hundreds of small buildings and thousands of head of stock were swept down the river, a large number . . . being killed or drowned." On top of the flood damage, numerous fires broke out, furthering the damage.[65] The gage at Iola recorded the "largest flood in total volume" at that location, with unofficial records showing that the river was "above flood stage 10 successive days and almost bankfull the preceding 6 days."[66] Parts of Neosho County were inundated three separate times, with each flood worse than the one preceding it.[67] At Chanute, the river overtopped the levees and covered a gas field, spreading oil from leaking tanks across the region.[68] Indian Territory was similarly hard hit by flooding in 1903. One account from June described the Neosho River as "three miles wide" with farms "covered with water [up] to ten feet deep. The Neosho river above Miami, I.T. has covered the prairie farms for miles south of the river's main channel."[69] As one reporter summed it up, the 1903 flood was the "greatest flood ever known in Oklahoma and Kansas."[70]

If Kansans and those living along the Neosho River in Indian Territory thought 1903 was a bad flood year, they must have felt overwhelmed when almost exactly one year later, they experienced even worse flooding. According to one report, the 1904 floods were "greater in number, height, and destructiveness than ever known before" on the Neosho River. Although there were no official records of the height that the floods in April, June, and July reached, there were

"quite a number of well-defined flood marks" along the river that showed the crest of the flood of July 10, 1904, "reached a height of about 1 foot greater than that of the 1885 flood."[71] One estimate valued 1904 property losses in the Neosho River basin at $1,200,000. Again, the floodwaters stretched along the entirety of the Neosho River and its tributaries. At Cottonwood Falls, for example, the water "was between four and five feet deep on the floor of the bridge."[72] On July 14, 1904, the "second disastrous flood of the year [in Chase County had] come and gone and left in its wake devastated fields, dead stock, and houses filled with mud and slime."[73] In early June, at Emporia, the Neosho and Cottonwood Rivers were reported as "rising a foot an hour."[74] At Strawn and Burlington, where for the third year in a row, the Neosho was "out of its banks [and] flooding all the bottom land," reports indicated that the "principal damage" would be to "growing crops."[75] A later report noted that both Neosho Rapids and Iola, Kansas, experienced record floods in July.[76] "According to the memory of the oldest inhabitant," on July 9, 1904, the Neosho River stood at the highest mark ever in Iola.[77]

Farther downstream in Kansas, Neosho County was also hit hard. Heavy rain in late April turned the Neosho River at St. Paul into "an inland sea, caused by the most phenomenal rise ever made in this section. Twenty-four hours ago, the river was scarcely a foot above the ordinary depth, but now traffic on both the Santa Fe and Katy railroads is paralyzed, and levees are broken, causing thousands of acres of rich farming land to be inundated."[78] On June 11, 1904, the Neosho River at Chanute and Erie was "the highest ever recorded. All of the oil country is under water. . . . In some places the Neosho river is six miles wide." Because the April flood had already breached local dikes, they "furnished no protection for the lowlands."[79] Four days later, the newspaper proclaimed that the Neosho had yet again made "a new record" and was a foot higher at Chanute than ever before. The floods washed out railroad tracks and "wiped out many of the levees" (presumably, different ones from those that were breached in April).[80] In June, the water was up again in St. Paul, with thirteen days of "the worst flood in its history." Water in the main channel rose "nine inches higher than in 1885," and one mile of the M.K. & T. railroad track was "underwater, preventing trains from passing over."[81] On July 9, Chanute experienced a fourth overflow, promising to be "the biggest of all in the history of Chanute." Again, water was "spreading over the Chanute oil fields," and the surrounding area "probably never contained more water than it does tonight."[82] In July, St. Paul also endured the fourth flood of the season, which reached "fourteen inches higher than the flood of 1885." Again, a large section of railroad track was washed out.[83]

The Neosho River flooded Indian Territory extensively in 1904, too. Early June saw flooding at Miami, where on June 7, the Neosho River "covered the new . . . 600 feet [*sic*] toll bridge with three feet of water," "ruined a thousand acres of corn," and prevented "rural mail wagons" from reaching the post office.[84] Ten days later, news reports described the Neosho as "higher than ever before known here." The river had risen "five feet in twenty four hours and is still rising. The water is now three feet deep on the new [$10,000?] toll bridge, and there is little hope of saving it. Three

miles above town, the river is six miles wide," a thousand acres of corn were "completely ruined," and the water was "now within two feet of the [St. Louis–San Francisco Railway] Frisco bridge."[85]

1905-1941

Historical documents compiled to date indicate that the Neosho River (and/or its tributaries) flooded all but nine of the sixty years from 1905 to 1965. Accounts of the rise and fall of the Neosho and its tributaries in southeastern Kansas and northeastern Oklahoma repeat the superlatives of similar events and damages incurred between 1885 and 1904. The Spring River was out of its banks in both July and August 1905, when the Neosho joined the Spring in flooding.[86] June proved once again to be the month for floods in 1906 when "heavy rains of the early portion of the month . . . caused flood stages in a considerable portion" of the Neosho.[87] Flooding was reported from Chase County, Kansas, to what is now Delaware County, Oklahoma, where the Neosho "was bank full and slushing over into many bottom pieces of corn."[88] On May 25, near Miami, the Neosho River was "out of its banks and many farms are covered with water."[89] The July 1909 flood of the Cottonwood and Neosho in Kansas, for example, was "as high as ever reported," and the second flood that year, in November, broke "all previous records" for the fall season.[90] In January 1910, another unseasonable flood occurred along the Cottonwood and Neosho Rivers. Although floodwaters caused damages during the January flood, ice posed more of a danger. The Cottonwood flooded and then froze in the streets of Marion, Kansas. The Neosho River flooded at the same time, breaking "all records" at Strawn. According to press coverage, there was an ice dam at Strawn and one between Strawn and Hartford. The one at Strawn began "a short distance below the river bridge and extend[ed] about two and one-half miles down the river. Dynamite was used but the ice dam [was] still holding. Water [was] in the ditches in the streets of town. The river below the ice dam [was] considerably lower than the level above the dam."[91] In Lyon County, the January event was the "greatest flood known so early in the season" and "most of the damage done was to buildings and fences by floating ice blocks."[92]

Spring rains caused flooding on the Neosho and Spring Rivers in April and May 1912. Neosho County encountered a "small flood" on April 4. From April 25 through 28, "high run-off resulted in severe flooding in the lower reaches of the river" and the "peak stage at Wyandotte, Oklahoma, was 30.0 feet on April 30," 5 feet above flood stage for that location.[93] According to the *Monthly Weather Review*, the Neosho "was at flood stage April 29 and 30 from Oswego southward, causing damage to crops and enforced suspension of business. The loss is estimated at $40,000."[94] The flood on the Spring River overtopped the Lowell Dam in Galena, Kansas, which on April 29 was "5 inches under water" despite "all flood gates at the dam and bypass bridge, a half mile up stream, open." Additionally, the "Badger Dike was two feet under water and mines [were] flooded."[95] In May 1912, the "lower" Neosho flooded, doing about $15,000 in damage mostly to agricultural lands.[96]

Substantial flooding occurred on the Neosho River in Kansas and Oklahoma in 1915. A "small flood" on April 22 in Neosho County started the flood season off that year.[97] But the worst of the 1915 floods happened in late May/early June and September. The spring flooding affected Lyon, Coffey, and Neosho Counties in Kansas and Ottawa County in Oklahoma (and likely Allen County in Kansas, since it sits between Coffey and Neosho).[98] The area around and including Miami suffered massive wind and storm damage, witnessing a "down pour of rain [that] was the greatest in years." The rain had completely saturated the ground, which was "covered with water, resembling streams. The rivers and creeks [were] bank full and overflowing in many places."[99] Reportedly, although the Neosho did not reach flood stage at Wyandotte, it "overflowed its banks above and below that [gaging] station."[100] The flooding situation only got worse from there. In Miami, the local paper reported that the Neosho River had "been on a week's spree, a wild and reckless rampage, spreading ruin in its wake, overflowing its banks and surrounding territory." The city park was "completely inundated," the river reached "within three or four feet of the wagon bridge floor" and blocked travel westward out of town for days because the west approach of the highway bridge was six or eight feet underwater, and "all growing crops and pasture along the river [were] destroyed by this overflow."[101] Fall flooding on the Neosho in 1915 occurred in September, exceeding flood stages for at least a full week in both Kansas and Oklahoma. The *Monthly Weather Review* reported that the flood at Iola (the highest recorded there since 1904) had required the rescue of 600 families. "While the damage from flooded conditions was greatest in Allen, Neosho, and Labette Counties, the river rose above flood stages along the course from Iola south to the Kansas-Oklahoma State Line."[102] The flooding caused "great losses" (and estimated $2,460,000 worth) to railroads, bridges, crops, levees, and livestock.[103] At Miami, flooding once again prevented motorists from crossing the highway bridge, requiring stranded travelers to set up a "city of tents" in which to shelter until the water receded.[104]

In June 1917, Tar Creek went on a "rampage" and flooded Picher, Oklahoma. November the next year witnessed the Neosho River and Tar Creek again overflowing their banks, spilling water into Miami, and "completely" submerging Picher.[105] The Neosho and Spring Rivers and Tar Creek again flooded in Oklahoma in March and May/June 1920. Heavy rain March 19 and 20 led to all three of these watercourses being "extremely high," having "inundated the lowlands." The local newspaper reported that in Picher, Cardin, and other towns near Miami, "cellars and basements were flooded as there are no sewer facilities available to carry off the heavy storm waters."[106] A few days later, the Neosho rose above flood stage at Fort Gibson.[107] In late May/early June, heavy rains caused "more flooding in basements in Miami."[108]

In spring 1927, the river was out of its banks in both Oklahoma and Kansas, with "mad flood waters" inundating the bottomlands of most of the watershed from Iola to Miami. The flooding marooned "scores of motorists" trying to cross the Neosho River at Miami, where the bridge was covered in water that had "attained [its] highest level in 23 years."[109] Another flood in June 1928 covered large portions of Miami.[110]

1941–2019

Disastrous floods on the Neosho River have continued since construction of the Pensacola Dam. Indeed, immediately after the project became operational, three major floods occurred in 1941 and 1943. In 1941, flooding caused heavy losses along the river's entire course. As one report described, floods were "the rule, rather than the exception" from April to October that year, with flood stage being "reached or exceeded" in every month except May.[111] Two floods in October 1941 saw the Neosho "on spree again." In early October, floodwaters all but surrounded Wyandotte, Oklahoma, cutting it off from the rest of Ottawa County; later October found the Neosho River, Spring River, and others "spreading havoc" across Oklahoma.[112] Both the Spring and Neosho Rivers flooded again in May 1943. At 23.95 inches of rain that month, Miami experienced the "greatest monthly amount recorded at any station in the state."[113] The Miami Public Utility Board (PUB) superintendent noted that the water level, which reached the racetrack, exhibit building, and swimming pool, was "the highest of any record."[114] Federal operation of the Pensacola Dam during the May flood was "credited with saving" the "big war plant" at the Oklahoma Ordnance Works immediately downstream.[115] Some people blamed dam operators at the time for the "flood troubles" Miami and Wyandotte had suffered, "where waters from the Grand river dam reservoir backed up into the outskirts."[116] Later review of the issue partially contradicted this narrative, indicating that any effects Grand Lake might have had on upriver flooding in May 1943 were "below Miami."[117]

News coverage in 1944 proclaimed that flooding in April had broken "all known records at Chanute, Erie, and St. Paul, and at the highway bridge east of Parsons, with the Neosho, "one vast sea, in some places, four or five miles wide."[118] Farther downstream, Wyandotte was "menaced by rampaging Neosho."[119] Late that year, a second round of flooding that was "extraordinarily high for December" was caused by a "combination of rain falling on frozen ground with high base flows already prevalent."[120] Flooding along the Neosho and its tributaries in June 1948 again submerged substantial portions of the town of Picher on Tar Creek and the lowlands in Kansas and Oklahoma. But the floods of July 1948 caused the most damage in Ottawa County.[121] According to local news reports, "a new all-time high water mark reportedly was established at a point [Commerce] 12 miles north of Miami," a measurement that surpassed the previous record from spring 1943.[122] Other reports indicated that the Commerce gaging station recorded the third- and fourth-highest known floods in terms of magnitude (prior to 1969) that year.[123]

Still the largest on record, the historical flood of July 1951 swelled countless rivers and streams and wreaked havoc across the Midwest.[124] Residents in Kansas and Oklahoma suffered greatly during this flood on a number of watercourses; heavy storms caused the Neosho, in particular, to reach "flood heights far in excess of any previously known." Miami "suffered extensive damage," with approximately a quarter of the city underwater and damages estimated "as high as several million dollars."[125] In 1954, "major flooding" of the Neosho and Tar Creek "caused extensive damage to Miami development."[126] News reports from 1957 depicted the Neosho River

bridge at Commerce (to which the gage was affixed) close to being overtopped and water extending far past the river banks on either side.[127] In 1961, the Commerce gage recorded the fifth-highest flood (prior to 1969) on the Neosho.[128]

In 1964, 1965, and 1968, respectively, the Corps completed the long-anticipated Council Grove, John Redmond (Strawn), and Marion dam and reservoir projects on the Neosho River in Kansas. Later reports indicated that these structures did indeed succeed as proponents had hoped in diminishing downstream flood damage.[129] However, Neosho River floods did not and would seemingly never disappear. A 1964 flood pushed the Neosho again out of its banks at Miami, where it flooded the fairgrounds for several days, a scene that was repeated in 1969, when Riverview Park was again flooded and the park road closed.[130] In the 1970s, floods of various sizes occurred every year in both Kansas and Oklahoma, with the Neosho on yet another "rampage" in Neosho County in 1970 and doing "the expected" by overflowing in Labette County in 1973.[131] Miami was especially hard hit in 1974, when combined high-water levels on the Neosho and Tar Creek caused flooding to both the west and east sides of town. Descriptions of the flood noted that Miami's fairgrounds, the "scene of many a western sporting event, could have accommodated a water polo match last week, or a racing meet for sea horses."[132]

The litany of Neosho River floods in Kansas and Oklahoma continued throughout the 1980s and 1990s. In southeastern Kansas, the river was out of its banks in one or all of Neosho, Labette, and Allen Counties in 1980, 1982, 1985, 1986, 1988, 1989, 1993, and 1998.[133] During the same two decades in northeastern Oklahoma, the story was much the same. In 1985, Ottawa and two other Oklahoma counties received disaster declarations. At Miami, the Neosho "crested 13 feet above flood stage. . . , damaging 300 homes and dozens of businesses."[134] Both Tar Creek and the Neosho caused floods in Miami in 1987; the Neosho flooded again in 1990, 1992, 1994, 1995, and 1997, each time either flooding the fairground, closing roads, or forcing home evacuations (or all three at once).[135]

Two major floods occurred during the last two decades of the 1900s in Miami—one in 1986 and one in 1993. As described in a pamphlet the Miami Kiwanis Club published in 1986, two storm systems resulted in rainfall amounting to 25 to 30 inches of rain between September 27 and October 3 that year.

> The first two days of rain saturated the ground and raised rivers and creeks to near flood levels as upstream from Miami, heavy thunderstorms in eastern Kansas fell into the Neosho and Tar Creek Basins. A second storm system struck on Tuesday, September 30th, bringing additional rainfall of 5 to 10 inches, causing severe flash flooding, twenty-six homes were evacuated in Sky Ranch West as the rapidly rising Tar creek swept out of its banks. The continued rainfall caused the Neosho River to rise above flood stage on Thursday, October 2nd, flooding rural areas from southeastern Kansas to the headwaters of Grand Lake and threatening all homes and

> businesses in low lying areas of Miami. Evacuations, sandbagging and other precautions to protect lives property continued throughout the remainder of the week. More than 400 volunteers worked around the clock each day, helping those that were threatened by projected crest levels of 766 feet.

Ultimately, the Oklahoma National Guard (ONG) deployed to assist emergency operations in Miami.[136] Miami residents again evacuated their homes and businesses and received help from the ONG in the 1993 flood, which also affected Wyandotte. According to State Emergency Director Tom Feuerborn, "We have extensive flooding on the Spring River, Tar Creek and the Neosho River. Most of the water is coming from Kansas where they had rains of 12 to 15 inches."[137]

The first two decades of the twenty-first century have also witnessed flooding of the Neosho River in Kansas and Oklahoma. Floods occurred in Oklahoma, specifically, in 2000, 2002, 2004, 2007, 2015, and 2019.[138] The 2007 Neosho and Tar Creek overflows "engulfed" Miami, flooding over 600 homes in that town.[139] The "record-breaking" May 2019 Neosho flood caused "major damage" in Miami, forcing "closures and major remodels" of some businesses. According to the National Weather Service both the Neosho and Spring reached "historic levels" during this flood with the Commerce gage recording its "fifth highest crest on record over the past 79 years" and the Spring reaching its "eighth highest crest since 1940."[140]

Flooding continued off and on into the twenty-first century and to the present at various locations in the Neosho River watershed, despite many efforts made over the course of the twentieth century to prevent such flooding. As evidenced through the litany of flood events presented in this section, everything from minor to major floods have occurred at almost every point along the Neosho River in Kansas and Oklahoma from as early as anyone could remember or document. As discussed in the next section, even once flood-control prevention measures—from early levees in Kansas to the multipurpose Pensacola Dam and Reservoir to other dams and reservoirs in both Kansas and Oklahoma—were constructed, floods continued to break records. Unfortunately for the people living in the vicinity of Neosho River and its tributaries, if current weather conditions continue, the likelihood of Kansans and Oklahomans living along the Neosho River experiencing record-breaking floods will likely continue.

Part 2: Controlling the Neosho River: Early Efforts at Flood Control before Creation of the GRDA

Introduction

Non-Indigenous peoples' attempts to harness the Neosho River and its tributaries began almost as soon as they began to occupy the area. Individuals living in the watershed, especially those immediately adjacent to the river, became active first in utilizing waterpower for mills and other industries along the riverbanks and then in flood control efforts in the nineteenth century.[141] Although federal and state agencies got involved in flood control earlier in Kansas than they did in Indian Territory (later Oklahoma), by the early 1900s, private, local, state, and federal agencies in different combinations and permutations all along the Neosho River and its tributaries sought cost-effective means to protect valuable agricultural land, domestic and commercial buildings and property, infrastructure, and human and animal lives from floodwaters.

Between the early 1890s and the mid-1930s, Kansans and those living in the Indian Territory/Oklahoma experimented with various forms of flood control along the Neosho River. People in Neosho County, Kansas, for example, built the first system of levees on the river in the 1890s, setting the stage for Kansas officials to begin creating a series of commissions and conservancy organizations to study the causes of and address flooding along the Neosho River and the state more generally. Officials in what would become the state of Oklahoma in 1907 also began to form water-related committees and supported private and public studies of flooding and flood prevention and control on the Neosho River. In both Kansas and Oklahoma, flood-control advocates engaged in early debates over the efficacy of everything from clearing streambanks of debris and clearing rivers of snags to straightening rivers to levees to reservoirs.

In towns like Miami, Oklahoma, flooding from the Neosho River led to ongoing battles against high water in the town. Platted along the eastern bank of the river, Miami's main business area sat close to the river, which created a natural barrier between the town and lands west of the river on which people had settled. Thus, the first matter of business for the town, even before Oklahoma achieved statehood, was providing reliable crossing for wagons and pedestrians, and then gas-powered vehicles, over the unpredictable Neosho. Although bridges were more reliable than ferries, the City (and then Ottawa County) found itself repairing flood damages to bridges sometimes multiple times per year. Adding to Miami's water problem was a nonexistent and then deficient early stormwater and sewer system, which was often overwhelmed by sheer volume of rain so many storms brought. Once Miami completed its first storm sewer system in the 1920s, some in-

town flooding diminished, although the City continued to expand the system over time in response to ongoing complaints of flooding in various areas of town, including along Tar Creek, which runs north–south through Miami east of the Neosho. To address the ongoing issues, especially constant flooding of the city's public park along the eastern bank of the Neosho River and over a low dam the City had built across the river for the park, Miami created a public utilities board (PUB) in 1927. The PUB would continue to address flooding and stormwater issues throughout the creation of a municipal zoning ordinance in 1930 and beyond.

By the early 1900s, the federal government was playing a more engaged role in flood control around the country, especially after a series of disastrous floods on the Mississippi and other large rivers around the country. However, the U.S. government (primarily the Corps) took a hands-off approach to flood control on the Neosho River until the later 1930s, when the Corps set its sights on using the Pensacola Dam and Reservoir Project in Oklahoma for flood control. This reversal would lead to Congress including money for Neosho River projects in the 1936 Flood Control Act.

In addition to flood-control efforts on the Neosho River, also beginning in the 1890s, interest grew rapidly around developing hydropower on the Neosho River at a larger scale. As Part 3 explores in more depth, in northeastern Oklahoma (and far southeastern Kansas), Henry Holderman was the first to conduct private surveys of the Neosho River and envision developing a power-generating dam on it. Holderman and others worked tirelessly into the 1930s surveying potential dam sites and modeling the power that specific dam designs and pool levels could produce.

Although mostly downplaying the Neosho River for flood control, the Corps had received authorization and appropriations from Congress in the 1927 River and Harbor Act to begin studying the power potential of rivers around the country, including the Neosho. This study resulted in what was known as a 308 report for the Neosho River, which outlined the Corps' proposed approach in 1935 to a power-generating dam akin to Pensacola and also explored what kind of benefit the dam (or a series of dams) might have on downstream flood control. The 308 report for the Neosho River stated that power-producing dams were feasible on the lower reach and that had Pensacola Dam (with some flood-control capacity) existed in 1927, it would have mitigated at least some of the disastrous downstream flooding that had occurred that year. Still, the Corps determined that federal funding for neither power production nor flood control on the Neosho River was economically justified at the time the study was released in summer 1935. The seeming fact that the Corps reportedly saw no utility in supporting power generation or flood control on the Neosho River coincided with the PWA's interest in developing economic relief projects around the country. Thus, when the State of Oklahoma created the Grand River Dam Authority in 1935 and took solid steps toward executing plans to build the long-awaited Pensacola Dam, it received federal funding and support not through the Corps but instead through the PWA for a power-focused project.

Early Flood-Control Efforts in Kansas

The First Levees: Neosho County

After destructive floods in 1889 and 1891, private parties got serious about building levees along the Neosho River in Neosho County.[142] Landowners near Erie concluded in 1890 "that by filling up the low places that permitted the water to overflow the lands, they could protect their lands from overflow from the ordinary flood." They then held a meeting at which they decided to assess "each owner of land who would be benefitted . . . thirty cents per acre for each acre to be benefitted." The landowners used that money to complete the "filling" work, which "was found to be of great benefit."[143] Although the makeshift levee seemed to work and inspired other locals to plan their own flood-control structures, arguments soon arose over who should pay the costs versus who received the benefits of future levees. Neosho County residents quickly realized that "individual action could not be depended upon, nor would it be safe to build private levees for the reason that some parts would be neglected and there would be no power to compel the proper building of the levee or to keep it in repair."[144]

On April 2, 1892, Neosho County residents gathered at a meeting in Chanute and adopted resolutions stating that Neosho River flooding was exacerbated by extant dams (such as the Erie mill dam, which had been washed out in 1885 and rebuilt), railroad trestles, and thick vegetation along the riverbanks that they believed were impeding water flow. Attendees called for a "mass convention" to take place May 7, 1893, and invited "owners of bottom land" affected by flooding to not only attend the meeting but spread the word to anyone else who might be interested. The stated goal of the May meeting was to devise plans "for securing definite, accurate, and reliable information" as to the causes of the recent floods and "to agree upon whatever action may be necessary to prevent the further recurrence of same." In the meantime, R. N. Allen (convener and secretary of the April 1892 meeting), J. L. Barnes, and D. C. Newman formed a committee "to further investigate the causes of the overflow." Additionally, J. M. Allen, Marion Johnson (one of the landowners involved in building the first levee near Erie), and Dr. W. E. Baker were tasked with determining what kinds of legislation would be needed "to prevent or remove obstructions in the river or to levy the same."[145]

During the 1893 legislative session, Arthur Lodge, a local landowner whose property was "subject to overflow," gathered money from other Neosho County residents and hired an attorney to draft a levee bill. Senator J. C. Carpenter made some "slight changes" to the bill and then "pressed its passage through the senate" after which Representative J. M. Dunsmore "obtained its passage" in the House.[146]

The 1893 law created levee districts and gave the Neosho County commissioners power over the entire levee-building process from planning to construction. The law also appointed an overseer

for each levee district, to be paid by the district, "whose duty it is to note any defect or injury that may appear in any part of the levee" and keep it "in good repair."[147] That same year, the first county-approved levee, the Baughman levee, was constructed near Shaw, followed by the Dutton levee just west of Erie. By 1902, Neosho County could claim 80 miles of levees along the Neosho River. Although "now and then loss has occurred by the breaking of a part of a levee" due to damage or shoddy design or workmanship, locals crowed about the overall "success" of the levees when "properly constructed."[148] The levees protected and benefited 18,529 acres of land, the value of which had doubled since they had been constructed. Furthermore, the levees had "added to the material wealth" of the county. And that wasn't all. "Their benefit from a sanitary point of view is inestimable."[149] By 1904, nineteen levee districts existed in Neosho County.[150]

Preventing Destructive Floods in Kansas

After the disastrous flood years of 1903 and 1904, beleaguered residents in the watershed had urgently demanded answers, a request that in 1905 was "brought to the attention" of the drainage investigations unit of the U.S. Office of Experiment Stations.[151] Although Neosho County residents had been constructing levees for at least a decade, no other county had developed such a system and levees (or any other kind of flood-control structures) were few to nonexistent along the Neosho River in Kansas. The people in these counties had suffered immense damage from flooding. Based on field investigations completed in 1906 and 1907, James Wright and Charles Elliott reported in their 1908 *Prevention of Injury by Floods in the Neosho Valley, Kansas*, that farmers' refusal to clean out snags and trash on their portions of riverfront obstructed waterflow and exacerbated flooding. "An immense amount of good would be accomplished by clearing out the snags, removing the bars, and cutting the timber on each side" of the river, they argued.[152] Ultimately, they suggested five main actions: remove obstructions from bottom and banks of channels, build "substantial levees" 900 feet apart on the lower section of the river and "return levees on each side of the channels of the larger tributaries," remove brush and trees from land lying between the levees, create interior drainage "by means of ditches with outlets through the levees into the channels by means of sluice gates," and cut a few bends in the upper section of the river to increase velocity.[153] The large-scale straightening of the "very crooked" Neosho that some people advocated, however, was infeasible both financially and logistically.[154] Additionally, Wright and Elliott assumed that all lands bordering the Neosho River would be "organized into drainage districts under the drainage law enacted by the [Kansas] legislature in 1905."[155]

In 1911, the Kansas legislature enacted a statute that permitted drainage districts to encompass more than one county. The law allowed districts on the more logical watershed basis. Several such districts were established: by one estimate, more than fifty drainage and levee districts had been created in Kansas by the early 1950s. But one observer remarked, "their contribution to effective flood control was reliably reported to have been practically valueless."[156] Still, at least some

of the levees worked. In 1915, an article in the *Farmers Mail and Breeze*, called the Deming Ranch in Oswego, with its 11-mile-long levee, "a fine example of what can be done in reclaiming land." A "system of dykes and tiles drainage" kept the ranch "protected from excessive rainfall" and made it so that "all the bottoms can be flooded above and below the farm, and still the water is kept off the Deming property."[157]

Commissions and Conservancy

Kansas Flood and Water Congress and State Drainage and Conservation Association

Flood control in Kansas gained momentum during the 1910s, largely through the efforts of state officials. On July 9, 1915, "in response to a general call issued by Governor [Arthur] Capper, there convened at Topeka a meeting of representative citizens from all parts of the state to discuss flood protection." The gathering resulted in the creation of the Kansas Flood and Water Congress. A year later, the engineering subcommittee of the flood and water congress outlined its four primary findings: federal cooperation and aid were necessary to "working out a comprehensive and satisfactory system for flood abatement in Kansas," a permanent state flood committee was required to serve as the official acting body for the state, the state needed to reestablish stream gages that the U.S. Geological Survey (USGS) formerly maintained, and immediate enactment of "adequate state legislation" that would empower the state "to make a comprehensive study of the Kansas flood conditions."[158] The next year, in June, representatives of twenty-two drainage boards, county commissioners, and mayors of cities affected by floods met to initiate "a concentrated, energetic campaign to reduce Kansas' annual loss of millions from floods." Governor Capper and others achieved their overall goal—the creation of the Kansas State Drainage and Conservation Association—that would work toward securing "better drainage legislation" and be empowered "to condemn property for flood protection." Some experts at the meeting believed that an effective drainage system would do more to address flooding than "dikes or levees."[159] To that end, attendees proposed to create a Neosho River drainage district as one of four in the state. The new association was to cooperate with the state flood and water congress "to bring about better protection against floods." Additionally, the group advocated creating a legislative committee to consider how to achieve the legislation they sought, including giving drainage boards authority to condemn property and enlarge districts. They also called for a centralized body to organize the drainage boards and ensure communication and coordination.[160]

Kansas Water Commission

The call for a centralized body was answered on March 13, 1917, when the Kansas legislature passed the Kansas Water Commission Law and created the Kansas Water Commission

(KWC).[161] The move was likely (at least in part) a response to the federal River and Harbors Act of July 27, 1916, and Flood Control Act of March 1, 1917.[162] The 1916 act authorized the War Department to conduct both a physical survey of the territory and an analysis of data "already gathered by governmental, state, private efforts, and by the Board of Engineers of the War Department," with the goal of devising a "general plan" that would "best guard against the recurrence of floods and diminish their damaging effects upon the lower valleys of the Kansas, Arkansas, Missouri, and the Mississippi rivers." In light of the importance of these rivers both to the "lives and welfare" of Kansans and also to downstream navigability, the Corps felt that thorough reconnaissance of the watersheds of each river was of "sufficient national importance to warrant" a federal survey.[163] The investigation, however, was contingent "upon action by the state of Kansas" that guaranteed state cooperation with the federal government and revision of state water laws in order to "bring them into harmony" with and to facilitate "the adoption and execution of" any plans that came out of the Corps' investigation.[164] Although the 1917 Flood Control Act focused only on the Mississippi and Sacramento Rivers, Kansans undoubtedly hoped their rivers might receive federal attention next.

With that in mind, the law tasked the KWC with investigating and securing "the most advantageous adjustment of the interest involved in matters of floods, drainage, irrigation, water power and navigation."[165] The commission was composed of the governor (ex officio chairman) and two civil engineers.[166] As soon as it was official, the KWC turned its attention to studying flooding in eastern Kansas and initiating "hydrometric investigations . . . without delay."[167] To that end, the commission entered into a cooperative agreement with the USGS for stream gaging. Another cooperative agreement was executed with the U.S. Weather Bureau.[168] Originally, funds for the KWC were slated to come through proceeds generated from the so-called Kansas sand law, as compensation for sand, oil, gas, gravel, minerals, or other natural products taken from navigable streams. At the time the Water Commission Law passed, however, the sand law had been rendered "inoperative" by litigation still pending before the Supreme Court of Kansas. Without a secure funding source, the state was forced to make small appropriations from its general fund for the balance of fiscal year 1917 and for fiscal years 1918 and 1919 to support field investigations for stream gaging. The lack of funding eliminated the compensation KWC commissioners had been promised in the bill and required the commission to rely on already-employed state engineers to shoulder the additional responsibilities of the commission, also without compensation.[169]

Inadequate funding hamstrung the KWC the entire decade it existed. In its first biennial report, the KWC was already noting that it could not conduct requested special investigations due to limited funds. However, the commissioners made plans for the next biennium to conduct river surveys ($8,000 from 1921 budget) and to analyze and recommend ways to enact "more effective water laws" ($1,000 from 1921 budget). The KWC recommended that once it received permanent financing, it receive authority to approve all plans and generally take over supervision of the drainage districts (akin to how the state oversaw local highway matters). It also called on the legislature to

provide flood relief that would assist in clearing the banks of the Neosho and other rivers in the state.[170]

The KWC carried on with little money over the next eight years. Early on, the commissioners "realized the impossibility" of fulfilling, "in its entirety, the broad program" that its founding legislation had outlined for it.[171] Every biennial report made clear that the economic situation would limit what it could accomplish. With this in mind, the KWC chose to focus the most attention on the stream-gaging program.[172] To the KWC commissioners, the importance of the program could "scarcely be exaggerated," as the data the gages gathered was "the basis for all calculations for flood prevention, water supplies, sanitation, drainage, water power, navigation, and irrigation."[173] In addition to the privileges the KWC garnered by cooperating with the USGS for the gaging program (for example, the U.S. Postal Service provided free office space to the team), affiliation with USGS for the gaging program would ensure not only consistency of the readings being gathered but also the "unqualified acceptance" of the data by courts and "leading hydraulic authorities in the country."[174] By 1924, the KWC was proud to report that it was operating thirty-two stations (a 100 percent increase over the 1921–1922 biennium), which were "well distributed over the principal watersheds of the state."[175] Eight of the gaging stations extant in 1924 were in the Neosho River watershed. Originally installed by the USGS in 1895 and cooperatively run with the U.S. Weather Bureau since 1904, the station at Iola was the oldest on the Neosho River and one of the first group of gages installed in Kansas. In 1904, the agencies established one gage at Neosho Rapids and one at Oswego. Over time, gages were added at LeRoy and Cottonwood River at Emporia (1908, both maintained by the Weather Service), another gage "near Iola" (1917, USGS), Parsons (1921, USGS), and Cottonwood River at Elmdale (1922, USGS).[176] However, of these, only four remained in operation in 1935—the two at or near Iola, Parsons, and Cottonwood Falls—for unknown reasons.[177]

Another stride the KWC made was to study the existing state water laws. In their second biennial report, the commissioners recommended that revisions be made to streamline jurisdictional borders to enable greater efficiencies in service, to require state inspection and approval of engineering plans related to the "regulation of uncontrolled flood waters" or "drainage of overflowed lands," and to strengthen and extend state and local cooperation around control and use of water resources to help these organizations function more effectively.[178] Additionally, the KWC suggested that the state create a uniform filing system, develop a statewide water code, engage in further flood studies, extend the stream-gaging program, and consider irrigation an integral part of the21rogramm.[179]

After several disastrous floods swept the Arkansas valley in 1923, Kansas state water commissioner H. A. Rice was called to a flood-control conference with the Arkansas Valley Improvement Association, two U.S. congressmen, and close to fifty representatives of the flood-damaged counties. Attendees made permanent the Arkansas Valley Improvement Association. The

organization would prove influential in future flood-control efforts on the Neosho, as part of the larger Arkansas River watershed.[180]

Kansas Division of Water Resources

The KWC continued its work through 1927, when the state legislature created the Kansas Division of Water Resources (DWR) under the Kansas State Board of Agriculture. The DWR took over "all of the authority, powers and duties theretofore conferred and imposed by law upon the Kansas Water Commission and the state irrigation commissioner" and abolished both the KWC and Division of Irrigation. The legislation thus "brought together into one department all state activities relating to irrigation, drainage, flood control and the conservation and utilization of the waters of the state."[181] The new body met in May 1927 to formalize its goals, but unfortunately, the DWR was "vested with much power" and "endowed with but little money," much like the KWC, its predecessor. As one newspaper reported, the legislature had given the division "words of encouragement as a substitute for funds." The new commissioners planned to conduct an extensive survey of conditions as soon as possible. Local media forewarned, however, that scant funds would "cramp" its activities and the DWR would not accomplish more than "a survey with a view to urging legislative action at the 1929 session."[182] During the meeting, the DWR discussed and approved plans for the building of artificial lakes and ponds, along with levees and dikes. However, it also pointed out to attendees that individuals and local benefit/taxing districts would need to fund and undertake those projects for themselves because, much like the federal government, the state could not fund or participate in the construction of works that benefited one locale over another. Agricultural board secretary Jacob C. Mohler reassured people that the body would not sit idle and that DWR chief engineer George Knapp would use his connections with county, railroad, utility, and irrigation engineers to gather data for future use as soon as funds became available.[183]

Conservancy Legislation and Appeals to Congress

The year 1927 proved to be a disastrous one across the United States, with Kansas suffering almost $15,500,000 in flood damage. Notably, most of the losses occurred in the Neosho River watershed, whose residents suffered estimated damages of $6,568,810.[184] In response, the DWR ramped up its flood-control efforts. Governor Ben Paulen and the DWR held a statewide flood-control and water-conservation conference in December. Soon thereafter, the governor appointed Knapp to the seven-person Flood Control and Water Conservation Committee (FCWCC), charged with working out a "comprehensive plan for flood control legislation to be presented to the 1929 legislature."[185] The FCWCC began meeting in February 1928 to address four main areas: controlling floods by drainage and levee districts, reducing floods through stream cleaning and maintenance, equalizing stream flow, and conserving water by building dams. At that time, the state constitution prohibited "the state from engaging in works of internal improvement, except the building of roads,

[and] creation of drainage and levee districts, which in effect [were] local benefit districts," so the FCWCC set out to study the drainage and levee districts and laws pertaining to them. Over the course of the year, the committee had meetings about the districts and low-water flow and conducted two trips to view rivers and meet with locals in various areas.[186]

In late 1928, the Kansas FCWCC issued its recommendation for legal reform. First was enacting a conservancy district law patterned after Ohio's Miami Conservancy District and requiring all drainage, levee, or irrigation plans to be approved by the DWR chief engineer. As part of this first recommendation, the committee supported retaining current drainage and levee district laws but repealing the irrigation district act. Second was enacting a maintenance law for streams and tributaries to be overseen by the counties (like roads), and to be funded in part by a levy on the entire county and in part by an additional levy on floodplain property. DWR would do the surveys and oversee application of the act. Third, the committee sought an amendment of the current act to provide greater compensation for reservoirs built with DWR approval. Last, FCWCC members advocated repealing a law that required the designer of a dam to give bond for its safety, instead placing the responsibility on DWR, whose chief would give approval before construction.[187]

Parallel to developments at the state level, Kansans made their voices heard in Congress. Debate during January 1928 hearings of the House Committee on Flood Control both presaged the increased role the federal government would take regarding flood control on the Neosho River in Kansas and Oklahoma under the Flood Control Act of 1936 and reflected the resistance of many in Congress to funding measures they perceived to provide greater local than national benefits.[188] The tragedies Americans experienced across multiple states during the 1927 floods pushed many senators and representatives to rethink the role the federal government should play regarding funding for flood prevention and relief to states and localities. U.S. Senator Arthur Capper, the former Kansas governor, went "on record as being in the strongest possible way" in favor of direct federal flood relief monies for victims of the 1927 floods on the Mississippi River. He also advocated for a federal flood-control program that would "recognize [flooding] as a national problem."[189] Like many of his colleagues, however, Capper was neither convinced nor ready to assert that the federal government should assume all costs for flood control and intimated that some form of local contribution would be required. Echoing estimates of flood damage in the Neosho River watershed, Kansas House Representative William Sproul explained that his district was "the worst flood region" of Kansas, where all the rivers (including the Neosho) had been "frequently overflowing, to the great detriment of the farming country and the cities near the streams." Sproul agreed with Capper in his opinion that the federal government should assume all obligation for flood relief on the Mississippi, but "with reference to the control of the floods in the tributary territories" like the area of the Neosho River watershed, he felt it would be "equitable and just" to divide costs among the federal government, states, and benefiting districts.[190]

In response to the FCWCC's recommendations, the 1929 Kansas legislature passed several acts relating to the creation of conservation districts, flood control, drainage, and the building of dams and required that the chief engineer of the DWR review and approve all such plans.[191] The DWR also received "authority over the placing of obstructions in the rivers and streams" and decision-making power over "changes made in the course, current, or cross section of any stream in the state." By 1931, sixteen sets of flood-protection or drainage plans had been submitted to DWR, of which the chief engineer approved fifteen. Additional approval was given for repairs on more than fifty levee systems and to thirteen of fifteen plans for dams. However, DWR still had made no progress in preparing general plans for state watersheds, with which the Water Commission Act had tasked it. Once again, a failure to obtain appropriations from the 1929 legislature meant that DWR could only await "the results of the flood-control surveys and plans now being made on Kansas streams by the War Department."[192]

Almost immediately following passage of the 1929 Conservancy Act, which the Kansas legislature modeled essentially word-for-word on the Ohio act, residents in the Neosho and Verdigris River valleys mobilized to create conservancy districts under the law.[193] As it was designed and approved by the DWR, the Neosho River district would span portions of nine counties and follow "a strip of land two or three miles wide from Council Grove on the Neosho River and Cedar Point on the Cottonwood River nearly 150 miles to the state line."[194] Locals knew it would be an arduous process to finalize the district. The surveys the new law required would take at least a year to complete, and courts had to approve the resulting appraisals before the districts could petition for federal approval. Even if the districts secured court and Congressional approval, federal funding was in no way guaranteed. Knapp was optimistic, however, that Congress would affirm such funding because land in Kansas was "worth just as much" as anywhere else and Americans living in Kansas suffered as much from flooding as did those living in the Mississippi River valley.[195]

Optimism about the proposed Neosho River conservancy district was dashed in 1930, when the Kansas Supreme Court ruled the law unconstitutional on grounds that the legislature had "exceeded its powers in delegating to the district courts its authority to establish political subdivisions such as conservancy districts." Although the state planning board wrote that this objection could "easily be overcome by the legislative establishment of a predetermined number of conservancy districts having definite boundaries, with boards of directors appointed by the governor by and with the consent of the legislature," no such action appears to have been taken. Despite ongoing recommendations from the board to revive the Conservancy Law, by 1936, the idea appeared dead.[196]

The Deming levee described so enthusiastically in 1915 might be seen as the exception that proved the rule where levees were concerned in Kansas. By 1928, almost every private levee built along the Neosho River had failed during floods and they all required constant repair or wholesale rebuilding.[197] During the late 1920s and into the 1930s, engineers like Knapp and other Kansans

were beginning to doubt the efficacy of widespread leveeing of rivers for some different reasons, including a lack of comprehensive flood-control laws and fighting instead of cooperation among the extant levee districts. Knapp reassured the committee that Kansans were interested "in any manner" of flood control but emphasized to the committee his personal interest in building reservoirs.[198] When asked if he thought building reservoirs in Kansas could also help with downstream flooding in Oklahoma and Arkansas, Knapp replied that they would be more helpful than continuing to follow the current policy "of attempting to control [water flow] values by cutting off bends and building levees."[199] In fact, Knapp explained, levees and straightening efforts might be creating worse flood conditions elsewhere on a river depending on its profile. He backed this up with an example in Salina, where after an engineer had raised the levee and straightened a portion of the Smoky Hill River through the city, flood flows downstream from the town increased significantly.[200] Ultimately, Knapp was "convinced" that the reservoir system had "merit" and expressed his "personal opinion" that Kansans would "be entirely willing to bear their portion of any work from which they will receive benefit."[201]

Despite massive and widespread levee failures and changing theories about the most effective ways to minimize flood damage along the Neosho River, faith in levees remained strong through the 1930s among laypeople and engineers alike. By the early 1930s, fifty-one levees or levee systems could be found along the Neosho.[202] In 1931, the Corps designed and estimated the costs of constructing twenty-nine additional levees from the headwaters of the Neosho to locations in Ottawa County, Oklahoma.[203] Although the completion of these proposed projects was not guaranteed, the stage was set for the federal government to get involved in flood control in Kansas.

Early Flood-Control Efforts along the Neosho River in Indian Territory and Oklahoma

Flooding occurred equally as often and as damagingly along the entire course of the Neosho River, both north and south of the Kansas–Indian Territory and then Kansas–Oklahoma border. However, local and state efforts in Indian Territory (IT) and then Oklahoma to curb flood damages progressed more slowly than they did in Kansas. Having achieved statehood in 1861, by the late nineteenth century, Kansas was a "mature" political entity comprising relatively well-organized local governments that could more actively respond to non-Indigenous demands to help Kansans prevent, minimize, or mitigate flood damages along the Neosho. Although the Indian Service attempted to ameliorate flood impacts in northeastern IT prior to statehood, these meager efforts were not undertaken in a concerted fashion. Once Oklahoma became a state in 1907, both Indigenous and non-Indigenous people were better able to influence local and state officials to focus on flood control. By the 1920s, Oklahoma's efforts looked very similar to those in Kansas. Oklahomans appointed committees on both local and state levels to investigate their options for

flood control; enacted a state water resources division; sent both elected officials and nonelected representatives to Washington, DC, to lobby for federal action; and grew increasingly divided regarding the costs versus benefits of local flood control measures as they related to different regions of the state.

Reservoirs versus Levees

Levees were not nearly as common in Oklahoma as they were in Kansas. In 1912, Tulsa city engineer T. C. Hughes advocated building a system of reservoirs on Oklahoma rivers for not only flood control but also irrigation. Although he did not refer to the Neosho River by name, Hughes echoed a similar if slow-growing pro-reservoir movement among people living along the Neosho in Kansas. Indeed, despite laudatory descriptions of levees like the one at the Deming farm in Kansas, engineers and laypeople alike debated the efficacy of levees almost as soon as they built them. As early as 1907, a commentator attending a January flood control conference in Iola reported that among Kansans in Neosho County who had built the first system of levees on the river in the 1890s, there was a "decided sentiment against levees." However, he noted, "levees continued to be built" despite the fact that "each big flood destroyed at least part of them."[204] Whether Hughes was privy to this sentiment among Kansans in 1907, he himself did not actively support building levees in Oklahoma—at least not northeastern Oklahoma where he resided. Rather, Hughes argued in 1912 that the State of Oklahoma should "issue seventy-five or one hundred million dollars in bonds, to thoroughly survey every foot of our territory and to construct great lakes and reservoirs and control absolutely all water that falls within our borders." Not only would the waterbodies prevent reoccurring floods in "hundreds of thousands of acres of bottom land the richest in the state," which was currently "valueless for agricultural purposes," but the land would also "immediately take on its proper value and be worth millions of dollars for home building purposes and will offer an attractive inducement for immigration and capital to invest when they see it is placed in a safe condition."[205] Perhaps ironically, the federal government continued to advocate for levees at various locations along the Neosho River well into the 1930s—an idea to which the Corps would return in the 1990s. Levee advocates and reservoir supporters would continue to debate each other throughout the twentieth century.

Commissions and Conservancy

Conservancy Legislation and the Oklahoma Flood Control Legislative Committee

In February 1921, the Oklahoma House considered and moved forward Bill No. 169, known as the "conservancy measure," modeled after the Miami (Ohio) Conservancy Act. The Oklahoma bill provided "that all territory subject to damage from floods be allowed to form a tentative

drainage district, regardless of county lines." If people in counties where the districts might be located voted in favor of forming such an entity, then the district would "legally incorporate . . . and vote conservation bonds." Property "benefited by the protection offered from floods would be assessed a sum determined by the measure of relief offered." Monies raised would go toward paying the bond interest. The bill was controversial because Oklahoma statutes at the time neither allowed the organization of such entities "irrespective of county boundaries" nor the issuance of bonds. The fact that the bill's backers were Oklahoma legislators hailing from regions near the Canadian River had generated some resistance from legislators from other parts of the state. Opposition came from people who worried that such a law might benefit some Oklahomans over others.[206]

According to one commentator, many legislators dropped their opposition to the bill once they were convinced that "it was not special legislation for the three counties most affected, and that the other counties would not be called upon to help finance the drainage project except in the ratio of the benefit they received by being protected from floods."[207] However, the 1921 conservancy bill seems not to have ultimately passed, as drafting state conservation legislation was the subject of discussion at a November 27, 1923, meeting of the Oklahoma state flood control legislative committee. Samuel H. McCrory, chief of the U.S. Department of Agriculture (USDA) Engineering Department, attended the meeting and recommended that Oklahoma legislators once again draft a conservancy law based on Ohio's. McCrory "pledged" that the federal government (through USDA) would support such an effort "both in an advisory capacity in the passage of an adequate law, and also in the matter of aiding the investigation of, and recommending the solution for, Oklahoma flood control problems." Whether he had Congressional authority to make this "pledge" is unknown.[208]

Perhaps the committee believed that federal presence at the meeting would lend more weight to such legislation and convince those who voted against it in 1921. Indeed, committee members approved a motion to add McCrory's language to the draft bill. Furthermore, they determined that since the rivers in question crossed state lines, an interstate commission was more appropriate than a state commission and vowed to work toward a multistate organization. They then read the proposed language of the bill, which declared its passage was an emergency and "immediately necessary for the preservation of the public peace, health, and safety"; agreed to some amendments to the bill; and created a permanent Flood Control Legislative Committee with J. F. Owens as chairman.[209] Immediately after the meeting adjourned, the committee delegates (led by Ernest E. Blake and including McCrory) marched to the statehouse and presented the proposed law to Governor Martin Trapp. In addition to support for the bill itself, the committee requested the governor press for a $100,000 appropriation for "preliminary investigation of flood control" in the state.[210]

The next year, in February 1924, the Conservancy Act (Senate Bill 63) was before both houses of the Oklahoma Legislature. According to one political commentator, the state's flood loss

in 1923 alone—approximately $100,000,000 with 600,000 acres of land (representing $12,000,000 in lost taxes)—rendered passage of the bill "a matter of great importance to the people of the state." Because current law still limited operation of drainage districts to counties, it was "impossible to drain, or protect these rivers" on a larger, more logical scale. The proposed 1924 act, however, would allow drainage (or levee) districts to be as large geographically as was the area needing flood-control measures—more of a watershed approach. This arrangement would thus reduce the overall cost to any of the benefited parties while spreading the benefits more widely. Backers also noted that the USDA was insisting that if the State of Oklahoma wanted federal assistance, then the state "must hold back these waters, impound them in the natural reservoirs, and use them where possible for irrigation, power, or other available uses." War Department engineers preferred that that streams "be consistently handled as a whole and not here and there a part of them." The Corps estimated that the costs of enacting flood-control in Oklahoma on a watershed basis at less than half of the cost of damage in 1923. Additionally, the Corps asserted appropriate placement of reservoirs could impound enough water to irrigate "as much as five million acres of land, which would return at least one hundred million dollars, for water rights, or more than the entire costs of the Conservancy Districts."[211] By June, Chairman Owens had invited members of the committee to a meeting at which the question of flood control would be "brought to the fore" and informed them that "the Flood Control proposition is moving along nicely."[212]

Drainage, Irrigation, and Reclamation Commission and Interstate Cooperation

In July 1924, Blake, who was a member of the Oklahoma Drainage and Irrigation Commission, was advocating for both irrigation and flood control. He recounted how two floods and one drought in 1923 had led Oklahomans to take the "broader view . . . that floods were the common interest of all, the water the common hope of all, and its proper handling the duty of all." The Oklahoma government should "take up the cause for the public good," presumably with federal support, Blake believed; "such is the wealth of good deeds, thus accomplishing both reliefs gives two benefits, and gives four resources for the expense: income from improved lands in the west [parts of Oklahoma], and from protected lands, counties, cities, railroads and properties in the middle and east. Being thus divided, the costs become slight to everyone, burdensome to none, and of benefit to all."[213] Although Blake did not mention Neosho River in particular, his thoughts presumably applied to all rivers in the state. In 1925, Oklahoma re-formed the state Drainage and Irrigation Commission into the Drainage, Irrigation, and Reclamation Commission (DIRC) with Blake at the helm. By statute, the commission's charge was to promote flood control, diminish flood destruction, and "promote the conservation and use of waters in the State," not only to protect public and private property but also to aid in agricultural and industrial development[214]

Members of the new DIRC involved themselves in matters of importance to both Oklahomans and others affected by downriver flooding. In June 1925, Oklahoma joined the new nine-state Interstate Commission (Alabama, Arkansas, Colorado, Kansas, Louisiana, Mississippi, New Mexico, Texas, and Oklahoma), whose purpose was to prevent flooding downstream from the Arkansas and Red Rivers (and later, the White River). Members of the DIRC attended the inaugural meeting of the Interstate Commission alongside representatives from New Mexico, Texas, and Kansas, and a volunteer delegate from Colorado. In January 1926, attendees from Arkansas, New Mexico, Texas, Oklahoma, Louisiana, and Colorado, and a delegate from Kansas met once again. According to Blake's reporting of the events, commissioners agreed that interstate agreements related to flooding would result in more economic control, greater benefits, and wider distribution of costs among the states involved. This in turn would lessen the financial burden to each person who benefited while enhancing multistate control of "entire stream systems, as units, under interstate agreements." The Chief of Engineers agreed.[215] After the meeting, the commissioners returned to their respective states to ascertain what measures and procedures would "encourage comprehensive development" and to gather all available and relevant information about flooding in each state. They also tasked themselves with developing a "feasible plan for the regulation and conservation of the waters of the Arkansas River and its tributaries, (a) to regulate and conserve the water supply, (b) to prevent devastation by floods, (c) the extent of federal interest and co-operation without impairing control by a State within a State of her natural resources and her state jurisdiction and sovereignty."[216]

On behalf of the DIRC, Blake submitted a report to Governor Trapp on October 26, 1926. The study revealed that flood protection efforts in the state like "channel straightening, ditching, and levee protection" had proven to be not only "a failure and a disappointment" but also "very destructive to the properties both above and below the improvement, and generally to those who thought to benefit by them." Additionally, he noted that the geological nature of streams in Oklahoma and the volatility of the weather contributed to ongoing flood problems.[217]

Blake and other DIRC commissioners believed that the most economical approach to flood control in Oklahoma was to build reservoirs at key sites on tributaries. Because the state had neither installed enough gages to track nor kept good data about flood destruction on the Neosho River or elsewhere (except for a USGS gaging station installed in 1899 on the Neosho River at Fort Gibson[218]), Blake's study was necessarily incomplete. Despite data gaps, the commissioners had compiled as many damage reports as they could and checked tax rolls, public records, and expert opinions. They concluded that since 1907, floods had caused an average of $10,000,000 annually in Oklahoma. As they described it,

> the year 1923 was exceptional in that the flood loss to the State that year approximated one hundred million dollars. . . . 1926 has already far exceeded the average, already reaching probably fifteen million dollars. The agricultural lands of

> the State subject to flood damage will aggregate, we think, when completely tabulated, two million acres, of which about one million is practically destroyed and rendered unproductive, one-half million is damaged approximately 50%, and one-half million damaged approximately 25%. . . . We have no doubt that the taxable valuation of the State is reduced at least $100,000,000.00 by reason of our floods, and we have found some counties where the tax burden is more than double what it would be if they were protected from the floods.[219]

While the DIRC focused on flood control and minimizing flood damage, they also addressed using the state's water supply for irrigation/agriculture; power generation, industrial development, municipal water, and downstream navigation.[220] The DIRC report lauded the fact that an interstate district was under consideration for the Neosho and Verdigris Rivers. Knowing that water could be stored in Oklahoma more cheaply than anywhere else in the United States and that storing such water would accrue benefits to states other than Oklahoma, they believed that an interstate compact would "divide the cost and greatly reduce the expense" for the State of Oklahoma. Furthermore, it was "only proper" that downstream beneficiaries pay their fair share.[221] For example, the DIRC had proposed to foot a substantial portion of construction costs to withhold one-third of Arkansas River floodwaters, even though doing so would benefit Arkansas and other downstream states as much as (if not more than) Oklahoma itself. The proposal was met with compliments from members of Congress, Commerce secretary Herbert Hoover, Interior secretary Hubert Work, and the Army Engineers Board.[222]

Like Kansans involved in flood control efforts, Oklahoma DIRC members understood that in order to obtain federal monetary assistance for flood control, the committee and legislators needed to convince the federal government that state efforts would protect and promote matters about which the federal government was concerned, which included "improving navigation and protecting government river control works, protecting and cheapening interstate commerce, assuring regularity to the transportation of mail and messages, and assuring permanence of lines of military transportation." For Blake, Oklahoma waters, if used properly, "would equal the value of our coal, or oil, or any one of our major agricultural crops." To lower flood-control costs, the commission suggested that the state shift from accepting petitions for small districts to imposing larger districts across the state—possibly even just one statewide district. Larger districts would be able to "deal more effectively with the Federal government and co-operating States."[223] Once the districts were established and plans for projects drawn up and priced, then the state could figure out how best to allocate the benefits and costs among the beneficiaries.

Blake and the other DIRC commissioners understood that Oklahomans, too, were potential downstream beneficiaries of other states' flood-control efforts—Kansas, in particular. During a two-day meeting at Chanute, Kansas, in October 1926, Blake and Cyrus Avery (chair of the Oklahoma State Highway Commission), Kansas senator Arthur Capper, and representatives from nine

southeast Kansas counties discussed how reservoirs in Kansas could prevent flood damage in Oklahoma and how better roads would help "expedite crop movements."[224] As Blake explained to attendees, "A single flood has cost this section of the state $6,529,000, while the entire prevention program might be carried out for $5,350,000." He went on to say that the Neosho River "could be curbed by 21 reservoirs at an estimated cost of $2,688,000" and discussed possible locations for flood-control reservoirs. This kind of flood control, Blake asserted, would undoubtedly help Oklahoma.[225]

Oklahoma Flood Control Commission and Appeals to Congress

After yet another "season of floods" in Oklahoma, talk turned once again to how best to control flooding in the state. According to an editorial in the *Oklahoma News*, the "disastrous" floods of 1923 had pushed Oklahomans "to demand, and get, a flood control law"' passed but that the law "or its operation was defective" and farmers were "incensed" by it. Facing threats of a call for its repeal, the Eleventh Legislature, which convened from January to March 1927, amended the law and approved the four-state flood control compact. At the same time, Governor Henry Johnston named a new Flood Control Commission.[226] Some Oklahomans were calling on Oklahoma legislators to ratify the flood control compact that Governor Johnston had successfully negotiated with Texas and New Mexico. Oklahoma City political commentator Victor Harlow believed that Kansas, Colorado, and Arkansas might also join the compact, which called for reservoir construction (primarily on the Canadian River) and would include the federal government paying half the cost of the proposed projects. To Harlow, because Oklahoma would benefit greatly from the compact, it behooved state representatives to "rise above the entanglement of small struggles and personal desires which has marred this session and to grasp and act upon a matter of great public moment."[227]

Harlow called on the legislature to meet in April and May so that the problems of flood control would receive more attention. He wrote, "the terrible disaster overwhelming the Mississippi lowlands should only serve to emphasize to us the massiveness of our own problem in the valleys of the Arkansas and the two Canadians. . . . Apparently the last legislature merely accomplished the destruction of the law which the state had. . . . Oklahoma has no flood control law susceptible of being practically applied, and of course can have none until the next legislature meets."[228] DIRC chairman Thomas C. Harrell acknowledged that Oklahomans faced "a real flood problem" and assured the public that the commission would encourage any "reasonable proposition for artificial storage of water, for irrigation or other purposes." The details of whether the flood solution would consist of a few large reservoirs, many small reservoirs, or a system of temporary reservoirs could be worked out later.[229]

In May 1928, Blake returned from Washington, DC, to Oklahoma "with a record of achievement that has hardly been paralleled in Oklahoma activity in Washington. Single-handed, with the opposition of powerful Oklahoma elements which should have been his coadjutors, he has

been able so to impress his views and his plans upon the President and the Congress that the whole idea which he represented [a reservoir plan] has been embodied in the Flood Control Bill recently passed." Political commentor Harlow praised Blake for his "persistence, energy, and ability" in pressing his cause for many years. "Rarely is it given to any man to formulate alone and unaided an important constructive idea . . . and then practically single-handed to drive it into the national legislative system."[230]

In August 1928, the Oklahoma DIRC came out even more firmly in favor of using reservoirs for flood control and "charted a complete system of reservoirs to be constructed at strategic points for the controlling of flood waters" in the state. The plan mirrored the one that Blake had presented to Congress in May and which Tulsa congressman Everette B. Howard supported. The plan called for three reservoirs on the Neosho River and others on the Verdigris, Cimarron, North and South Canadian, Arkansas, and Little Caney Rivers. Howard asserted that had these reservoirs been in place in 1927, none of the rivers would have flooded that year. Approval and construction of the proposed reservoirs was "another forward step towards progress for Oklahoma and the stabilization in value of some of her best lands which are at present subject to annual inundation by floods."[231]

Later in 1928, Blake expressed frustration that the Corps' flood control surveys were moving too slowly despite "official approval" of DIRC chairman Harrell. While efforts had been more fruitful for the Red River survey, which federal engineer George E. Clements headed, the Arkansas River survey was nowhere near complete. Frank B. King, associate engineer in charge of the survey, had hired more staff to help, but at the time employed only four engineers, studying power, run-off and stream control, economics, and irrigation, respectively—nowhere near the staff needed for a survey the magnitude of which the Arkansas Basin required.[232] Two years later, the DIRC was mapping all rivers and creeks in Oklahoma in order to "work out a system of flood control."[233]

Blake and the DIRC commissioners seeking federal support for flood control were stymied in 1933 for several reasons, including the fact that Oklahoma was competing with every other state for money. To make matters worse, evidentiary documents for the flood-control plan that Blake and the commission had been working on and had presented to Congress unsuccessfully for years "vanished."[234] Apparently, the plans' absence was discovered when the Public Works Administration finally got interested enough to request the plan and supporting documents during yet another meeting with the Oklahoma contingent in Washington, DC. Blake insisted that when he left his office as head of the DIRC, he handed over all field notes and received a receipt from them, but the documents were nowhere to be found.[235] A "frantic telegraphic search" ensued and failed. As one commentator noted, if the plans could not be found, "years of effort" and $50,000 in state monies might "all have been wasted." "If these records should actually be lost," it might mean the collapse of a program which would have meant at least $45,000,000 more to the State. Oklahoma's share in the estimated $100,000,000 cost of controlling floods in the Arkansas Basin.[236] When Blake returned

to Oklahoma, he downplayed the "misplacement of the field notes of the interstate engineers" as "not as serious a matter as has been pictured." Blake was sure the notes would turn up, but at the very least, he had in his possession all the blueprints and plans that had been made from those notes.[237]

Regarding other disagreements among Oklahomans in DC around plans being formulated among the Corps and interstate commissions, Blake reported that "the point of conflict" was the Corps' determination that none of the recommended reservoirs (except one in Colorado and one at Fort Reno) would "afford protection enough below to justify their being built." Blake also noted that Oklahomans disagreed with the Corps' proposal "to catch the flood waters further down the rivers," a plan that did nothing to diminish flood damage in Oklahoma. The Oklahoma delegation was "split," with the "east side gentlemen" (i.e., the Tulsa contingent and presumably GRDA proponents who would benefit from federal funding should the Corps determine the project was economically justified) pushing an Arkansas Basin–specific program that would provide no relief to western Oklahoma.[238] Additionally, Oklahomans from the eastern part of the state wanted to challenge the Memphis District engineers' report to show that the engineers had inaccurately estimated the cost-benefit ratio of the proposed dams and to convince the secretary of interior to overrule the engineers' report in their favor. Others, including two Tulsans and Senator Wesley Disney from Oklahoma's First District, also wanted water requirements for navigation of the Arkansas River below Tulsa "reduced from a 9 foot stage of slack water to a 6 foot stage of slack water and the cost re-calculated on that basis."[239] Although most of the Oklahoma delegation returned to Oklahoma, Disney remained in DC to promote flood-control projects with the assistance of Tulsans Colonel Clarence B. Douglas, Eugene Lorton, and Newton R. Graham; N. D. Welty of Bartlesville; H. B. Cobban of Miami; and other "prominent" Oklahomans.[240]

By the early to mid-1930s, before passage of the 1936 Flood Control Act, many Oklahomans felt strongly that a series of three dams and reservoirs (not levees) was the most effective way to minimize flood damage along the Neosho River both in Oklahoma and downstream states. Additionally, having power-generating capacity at each of the dams would be of benefit to Oklahomans, specifically. The federal government, however, saw it differently. The Corps' studies had determined that levees, especially above the mouth of the Spring River, were the best means of flood control on the Neosho. While most of those proposed levees would be in Kansas, three were proposed for Ottawa County, Oklahoma: one west of Miami (5.3 miles long, average 9 feet tall), one northwest of Miami (9.8 miles long, average 9 feet tall), and one straddling the state line in Ottawa and Cherokee Counties (12.9 miles long, average 8 feet tall). Despite the detailed plans and cost estimates the Corps made for this system of levees on the Neosho above the Spring, they could find no economic justification for expending federal monies on them at that time.[241]

The Corps was similarly reluctant to recommend congressional support for the proposed series of three dams and reservoirs below the mouth of the Spring at Pensacola, Markham Ferry,

and Fort Gibson. Even though the Corps' own studies showed that not only would the combined storage and power dam at Pensacola and smaller low-head dams at Markham Ferry and Fort Gibson have minimized downstream damage of the April 1927 floods, but these facilities also could "be developed at a price which is normally considered reasonable." As with the proposed levees in Oklahoma, however, the Corps concluded that, "in the absence of a market, there can be no economic justification for such construction."[242] The federal government would not be involving itself in flood control on the Neosho River in Oklahoma at that time.

Miami, Oklahoma, Flood Control

As with almost every town located along the Neosho River, Indigenous and non-Indigenous residents in and around what is currently Miami, Oklahoma, had endured ongoing floods for as long as anyone could remember. Not surprisingly, then, the people who first platted the town in 1891, immediately adjacent to the river, continued to experience flooding and the damages it caused.[243] Scant evidence exists about early flood control efforts in the town, but the river—and its floods—has played a prominent role in Miamians' lives. Perhaps the most important concern of early Miamians was how to cross the river safely from the east bank, where the town was sited, to the west bank. Private ferries conveyed people and goods across the Neosho from 1891 until 1901, when a group of four local men received a charter for and eventually built a wagon toll bridge across the Neosho River at Miami. While some lauded the proposed bridge as a "valuable adjunct to the prosperity of our thriving progressive town," not everyone was so enthusiastic.[244] Unsurprisingly, resistance came from an owner of the ferry charter, next to whose facility the bridge was proposed to be constructed at the foot of what is now Main Street.[245] In 1905, purported "enemies of Miami" argued against the town as the seat of proposed Quapaw County because the bridge was still tolled, putting an unfair burden on county residents west of the river trying to access county services. Hands tied, supporters of Miami's county-seat bid reminded detractors that the City still had a year before it could exercise its option under the original charter to purchase the bridge but assured them that the town would find a solution to the problem.[246] When exactly the City eliminated the issue is unknown, but Miami did become the seat of Ottawa County in 1907, and the County ultimately took over the bridge as part of a county highway.

Also in 1901, the St. Louis–San Francisco "Frisco" Railway was building its own bridge across the Neosho River just south of Miami. Workers building the bridge had been discouraged from starting the job until "after the usual floods accompanying [the heavy June rains] had come and gone," but as soon as they got underway, they completed the bridge in record time. By October, the entire rail line was complete, replete with "a gold spike being driven in Miami as the finishing touch to the line that was to give Miami through train service and lift it from the position of being 'the end of the earth.'"[247]

By 1900, Miami had begun building water-related infrastructure in the form of culverts, but appears not to have had a storm sewer system until October 1917, when Miami City Ordinance No. 308 authorized an $80,000 bond measure to build a storm sewer system in the town.[248] Contracts were let for their construction the following spring.[249] Two years later, Ordinance No. 438 approved an additional $150,000 in bonds to expand the system and by August 9, 1921, the "Neosho River line" (storm sewer) was officially complete.[250] Engineers completed additional lines and outfall sewers in early January 1922 (one to Tar Creek and apparently a second to Neosho River).[251] However by November 1922, the river was already creating problems with the new sewer system, and Miami commissioners were discussing condemnation of "a narrow strip of land paralleling the Neosho river for the purpose of building up the banks to prevent the river from washing away under the city sewer line, which also parallels the river west of the city." At the time, no action was taken.[252]

On June 9, 1921, Miami Ordinance No. 490 created the Public Municipal Park (adjacent to which a low dam across the Neosho River would eventually be constructed); three months later, the Board of Park Commissioners was formed by Ordinance No. 497.[253] Almost immediately, Miamians and others in Ottawa County realized that flooding was going to be a problem at what was named Riverview Park. Two successive floods in March 1922 not only inundated the park but also created a worrisome log jam at the county bridge immediately upstream. By March 29, county commissioner Jim Jarrett had given up trying to clear the jam, and the commissioners began discussing instead a plan to build a levee to prevent flooding in Riverview Park. Jarrett finally got behind a plan that had been "suggested repeatedly and may be the feasible one to follow. . . . It would be necessary to construct an eight-foot levy at the lower section of the park to prevent the backwater from overflowing the park. The greater portion of the water now in the park came in over the river bank about 100 yards below the bridge."[254] The County ultimately decided to build a rock wall at the ends of the bridge in Miami "to withstand future floods" and prevent future damage.[255] In July 1922, the City made plans to raise the "lower" end of the park to match the "higher" north end. According to Charles Ellis, superintendent of the municipal light and water plant, the City had already been contemplating this leveling even before the recent spring and early summer floods, and that "the present rise could have been prevented if the work had been completed" when it was originally proposed.[256]

On July 30, 1923, the Miami board of commissioners approved construction of 6-foot-tall dam across the Neosho at the city park.[257] Whether the larger city commission envisioned a dual role for the dam as both a flood-control structure and park enhancement is unclear, but the Parks Department had grand plans for a beach, bathhouse, camping shelters, and even locks through the dam, which they believed would be a "desirable acquisition to the splendid resort."[258] The City intended to charge $1 per passage through the proposed locks.[259] Multiple spring floods delayed construction and damaged the dam as it was being built. In April 1924, for example, city crews were working on various projects around Riverview Park, including "constructing the concrete apron on

the east dam, where floods played havoc with the bank during the fall and winter, even cutting under the end of the dancing pavilion and causing the floor of one corner of the building to fall into the water."[260] In May, Miamians attended the grand opening of Riverview Park and the newly formed Lake Miami, on which boating was predicted to be a "chief attraction"; "fishing at the dam is good," proclaimed the local newspaper.[261] Although the park was officially open, work on the dam continued after the celebration.[262] In October 1929, the City acquired more land for the park, expanding it two blocks east of Main Street and three blocks south of Ninth Avenue.[263]

Dealing with storm runoff and drainage was an ongoing struggle for the City of Miami, which on February 28, 1927, voted to amend the city charter and create the public utilities board (PUB).[264] On May 7, the newly formed PUB held its first meeting, at which members agreed to the board's rules and regulations and elected G. W. Sapp head of the sewer division.[265] In April 1929, the Miami PUB was once again discussing "improper drainage" of stormwater. At the meeting on April 19 that year, the board directed PUB superintendent H. G. Freehauf to come up with an estimate for what it would cost to construct a "proper drainage system" for the flooding problem on B, C, and D Streets NW (now P, O, and N Streets NW[266]) immediately adjacent to the Neosho River in the city.[267] Later minutes did not record what exactly Freehauf presented to the PUB. However, he likely in part proposed creating a storm drainage sewer district, which the board discussed at the June 7 meeting and then asked the city attorney to investigate.[268] In early September 1929, the PUB discussed creating a sewer district and 500-foot sewer line in the southwest portion of the city.[269] The next month, the City of Miami started the process of creating a comprehensive zoning ordinance.[270] On June 30, 1930, Miami commissioners passed Ordinance No. 588, which finalized it.[271]

Floods continued to wreak havoc at Riverview Park. In 1933, "high water and powerful eddies" resulting from a spring flood washed out the west bank of the river near the dam at Riverview Park.[272] That July, the Miami PUB, which had taken over the Parks Department, drafted a budget to repair the dam itself and construct a "wing wall" to protect it on the west side of the river.[273] The final structure was a concrete retaining wall 400 feet long and 20 feet tall.[274] In June 1944, on the heels of a large flood in May 1943, the City condemned more land for the park, blaming GRDA for past flooding of this part of the park and in anticipation of potential future overflows.[275]

Federal Involvement in Flood Control and Power Development Nationally and on the Neosho River prior to 1935

Although the Constitution implicitly reserved to the federal government control over navigable rivers and streams and their tributaries (a stipulation often referred to as the commerce

clause), states exercised the most control over watercourses through most of the nineteenth century. It would take almost 150 years for Congress to pass legislation specific to flood control (1917) or hydropower development (1920). Federal officials, most notably staff of what would become the Army Corps of Engineers, were not completely out of the loop, however. By the 1820s, under the guise of improving interstate navigability under the commerce clause, Corps engineers were performing surveys and river projects that "everyone in Congress knew . . . [were] also for flood control."[276] For nearly a century, the Corps' river improvement efforts were often caught between a fight that, as one historian described it, "pitted one locality and region against another amid cries of 'pork barrel' spending and 'log-rolling.'"[277]

Between 1849 and 1912, early federal flood-control measures evolved in the wake of several disastrous floods (most occurring on or along the Mississippi River) that spurred Congressional action. Flooding in 1849, for example, led to the passage of the 1849 and 1850 Swamp Lands Acts, which "encouraged the reclamation of millions of acres of flood-prone wetlands" most notably in the lower Mississippi Valley. After another Mississippi flood in 1874, Congress created the Mississippi River Commission in 1879.[278]

In 1884, a slow evolution toward more active involvement in flood control began when Congress passed the Rivers and Harbors Act that year, authorizing "the Secretary of War to remove unauthorized obstructions, including dams, bridges, and causeways."[279] The 1890 Rivers and Harbors Act took this authority further and outlawed creating unauthorized obstructions to navigable water over which the United States had jurisdiction.[280] The next year, the federal government "granted free rights of way through the public lands and reservations for canals, ditches, and reservoirs," extending this in 1896 to "any citizen or association of citizens . . . for the purpose of generating, manufacturing, or distributing electric power."[281] Under the 1899 Rivers and Harbors Act, anyone proposing to build a bridge, dam, dike, or causeway over navigable waters of the United States was required to submit plans for consent of Congress and approval of the Corps of Engineers and secretary of war before construction.[282]

One of the first pieces of federal legislation specific to developing power sites on the nation's river was the General Dam Act of 1906. The act "empowered the federal government to compel dam owners to construct, operate, and maintain navigation facilities without compensation whenever necessary at hydroelectric power sites." Still, the government was not in the power business, and private interests almost exclusively developed most power projects before World War I.[283]

Thus, at the same time Kansans and then Oklahomans sought relief from the almost annual floods to which they were subjected, the federal government had few means by which to directly intervene or assist with flood control on the Neosho River. Historian Joseph Arnold explained that this was due to a lack of federal resources, the "formidable engineering and economic obstacles to flood control by methods other than levees, such as reservoirs," the relatively slow growth of large

population centers along the river through the end of the nineteenth century, and the resistance of many politicians who believed it was unconstitutional to provide federal aid for flood-control projects that would ostensibly benefit local interests more than the nation as a whole.[284] Conversely, the lack of true federal oversight of hydropower facilities until passage of the 1920 Federal Water Power Act caused later consternation among private and then state interests that had been developing plans to site a hydroelectric plant on the Neosho River since the early 1890s.[285] The shifting federal role in both flood control and power development on the Neosho River—from mostly hands off until 1936 to mostly hands on by 1941—created complicated public and private dynamics within both Kansas and Oklahoma. The repercussions of the shift continue to this day.

This was the milieu in which Neosho County, Kansas, residents found themselves in the 1890s, when private parties started building the first flood-control levees on the Neosho River near Erie.[286] Citizens knew that if they could engage the federal government in providing both monetary and engineering assistance, their efforts might be more successful. To that end, in 1894, locals in Osage Mission (present-day St. Paul) formed the Neosho Land and Improvement Company with furthering its flood control goals at either or both a local and federal level as its primary focus. The group was soon able to influence U.S. Representative Snyder S. Kirkpatrick (a resident of nearby Wilson County) to pass a bill in 1896 to have the Corps conduct a survey of the Neosho River.[287] That year, Corps engineer J. R. Van Frank conducted a survey of the Neosho from the north line of Neosho County to the south line of Labette County.[288] Still ostensibly focused on navigability, his superior, Captain William Sibert reported to the secretary of war that the "extremely small low-water discharge makes it impracticable to improve this stream for navigation purposes . . . . It is not . . . worthy of improvement by the United States."[289] This early Corps survey did not result in immediate federal aid to Kansans in Neosho and Labette Counties. However, Congress soon passed the Rivers and Harbors Appropriation Act of 1899, paving the way for the federal government to involve itself in planning and funding flood-control projects around the nation.[290]

Although continual flooding on the Neosho River was not enough to pressure federal agencies to get involved in Kansas or Oklahoma, over the first three decades of the twentieth century, national concern about flood control generally intensified alongside national debate over the utility of levees versus reservoirs as preventive or mitigating measures against flood damage. The early 1900s saw disastrous flooding on rivers in Kansas with serious impacts on large population centers of Kansas City and Topeka, whose citizens began pressing their representatives in Congress to take action. In 1912 and 1913, "two terrifying floods . . . devastated" the Mississippi River valley, highlighting the "inadequacy of the levee system."[291] On the heels of these floods came another in 1916. In the aftermath, Congress established the House Committee on Flood Control in 1916 and passed the Flood Control Act in 1917, the "first act aimed exclusively at controlling floods."[292] Although, as noted above, the 1917 legislation only addressed flooding on the Mississippi and Sacramento Rivers, "the door had been opened," if ever so slightly, to a nationwide program of flood control.[293]

After World War I, Congress opened the door wide to developing hydropower resources on rivers in which it had showed little interest in investing money for "comprehensive waterways development."[294] In 1920, Congress passed the Water Power Act of 1920, which created the FPC and solidified federal control over power dams on nonnavigable rivers.[295] The subsequent passage of the River and Harbor Act of March 3, 1925 (43 Stat 1186), which ordered the Corps of Engineers to determine the cost to do surveys of the nation's rivers and recommend ways to improve them, would perhaps ironically lead to the "most detailed and comprehensive flood control studies and plans ever."[296] In April 1926, the Corps' estimate to survey over 180 rivers and tributaries for $7,300,000 became enshrined in House Document 308 of the sixty-ninth Congress. Under the 1927 River and Harbor Act, Congress began funding the studies, which would result in what became known collectively as the 308 reports.[297]

Although Congress's focus with the 308 surveys may have been on developing hydropower sites around the country, the Corps fully understood the addition influence it might have on pressing forward with a national flood-control program. As Chief of Engineers Major General Harry Taylor noted, the program would "have a far-reaching influence in controlling and coordinating all works in connection with the diverse beneficial uses which may be made of the streams under federal jurisdiction."[298] Although he called out neither power nor flooding in this statement, he certainly meant both—and his prediction could not have been more accurate. Indeed, the results of the 308 survey that included the Neosho River set the stage for future debates over and the ultimate construction of Pensacola and later the Fort Gibson and Markham Ferry dams in Oklahoma.

The River and Harbors Act of January 21, 1927, and Flood Control Act of May 15, 1928, authorized the Corps specifically to report on all tributaries to the Mississippi as regards flood control in the larger watershed. This included the Neosho River, as tributary to the Arkansas. The surveys resulted in several documents published between 1931 and the final *Arkansas River and Tributaries* (dated August 24, 1935; formally printed in 1936), all with slightly varied but similar results and recommendations.[299]

The Corps-led 308 studies were underway by summer 1929, when the *Miami Daily News-Record* noted that surveyors had "swarmed" the area. On the morning of July 1, government engineers were in Miami, Oklahoma, where, according to the news, surveyors were "mapping out purely visionary dams and supplementary channels on the streams tributary to the Arkansas and Mississippi rivers for the purpose of submitting accurate figures to the consulting engineers." The Corps believed these maps would be comprehensive enough to provide estimates of the "exact acreage" that reservoirs would cover if the hydropower dams were built.[300] In addition to reservoir sites, the engineers were surveying for locations at which to build more levees. The district engineer's June 1931 report on the Neosho River summarized the "most practical plan" for flood control as building levees (in a prioritized, three-stage approach) in the overflow areas along the main stem of the Neosho above the mouth of the Spring.[301] As noted above, survey results led the

Corps to propose constructing three levees in Oklahoma (one straddling the state line) on the Neosho and another forty-nine in Kansas, which already had fifty-one levees or drainage districts at that time.[302] Two of the proposed levees were near Miami in Ottawa County; one straddled the state border between Ottawa and Cherokee Counties (Kansas), and two more would have been located in southern Cherokee County near Chetopa and Oswego. The latter two would likely have had some mitigatory influence on flooding in northeastern Oklahoma.[303] These levees would protect an estimated 133,840 acres, according to Corps calculations; however, none of the proposed construction was "economically justifiable" at that time.[304] Interestingly, the report stated that if reservoirs (not levees) had been extant on the Neosho, the April 1927 floods would not have done such damage on the Mississippi. Still, the cost of reservoirs compared to the damage benefits they might afford did not pencil out in 1931, and the Corps also determined that reservoir building on the Neosho for flood control reasons was not economically justifiable.[305] No evidence exists that any of the fifty-plus levees proposed in 1931 were built as designed; it would take three more decades to get the reservoirs built.

In sum, the district engineer recommended in 1931 a three-pronged plan for the "most efficient development of the water resources of the Grand" watershed.[306] First was to develop waterpower on the lower reaches of the Grand in Oklahoma.[307] Second, was the recommended levee-building plan.[308] Last, a reservoir at Council Grove, Kansas, would improve municipal water supply and quality (but nothing specific to flood control).[309] Despite the so-called practicality of these three measures, the Corps concluded that none of the proposed reservoirs in Oklahoma reservoirs or levees in Kansas was "economically justifiable at the present time" due to "excessive" cost (although it recognized that later economic conditions might change this cost-benefit analysis).[310] Furthermore, the federal government determined that costs associated with building reservoirs to either generate power or provide municipal water "should be left to private initiative."[311]

By February 1934, when the Corps issued yet another "Report on the Grand (Neosho River)," the Corps had reduced the number of levees proposed in 1931 for Oklahoma to two (again with one straddling the state line) and for Kansas to twenty-two. This iteration of the report deemed the two Ottawa County levees as having the least economic merit of all the proposed projects.[312] Unlike in the previous report, the Corps assessed specific cost-benefit ratios for the Pensacola, Markham Ferry, and Fort Gibson (both individually and as a group of three) and a reservoir at Council Grove. Yet again, however, they were placed at the bottom of the priority list, likely because the Corps did not yet see these as providing enough preventative benefit where flood-control damages were concerned and being focused on private development of power and municipal water sources, which the Corps did not see as its purview.[313]

The 1935, final iteration of the 308 report on the Arkansas River and tributaries served as the basis for both the flood-control and hydroelectric projects the Flood Control Act of 1936

authorized (and subsequent acts appropriated funds for). By that time, the Corps had whittled down the original list of proposed levees substantially. The act only authorized projects in Kansas and required local entities to provide free easements and rights-of-way, release the U.S. government from any future damages claims; and maintain and operate the structures after their completion.[314] The levees authorized were planned for the cities of Florence, Cottonwood Falls, Emporia, Neosho Rapids, Hartford, Burlington, LeRoy, Neosho Falls, Iola, Humboldt, and Chetopa; and in Cherokee, Chetopa, and Lyon Counties. Ultimately, however, with the exception of the City of Iola, which did ultimately build its levee, "local interests did not desire the construction of the proposed levees and would not provide the necessary rights of way."[315] Public hearings, for example at Burlington, Kansas, elicited such statements as, "the people of Burlington do not want levees," and that the general preference was for a system of reservoirs on the Cottonwood and Neosho Rivers instead.[316]

Regarding the Neosho River as a whole, the Corps determined that while it did indeed overflow a "considerable area," no economic justification existed at the time for the federal government to pursue large flood control projects on it. The Corps did note that future economic conditions might justify a storage reservoir on the Spring River above its confluence with the Neosho but that at the time, financial concerns were local not federal in nature.[317] Improving the river for navigability made no sense for the Corps. While the Corps found no economical sites for power production along the Neosho in Kansas, the Pensacola, Markham Ferry, and Fort Gibson sites were viable. Still, with an air of finality, the Corps stated that there was "no Federal interest involved on this stream."[318]

Some combination of the results of the Corps 308 reports completed in 1935 and 1936 and the series of "disastrous" floods that swept the nation those same years compelled Congress to pass first the Rivers and Harbors Act of August 30, 1935, and then the Flood Control Act of June 26, 1936.[319] Adding to the momentum, President Herbert Hoover in the late 1920s and Franklin D. Roosevelt from 1933 onward pushed for flood control through various means. Early in the Depression, Hoover advocated using flood-control projects on the Mississippi River as an "unemployment relief measure," presaging the widespread New Deal programs Roosevelt would implement.[320] The 1935 act took things further, reflecting the ongoing trend toward planning and funding multipurpose dams for "controlling floods, improving navigation, regulating the flow of the streams of the United States, providing for storage and for the delivery of the stored waters thereof, for the reclamation of public lands and Indian reservations, and other beneficial uses, and for the generation of electric energy as a means of financially aiding and assisting such undertakings."[321] Roosevelt furthered Hoover's drive to unite work relief with flood control and hydropower development "in a manner that the New Deal was to continue doing throughout the 1930s and that became one of the rationales" for federal funding of projects like Pensacola through the PWA and passage of the 1936 act, which focused on flood control through the Corps.[322]

As discussed in this section, prior either to creation of the GRDA or to passage of the Flood Control Act of 1936, individuals, municipalities, and the States of Kansas and Oklahoma marshaled numerous efforts to effect some form of flood control on the Neosho River and its tributaries. Levees, clearing banks and the watercourse, and even straightening sections of rivers and streams served to provide some measure of relief, but in no way prevented flooding from causing damage along the Neosho. Although the Corps was mostly hands-off where navigability and flood control on the Neosho River was concerned up until the mid-1930s, the FPC involved itself with power production on the nation's rivers after passage of the 1920 Federal Water Power Act. After the Depression hit, the PWA was tasked with funding local projects for economic relief, which dovetailed nicely with more local attempts to develop power, such as the efforts that individuals and then GRDA were making to construct the Pensacola Project.

As the next section outlines, in 1935, the State of Oklahoma created the GRDA and began moving forward in earnest with securing an FPC license and agreement with the PWA to develop the Pensacola Dam to generate hydroelectricity. Soon after, the Corps reversed gears where flood control was concerned on many rivers, including the Neosho. This sea change, as codified in the 1936 Flood Control Act and cemented in subsequent revisions and amendments to the act as well as other enactments, opened the door wide to the Corps' direct involvement and oversight of operation of the Pensacola Dam and Reservoir. These two developments set the stage for what has come close to a century of debate over power generation and flood control on the Neosho.

Part 3: Managing the Neosho River: Flood Control and Power Production after the Creation of the GRDA

Introduction

Many people have written about the history of the development of the Neosho River for power production and flood control. What follows is a summary leading up to creation of the Grand River Dam Authority in 1935, debates around and eventual issuance of and modifications to the FPC license in 1939, federal operations of the dam during World War, the return of Pensacola Dam operations to GRDA in 1946, and ongoing jockeying for control that would play out during that period (and arguably, up to the present).

As discussed in part 2, the Corps had shown an early interest in rivers like the Neosho, which although nonnavigable could yield viable sites like Pensacola for power-generating facilities and dams that could have a positive effect on downstream navigation and stream flow. Still, for decades, the Corps had concluded that the potential combined benefits of the Pensacola project for multiple purposes (power generation, navigability, and flood control) did not outweigh the estimated costs to the federal government. Because it was focused on larger issues of downstream navigability and flooding, the Corps came late to the table where the Pensacola Dam was concerned for power production or any kind of flood control upstream of the proposed dam. Additionally, by the time the Corps decided it wanted more authority at Pensacola, most of the planning and design was done, and the Public Works Administration (PWA) had determined to use federal New Deal grant and loan funds to assist in its completion. PWA envisioned the Pensacola Dam as an important Depression-era relief measure for the region (primarily to create jobs and generate power for rural electrification projects and economic development), and GRDA was thrilled to have found federal support for their project—one that many people in Oklahoma and nearby states had wanted for decades.

By the time GRDA and PWA sealed the deal, however, the Corps had its own plans for Pensacola. Under the 1920 Federal Water Power Act, the FPC had assumed responsibility for licensing power dams on rivers like the Neosho. However, in June 1938, Congress had passed an amendment to the Flood Control Act that conveyed to the Corps complete authority over flood control on the nation's rivers to include the power to dictate how FPC-licensed hydroelectric dams would operate as regarded flood control. The act also charged the Corps with responsibility to secure (and pay for) rights and title to land, legal settlements, or flowage easements necessary to constructing the dam and reservoir. Under this authority, the Corps weighed in on the license for

the Pensacola project. During this phase, PWA, GRDA, the FPC, and the Corps engaged in long debates around the proper pool levels for power generation versus flood control and who would control the dam to manage these pool levels. The exact elevation of the power pool versus the flood poll was key to determining which agency was responsible and who would pay. Negotiations ultimately resulted in a 1939 FPC order outlining a compromise. Neither party was thrilled with the terms but both parties appreciated that the compromise would allow the stalled project finally to move forward. No one could have known the lasting effects the compromise would have on how the project was run after it was completed and commenced commercial operations in spring 1941.

Under the final license, GRDA was responsible for acquiring land and easements up to elevation 750 (with some exceptions related specifically to the two railroads within the project area) and the federal government for the land between elevations 750 and 755. According to the license, the federal government was responsible for acquiring those lands and easements before GRDA could (under the terms of its license) operate the dam above elevation 750. GRDA/PWA would also need to enter into settlement agreements with various parties regarding known, predictable damages to municipal infrastructure (for example, the Miami storm sewers) and roads and bridges (for example, with Ottawa County). To expedite the process for GRDA, Congress passed a law giving GRDA the right to acquire Indian land below elevation 750 without congressional approval at a fair price or, if an Indian refused to sell, the authority to condemn the land.

On the heels of Pensacola Dam's grand opening in spring 1941, additional changes to federal policies outlined in ever-greater detail the Corps' role in managing flood control on the Neosho River and therefore, how much control it could exercise over GRDA operations under its FPC license and PWA contract. The Flood Control Acts of 1941 and 1944 further cemented the Corps' flood-control authority. Two years after Executive Order No. 8944 transferred wartime operation of the Pensacola Dam to the FWA in November 1941, Executive Order No. 9373 transferred this role from the FWA to Department of Interior, which in turn created the Southwestern Power Administration. After the war ended, Interior and GRDA agreed to a plan that returned operations of the Pensacola Dam to GRDA (according to its license and with Corps oversight) on September 1, 1946.

Floods in 1941 and spring 1943 would test the operations arrangement between GRDA/PWA and the Corps almost immediately after the Pensacola Project began commercial operations in spring 1941. Heavy flooding occurred after two big storms in 1941—one in April and a much larger one that lasted from September through November. Following the rules of the license, GRDA notified the Corps when the pool reached elevation 745 in April and followed Corps directions thereafter. When the Corps directed GRDA to allow the pool to rise to elevation 750 (at the dam), GRDA complied, but not without notifying the Corps that potential upstream flooding might occur. The Corps ignored this warning, and upstream lands did indeed flood.

After the spring 1941 flood, the Corps and GRDA codified rules and regulations around operating the dam during flood conditions and the War Department hastened to acquire land and flowage easements between elevations 750 and 755. In May 1943, another large flood hit the Neosho River and led again to Corps takeover of Pensacola operations. Because the United States had not yet acquired all the land to elevation 755, Federal Works Agency (FWA) administrator Douglas Wright used his emergency powers and an appropriation from Congress to quickly complete the process ahead of any potential flood damage claims they might face. He also made decisions that many believed protected the downstream Oklahoma Ordnance Works from major damage and work stoppages, but others criticized his actions and blamed him for both upstream and downstream flooding.

Between June 1943 and September 1, 1946, when the federal government handed the Pensacola Project back to GRDA, no further flood events caused damages attributable to dam operations on the Neosho River. The Department of the Interior created the Southwestern Power Administration (SWPA) in September 1943 and granted that agency control over Pensacola Dam. SWPA quickly moved to acquire land and easements up to elevation 760 to allow for flexibility in dam operations in unusual or emergency flood situations.

The history of the planning, construction, and operation of the dam and reservoir at Pensacola reveals divides that existed, grew, were bridged, and widened again among those entities focused on power and those focused on flood control. In some cases, the means and goals of these entities dovetailed neatly, but in many cases, their objectives diverged, and they actively competed against one another. The results of the competing interest of power versus flood control could be seen at local, state, regional, and federal levels into the second decade of the twenty-first century. Through a series of enactments, the roles of GRDA and the Corps were clarified and codified such that the Corps controls operations of the Pensacola "flood pool" (i.e., reservoir elevations at 745 feet and above) whereas GRDA (under its FERC license) controls operations for power generation in the "conservation pool" below that.

Private Hydropower Development on the Neosho (Grand) River before GRDA

The State of Oklahoma formally created the Grand River Dam Authority with passage of the Grand River Dam Authority Enabling Act on April 26, 1935. However, private attempts to locate and build a hydropower dam on the Neosho River had begun as early as the 1890s. The first person to see the river's power potential was a Cherokee citizen, Henry Holderman, who grew up in Indian Territory, attended the Wyandotte Indian School, and became fascinated with waterpower at an early age. According to various sources, Holderman, like many of his generation, saw electricity as the harbinger of progress and prosperity, things he desired for members of the Cherokee Nation.[323]

Hoping to facilitate construction of a hydropower dam on the Neosho River, Holderman organized and executed a river survey between Iola, Kansas, and the Arkansas River; they located three possible sites during the journey. By the late 1890s, Holderman was solidly on the path he would follow until he died: trying to attract financial backing to construct his proposed dam. Having sold his family's land holdings to purchase "the prospective sites and the riverbed from the Cherokee Nation," Holderman worked diligently through the first three decades of the twentieth century to draw investors—from cotton manufacturers to railroad operators to miners—to his project.[324] Holderman (and his wife) teamed with various investors and incorporated a number of entities to develop waterpower on the Neosho. With three backers, he formed the Grand River Power Company under the U.S. Court of Appeals for the Indian Territory in 1907. The company reportedly initiated condemnation proceedings on land for the pool, but no record exists of any corporate activity thereafter. In 1913, Holderman, his wife, Maude Holderman, and Strang banker E. L Stegall, formed the Grand River Power and Electric Company (GRPEC) under what was now Oklahoma state law. The company existed just over twenty years but lost it charter in 1934 for nonpayment of license fees.[325]

Plans for hydropower on the Neosho gained momentum after 1917, when Holderman and others incorporated the Grand River Hydro-Electric Company (GRHEC). Engineer Royal D. Salisbury developed plans and a cost estimate for a dam in 1920; the plans were either made public or leaked in 1921, as the *Miami Daily Record-Herald* reported with concern in late December that year that the company was ready to begin construction. The article provided no specifics about the size or location of the proposed dam, but noted that as designed, it would create a "tremendous overflow" on the Spring River to a point "almost midway" between Baxter Springs, Kansas, and Wyandotte, Oklahoma, and on the Neosho to a point "some miles northwest of Miami."[326] In 1922, GRHEC applied for and received a permit from the Oklahoma state engineer "to appropriate the entire flow of Grand River, at the approximate location of Pensacola Dam, for the purpose of generating electric power and energy."[327] Whether it submitted the exact plans on which the *Daily Record-Herald* reported is unknown.

In a parallel process to the GRHEC's attempt to build a state-permitted dam on the Neosho River, the Public Service Company of Oklahoma (PSCO) initiated the process of securing a preliminary federal permit from the newly created FPC at its own site near the one GRHEC proposed. To that end, on May 25, 1923, PSCO president Fred W. Insull filed a declaration of intention to the FPC for a project on the Neosho River.[328] According to its declaration, PSCO was already "serving electricity" in the northeast Oklahoma cities of Tulsa, Nowata, Broken Arrow, Garnett, and Dawson and was in negotiations to expand its grid to include Pryor, Vinita, Big Cabin, and Adair. PSCO asserted that the "constantly increasing demand for additional electric power" made it immediately "necessary" to receive the permit and develop the dam. A couple weeks later, the FPC requested that the Corps report on the appropriate jurisdiction for such a project.[329] In response, Memphis District commander Donald H. Connelly noted that although the Neosho

River was not navigable above Fort Gibson, the section between Fort Gibson and the Neosho's confluence with the Arkansas was both navigable and overseen by the Corps. Connelly expressed some concern that if the proposed project was "freed" from U.S. control, adverse effects to navigability on the lower reaches of the Neosho or the Arkansas might occur.[330] He thus recommended that "provision for passing 375 [cubic feet per second] over or through the dam at all times is necessary to protect the interests of interstate and foreign commerce."[331] Based on Donnelly's findings, Corps acting chief Harry Taylor recommended that the FPC was the appropriate jurisdictional agency for the proposed project.[332]

On April 12, 1924, PSCO submitted its application for a preliminary permit.[333] On July 16, 1924, Oklahoma state attorney general George F. Short submitted a protest on behalf of the State of Oklahoma against the FPC's issuance of PSCO's preliminary permit for the Grand River Dam. The State's argument was that the Neosho was nonnavigable and therefore not subject to FPC authority (or any federal authority, for that matter) and that the State had already granted prior rights to the beneficial use of the water to the GRHEC. Call informed Short that his protest was baseless because fluctuations in stream flow due to operations of a dam on the Neosho River could have an adverse effect on navigability on the Arkansas River to which the Neosho was tributary.[334] A year later, with the State's protest apparently dropped, the FPC moved ahead and finalized a preliminary permit a year later on July 25, 1925. The permit covered initial studies in support of an application to license FPC Project No. 498, "a concrete dam in the Grand River, a power house, and appurtenant works," near Bernice in Delaware and Ottawa Counties.[335] The proposed location was upstream from where GRDA ultimately built the Pensacola Dam on a bend of the river that headed northwest just past the protrusion of land on which the Shangri La Resort currently stands.[336]

The preliminary FPC permit gave PSCO three years' priority over other applicants in submitting a license application, which was to include the results of all engineer studies and cost estimates, installation of a stream gage at or near the proposed dam site, boring and stability analyses at the dam site, and gathering and submitting market data to support the economic feasibility of the project.[337] If the fifty-year license were to be granted, the permit specified that it would include a number of conditions. Specifically related to the dam's potential role in flood control, was the stipulation that operations affecting "use, storage, and discharge from storage" were to "be controlled by such reasonable rules and regulations as the Secretary of War may prescribe in the interests of navigation and as the Federal Power Commission may prescribe in the interest of flood control and of the fullest practicable utilization of the waters of said river for power purposes."[338]

While PSCO was securing a preliminary permit from the FPC, in 1924, GRHEC transferred its rights to the Oklahoma Hydro-Electric Company (OHEC), and the new company received state permits for the three other proposed dam sites on the Neosho.[339] OEHC then hired Tulsan Victor Cochrane to report on the feasibility of Neosho River power projects and acquired some land a short distance downstream of the current Pensacola Dam site. Additionally, they secured interest in

the dam from Miami mining magnate J. F. Robinson, who sought cheap electricity for the local, booming lead and zinc industry in which he was heavily invested. In 1925, Cochrane and W. R. Holway (who later played a prominent role in designing and constructing the Pensacola Dam) conducted surveys regarding the "economical height to which a dam should be built (for the development of power) at the Pensacola site."[340]

Jockeying for position, OEHC and PSCO both applied to the DIRC in late 1925 for state permits for their projects. By that time, what was now the OHEC had failed to begin construction on their proposed 159-foot dam near Ketchum and thus their permit had expired due to a "two and one-half year statutory limitation requiring completion of one-fifth of the work on such a project within this period." Perhaps hedging their bets with their preliminary FPC permit, PSCO applied for a state permit to build a "40-foot dam above the other site." The DIRC determined that the smaller dam would "be a waste" considering OEHC's plan to develop the entire river, but it issued neither an extension to OEHC nor a permit to PSCO at that time.[341]

In March 1926, Robinson applied to the DIRC to construct four dams on Neosho River. Approval came in October; however, by that time, Robinson's failing health led him to assign his rights to Tulsan Wash E. Hudson, who in turn assigned his rights to Grand-Hydro, yet another new corporation formed on November 6, 1929, in Oklahoma (with Hudson as one of its incorporators).[342] The DIRC proclaimed that work on the first of four hydroelectric dams was slated to begin on December 1, 1930, and that letting of contracts would start within twenty days.[343]

Almost simultaneous with this announcement, Oklahoma courts decided that House Bill No. 4 (the so-called Revocable Permit Bill) was unconstitutional. Despite this adverse ruling, "the Tulsa interests, headed by Wash Hudson" proceeded in their negotiations for the Neosho River project.[344] Hudson had transferred the permit they had just received to an eastern corporation but retained interest as president with the backing of "several capitalists of St. Louis and Chicago as well as a small local group." Some doubted the financial viability of the project, but Hudson assured everyone that all was well, and that the money was available to begin construction on the first of the four proposed dams for an estimated cost of $26,000,000. Backers claimed that the project would produce enough cheap electricity to supply all northeastern Oklahoma with power and that electricity use would be "vastly increased" in that region. "Farms will be electrified, and new industries established, to utilize this cheap and convenient power," proponents proclaimed. The City of Tulsa was especially keen that the plant "be completed before the present electric franchise of that city expires, and a cheaper service may be available through it."[345] As it would turn out, despite earlier protests to the contrary, Insull from PSCO was a financial backer of the new Grand-Hydro Corporation (and likely had been since the Tulsa contingent had taken over). However, despite the permit enthusiasm and by that time having acquired approximately 2,100 acres of land for the dam and reservoir, "the Insull empire collapsed."[346]

Grand-Hydro's final attempt to dam the Neosho River came in summer 1931, when it applied again to the DIRC—this time to build a 50-foot dam 6 or 7 miles above the current Pensacola Dam site with a "14-foot equalizing dam" located close to the current dam. The original application has not been found; but based on minutes from the conservation commission's discussion of the application, Grand-Hydro's proposal focused on power generation not flood control (although the equalizing dam may have served somehow in that capacity).[347]

In October 1931, E. R. Englebrecht sued Ottawa County for $977 for the purported value of gravel that Ottawa County had taken from the Neosho River along his farm. The case needed to be resolved "so that the Grand River Power company [*sic*] will know who to get its title from for a damsite down near Ketchum."[348] The suit harkened back to treaties the United States made with the Seneca and Cherokee in 1831 and after. The first treaty with the Senecas forced them onto land east of the Neosho River and "north of the line which now is two miles south of the [Ottawa] county line." A later treaty forced the Cherokee onto lands west of the river. In 1831, a government survey had fixed the limits of that tract. Englebrecht's argument was that the river had changed course over the past hundred years since the treaties were signed and the boundaries surveyed and that he could prove it by "structural traces" and testimony of an "old inhabitant" who remembered "he cut wood formerly, where the gravel bar now stands." Also in question was whether the Seneca and Cherokee titles "each extended to the middle of the river, or to their respective banks; and if the latter, the riverbed would still be government property unassigned." Another potentiality was that it remained unassigned tribal land due to the riverbed not being included when the allotments were made (the same allotments that Holderman likely bought in his initial attempts to build a dam). The outcome of the suit would be directly influenced by the outcome of a case the Cherokee Tribe had pending against Grand-Hydro (related to their proposed dam and reservoir site) wherein the Cherokee were arguing that the riverbed was tribal property.[349] The outcome of this case is unknown; however, although the commission had approved the application, Grand-Hydro never made any use of the waters of the Neosho River.[350]

Grand River Dam Authority and the Pensacola Dam

Creation of the Grand River Dam Authority

As private efforts to develop a power dam on the Neosho River died at the beginning of the Depression, public agencies' focus on the potential for flood control on the Neosho had begun to grow. Oklahoma politicians at the state and federal level pushed to consolidate their efforts to develop hydropower on the Neosho River under the auspices of a state entity. The fact that the Corps had determined that Neosho River power projects at Pensacola, Markham Ferry, and Fort Gibson were feasible (even if not in the interest of the federal government at that time) bolstered the

resolve of supporters of state involvement. Additionally, favorable reports on Neosho River projects had emanated from both the President's Committee on Water Flow (primarily focused on flood control benefits) and the Mississippi Valley Committee of the Public Works Administration (primarily focused on power and recreation benefits) in the first half of the 1930s.[351] Especially based on the latter two reports, Oklahomans believed creating an official entity with which the federal government could negotiate and share costs might attract New Deal program relief to the state. The Pensacola Project seemed like a ready-made opportunity to put unemployed Oklahomans to work and to spur the economic development that cheap electricity and recreational opportunities might bring.

By 1935, the proposed Pensacola Dam had already been heavily researched and engineered. Although it was not quite shovel ready, numerous studies conducted over the previous four decades had located the best site, estimated the land needed for the pool, and made preliminary estimates of how various dam and reservoir designs would affect power production and flood control. U.S. Senator Elmer Thomas had been focusing for several years at that point on securing federal funding for flood control for Oklahoma.[352] Elected to Congress in 1931, U.S. Representative Wesley E. Disney had taken up the charge of securing an interstate compact and federal funding for projects that would make the Arkansas navigable to Tulsa, facilitate building the Pensacola Dam (along with another dam at Flat Rock, Missouri, on the White River), and bring "cheap power and water rates" to Oklahoma, Kansas, and Texas.[353] Despite these efforts and the increasing volume of Oklahomans' calls for federal support of hydropower development of the Neosho River, neither Thomas nor Disney had been successful to that point. As one historian explained it, however, these failures had left the door open for the Neosho River project to "rest on its merits as a power site approved by the state."[354]

At his inauguration in January 1935, newly elected Governor Ernest Marland (a staunch Roosevelt Democrat dedicated to bringing New Deal money to his state) pledged to create a well-funded Oklahoma Planning Board and Flood Control Board in order to negotiate access to New Deal recovery money.[355] Oklahomans thus began a full-court press at the state level to finally build the dams they had long desired.[356]

Oklahoma legislators, led by Senator Jack Rorschach of Vinita drafted a bill in March 1935 to create a Grand River Dam Authority, which was passed by both houses but "forced into conference" to address competing interests and opposition within the Senate. Among other things, two senators wanted state authorities to build dams in their regions, others worried that the bill presaged federal entry into and competition with private companies in the power business, and at least one believed it was unconstitutional.[357] Additional opposition came from coal miners in Oklahoma and Arkansas, who sent petitions to Congress arguing that a GRDA hydroelectric facility would "put the coal mining industry in Oklahoma out of business and cut off or greatly reduce the earning power of about 7,000 coal miners in Oklahoma."[358] In support of the bill, Rorschach

declared that creating GRDA would furnish an opportunity to finally build the long-desired Pensacola Dam and that Disney had intimated to him that federal funds would likely be available if the authority was created. The bill ultimately passed with a controversial caveat.

Governor Marland signed Senate Bill Number 395 creating the Grand River Dam Authority into law on April 26, 1935.[359] GRDA was tasked with overseeing "a conservation and reclamation district" that ultimately included Adair, Cherokee, Craig, Creek, Delaware, Mayes, Macintosh, Muskogee, Nowata, Okmulgee, Ottawa, Sequoyah, Tulsa, and Wagoner Counties in northeastern Oklahoma.[360] The Authority was empowered as a governmental agency to "control, store, and preserve" the waters of the Neosho River and its tributaries "for any useful purpose." Useful purposes included developing waterpower and electric energy, preventing flood damage, reforesting the watershed to prevent soil erosion and floods, acquiring lands or easements (by purchase or condemnation) related to its purposes, and to "construct, extend, improve, maintain, and reconstruct . . . any and all facilities of any kind necessary or convenient to the exercise of such powers, rights, privileges, and function."[361] The act also authorized GRDA to borrow money for projects through bonding. A nine-member board of directors was appointed to oversee GRDA; the governor, attorney general, and commissioner of labor each got to choose three of the nine. Originally, GRDA's term was set to expire July 1, 1937 (unless extended) and would be headquartered in Vinita (subject to change by the board).[362]

Much to the chagrin of the bill's supporters (and Marland himself), the bill as passed contained language that prohibited GRDA from selling power directly via its own transmission lines and forced it instead to sell to local power companies that could then charge retail prices to consumers. Marland knew the bill he signed had been a compromise. During an address later that spring to several representatives of eastern Oklahoma cities, he expressed his frustration with the "power trust," which he blamed for adding the Kirkpatrick amendment and "hamstringing" the bill. He reiterated his deep desire to see the Pensacola plan implemented and his belief that federal support via some form of New Deal relief program was imminent.[363] Members of the GRDA board and other backers of the Pensacola Dam were similarly incensed with the Kirkpatrick amendment, most notably because PWA, from which GRDA hoped to receive funding, refused to consider the project with the amendment in place.[364] Although not everyone was thrilled with the way it was created, GRDA was officially born.

Funding the Pensacola Dam

Throughout 1935 and 1936, "a small group of men worked incessantly" to keep GRDA's vision of a Neosho River dam or dams alive and top of mind with state and federal officials.[365] They traveled on their own dime (or with the support of contributions primarily from citizens of Grove, Miami, Pryor, and Vinita) to meet with the governor and representatives of state agencies and journeyed multiple times to DC and elsewhere around the country advocating the cause. At the

federal level, Senator Thomas and Representative Disney lobbied for GRDA often and forcefully. Although they encountered multiple roadblocks along the way during 1935 and 1936, their tireless efforts (especially Disney's) eventually paid off when Roosevelt called in 1936 for a thorough survey of the Pensacola Dam project.[366] In the meantime, back in Oklahoma, local supporters of the Pensacola Dam project were applying pressure to their representative in the Oklahoma legislature.[367] Finally, in early 1937, state legislators removed the Kirkpatrick amendment from the enabling act.[368] Securing federal funding through PWA was once again on the table.

Once the Kirkpatrick amendment to the GRDA act was repealed, the political wheels spun quickly in GRDA's favor at both a local and federal level. In March 1937, the Oklahoma legislature renewed GRDA's charter through June 1939 in anticipation of construction, which everyone hoped would be imminent.[369] Army engineers conducted more detailed studies of the Pensacola, Markham Ferry, and Fort Gibson sites in conjunction with the larger Arkansas River Basin flood control program. In June 1937, Senator Thomas was able to secure $16,000,000 for the project as an amendment to a War Department appropriation bill. Funding, however, ultimately came under the purview of PWA (which was overseen at that time by the Interior Department) when Congress appropriated PWA funds for the Pensacola Project. Secretary of Interior Harold Ickes, a former detractor of the project, recommended that it receive $20,000,000 based on correspondence he received from the Corps of Engineers on June 8, 1937.[370] President Roosevelt approved the $20,000,000 allocation for the Pensacola Project on September 18, 1937; PWA followed up, offering GRDA a loan of $11,563,000 (to issue bonds that would then be sold to PWA) and grant of $8,437,000 to fund the project.[371]

The public reaction was jubilant. "A large celebration" took place in Vinita with local cities like Miami entering floats into the parade and appearances by Marland, Disney, Thomas, Holderman, Reybold, and many other long-time supporters and early financial backers of the project.[372] According to one account, Reybold "remarked that 'people up here' had worked hard for the project and deserved it.'" Pensacola's tireless advocate, Representative Disney, noted with some irony, "'this is the first time I've ever been happy at a Grand River meeting. Usually I've been mad. I'm proud of the project. . . . Why, we would have had the dam two years ago, if the Senate had passed the authorization which I had put through the House twice.'"[373]

The GRDA board approved PWA's offer during its October 16, 1937, meeting and appointed R. L. Davidson general counsel.[374] In short succession, GRDA hired the Tulsa-based company Holway and Neuffer as the project engineers and appointed general manager Robert Van Lear Wright, whom PWA backed and who was close with Ickes.[375] After forty years of envisioning, the Neosho River Dam development was officially underway.

Designing the Pensacola Dam: The Pool Controversy

In fall 1937, William Rea (W. R.) Holway, assisted by engineer Victor Cochrane, began formulating their plans for the Pensacola Dam. Both Holway and Cochrane were intimately familiar with the project, as they had worked closely together in the 1920s in determining "the economical height to which a dam should be built (for the development of power)" at the Pensacola site. (Holway would play a prominent engineering role at the Pensacola Dam for many years to come.) In addition to their own studies of the site, Holway and Cochrane reviewed the Corps' 1935 308 report and investigations that Grand-Hydro and its predecessors had completed between 1918 and 1930. Armed with several models and designs but with no contractual requirements or guidance as to the dam design and the size of the pool, the first question the engineers needed answered was exactly how much power production and flood control PWA was contemplating at Pensacola. On November 10, 1937, PWA power division director Clark Foreman explained that the Pensacola Project allotment had been made to cover construction of a project "embodying the engineering features" the Corps chief had presented in a letter to the PWA assistant administrator on June 8, 1937 (a statement Ickes reiterated to Chief of Engineers M. C. Tyler in a letter the next day).[376] The Corps design to which Foreman referred called for the top of the dam to be at elevation 765, the maximum pool for dual purposes at 760, and the maximum pool for power use at 735. Additionally, its spillway was to be uncontrolled.[377]

Neither Holway nor Cochrane understood the basis of the directions the Corps (via PWA) had given them. Although their primary focus was on power generation, they had always planned to include some form of flood control in the design. As Holway explained, engineers knew from the beginning that "a gated spillway would be necessary on any dam on the Grand River in order to have any control over floods." Not only had he and Cochrane "spent considerable time and money preparing theoretical hydrographs showing the amount of flood control that could be obtained by gates which we proposed to install," but they also felt strongly that the power pool elevation needed to be 745 not 735 to generate "enough revenue from power production to pay off the bonds, which would be issued against the project by the Authority." In early 1938, Holway and Cochrane presented the results of their studies to Little Rock District engineer Colonel Eugene Reybold to press for gates on the spillway. In a surprise turn of events, Reybold said that despite the June 8 letter, the Corps "had never contemplated an 'uncontrolled' spillway and did not want one." Holway and Cochrane then raised two more concerns: first, that the June 8 letter had not provided enough spillway capacity, and second, that the proposed power pool elevation of 735 needed to be raised 745 to "obtain enough revenue from power production to pay off the bonds" that GRDA would be issuing for the project. Reybold "protested" that Secretary Ickes had assured the Corps that they would receive "adequate flood control in the project."[378] However, Reybold had to concede that the flood control that an uncontrolled spillway would have provided (and as the Corps had proposed it in the June 8 letter) "was practically none."[379]

Holway and Cochrane were working during a period when the Corps was moving away from earlier assessments that there was no federal interest in the Neosho River for flood control to instead authorizing preliminary examinations in Oklahoma of the Pensacola, Markham Ferry, and Fort Gibson reservoir sites for multipurpose dams.[380] To many, this appeared to be a confusing about-face. As Holway explained, "up to and in the year 1935, the Corps of Engineers had found that flood control on Grand River was . . . merely a 'local' problem."[381] Indeed, the Corps' 1935 308 report about the Arkansas and tributaries specifically noted that there was "no plan for flood control in the river below the mouth of Spring River that is practical from both an engineering and economic standpoint" and that to use the river "to its best advantage," the focus should be on developing water power. Doing so would eliminate all "flood problems, as practically the entire reach will be occupied by water-power reservoirs."[382]

Thus, in 1937, when GRDA received funding from PWA (and significantly, not the War Department), Holway and Cochrane were focused on designing a hydropower project that could meet the stipulations of its PWA grant and loan contract, which required it to be self-liquidating. After their meeting with Reybold regarding the dam's design, the engineers moved forward with the plans that best supported both GRDA's financial obligations while still incorporating some flood control. On February 11, 1938, GRDA filed with the FPC its declaration of intent to seek a license for the Pensacola Project.[383] On April 22, 1938, Holway and Cochrane submitted to the GRDA board a plan that provided for a gated spillway that could accommodate 535,000 cubic feet per second (cfs) with the dam crest at 757, maximum pool level at 755, power pool level at 745, and spillway crest at 730. The board immediately approved the plans and then submitted them to both PWA and Corps, whose approval was needed to secure the FPC license.[384]

Several months of debate over the power pool level ensued. In a meeting soon after the Corps received the plans, Reybold once again "contended" for the 735 power level, which GRDA representatives refused to concede. Reybold "agreed" that as designed, the dam "could be operated their way or our way," he ultimately indicated that the Corps "would approve the structural features of the project." The plans moved up the chain of command. In May and June 1938, GRDA engineers and officials visited DC several times to discuss their plans with the FPC and Corps. According to a later account by Holway, Chief of Engineers Tyler listened to the GRDA engineers explain that the specifications outlined in the Corps' June 8 letter were untenable for GRDA and in reality, counter to the Corps' hopes for some flood control at the dam. After hearing the problems with the Corps' call for an uncontrolled spillway; the Corps' proposed elevation of 760, which GRDA knew from its own modeling would flood Grove and Miami; and the Corps' request for an entirely inadequate 5,000 acres of flood control at the project, Tyler admitted that the Corps had "made a mistake" and asked what remedy GRDA sought. When the engineers responded by saying the best option for GRDA would be for the Corps to vet the plans with the 745 pool level, Tyler approved the plans so that GRDA could move ahead with taking bids but punted the elevation question to "a later determination."[385]

Almost immediately thereafter, the FPC conveyed to GRDA "certain criticisms" the Corps had made on the design Tyler had approved. GRDA engineers reviewed the comments and responded that they had found mistakes in the Corps' computations. In response, the FPC sent an engineer to Vinita to facilitate a compromise. The FPC explained to GRDA that the Corps would "waive their criticisms of design" in exchange for a power pool elevation of 735. Once again, GRDA refused to compromise and stood by its original design.

In the middle of the debate over the Pensacola design, Congress passed the Flood Control Act of 1938 on June 28. The legislation clarified language in the 1936 act and solidified the Corps' jurisdiction over federal "investigations and improvements of rivers and other waterways for flood control." Furthermore, the act required the Corps to acquire with federally appropriated funds "title to all lands, easements, and rights-of-way" for any dam and reservoir project (as well as channel improvements) previously authorized by either the 1928 or 1936 Flood Control Acts (with some exceptions).[386] Although the act didn't call out the Pensacola Project by name, a May 1938 House report from the Flood Control Committee on the proposed legislation confirmed that although the Pensacola Dam project was under the umbrella of the Arkansas River Basin plan, the Works Progress Administration had authorized and appropriated funds for its construction.[387]

The inability to reach a compromise precipitated a hearing in Fort Smith, Arkansas, with the Corps, FPC, and GRDA on December 7, 1938. Also in attendance were members of the Arkansas Valley Association (hailing from as far north as Tulsa to as far south as Pine Bluff), who urged that the power pool be lowered to 735 for flood control. As Holway later described, one of the representatives made "a long, impassioned plea for less power and more flood control," and continually referred to the Corps' 308 report as "the B-I-B-L-E" regarding flood control in the Arkansas River Basin. Holway countered, noting that this so-called Bible had recommended that the "there was no Federal interest in such a development." GRDA was chagrined to hear at this meeting that "the Army now had a plan to build a dam at Pensacola to provide 960,000 acre-feet of flood storage and had complained that the Authority was proposing to give them only 520,000 acre-feet." Not only did such a plan go completely against the 308 report but, as Holway pointed out, despite various unofficial statements forecasting the Corps' growing interest in Pensacola for flood control, there was "no *published* report" by the Corps of such a plan."[388] Additionally, lowering the power pool elevation to 735 would reduce GRDA's firm power generation at Pensacola by 20 percent, thereby incurring a 20 percent increase in its rates to consumers. An increase in this size would bring GRDA's electricity rates almost in line with the rates local utilities were charging, greatly diminishing any economic benefit the project was supposed to bring to Oklahomans under the goals of New Deal relief programs—a consequence of which the Corps was aware.[389]

Federal Power Commission License and Continuing Pool Controversies

Despite ongoing controversies over the pool level, on January 27, 1939, the FPC issued a license for Project No. 1494 to GRDA for the Pensacola Dam and Reservoir. The license authorized GRDA to operate the reservoir at 745 feet for power production but specified that GRDA was

> not to utilize storage space above said elevation 745 for power production purposes except during periods when the reservoir is being operated for the control of floods. The storage capacity between elevations 745 and 755 shall be expressly reserved for the control of floods. The Licensee shall impound flood waters in the storage space between elevations 745 and 755, and release flood waters therefrom, when, as, and in the manner directed by the Secretary of War, or his authorized representative: provided, that the Licensee shall not be required to impound any water above elevation 750 until the United States has acquired the necessary flowage rights above that elevation.[390]

General counsel Davidson undoubtedly echoed the sentiments of everyone at GRDA (and PWA) when he wrote to Oklahoma State Representative Lincoln Battlefield from Mayes County that the FPC's decision to uphold GRDA's preferred power pool level at 745 was "a distinct victory for the Authority in its controversy with the Army Engineers over the storage capacity . . . between power development and flood control."[391]

Despite Davidson's sense of victory, GRDA general manager Wright was not thrilled about paragraphs 4, 5, and 6 of the license. In mid-February 1939, Wright wrote to the FPC, recognizing the commission's "evident intent" to help GRDA meet its financial obligations to PWA by fixing the power pool at 745. However, as he explained to the FPC in mid-February 1939, the wording in the paragraphs he questioned instituted "a definite and fixed division" in the reservoir's storage capacity between power generation and flood control and required GRDA to defer to the secretary of war regarding operations between elevations 745 and 755. The order created "a condition not previously contemplated" in their plans that would increase costs by approximately $1,000,000. GRDA would "no longer [be] able to anticipate the frequency" of the use of this part of the pool. This was a problem because the GRDA engineers' power-generation models had been based on a plan that the Pensacola pool would be "normally and habitually used to elevation 750" and that GRDA would only be responsible for purchasing land and preventing damages to that contour. Wright asserted to the FPC that "the equivalent of the maximum flood record could be controlled under elevation 750 and that flooding between 750 and 755 would be necessary only as the result of rainfall, the volume and frequency of which could not be clearly predicted from available records, but which should not occur more than once in fifty years." As a result, Wright did not consider it

"economically feasible" at that time "to buy and clear this additional land and permanently protect the structures of others." The GRDA engineers' models suggested that GRDA could operate the Pensacola Reservoir in a way that would "anticipate the necessity of flood storage space in the minimum amount of 520,000 acre feet, with normal flood restricted to 750, and still discharge under all conditions within the bank-full capacity of Grand River below the Pensacola site." He summed up by asking the FPC to consider the effect to GRDA's ability to be self-liquidating (and thereby repay its loan to PWA) and modify the license to "effectuate" this ability.[392]

Further discussion in spring 1939 revealed a fundamental divide between how GRDA and the Corps had been planning to use the pool level to address flood control. As Holway explained it, the difference was directly related to how each entity proposed to operate the dam. GRDA proposed to lower the normally 745 power pool in advance of a flood to 735 or 740 so that they could ensure enough spillage to never top 750, even in flood conditions. "With the maximum flood for which the spillways are designed, 525,000 sec ft, the pool level" might reach elevation 755, but such a flood would "probably never occur and probably only once in fifty years will 220,000 sec ft be exceeded." The Army's plan was "to maintain the pool level at 735 for power purposes with the gates open and to close the gates and stop the flow of water entirely in the Grand River to keep it out of the Mississippi when a high crest was expected at the mouth of the Arkansas, with no relation to the size of the flood coming down the Grand River." As he summed up, the Corps' approach to flood control at that point was "to hold back floods and to release them when desired, unless the storage has been filled and the waters must be released from the reservoir as fast as they come in, which could well be at a time when the largest peak of that particular flood was coming down the river." Holway feared that this approach might actually prove to be "harmful rather than helpful, due to the possibility of having to let a large amount of water down just at the wrong time."[393]

The pool level controversy that continued to rage into early summer 1939 precipitated a few changes over the next few months to the first iteration of the license.[394] By early July, however, GRDA, had "hurdled . . . a major obstacle" in its path and reached a compromise with the FPC and Corps, which had agreed to take responsibility for purchasing all land and easements between elevations 750 and 755.[395] In its final form, officially authorized in late July 1939, the license authorized "a dam approximately 147 feet in height and 5,595 feet long . . . consisting of a reinforced concrete, multiple arch, non-overflow section 4,284 feet long, a concrete gravity spillway section 861 feet long, with crest gates of the Taintor type, and a concrete gravity, non-overflow section 451 feet long." An auxiliary spillway about "one mile east of the main dam, [would consist] of two detached gravity concrete sections, about 800 feet in total length," also with gates. The reservoir would extend "approximately 55 miles upstream from the dam, having a storage capacity of 1,680,000 acre-feet at elevation 745 feet amsl, which is the maximum power pool level, and provision for flood control storage to elevation 755, at which level the total storage capacity will be about 2,200,000 acre-feet."[396] Perhaps the most important sections of the license related to the pool controversy were Articles 13 and 14, which authorized GRDA

> to operate the reservoir in such manner as to utilize storage space below elevation 745 for power production purposes but not to utilize any storage space above said elevation 745 for power production purposes except during periods when the reservoir is being operated for the control of floods. The storage capacity between elevations 745 and 755 shall be expressly reserved for the control of floods. The Licensee shall impound flood waters in the storage space between elevations 745 and 755 and release flood waters therefrom when, as, and in the manner directed by the Secretary of War, or his authorized representative: provided, that the Licensee shall not be required to impound any water above elevation 750 until the United States has acquired the necessary flowage rights above that elevation. . . . Subject to the provisions of Article 13, the operation of the project by the licensee, [Article 14 commanded that] so far as such operation may affect the use, storage, and discharge from storage, of waters, shall at all times be subject to the control of the Secretary of War under such rules and regulations as he may prescribe in the interests of navigation and flood control, and subject to the control of the Commission under such rules and regulations as it may prescribe for the safety of the dam and for the protection of life, health, and property.[397]

Although the matter of the pool elevation seemed to be resolved, the pool controversy would continue well into the 1940s and beyond.

Land Acquisition, Flowage Easements, and Damages Settlements

Although GRDA had been steadily acquiring land and easements for the reservoir that would form behind the dam since executing its contract with PWA, once GRDA received its final license in July 1939, the pressure was on to complete the process, which had already proven to be contentious, tedious, and far more expensive than originally estimated. Although it was obligated to acquire land up to elevation 750, Holway urged GRDA in October 1939 at the very least to secure land acquisitions to the 730-foot contour—the lowest level at which the dam could begin generating power. However, even below that lower contour line, Holway explained, only 334 of the needed 837 tracts had yet been acquired.[398] As one news outlet described it, "scarcely a week passes" that GRDA "does not strike a snag of some kind in its efforts to acquire land needed for the project."[399] By mid-December, with the project nearing completion, GRDA was under tremendous pressure to purchase or start condemnation proceedings immediately in the remaining 4,836 acres left to acquire—a seemingly unsurmountable hurdle.[400] A further sense of urgency was created by the fact that GRDA was working on a January 29, 1940, construction deadline, which was itself already an extension from the original July 1, 1939, deadline.[401]

To make matters even more complicated during this period, ongoing internal discord between the GRDA board and General Manager Wright reached a crisis point in November 1939 when the GRDA board asked Wright to resign under charges that Wright had "proved inefficient."[402] Many at GRDA had viewed Wright as an outsider since the day he was appointed. Indeed, friction had grown to such a point that in March 1939, the Seventeenth Legislature rewrote the GRDA enabling act, which reduced the board membership to five people whom only the governor would appoint.[403] Thus by late 1939, with anti–New Deal governor Phillips and his five appointees in charge, some of the pressure to oust Wright may have been due as much to political differences as Wright's performance. Although it was "conceded on all sides" that GRDA could fire Wright "regardless of the attitude of the PWA," PWA had to approve a replacement and could "refuse to approve administrative acts of the Authority and can delay or refuse to advance further funds for the project."[404] With that in mind, GRDA "filed formal charges" and removed Wright from his position in late November 1939.[405]

Early in 1940, tensions between GRDA and PWA over filling the general manager role "eased" after PWA granted a three-month extension for completion of the project, extended Davidson's interim appointment for another few days, and agreed to review a new set of candidates and make a recommendation.[406] Among GRDA supporters, however, Wright's firing had taken on an even more ominous political hue. Democratic U.S. Senator Josh Lee "charged that 'powerful forces' were seeking to stop construction of the Grand river dam in an effort 'to prevent the government from selling cheap electricity to the people.'" He also inferred that Governor Phillips "had obtained power over the GRDA at the last legislature in order to gain control of the project." Lee noted that the general manager situation was "'not a fight of personalities but one over fundamental issues as to whether the people of Oklahoma will have a right to cheap electricity.'" Whether true or not, Lee believed that Phillips and the new GRDA board intended to block construction.[407] GRDA and PWA had agreed to hire former Muskogee city manager, T. P. Clonts, as general manager by March 1, 1940.[408]

On November 4, 1939, 5,000 people attended the dedication of Pensacola Dam. With the water already rising, attendees "witnessed the greatest massing of water craft ever conducted in Oklahoma," watched "motorboat races and water skiing" and a "parade across the dam," and listened to Governor Turner's dedication speech.[409] The celebration belied the frantic land negotiations that had been going on and would continue for years to come. Between receiving the license in July 1939 and spring 1941, when full commercial operations commenced, GRDA settled its suit with Grand-Hydro over ownership of and a price for the dam site, dealt with hundreds of individual condemnation cases, negotiated with the state over highways and railroad companies over their lines, entered into settlement agreements with the City of Miami and Ottawa County, and sought and received title from the federal government to all Indian lands within its jurisdiction.

Individual Parcels

A thorn in GRDA's side throughout the land acquisitions period was the process of setting the value of the land to be acquired or condemned. At the outset of the process, GRDA had pledged to make "every effort . . . to acquire the property without resorting to condemnation suits." However, local people also expected "a great real estate boom to result from the expenditure of $1,250,000 for 46,500 acres of land to be inundated."[410] Although local landowners and commentators like Victor Harlow may have anticipated the potential of increasing land values, no one at GRDA seems to have expected the "unexpected high appraisements and damage awards" that district court juries would uphold.[411] GRDA appraisers had based their $1,250,000 estimate on "the price the property would bring at a free voluntary sale" (whether a dam was to be built or not).[412] However, landowners and court appraisers were basing their estimates, which district judges were upholding, on the value of the land as part of the dam and reservoir site—land that GRDA was required by its PWA contract and its FPC license to secure before operations could commence.

Discrepancies also existed between the federal agencies and both GRDA and private owners. For example, in the Grand-Hydro case, negotiations had broken off in February 1939 between GRDA and Grand-Hydro over the value of the 395-acre dam site and 1,705 acres directly upstream, which Grand-Hydro legally owned and which GRDA had to secure before it could move forward with the project. According to one report, Grand-Hydro valued the land at $243,000, PWA appraisers at $193,000, and GRDA at $75,000. In response to the impasse, GRDA planned "immediate condemnation proceedings to obtain title to the property."[413] Although GRDA's federal license now enabled it to condemn land valued at more than $3,000 in federal instead of state courts, that decision only held for new cases. Indeed, GRDA "received a severe set back . . . when appraisers appointed by the Mayes County District Court" fixed the value of Grand-Hydro's land at $314,755, an even higher value than Grand-Hydro had originally estimated.[414] Staring down the construction deadline, PWA approved and released the payment in January 1940.[415]

In late November 1939, GRDA "filed formal charges" to disqualify District Judge W. M. Thomas from Miami from all future land-condemnation suits related to the Pensacola Dam—"suits which in the past in the three-county area have gone against the Authority with considerable regularity."[416] GRDA also believed that Thomas should recuse himself because he owned land that GRDA needed to partially condemn.[417] GRDA pleaded for removal of cases from Delaware County, charging that the citizens of the county "have made an organized effort to force payments far in excess of the fair value for needed land." Thomas refused to disqualify himself and "overruled the motion," to which GRDA responded by filing a mandamus action with the Oklahoma Supreme Court "in an effort to force his disqualification." GRDA assistant counsel Gayle Pickens asserted that in early 1938, "landowners assumed a hostile attitude and made an organized effort to force the Grand River Dam [A]uthority to pay far in excess of the fair value of lands needed."[418] He recounted how these landowners had met to form an organization "to prejudice the citizenry against

Grand River Dam Authority . . . [and] intimidate county officials, jurors and court-appointed appraisers." GRDA believed that "the citizenry as a whole has been intimidated" and that "either through friendship with their neighbors of fear of losing that friendship, hesitates to arrive at a true land value." Furthermore, GRDA had been having a hard time finding witnesses in Delaware and Ottawa Counties "due to this intimidation."[419] In Thomas's defense, attorney J. G. Austin of Miami argued that "some Delaware County jurors have held a 'distorted view' of land values in the area because of high prices set in the early days by appraisers," but Thomas was "not responsible for this attitude or disqualified in any way."[420]

State Highways

In early October 1939, GRDA asked for a six-month extension on the January 29, 1940, completion deadline. At that time, Oklahoma governor Leon C. Phillips, along with the state highway department, were "deadlocked in negotiations over payment of costs of removal of state roads in the area." Phillips had originally pushed for $1,600,000 but they reduced that amount to $900,000 "in an effort to make an amicable settlement."[421] According to earlier news coverage of the matter, GRDA only had $323,000 for the expense.[422] By October 1940, Davidson wrote to the GRDA board that "no settlement of this controversy has been reached as yet, but no suit has been filed by the State or the State Highway Commission for recovery of damages against the Authority" either.[423]

Railroads

Construction of the dam and the reservoir to fill behind it would inundate parts of the tracks of the two railroads that crossed the area, the St. Louis–San Francisco "Frisco" Railway and the Kansas, Oklahoma & Gulf Railway (KO&G). To mitigate these damages, in early July 1939, the FPC modified GRDA's license for the Pensacola project and required the Authority to "acquire all necessary lands, easements, and rights of way up to elevation 750; and raise all railroads affected by the project to such elevation above elevation 755 as may be necessary to provide for operation of the railroads when the reservoir is raised to elevation 755"[424] GRDA engineers moved quickly to complete this work. By December 1939, Holway conveyed the news that the relocation of railroads within the reservoir pool was complete.[425] Later reports described that GRDA relocated and raised the Frisco tracks to the required elevation, except a small section of east of Wyandotte, "because the railroad company did not deem it necessary." As for the KO&G, GRDA obtained flowage rights instead of relocating or raising it, however, that process occurred during federal control.[426]

After GRDA retook control of Pensacola Dam in 1946, there was some confusion among GRDA staff as to whether the federal government had indeed completed the land acquisition process. Although GRDA counsel Q. B. Boydstun believed that GRDA and the federal government had acquired all "necessary flowage rights" for the railroads, he explained in a May 1947 letter to

Tulsa District Engineer Col. C. H. Chorpening that GRDA had not yet received the official documents to prove this and would need to confirm with SWPA (which presumably possessed them).[427] By March 1948, GRDA general manager France Paris was able to confirm that either tracks had been raised or flowage easements secured up to 755' regarding the Frisco and KO&G railroads.[428]

City of Miami

As the pool controversy continued among GRDA, PWA, and the Corps in 1937 and 1938, the City of Miami had its own concerns about possible damages the town and its citizens might endure once the Pensacola Dam was complete and the lake at full pool behind it. According to the City, the lake would "reach the City . . . when the lake is full and when the lake recedes it will leave mud flats near the City." The solution as the city commissioners saw it was to build a low water dam south of the city. To that end, the City passed a resolution on November 7, 1938, calling on U.S. Senator Thomas "to have a survey made by some competent engineer of this project in order to ascertain the probable cost" of such a dam.[429] Whether Senator Thomas had any influence is unknown, but in April 1939, the Oklahoma State senate passed a bill in support of acquiring land for city park purposes (whether the 5 to 10 acre parcel the City needed to build the dam would actually be a park was unclear). Mayor Dobson proclaimed that the construction of a low-water dam near the "Connor Bridge," 9 miles southeast of town was the city's "No. 1 project." Rough plans estimated the dam would be 15 to 18 feet tall and 900 feet long, have a lock and a lock keeper's house, and would maintain a "constant water level" once Grand Lake was filled. GRDA would provide the easement and title (if it could secure them). The City had applied for funding through the Works Progress Administration (WPA), and Miami's share of the estimated $175,000 project would be $35,000 to $40,000.[430]

In June 1939, the Miami PUB contracted engineer Eugene Wood to survey and make recommendations regarding what it would cost to build a low-water dam south of town.[431] In July, for unknown reasons, the City of Miami abruptly canceled the low-water dam project.[432]

Between 1938 and 1940, both GRDA and the City of Miami were in discussions about assorted items related to the Pensacola Project, including estimating how much GRDA electricity the City might use and what rates they could expect to pay.[433] They also embarked on extensive investigations and discussions about what kinds of damages city infrastructure might experience. On October 20, 1939, the Miami PUB was anticipating C. E. Bardsley's report regarding a recent survey and estimate of damages he had made about potential damages to the disposal plant and sewer outfalls. At the same meeting, the PUB superintendent reported that in a different survey he had participated in, the finding was that the extant outfalls would be 1 to 5 feet below the 745 feet amsl.[434]

Miami mayor W. W. Dobson, city attorney E. C. Fitzgerald, PUB superintendent Freehauf, and GRDA engineer Holway met at Vinita on January 30, 1940, to discuss the potential damages. On February 1, 1940, GRDA engineer Holway wrote to Dobson regarding the meeting in Vinita two days' prior between Holway, Dobson, and Fitzgerald regarding potential damages.[435] In response to what he learned at the meeting, Holway wrote to Dobson two days later "to correct the impression prevalent in the City of Miami, among the citizens," that GRDA had "ignored Miami and its rights." He wanted Miamians to understand what Dobson, Fitzgerald, and Freehauf already knew—that GRDA had been studying the "situation" for months at the City's behest. GRDA's studies (which Holway said were documented in numerous field survey books) had determined that Miami would suffer no possible damages with the lake level at 730 or 735, which GRDA needed to hold the lake at to allow time for highways to be relocated, and that "any damage which might be done to the property of the City of Miami would be when the lake reached its final level of 745 or 750, in flood times." Additionally, Holway stated that GRDA had not yet negotiated with Miami over potential liability because other places, "such as Vinita and Grove Water Supplies and the railroads and etc." would be flooded "by even the 730 lake level, and, therefore, had to be taken care of before the lake was filled." Since no damage could "accrue" to the City of Miami until the lake reached "a high level," GRDA had delayed the conversation, "while other more pressing matters have been taken care of." Still, Holway promised to bring Miami's concerns to the GRDA board and reassured the mayor and commissioners that GRDA would "very shortly make some definite move towards settling this matter."[436] After hearing what had transpired at the January 30 meeting (and presumably reading Holway's letter), the PUB board collectively agreed that GRDA should settle damages with the City of Miami "before closing the gates at the dam."[437]

On March 1, 1940, the mayor and Miami PUB met with a contingent of GRDA representatives that included Clonts, Davidson, Holway, and Supervisor of Power, Sales, and Distribution Carl L. Gearhardt to again discuss potential damage to outfall sewers. After the discussion, the PUB made a motion to "immediately" conduct another survey that would show "the elevation of the sewer line, the type of soil intervening the line and all other data which may be compiled to determine the probable effect of maintaining an average water level of 745 feet." Additionally, the study should recommend "the probable cost of obtaining easement rights and construction of [a] new line without prejudice of the City to take any action which may be deemed necessary."[438] A month later, the mayor and PUB met once again with the independent surveyors and GRDA. Fitzgerald "presented the plans and profiles" of the extant Neosho River and Tar Creek outfall sewer system and its proposed new location and then the group discussed potential damage to the Neosho River bridge (at Main Street) and Riverview Park. The group also contemplated the fact that flowage rights and park damage "would have to be referred" to the "governmental department" (presumably the city attorney and mayor). Ultimately, the Miami officials asked GRDA "to relocate the sewers," which Clonts promised to refer to the GRDA board.[439]

On April 23, at a special session with both the PUB and city commissioners to discuss outfalls, Clonts presented GRDA's opinion that the Authority should not be "stuck with the Tar Creek outfall and that the City shouldn't ask them to throw away the entire sewer system and build a complete new one." Furthermore, GRDA believed that without Tar Creek on the table, the City could build a new sewer for $50,000 and that "by working up a P.W.A. Project the City would be able to build the sewer cheaper than the proposed estimate." Clonts continued that he would recommend to the GRDA board that the City receive $30,000 in damages for the Neosho River outfall sewers and $5,000 for the bridge.[440] Over the course of May and into June, the debate continued, with Clonts also taking up the matter of damages with PWA. As Clonts reported to Freehauf in early June, Clonts had asked PWA about settling damages to the Miami sewers and whether PWA would "be agreeable to settle these damages and then hold in abeyance the alleged damages to the bridge and park." PWA responded that it would not "approve any settlement which does not liquidate all of the alleged damages."'[441]

By October 1940, Davidson reported to the GRDA board that the City of Miami and GRDA had settled on a $50,000 damage claim "for flooding a portion of the sewer system of the City of Miami and a part of a public park and for anticipated injuries to a certain highway bridge within the corporate limits of the City."[442] The next month, PWA approved the proposed settlement, which specified that in exchange for the $50,000, the City of Miami would "release and discharge the Authority from any and all claims for damages caused by the construction, maintenance and operation of the project or by the overflowing and inundating of lands and properties of the City located in the basin area and lying below elevation 750" and that the City would convey to GRDA flowage easements for "all of the City's lands and properties located in the basin area and lying below elevation 750." The settlement was executed on November 14, 1940. Mayor Dobson signed for the City and Ray McNaughton signed on behalf of the GRDA board.[443] The full city commission approved and the mayor signed the release of the flowage easement at the December 2, 1940, meeting.[444] On the same day, the City of Miami passed a resolution related to the flowage easement through the Park of the Grand River Lake."[445]

Ottawa County

Ottawa County also sought damages from GRDA related to the Pensacola Project. In September 1939, GRDA general manager Wright, counsel Davidson, and engineer Holway opined to the GRDA board that $40,000 was a fair sum to pay Ottawa County for damages related to the reservoir's projected inundation of county roads and bridges.[446] On November 6, 1939, the Ottawa County Commissioners passed a resolution requiring GRDA to raise certain county bridges to 760 feet amsl, and in January 1940, the commissioners passed a resolution "authorizing and directing Frank Nesbitt to prosecute mandamus proceedings against the GRDA in protection of the interest of Ottawa County regarding certain roads and bridges."[447] Originally estimating damages to county

roads and bridges at $350,000, the County had reduced to $152,500 the amount it was seeking.[448] Clonts, Davidson, and Holway told the GRDA board on August 3 that they saw no justification for that sum and recommended sticking to their $40,000 recommendation.[449] As of October 1940, with the construction deadline looming, no agreement had yet been reached between GRDA and Ottawa County, although GRDA recognized its liability "for actual damages sustained by the County."[450]

In December 1940, Clonts read to the GRDA board a letter from Ottawa County attorney Nesbitt stating that the board of commissioners would "compromise and settle Ottawa County's claim for damages for the destruction of or injury to the Bee Creek, Spring River, and Conner Bridges and approaches for the sum of" $55,000.[451] The county commissioners passed a resolution on December 28, 1940, accepting the settlement terms and the GRDA board Resolution No. 2070 approving the agreement on January 6, 1941.[452] A few weeks later, a PWA official pointed out that PWA was fine with the agreement terms but that the commissioners had not entered an official resolution appropriately in the Commissioners Journal. This error was corrected in the February 5, 1941, corrected resolution.[453] On March 8, 1941, Ottawa County Commissioners passed an additional resolution regarding GRDA damages—accepting payment and vacating roads and bridges under 750 feet amsl.[454] In January 1945, Ottawa County passed a resolution releasing SWPA/GRDA from further liability on rebuilt roads and bridges.[455]

Indian Lands

In addition to the city, county, private, and state lands or flowage easements that GRDA needed to acquire for the Pensacola Dam, "a considerable quantity of Indian land in Ottawa, Delaware, Craig, and Mayes Counties" (both allotments and trust lands) within the proposed power pool contour (up elevation 750) for which GRDA was responsible.[456] In comments on House Committee of Indian Affairs' Report No. 7901, regarding a bill that would assist in this process, Acting Secretary of the Interior E. K. Burlew suggested to committee chairman Representative Will Rogers (from Oklahoma) a few revisions but granted overall approval from Interior. Burlew agreed that if GRDA took responsibility for acquiring and paying a fair price for Indian lands, the federal government would grant all rights and easements related thereto.[457]

On June 11, 1940, Congress passed the Act to Transfer Certain Lands to the Grand River Dam Authority, and for Other Purposes. The law authorized GRDA to acquire, without congressional approval, "all the right, title, and interest held by the United States and by individual Indians and tribes of Indians in Indian Lands located in Ottawa, Delaware, Craig, and Mayes Counties, Oklahoma, lying below an elevation of [750 feet amsl], which may be required for the Grand River Dam Reservoir." This grant was subject to individual Indian owner consent and Interior's approval of a map of each parcel and determination of appropriate compensation. If any individual or Tribe refused consent, the act authorized GRDA to initiate condemnation proceedings in federal district court. The act outlined specific caveats, including a requirement that only the

"principal Chief" of the Cherokee Nation appointed "under section 6 of the Act of April 26, 1906 (34 Stat. 137, 139)" could give consent for the Cherokee Nation, and that "as to the lands of the Seneca Indian School, the interest conveyed hereby shall be a flowage easement only."[458]

One question that surrounded acquiring and paying for Indian land revolved around whether GRDA would purchase the land outright or exchange it for other parcels. GRDA general counsel R. L. Davidson was "of the opinion" that GRDA "could not purchase land above the 750 ft. contour line and exchange the same but that the only way the Authority could dispose of such land acquired would be by sale for cash."[459] However, the secretary of interior was allowed to use his discretion in using any compensation received "in the purchase of lieu lands," under 47 Stat. 474 (June 30, 1932), which provided that "whenever any nontaxable land of a restricted Indian is condemned or sold the proceeds may be reinvested in other land, to be likewise restricted and nontaxable."[460]

Operating the Dam

GRDA Operations: April 1941-November 20, 1941

In March 1940, GRDA closed the gates of the Pensacola Dam, behind which water began to pool; GRDA officially commenced operations almost exactly a year later. As outlined above, under the terms of its PWA contract and FPC license, GRDA controlled dam operations up to elevation 745 (and had purchased land and flowage easements to the 750 contour line), but the War Department took over during flood situations to manage pool operations above that elevation (and was responsible for acquiring land above elevation 750).

Almost immediately after GRDA opened the project, a flood elevated Grand Lake in mid-April 1941, precipitating the Corps' takeover of operations. Later reports suggested that this first attempt to coordinate between GRDA and the Corps might not have been the smoothest process. On April 17, the pool was at 741.05 feet and climbing. The Corps directed GRDA to discharge 30,000 cfs until 10 p.m. that night, but GRDA did not heed the directive and continued to spill into April 18. The problem was that the "overburden in the spillway get-away channel had not been excavated" because the designing engineer had assumed that pilot channels excavated in the bedrock would "cause the hydraulic removal of the entire overburden . . . before it became necessary to utilize the full discharge capacity of the spillway." GRDA's continued spill in contradiction to the Corps' directions was a direct result of the GRDA engineers' fears that the powerhouse might be severely damaged. The Corps sent observers to the dam on April 18, and the pool reached a height of 748.14 feet on April 19, whereafter the spillway get-away channel began to give way as designed and was fully open by April 20.[461] (See more in next section about 1941 flood damages.)

The interagency dynamics experienced during the April 1941 flood led the Corps to devise a set of rules and regulations around flood-control operations at the Pensacola Dam, as follows:

1. Whenever the elevation of the reservoir exceeds elevation 745, the discharge facilities shall be operated so as (a) to reduce as much practicable the flood damage below the reservoir and (b) to limit the elevation of the reservoir to elevation 750.
2. The District Engineer . . . shall advise the Authority when inflow rates are anticipated which may raise the elevation of the pool above elevation 745, and the maximum rate of release allowable. The Authority shall then take such measures to increase the storage capacity of the reservoir available for the control of floods as are not inconsistent with the development of power.
3. The Authority shall inform the District Engineer daily, promptly after taking the morning observations, as to the elevation of the reservoir pool and the tail water, and the rates of release for the preceding 24 hours. Whenever the pool is above elevation 745, the Authority shall submit these reports by telegraph or telephone as directed by the District Engineer, supplemented by such additional telegraphic or telephonic reports as may be required by the District Engineer in the interest of flood control.[462]

When an even larger flood hit in September and October 1941, GRDA and the Corps both appeared to have adhered closely to these rules.[463]

In August 1941, Congress amended the Flood Control Act of 1938 to specifically include the Neosho River reservoirs under the Arkansas River Basin general comprehensive flood control plan. Additionally, the 1941 Flood Control Act appropriated an additional $29,000,000 to achieve the goals of the plan.[464] By including the Pensacola Project under the Arkansas River Basin plan, the 1941 law implicitly obligated the Corps to acquire land, easements, and rights-of-way above elevation 750 for flood control.

Federal Operations: November 21, 1941–August 31, 1946

Undoubtedly in anticipation of entering the war that had been raging in Europe since the late 1930s, Franklin D. Roosevelt signed Executive Order No. 8944, "Directing the Federal Works Administration to Take Possession of and Operate a Certain project of the Grand River Dam Authority," on November 19, 1941.[465] Roosevelt did this under Section 16 of the Federal Water Power Act of 1920, which allowed the president to take possession of any or all of a private operation for war purposes but ensured that the federal government would then pay "just and fair compensation" at an amount set by the FPC when it returned the operation.[466] The executive order directed the FWA administrator to take over Pensacola Dam for the war effort as of November 21, 1941, with Douglas G. Wright appointed as special representative to the administrator to administer the project.[467] Wright "immediately initiated appropriate action necessary for the completion of the

project so as to make it usable" for wartime needs. Some wrangling regarding power distribution ensued, but by August 1942, "the majority of the war load deliveries" was being made. GRDA, which had initially had trouble finding a market for its power, was now solidly on the positive side of the balance sheet. As of September 1945, the project was essentially complete, with the fifth generator in the process of being installed (GRDA had contracted but not completed the work before government takeover) and scheduled to be operational by early 1946.[468]

In December 1941 (pursuant to the 1941 Flood Control Act), the War Department began acquiring the necessary lands and easements to permit storage of floodwaters in Pensacola Reservoir between elevations 750 and 755. By a directive of February 19, 1943, President Roosevelt put FWA in charge of acquiring land and easements; Executive Order No. 9366, dated July 30, 1943, and Executive Order No. 9373, dated August 30, 1943, which went into effect September 1, 1943, transferred administration of the Pensacola Project, including additional land acquisition, from FWA to Interior. Also on September 1, Interior created the SWPA to oversee the operations of Pensacola, Denison, and Norfork Dams in Oklahoma, Texas, and Arkansas.[469] From then until GRDA regained control of the operation in late summer 1946, SWPA administered the project.[470]

Floods and Flood Damage in 1941 and 1943

The years during which the Pensacola Dam was being planned and constructed coincided with some of the worst drought years experienced in that part of the country for decades. The stream gage on the Neosho River near Parsons, Kansas (approximately 50 river miles above Miami and 80 river miles above the Pensacola Dam), for example, recorded flows as low as 0 cfs for considerable periods in 1934, 1936, and 1939.[471] Historical data for the stream gage at Grove, Oklahoma, indicate that between 1925 and 1939, 1927 (15,750 cfs), 1928 (10,500 cfs), 1929 (11,970 cfs), and 1935 (9,660) recorded the highest annual cfs, and 1931 (2,533 cfs), 1934 (1,750 cfs), 1936 (2,845), and 1939 (2,188 cfs) recorded the lowest averages (the filling of Grand Lake rendered the gage inoperable). The gage at Commerce, Oklahoma, established in 1940, registered an annual average cfs in 1940 (566.8), one of only eight years with under 1,000 cfs between 1940 and 2022. By comparison, the four highest annual cfs recorded at Commerce were in 1951 (8,821 cfs), 1993 (11,140 cfs), 1999 (9,330 cfs), and 2019 (11,070 cfs).[472] As Holway later wrote, "it is interesting to note that of the six largest floods [prior to 1948], four occurred in the first three years of operation; and that also the driest period on record for the river was in 1939–40, during the peak of construction."[473] The first few years of Pensacola operations just happened to coincide with a run of wet years after the Dust Bowl era. GRDA and the Corps were forced to closely coordinate their efforts during three significant flood events in April and September–November 1941 and May 1943.

1941 Floods and Damage

As noted above, a flood in April 1941 led to the first instance of the Corps operating the Pensacola Dam and Reservoir under flood conditions, which resulted in the promulgation of rules and regulations that each entity agreed to follow the next time such an occasion arose. Just five months later, the opportunity arrived when the area experienced almost two full months of flooding.

According to plan, GRDA handed over control to the Corps when flood stage was reached. Between September 9 and November 6, 1941, GRDA followed the Corps directives to the letter, always attempting to keep the lake level at or under elevation 750.[474] As GRDA engineer Walter C. Burnham later explained, "during the 1941 floods, the reservoir was filled to 749.7 with the first flood waters before the crest flows of the tributaries entered. This resulted in having a full pool to elevation 750 when the maximum inflow from Neosho and Spring Rivers reached the reservoir and caused the greatest possible backwater in the lower reaches of these streams [in some cases, causing damage] . . . above contour 750."[475]

As early as November 12, 1941, GRDA general counsel Marshall expressed his concern to acting general manager C. A. West about potential GRDA liability for damages associated with holding the reservoir at 750 feet during the October 1941 floods. Marshall wanted to find out whether GRDA might be "clothed with any semblance of immunity" against damage claims arising from the flood—damages that stemmed directly from GRDA executing War Department orders. Marshall sought to find agreement about the government's obligation regarding anticipated litigation against GRDA, what recognition the government would give "if any, to the matter of its duty to indemnify the Authority against liability in these damage cases," and what policy the government would institute regarding reimbursement to GRDA for judgments rendered for damages. Marshall urged that this be done as soon as feasible.[476]

In December 1941, Wright assured Tulsa District engineer H. A. Montgomery that while GRDA recognized its responsibility for operating the dam "for national defense and national safety," GRDA felt it was "necessary to increase the storage of water in the reservoir to a normal operating level of 747.5 at this time. It is our plan to cooperate with your office as much as possible in the operation of the project during the flood condition . . . . However, final decision as to project operation will be made by this office . . . unless contrary instructions are issued by the Administrator or the President. It is the very definite policy of this office that under no flood conditions shall the level of the reservoir be again raised, as it was in the last flood, to a height which will back water in the reservoir above the 750 contour. This project is faced with a large number of damage suits from the requirement in the last flood of raising the level of the reservoir at the dam to such a point that the back water level in the upper reaches of the reservoir was approximately ½ feet above the 750 contour line which is the property line of the project."[477]

Also in December, Marshall wrote to Tulsa District engineer Montgomery, listed the flood claims already made against GRDA as result of 1941 flooding, and noted that they were expecting

other damage claims "on account of alleged flooding of lands in the upper part of the reservoir area above the 750 contour." Marshall asserted GRDA's position that all the damage the claims outlined had resulted from the Corps' management of the flood-control pool. He further explained that while Article 13 of the license provided "that the Licensee shall not be required to impound any water above elevation 750 until the United States shall have acquired necessary flowage rights above that elevation, it would appear that the office of the District Representative of the Secretary of War has interpreted the language of the license to mean 750 at the dam." Thus GRDA believed that it "should be protected against any liability that may result, as well as against the expense involved in defending itself against it on this account."[478] Montgomery responded that the chief of engineers did not consider the War Department liable for any damages during the 1941 floods.[479] Marshall conveyed this response to the Board, noting that it appeared GRDA would bear the "burden of the investigation and defense of these claims." In the meantime, FWA special assistant general counsel R. L. Davidson (later GRDA counsel) would keep track of all expenditures associated with defending GRDA against these claims in case they could recoup them in the future.[480]

Which entity bore ultimate liability for damages incurred during the fall 1941 floods would come down to the definition of the 750 elevation and what it meant in relation to land and easements that GRDA was responsible for securing up to 750 and land between 750 and 755 for which the federal government was responsible. As Marshall explained in a letter to the FPC, he thought Montgomery was interpreting License Article 13 "as requiring the Authority's operating force to impound waters in the reservoir up to elevation 750 at the dam, and it is my information that the resultant backwater curve resulted in bringing the level of the reservoir near the headwaters of the lake to a point above elevation 750." Wright, Davidson, and Marshall found this position to be "wholly unjustified." Marshall then requested that the FPC amend Article 13 to relieve GRDA from any such liability and instead assign to the Corps "full and complete responsibility for any and all injuries sustained or damages suffered in consequence of the manner and method of the control of reservoir operations above said elevation."[481] Once GRDA's adversary, Judge Thomas now found himself in support of GRDA's position, writing to Montgomery about the several lawsuits already pending in his district and an estimated 2,000 more that might be coming. He had heard reports that the United States was planning to acquire land and easements for the five feet between 750 and 755, "and possibly more" to address "the slope" on the upper reaches of the during floods. Thomas remarked that he had spoken with not only the GRDA attorneys but also landowners, and that they were "all very anxious to know" whether the Corps intended to acquire that land in "the near future." Thomas felt that if the Corps did plan to buy the land, then all pending litigation was "quite useless" and that "most of the party litigants" agreed. If the Corps did not intend to acquire the land soon, though, litigation would proceed.[482]

The FPC did not respond as hoped to GRDA's request to render the Corps, not GRDA, liable for damages incurred by the Corps' operations of the Pensacola Dam during flood times. The FPC's Leon Fuquay directed Marshall's attention "to the fact that the Authority has failed to file

maps showing the completed project boundary in accordance with Article 9, although repeated requests have been made by the Commission." Until this was done, the FPC could not determine whether GRDA had acquired sufficient land to fulfill the article. He also pointed out that "It is a known fact that backwater effects result from the impounding of waters and failure to take such effects into consideration in acquiring sufficient lands cannot create a liability against the United States." He added that license Articles 12 and 13 "confirm this interpretation." Fuquay directed GRDA to Article 17, which stated "that in no event shall the United States be liable for damages occasioned to the property of others by the construction, operation, or maintenance of the project. As to claims for damages for flood waters below the dam there appears no necessity for comment." In a parting shot, Fuquay said that both the FPC and the War Department "hitherto have been extremely lenient with respect to the provisions for flood control" and that the Authority's desire to file a formal license amendment appeared "unwarranted."[483]

Not to be deterred, Marshall retorted, "As you know, the Authority is and has been without means since November 21, 1941, to provide preparation of maps indicating the boundaries of the project." But, he continued, that was beside the point of his March 24 letter, which was specifically arguing that because the Authority was required by its license to maintain flood-water storage to elevation 750, he had to "reject" the FPC's view that the Authority should "assume moral or legal responsibility for damage caused by back-water to lands above elevation 750." Furthermore, Marshall rejected the idea that either License Article 12 or 13 "contemplates the acquisition by the Authority of lands near the headwaters of the lake above elevation 750 to enable flood-storage waters to be held at the dam at such an elevation as would involve the flooding of lands above elevation 750 in the upper reaches of the reservoir. It is the Authority's view that Article 12 of the license distinctly contemplates that the United States shall acquire necessary flowage rights above elevation 750 to permit the use of any part of the reservoir area for flood-control purposes above that elevation." Additionally, Marshall pointed out that the Federal Emergency Administration of Public Works (FEAPW) program under which the original project was built "contemplated that no lands would be acquired (except in exceptional instances . . .) with funds lent or granted by the Government for construction purposes, above elevation 750. Thus, it would have been impossible for the Authority to have acquired land above elevation 750 in the upper reservoir area to provide for flowage of the waters of the reservoir to a point above that elevation." In closing, Marshall rejected the idea that Article 17 rendered the Authority responsible for actions they took at the dam under the Corps' direction.[484]

Marshall took GRDA's case to Special Representative to the Administrator Wright, asking him to try to change the FPC's "attitude."[485] Wright wrote to the FPC on June 15, 1942, that after conferring with FWA's legal department, he believed that while GRDA remained under federal control, it was "not subject" to the FPC license provisions. He asserted that in his opinion, the FPC's only jurisdiction (while the project was under federal control) was over what the fair and just compensation would be to GRDA once the project reverted to them. "In other words, the

operation of the license issued to the Authority is suspended until possession of the project is restored to the Authority in accordance with the Executive Order of the President." Wright stated that since the Administrator took over control of the project on November 21, 1941, GRDA had "refused" to take actions that would flood "land above elevation 750 at any point on the reservoir. Despite this stance, GRDA was "cooperating . . . as fully as possible" with Corps directives regarding operations for flood control. Wright noted that the controversy between GRDA and the FPC did not affect his operation of the project but that he was "in sympathy" with GRDA.[486]

Write reiterated Articles 12 and 13 of the license, noting that "there is nothing in the license that fixes the elevation of 750 at the dam" and explained that he believed that neither GRDA nor the FPC (or PWA or the Corps, for that matter) had taken into consideration the potential "backwater curve incident to the inflow, but that each had in mind, both in the acquisition of lands and the impounding of water, a uniform level of 750 over the entire reservoir." All agreed that GRDA was not required to impound water "at any point on the reservoir above elevation 750 [i.e., the contour line]," until the United States had acquired the land and flowage rights above that elevation. Wright echoed Marshall in requesting that before the project reverted to GRDA, "the license should be amended so as to eliminate this controversy. The license should recognize the existence of the backwater curve and make specific provisions with respect to it; it is contemplated that the United States will acquire the necessary flowage rights above elevation 750 to provide five (5) feet of additional storage above elevation 750, and if this is done before the project is returned to the Authority, the controversy maybe entirely eliminated so far as future operations are concerned." He was adamant that whatever the final solution was, it would "not require the Authority to acquire any lands or flowage rights above elevation 750 at any point on the reservoir."[487]

Fuquay was adamant that from its inception, federal authorities had regarded the Pensacola Project as desirable for flood control purposes. While this characterization of early federal interest in Pensacola was false, he was correct in pointing out that the conflict between the power generation and flood control had "for many years . . . delayed actual construction at this site." He defended the FPC, noting that the commission had tried to create license conditions that would balance power with flood control, as "only in this way can the full public benefits be derived, that justify use of this site." According to Fuquay (also somewhat inaccurate), "the original assumption upon which approval was given for construction of this development was that flood control storage of approximately 960,000 acre feet would be provided" by using the storage capacity between 735 and 755. However, after GRDA made "urgent representations" that it could not operate economically otherwise, the FPC ultimately authorized (in its January 27, 1939, license draft) a 745 power pool level with flood control storage between 745 and 755. "Subsequent" to receiving the January 27, 1939, license, GRDA proposed to the FPC that it should only be required to acquire land and easements up to elevation 750. "This proposal was made in spite of the fact that the application had proposed 'a reservoir containing at maximum power pool level 1,680,000 acre feet of water and at flood pool level 2,200,000 acre feet.'" In other words, to Fuquay, the FPC license as originally issued

anticipated that GRDA would acquire all land up to elevation 755. In his estimation, if the FPC had authorized a maximum power pool to elevation 755 for a power-only facility, then the commission would have "expected" GRDA to "acquire those rights to lands lying above this elevation which would be affected by the backwater from the reservoir." But because the FPC license "relieved" GRDA "of the considerable expense of purchasing lands within the upper five feet of the storage reservoir," Fuquay saw "no sound reason" that GRDA "should not acquire those rights which may be affected by backwater from this reservoir when it is operated up to elevation 750 for flood control purposes. The only other alternative would be operation of the reservoir to a lower elevation than 750 and operation of the reservoir to a lower elevation would not be in harmony with the letter and spirit of the license and would thwart one of the principal purposes for which the project was authorized"—power generation.[488]

1943 Floods and Damages

The May 1943 flood raised different concerns about the role the Pensacola Dam should play in flood control on the Neosho River. Whereas upstream flooding was the primary issue with the 1941 floods, both upstream and downstream flooding were at issue in 1943. The flood also brought into stark contrast the catch-22 GRDA faced in trying to balance dam operations to minimize potential damages to both upstream and downstream lands.

Comprising two separate events between May 7 and 26, 1943, the floods (especially the second) created "record-high discharges" on the Spring River—even higher than that stream recorded in 1951. The lower basin of the Neosho River also "flooded severely" from around Iola, Kansas, to Oklahoma.[489] According to a later account, "the largest previous flood on the Grand River had a peak of 235,000 second-feet; this one had a peak of 347,000 . . . the largest in about a 100-year record . . . almost 60 percent larger, both in peak and quantity, than any known flood on the Grand River."[490] On May 10, 1943, the reservoir reached 749.05 feet and spill was increased to such a level as to seriously threaten the newly constructed Oklahoma Ordnance Works (OOW), approximately 30 miles downstream. Given the situation and the OOW's importance to the war effort, Wright authorized raising the pool above 750 feet (and as far as 752 feet) in order to protect the plant.[491] Although no one could have predicted that things would get even worse, the *Tulsa Tribune* was somewhat premature in an article published that day crediting the Pensacola Dam with "saving" the OOW.[492] The next day, the elevation reached 751.32 feet, on which news reports blamed "flood troubles" at Miami and its outskirts.[493]

After a few more days of heavy rain, Wright gave directions to raise the pool as high as 755 feet, "five feet above the property line," an area "in the process of obtaining flowage easements." By the morning of May 19, the pool was at 753 feet. After that, GRDA sent out warnings to city and county officials below the dam "that releases would be made and that the river would be several feet above the 1941 record." Essentially, the "flood volume of the May 1943 [flood] exceeded any other

major storm and entered the reservoir in a much shorter time." The pool level apparently reached its highest elevation at 754.58 feet.[494]

The Fallout of Balancing Upstream and Downstream Needs

Immediately after the flood, GRDA and FWA received strong criticism from various quarters for its operations of Pensacola during the flood. Especially vocal was Tulsan Newton Graham, chair of the board of the Southwest Valley Association and Tulsa Chamber of Commerce member, whose focus was on flooding downstream of Pensacola on the Neosho River and beyond. According to Graham, "every person who advocated the building of this [Pensacola] dam [was] promised flood control and that promise is not being kept," the blame for which he placed squarely in GRDA's lap. Graham believed that GRDA could have prevented the death and estimated million dollars' worth of destruction to residences, private property, livestock, and crops. And while he acknowledged the importance of electricity (and presumably, protection of the OOW) to the war effort, "potatoes, corn and livestock" were just as crucial.[495] In response, Wright explained how even at 735 feet, downstream flooding would have been an issue that could have only been solved if the Markham Ferry and Fort Gibson Dams would have been in place. Put simply, "the Grand River valley was completely full of water from the Grand River Dam to the end of the watershed." The only way Wright could see to have prevented the downstream flooding on the Neosho and Arkansas Rivers would have been if the Fort Gibson Dam had been constructed already. It was impossible that one dam could "control a flood that fills the entire river valley from its mouth to the headwaters." Furthermore, it was "ridiculous to expect to secure flood control on the Arkansas River system by control works on the Grand River alone when the floods contributed by other streams are equally devastating and severe."[496]

Supporters of GRDA and Wright's actions pointed out that unpredictable weather contributed as much as or more to the flooding (upstream and downstream) than dam operations. A May 19 editorial in the *Tulsa Tribune* noted that before they "kicked around" the management of the dam, critics "had better take a look at the rainfall reports" and recognize that May was historically a relatively dry month and that GRDA had been operating based on weather reports that everyone had access to and which predicted clearing skies, not the epic rainfall that actually occurred. The real blame, the editorial proclaimed, was really Congress, which had thus far underfunded flood-control efforts in the Neosho River valley.[497]

Wright then remarked that "flood control works on the Grand River without question destroy potential power producing capacity on one of the best power producing streams in the area." Why, he wondered, did people not focus more intently on a more "sensible plan of flood control for the Arkansas River basin" that included building "as much flood control works as possible on streams that do not have potential power producing capacity and the utilization to as great a degree as possible of the potential power capacity of rivers like the Grand?" "Let's not

criticize one dam for not controlling a flood in the Arkansas river system when all studies show that a large number of dams are necessary to accomplish this purpose."[498]

The fallout of the 1943 flood resulted in GRDA and Wright being called to testify almost a year later in 1944 in front of the appropriations subcommittee for the Department of the Interior. Wright responded to allegations that "maladministration" of the Pensacola Dam and Reservoir caused damage during the two May 1943 floods. Wright explained that the FPC license set the power pool elevation of the Neosho River Dam at 745 feet. The first flood raised the reservoir almost to elevation 745. The "second flood made the first one look like a baby" and filled the reservoir to 754.58 feet. Wright noted that he took matters into his own hands and "did something . . . a little bit unusual." Facing the seeming inevitability of either "wiping out" the OOW downstream or inundating 5 extra feet of land that neither GRDA nor the federal government yet owned, Wright pushed forward with FWA approval to purchase the land with a congressional appropriation he had just received. As he explained, this enable him to use "5 feet more storage than there would have been available had I not taken that emergency action."[499]

Wright summed up that he thought the 1943 flood should have made it exceedingly clear to people that what was needed on the Neosho River was a "comprehensive plan" for flood control—one that included the Markham Ferry and Fort Gibson Dams—"or you are not going to get very much out of it." Wright was proud of the flood protection GRDA's operation of the Pensacola Dam and his quick moves to acquire land and easement had provided. He noted how much worse things could have been, including losing the $75,000,000 OOW. Instead, GRDA's actions allowed the OOW operators enough time to "build dikes and sandbag their works before the peak got there."[500] Rather than cast blame on GRDA, he felt strongly that the Authority had done its best under the conditions.

Although he thought it was obvious, Wright reiterated to the committee that the Pensacola Dam had been built as a "50-50 compromise" between power production and flood control. Although the Army had always wanted more flood-control storage in the reservoir, the State of Oklahoma (supported by the PWA contract and FPC license) had always seen its main purpose as providing power to Oklahomans and later the war effort (indeed, OOW had been sited specifically to access inexpensive GRDA power). The upshot, Wright concluded, was that the Corps had realized after a few years of Pensacola being in service that it needed to revise the original Fort Gibson Dam plans. The Corps was convinced that in order to effectuate more consistent flood control both upstream and downstream of Pensacola on the Neosho, the Corps needed to increase the size of the Fort Gibson reservoir and focus on better coordination of operations between Pensacola and the planned Markham Ferry and Fort Gibson Dams. Doing so would reduce at least some of the pressure that had been on a single dam to do the work that GRDA had originally planned in its first designs of the Markham Ferry and Fort Gibson facilities that the Corps itself had argued until the late 1930s were neither economically feasible nor desirable as federal projects.

Thankfully, Wright noted, by the time of the March 1944 hearings, Congress had finally authorized and appropriated the last of the three planned dams, Fort Gibson.[501]

Damages Claims, Land Condemnations, and Securing Additional Land and Flowage Easements

Oklahomans upstream of the Pensacola Dam sought to file damages claims for the May 1943 floods almost immediately after floodwaters had receded. By June, FWA was attempting to test a case already in court to "amend one land condemnation suit to cover personal property" retroactively to cover May damages to personal property.[502] Additionally, because flood victims had "no recourse" and were unable to sue the U.S. government under the laws at that time, District Judge Thomas was pushing for legislation to make it possible to do so. Thomas argued that it was "against the constitution to take or damage private property without just compensation" and furthermore unfair that the FWA alone had the power to determine the amount of damages they would pay.[503]

Thomas described in detail the damage he predicted future dam/pool elevation increases would cause, noting that "the inhabited section of Miami starts at about 750 feet above sea level" and that the sewer discharge was at about 751 feet. Tar Creek and Spring River would also be affected. He may have based his comments on engineering surveys by Black & Veatch, a firm the Corps employed to make initial studies of potential upstream damage if Grand Lake were raised 5 feet. Thomas requested that the Corps make the study findings public and pressed for its inclusion in the record of future House Flood Committee hearings. That way, "Miami city officials and property owners above the dam, who contend that damage will extend far beyond the proposed reservoir line, will be able to go into court, or before a damage commission and cite expert engineering testimony to offset the testimony of FWA engineers who disagree."[504]

During the June 17, 1943, meeting of the Miami PUB, commissioners discussed correspondence Miami mayor F. E. Millner had received from Judge Thomas regarding flood damages, which made recommendations regarding how Miamians could best advocate for themselves regarding flood damage. Thomas urged the City and parties to act quickly and gather proof of claims to submit to FWA representatives, who would be holding hearings "as to the correct flood curve line as shown by the May Flood of this year," in order to pressure FWA to adopt a "fair" flood curve that would reimburse flood victims retroactively and protect them against future floods. Thomas also thought the City should press for public statements from FWA "that if they cannot negotiate damage settlements to that line, that they will condemn to that line" and "that they will stipulate in all condemnation proceedings above the dam that the damages caused by the May Flood may be litigated and evidence introduced in reference thereto as a part of the condemnation proceedings on a cross-petition to be filed by the property owner."[505] Thomas furthermore warned the City of Miami and anyone in the general area damaged by floods to "stay out of any entangling

associations with affected communities below the dam." Because there was a "conflict in interests between our community and those communities," Thomas believed that "any collaboration with them will prove detrimental to the interest of the City of Miami and other property owners affected in this community." The PUB determined that Thomas, Freehauf, and Nesbitt should go to Tulsa and Kansas City and "obtain what information" they could.[506]

Thomas, Freehauf, and Nesbitt had met unsuccessfully with Black & Veatch to solicit its engineering services (possibly due to a perceived conflict since they were in the Corps' employ). Next steps were reaching out next to Burns & McDonnell and paying someone to review the local newspapers for relevant flood-control data.[507] On July 7, 1943, a special session of the PUB met to discuss flood control and damages with a Burns & McDonnell engineer. The PUB determined that a special study would need to be made but tabled the discussion.[508] The City appears to have reached out to GRDA immediately, indicating that they might be moving ahead with litigation. GRDA general counsel Marshall replied with a reiteration of the terms of Miami's November 14, 1941, settlement agreement.[509]

On August 1, 1943, Wright told the Miami newspaper that GRDA planned to purchase more land in order to be able to elevate the pool to 755 feet (at the dam), a move that "may have been influenced by flood stages beyond that point last May." Wright reported that the "taking line" was still being determined between Wyandotte and Miami, but he thought that "purchases to the 770 line would be necessary . . . to prevent recurrent flooding of privately-owned lands." Wright was not ready to go "public" with any further details due to the ever-changing nature of the process.[510] The process that Wright was referring to in part was likely the impending formalization of SWPA under the Department of Interior, which would take over from FWA on September 1, 1943.

In meetings of the Miami PUB on August 3 and 19 that were attended by Holway, chief of land acquisitions Grover Spade, chief counsel Davidson (representing the nascent SWPA), and Miami's mayor and city attorney. Attendees discussed the "contemplated flowage easement" that SWPA wanted to raise from the 755 elevation (which had been acquired through Wright's emergency condemnations in May 1943) to 760 feet and how best to achieve that goal.[511] Despite "cheery talk" by property owners in the area about the potential high prices they might receive during the new phase of land and easement acquisitions, Wright (on behalf of the federal government) made it clear that "land values [had] not increased because it was now lake-front property" and that "although federal juries returned oversized awards to landowners in [past] GRDA cases," federal attorneys did not anticipate "a repeat performance."[512] The process was still ongoing on November 29, 1943, when Wright proclaimed that the lake level at the dam would only reach 755 feet in flood conditions but that SWPA would continue to operate the dam at elevation 745 under normal conditions. Still, he assured locals that SWPA was seeking to "make it possible to

raise the water level for flood control" from elevation 755, by which he was likely referring to SWPA's decision to acquire land and easements up to elevation 760.[513]

In mid-March 1944, the PUB discussed how the SWPA condemnation suits continued to "inch toward Miami." Miami attorney and PUB member Nesbitt explained that the petitions that had been filed thus far were to secure flowage easements around Grand Lake "up to the 758 foot level" and that the government was not seeking fee simple—just easements—so the land owner would continue to pay taxes. According to Nesbitt, as SWPA acquired easements, "the elevation is graduated toward Miami and at the time the city is affected, it is anticipated the elevation here will be 760 feet or more."[514] When the Oklahoma Planning and Resources Board asked GRDA to produce documentation of all land and easements SWPA had secured in early 1945, Marshall responded SWPA's administrator had possession and GRDA had no means of procuring the requested documentation due to staff shortages. However, he reported that GRDA itself had acquired close to 50,000 acres of land below elevation 750 and had prepared "several thousand tract maps" which were being printed and to be filed soon with the FPC.[515] Marshall also confirmed that SWPA had "for some time" been acquiring "past lands in fee and flowage easements above the Authority's taking line, that is, above elevation 750, and these lands constitute a part of the reservoir area, with particular reference to the accommodation of flood control."[516]

On December 22, 1944, Congress passed the 1944 Flood Control Act. Section 7 of the law specified, "Hereafter, it shall be the duty of the Secretary of War to prescribe regulations for the use of storage allocated for flood control or navigation at all reservoirs constructed wholly or in part with Federal funds provided on the basis of such purposes, and the operation of any such project shall be in accordance with such regulations."[517] Although SWPA was technically overseeing power production at Pensacola by late 1944, the Corps was firmly in charge of flood control on the Neosho River.

GRDA Operations Resume, September 1, 1946

With World War II winding down, GRDA began its push to regain control over its power operations on the Neosho River. In June 1946, Oklahoma governor Robert S. Kerr unsuccessfully requested of President Harry S. Truman that the Pensacola Dam be restored to GRDA.[518] Truman regretted that he was unable to effectuate the transfer at that time, explaining that he wanted to safeguard the process and ensure that the federal government had accomplished all of the necessary milestones before returning Pensacola operations to GRDA. These milestones included determining exactly which properties would be returned, "including improvements and construction work completed," auditing mutual accounts, and renegotiating the loan and grant arrangements—all in concert with Interior and other related agencies.[519] Although hopes were high that GRDA would regain control by the beginning of 1946, negotiations were ongoing throughout the first half of 1946. The House Flood Control Committee and Interior approved proposed legislation for the

return in early summer and the Corps reported favorably on the Senate version of the bill later in June.[520]

On August 1, 1946, GRDA and the United States of America issued a settlement agreement formalizing the transfer.[521] Under the terms of the agreement, GRDA would receive $5,000,000 in compensation for federal use of the project and the return of all properties that the government had acquired originally from GRDA or constructed since it took over operations.[522] Additionally, the government would "grant, transfer, convey and deliver . . . all flowage rights" below elevation 750 to GRDA.[523] In return, GRDA would "grant, transfer, convey, and deliver . . . flowage rights . . . above elevation 750."[524] Last, GRDA agreed to hold the United States of America harmless "from any and all claims, damages, causes of action, debts, contracts, and demands whatsoever" relating to any period during which GRDA was receiving PWA loan and grant money, operating under its contract with FWA, or was under federal control.[525] On August 9, 1946, Congress passed An Act to Authorize the Use of Certain Lands of the United States for Flowage in Connection with Providing Additional Storage Space in the Pensacola Reservoir of the Grand River Dam Project in Oklahoma, and for Other Purposes.[526]

Final paperwork was signed in Kansas City and Tulsa on August 21, 1946, effecting the return of Pensacola Dam to GRDA and retiring old and issuing new bonds with a lower interest rate. GRDA general manager France Paris noted that this momentous event "would mark the start of its 'fullest possible development as a source of low-cost power and as a recreational facility unexcelled in the southwest.'" The Tulsa offices of GRDA were also returned to Vinita.[527] SWPA assured the Corps that SWPA was ensuring that all contractual items were complete and anticipated the final close date for the agreement would be August 31, 1946.[528]

When GRDA retook control over power generation at the Pensacola Project, sufficient flowage easements had been acquired to "protect all interests of the Government from liability and damage resulting from major floods comparable to the great flood of May 1943" (and were therefore conveyed to GRDA through the settlement agreement). Flowage rights applied to flood flows of 10,000 cfs to about 80,000 cfs on the Neosho River above Miami along with small areas along the Spring and Elk Rivers and possibly a few small tributaries. As Burnham explained the situation after the transfer, the "main body of land" on which flowage rights had been acquired was "the valley storage lake above Miami," which had been "inundated by every major flood on the Neosho River before the reservoir was built."[529] Burnham provided a description of where floodwaters went at that time in the Miami area.

> This valley storage lake is about four miles wide north and south and over five miles wide east and west. The overflow area is approximately 13,500 acres. The area inundated as shown on the old 308 report maps and the overflow area in the 1943 flood are about the same. The outlet of the lake is approximately mile 145.2. . . . The inlet of Neosho River at the upper end and near the northwest corner of the lake at

> mile 156.5. . . . The length of the river channel between these two points and sections is 11.3 miles or 59,700 feet. . . . The first overflow during a flood occurs at the bend adjacent to Mud Creek near mile 156.5, and meets the water retarded by the bottleneck at mile 145.2. This action is entirely independent of the reservoir at any elevation. . . . Water elevation at low water at mile [1]56.5 is about 754 and at mile 145.2 is about 738—a difference of sixteen feet in 11.3 miles or a fall of 1.41 feet per mile.[530]

Burnham provided this detailed description because the valley storage lake seemed "to have been overlooked when the data for the envelope curves were calculated" and that "streams flowing into the valley lake upset calculations of backwater curves."[531] Although Burnham did not specify, it seems he was referring to the 1942 report Black & Veatch had prepared for the Corps, which modeled a number of different curve envelopes associated with lake levels at the dam.[532] Black & Veatch based their backwater curve models on an estimated mean flood stage for Miami based on data from the Parsons gaging station and an estimated cfs at Miami based on data from the Commerce gaging station. Furthermore, "streams flowing into the valley lake upset calculations of backwater curves."[533] Burnham believed their models to be inaccurate due to the presence of the valley storage lake upstream from Miami, which created conditions different from those at Parsons or Commerce, thus skewing the results. According to Burnham, "correction of these elevations will change the points of intersection and reduce the heighth [*sic*] of the calculated backwater curve above section 25, assuming the envelope curve below section 25 is correct."[534]

In sum, Burnham calculated that "all lands under the 755 backwater envelope curve are inundated by major floods," but that "the reservoir operated at any elevation to 755 does not damage these lands." Furthermore, any effects of the "backwater curve resulting from the May 1943 flood were below Miami." To Burnham, "any money paid for inundating lands above Miami will not compensate for damages as lands have been inundated by every major flood independent of the reservoir." To protect "nearly all the good land," he suggested constructing a levee "on the left bank starting at the Commerce gage and following contour 765 for about a mile and then follow near the 760 contour to a point just north of Miami."[535] No such levee appears ever to have been built.

Post-1946 Flood Control on the Neosho River

By the time GRDA regained control of the Pensacola Project, Markham Ferry and Fort Gibson Dams had been authorized as part of the Arkansas River Basin plan and received appropriations for construction under the 1941 Flood Control Act. The stage was finally set for completion of those two projects, and the Corps began construction on Fort Gibson Dam in 1942.[536] Despite the crucial role most people agreed it should play in flood control on the Neosho, the project was not complete until 1953.[537] GRDA began construction on the Markham Ferry Dam

(now known as the Robert S. Kerr Dam, which impounds Lake Hudson) in 1958 and completed it in 1964.[538]

Although some public Kansas entities and private corporations and individuals had built dams that created reservoirs to provide both flood control and water, typically on smaller tributaries, by the beginning of World War II, only a few of the 1930s-era flood-control projects the Corps had proposed and authorized along the Neosho River in Kansas and Oklahoma had come to fruition by 1946. The lack of follow through on these recommended projects, despite the promise of some federal funding, stemmed mostly from localities' refusal or inability to meet the level of cooperation and cost-sharing required for federal assistance.[539] Still, at the time GRDA took the Pensacola Project back from the federal government, concern about flooding remained an issue, and federal, state, and local officials and the public continued to debate the best means of flood-control on the upper Neosho.[540] In 1949, Kansans lobbied Congress for the construction of a series of four dams and reservoirs (that would be coupled with soil conservation efforts) along the Neosho.[541] Congress authorized three of the projects in the Flood Control Act of 1950. The disastrous flood of 1951 emphasized how essential these dams were for flood control in the Neosho River watershed.

Despite the impetus the disastrous 1951 flood provided to make progress on the the Kansas reservoir projects, it would take more than a decade for each to be completed: Council Grove in 1964, John Redmond (formerly known as Strawn Dam) in 1965, and Marion in 1968.[542] Later reports indicated that the Kansas reservoir system on the Cottonwood and Neosho reduced flood stages "significantly" at Miami.[543] According to one study of the John Redmond Dam, "controlled releases from the dam [had] decreased the magnitudes of peak discharges and increased the magnitudes of low discharges" downstream from the dam.[544]

Since the late 1960s, efforts to control flooding on Neosho River and its tributaries and the damages those floods cause have continued with local insurance studies, municipal planning and zoning, and local floodplain management programs coordinated through the Federal Emergency Management Agency (FEMA) in support of the National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973.

In 1979, the City of Miami hired a consultant to draft a zoning ordinance to address flooding and other issues in the City. According to the draft ordinance, the certain areas within the town were

> subject to periodic inundation, which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect the public health, safety, and general welfare. . . . These flood losses are created by the cumulative effect of obstructions in flood plains, which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas

> by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, floodproofed, or otherwise protected from flood damage.[545]

The next year, FEMA published a study of "the existence and severity of flood hazards" along the Neosho and other streams in and around Miami to support the town's conversion to "the regular program of flood insurance by the Federal Insurance Administration (FIA)" and "promote sound flood plain management."[546] The 1980 study emphasized that the Neosho was the "primary source of flooding," in Miami, which had been originally sited along the river's left bank and developed most extensively in that area.[547] Although "most" residences and businesses were "above flooding elevations" some areas on the Neosho, Tar Creek, and other small streams had been "inundated by past floods."[548] FEMA concluded that "continuous heavy rains" and "intense local thunderstorms moving in a northeasterly direction across northeastern Oklahoma and southeastern Kansas." Much like part 1 of this study shows, FEMA's review of historical documents and interviews with locals documented "numerous flooding instances on the Neosho River and Tar Creek" over time.[549]

The 1980 FEMA study, which was updated in 1988 to include an evaluation of flooding on Little Elm Creek, specifically considered contributing factors to damage at Miami from the two largest floods on record—1943 and 1951. In 1954, heavy, sustained rains (especially at Joplin, Missouri) combined with ground saturation led to high flood crests (25.12) and large peak discharges (105,000 cfs) at the Commerce gage and subsequent filling of the Pensacola Reservoir (although the FEMA report made no association between the reservoir level and flooding at Miami).[550] The 1951 flood was caused by a "sequence of significant rainfall" over the Neosho River Basin from late April 1951, which

> culminated in the critical storm of July 9–13. Rainfall in May was considerably above normal, and the June rainfall was more than twice the normal. There were three (3) storm periods, June 20–24, June 28–30, and July 9–13. The 1951 flood actually began in June when the Neosho River became bankfull on June 24 and gradually rose to about 5 feet over bankfull by July 1. The storms moved from north to south so that the rainfall followed the floods downstream. . . . the occurrence of these storms in such rapid succession not only produced flooding, but saturated the soil and accounted for the phenomenal rates of runoff in the latter parts of the storm. Rainfall during the period July 9–13 consisted of a series of intense thunderstorms over the upper Neosho River watershed. . . . A total of 17.4 inches for the storm period was unofficially recorded south of Emporia, Kansas.[551]

During the July 1951 flood, the report estimated that "velocities in the channel of Neosho River in the vicinity of Miami ranged up to 10 feet per second. Overbank velocities ranged up to 7 feet per second." Compared to the 1943 flood, 1951 was a monster with the crest stage at the Commerce gage standing at 34.03 feet and the estimated peak discharge at 267,000 cfs.[552]

The FEMA report further noted that bridges in Miami did not prove to be significant obstructions to the floodwaters and their effect on the "head loss" of the river in 1951 was "negligible." The authors concluded that flooding on Tar Creek, however, was "often elevated downstream of the St. Louis–San Francisco Railway Bridge from the Neosho River," due to "backwater effects" upstream of the bridge.[553] Again, no mention was made to the Pensacola Reservoir contributing to the epic flooding in Miami in 1951.

After a major flood in fall 1986 caused $11,000,000 in damages in Miami, Oklahoma, and the surrounding area, "several communities" inquired about what kind of help the Corps could provide in solving the flood problems. "Local interests" sought to understand the cause of the frequent flooding and "suggested potential solutions, including dredging, flood control reservoirs, channel improvement, levee protection, reservoir storage reallocations of the existing Neosho River lakes, and other measures." In May 1987, Miami's mayor wrote to the Oklahoma governor, requesting "assistance in obtaining a Federal study to examine the flood situation and the flood control operation of Grand Lake."[554] Soon after, the Corps received funds to conduct a reconnaissance study of potential flood measures on the Neosho River between the John Redmond Dam near New Strawn, Kansas, and Miami. After examining "structural and non-structural solutions" for Miami specifically, the Corps recommended in March 1989 that a levee protection project was the economically feasible solution.[555] The Corps reported that spring that it expected to finalize a cost-sharing agreement with the City of Miami—a policy of which the mayor and city commissioners were aware—by fall 1989.[556] However, in June 1990, Miami's Board of Commissioners voted not to initiate feasibility studies and the Corps discontinued the studies.[557]

In 2016, confusion questions remained about ownership within the FERC boundary for the Grand River Dam Project. To simplify the regulatory framework, Congress included clarifying language in 2016 Water Infrastructure Improvements for the Nation Act. The act conveyed "by quitclaim deed and without consideration, to the Grand River Dam Authority, an agency of the State of Oklahoma, for flood control purposes, all right, title, and interest of the United States in and to real property under the administrative jurisdiction of the Secretary acquired in connection with the Pensacola Dam project, together with any improvements on the property."[558] This change would have no effect on the authority invested in either FERC to license the project or on the Corps' jurisdiction over flood control.

Congress outlined further clarification and instruction regarding the roles of FERC and the Corps related to the Grand River Dam in the 2019 National Defense Authorization Act for Fiscal Year 2020. Section 7612 clearly defined the conservation pool and the flood pool and established the Corps' "exclusive jurisdiction and responsibility for management of the flood pool for flood control operations at Grand Lake O' the Cherokees." Congress further clarified that FERC's jurisdiction "shall not extend to any land or water outside the project boundary," established that "any land, water, or physical infrastructure or other improvement outside the project boundary shall

not be considered to be part of the project"; and forbade FERC from making any changes to the project boundary without GRDA's "expressed written agreement." Furthermore, the law prohibited FERC or any other federal or state agency from imposing license conditions relating to water surface elevations at the Pensacola Project, except with respect to FERC's "rules and regulations for project safety and protection of human health" and eliminated federal land management agencies' authority to impose mandatory license conditions under FPA Section 4(e). Last, Congress directed the Corps to complete a "study of infrastructure and lands upstream from the project to evaluate resiliency to flooding."[559]

Thus, as of the 2023 relicensing process (and this writing), the Corps remains firmly in control of flood control operations at the Pensacola Dam over elevation 750 while GRDA (under its FERC license and within the FERC boundary) holds responsibility for the power pool up to elevation 750.

Conclusion

Several narratives are drawn through this study of flooding, flood control, and the development of hydropower on the Neosho River. First is the sheer volume of water that the river has both carried within and spilled outside its banks from proverbially time immemorial. Archaeological evidence, ethnographic accounts, early military and settler reports, newspapers, photographs, interviews, and countless other documents attest to this fact. The Neosho is not and has never been unique as the mainstem river within a watershed in the middle of the North American continent, where geological conditions and topography, climatic patterns, and soil conditions create conditions ideal for extremes of both drought and deluge.

The second narrative relates to how flooding has had an often-disastrous impact on the humans who have populated the Neosho River watershed and others like it in the region. Whereas Native people sought to adapt to the vagaries of their environment, moving between higher ground during floods and lower ground when the rivers and streams were within their banks, people of mostly European descent (and the enslaved people they brought West with them) adhered to a more settled interaction with single plots of land on which they constructed homes and outbuildings, planted crops, grazed animals, extracted mineral resources, and so on. River bottoms have the distinct advantage of providing fertile soil and easy access to water for drinking, irrigation, transportation, and power production; river bottoms are also highly susceptible to floods and the death and destruction floodwaters leave behind. Many non-Indigenous people (especially those moving west in pursuit of "proving up" land that would become legally theirs under the various Homestead Acts) believed in the land ownership model and in settling at one location. This desire for rootedness did not allow for the ease of movement Indigenous people had based on seasonal rounds or climactic vagaries. Thus, non-Indigenous people settled along a river that flooded—often

multiple times per year--wiping out crops, destroying buildings, killing livestock, and sometimes taking human lives.

Thus, as non-Indigenous people chose and Indigenous people were forced to move to the territory that become Kansas and Oklahoma along the Neosho River, efforts expanded to control flooding and minimize its risks while also taking advantage of the benefits proximity to water imparted. The narrative of trying to control flooding on the river played itself out at the private, local, state, territorial, and ultimately, federal levels in various combinations over time in the region. The contours of these efforts sat solidly within the context of the expanding United States—from removal of Native people to Indian Territory, through the Civil War and Kansas statehood, through Oklahoma statehood, expanding federal involvement in navigation and flood control, the Depression, two world wars, the Cold War, and beyond.

Alongside flood control developed the narrative of increased demand for electric power as the nineteenth century turned into the twentieth. People had been harnessing waterpower on river and streams via mechanical waterwheels for centuries, but late nineteenth- and early twentieth-century advances in generating and transmitting electricity led to ever-greater interest in siting hydroelectric facilities on the nation's waterways. People living along the Neosho River were as excited as other people around the country to develop rivers and streams for power. This enthusiasm was evidenced by the tireless efforts of Henry Holderman and others to site a hydroelectric dam on the Neosho River in Oklahoma over the course of the 1890s through 1930s.

The narrative threads of power production and flood control both ran parallel and intersected. Although the federal government advanced haltingly into widespread flood-control efforts during the early twentieth century, the astounding successes of such private hydroelectric facilities as Niagara Falls in New York State or Snoqualmie Falls outside Seattle sparked the passage of the Federal Power Act in 1920, creating the Federal Power Commission to oversee, license, and regulate the ever-growing number of facilities. Into the mix stepped any number of private, municipal, state, and soon federal attempts to site, design, and develop power projects.

Into this milieu stepped the State of Oklahoma, which was determined by the early 1930s to develop hydroelectricity on the Neosho River—the outgrowth of what had begun with Holderman's early surveys of the river. When the Grand River Dam Authority came to be in 1935, the Corps was (at least on paper) resolutely disinterested in supporting federal development of specifically the Neosho River for either power or flood control purposes. However, the State of Oklahoma and two federal agencies (the FPC and Public Works Administration) perceived in the Pensacola project a terrific opportunity to provide desperately needed jobs during the Depression and affordable electricity for local communities and industries.

Whether anyone in the FPC or PWA was aware or not, a sea change was underway within the Corps. The agency was steadily moving away from its original position that nonnavigable rivers

like the Neosho were not worth federal investment and toward a much stronger interest in controlling these tributaries to larger, more problematic rivers downstream that had by then been experiencing decades of disastrous floods. As hydroelectric power production grew rapidly over the first three decades of the twentieth century, the U.S. Army Corps of Engineers, which had previously maintained a mostly hands-off approach to flood control (especially on nonnavigable rivers)—became increasingly concerned about the effects of floods on safety, navigation, and commerce on the nation's rivers. A series of disastrous floods across the United States spurred a movement toward Corps' responsibility for and authority over flood control. This role at times pitted the Corps' flood-control mandate against the various goals of individuals, power generators, manufacturing and mining companies, municipalities, states, regions, and even other federal agencies.

The siting, designing, licensing, construction, operation, and relicensing of the Pensacola Dam provide a fascinating window onto the dynamics that surrounded the often-conflicting goals between those who prioritized power generation (and in the case of GRDA, the need to generate enough revenue through power generation to comply with its self-liquidizing agreement with the PWA) and those who prioritized flood control. The two were never mutually exclusive, but different emphases and compromises made during the initial licensing created an at-times confusing regulatory and operational framework where power versus flood control was concerned.

The purely coincidental timing of when GRDA went officially online in early 1941 with the onset of World War II later that year exacerbated the lack of clarity among GRDA, PWA, FPC, the Corps, and Interior over whether Pensacola's primary purpose would be power or flood control and whether it was best operated by a private, state, or federal entity. Unfortunately, this opacity led to early tensions and accusations of malintent (mostly around responsibility for flooding upstream of the dam and liability for flood damages and prevention). Everything from mild annoyance to outright hostility among the parties involved in or living near the Pensacola has been rooted in the initial debates surrounding the reservoir pool level and associated land acquisitions and flowage easements and how these were resolved by compromise in the original license. Fortunately, a series of congressional acts and related reports and enactments codified and clarified the roles of GRDA, FERC, and the Corps where the operation, oversight, and ownership of the Pensacola project is now concerned. The past almost century of interplay between power production and flood control combined with the ever-present specter of flooding of the Neosho River and its tributaries comprise the final, overarching narrative of tension that remains among people living in the watershed today.

Endnotes

[1] Unless otherwise noted, physical description provided here come from various portions (including transmittal letters with earlier dates) of *Report on Survey of Pensacola, Markham Ferry, and Fort Gibson Reservoir Sites, Grand (Neosho) River, Okla.*, October 29, 1938, House Document No. 107, *U.S. Congressional Serial Set* (1939), esp. 2–20. See also H.R.Doc. No. 308, 74th Cong., 1st Session, maps, 1931, Box 3, Folder 4: Grand (Neosho) River, Native American Lands Maps Collection, 1993-060, Oklahoma State University, Archives, Stillwater (OSU Archives); maps, graphs, plans in Folder: Grand (Neosho) River, Okla, Preliminary Report Pensacola, Markham Ferry, Ft. Gibson Reservoirs, Appendices I and II, to Accompany Oct 29, 1938, Plats 1938, RG77, Corps of Engineers, Southwestern Division, Rivers and Harbors Studies and Reports, 1928–1942, Eagletown–Guadalupe, HM2000, Box 2, E. SW7, National Archives and Records Administration, Fort Worth, TX (NARA-FW).

[2] *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938, 19.

[3] *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938, 10.

[4] *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938, 5, 9, 20.

[5] Synopsis of District Engineer's Report on Grand (Neosho) River, Kansas, Missouri, Arkansas, and Oklahoma, June 19, 1931, 9, Folder: Grand (Neosho) River—KS, MO, AR, OK, RG77, Corps of Engineers, Southwestern Division, Engineering Files—Harbors and Rivers, 1920–1940, Galveston–Grand (Neosho) River, HM2000, Box 21, NARA-FW.

[6] Walter C. Burnham to Douglas G. Wright, Administrator, July 28, 1947, Operation Grand River Dam Project, Grand River Dam Authority, Headquarters, Chouteau, OK (GRDA-HQ).

[7] Synopsis of District Engineer's Report, June 19, 1931, 9; *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938, 17; and *Arkansas River and Tributaries*, 1231.

[8] *Grand (Neosho) River and Its Tributaries*, *Oklahoma*, *Kansas*, *Missouri*, *and Arkansas*, February 19, 1946, reprinted with correspondence in *U.S. Congressional Serial Set* (Washington, DC: GPO, 1948): 1–71, quotation on 23. According to this report, "a total of 62 storms having an average rainfall over a major division of the watershed of 3 inches or more in the period January 1900 through June 1944, with 53 of these storms having an average rainfall over the entire watershed of 3 inches or more" (19–20).

[9] *Arkansas River and Tributaries*, *3 Vols.*, *Report of Corps of Engineers*, part 10, House Document No. 308, reprinted with illustrations in *U.S. Congressional Serial Set* (Washington, DC: GPO, 1936): 1215–341, quotation on 1231. Although the report refers to valley storage in "Kansas" and does not specify the small section of watershed in northeastern Oklahoma above the Spring River, the division of the river into two distinct reaches divided at the mouth of the Spring in the report and the similarity in topography around the Grand River between southeast Kansas and northeast indicates that this description of "Kansas" should include the small section of the river in Oklahoma north of the Spring.

[10] *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938, 17; and *Arkansas River and Tributaries*, 1230–31.

[11] Arthur H. Rohn and Alice E. Emerson, "Great Bend Sites at Marion, Kansas," *Wichita State University Publications in Anthropology* No. 1, 1984, quotation on 15, on file at Iola (Kansas) Public Library.

[12] George P. Morehouse, "A Famous Old Crossing on the Santa Fe Trail," address to Kansas State Historical Society, December 1, 1903, reprinted in *Transactions of the Kansas State Historical Society, 1903–1904* (Topeka: Clark, 1904), 137.

[13] Quotation from Defence of Western Frontier, Letter from the Secretary of War, in Reply to the Resolution of the House of Representatives of the 24th Ultimo, Relative to the Plan Proposed for the Defence of the Western Frontier; also, What Tribes of Indians Inhabit the Country Immediately West of Arkansas and Missouri, April 1, 1840, 2, Referred to the Committee on Military Affairs, April 1, 1840, 26th Cong., 1st Sess., *U.S. Congressional Serial Set* Vol. No. 366, Session Vol. No. 4, H.R.Doc. No. 161. See also Grand (Neosho) River, Okla., Watershed, Adjacent Area, and Details of Lower Grand River Valley," map, October 1938, Appendix 1, *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938. General statements about flooding frequency in this paragraph are based on reviewing and cataloging numerous sources (including historical society manuscript and photograph collections, newspapers, federal and state agency reports, and other relevant documents) gathered in Kansas and Oklahoma, as well as through databases and online sources such as newspapers.com, HathiTrust, *Congressional Record*, and so on. All documents available upon request.

[14] U.S. Office of Indian Affairs Annual Report of the Commissioner of Indian Affairs, for the Years 1826–1839, 1834, Report No. 474, Regulating the Indian Department, esp. 114, retrieved from https://search.library.wisc.edu/digital/A3YVW4ZRARQT7J8S; and William W. Graves, *The First Protestant Osage Missions*, *1820–1837* (Oswego, KS: Carpenter, 1949). See also James O. Wright and Charles G. Elliott, *The Prevention of Injury by Floods in the Neosho Valley, Kansas*, U.S. Office of Experiment Stations Bulletin No. 198 (Washington, DC: GPO, 1908); U.S. Army Corps of Engineers [USACE], Tulsa District, *Flood Plain Information: Neosho River and Tar Creek*, *Miami*, *Oklahoma* (Tulsa, OK: District, 1969); and Kansas State Board of Agriculture (KSBA), *Twenty-First Biennial Report*, *for the Years 1917 and 1918* (Topeka: KSBA, 1919). Accounts conflict on whether the 1844 flood was actually on the Grand River; according to Snowden D. Flora, "There are no records of a flood in 1844 along the Neosho or Arkansas Rivers" ("Climate of Kansas," in KSBA, *Report of the Kansas State Board of Agriculture* 67, no. 285 [June 1948]: 280).

[15] In 1844, the Osage Subagency was located on the Neosho River in southeastern Kansas likely near what is now St. Paul (once Osage Mission), Kansas, in Neosho County. Harvey quoted in Louise Barry, comp., *The Beginning of the West: Annals of the Kansas Gateway to the American West*, *1540–1854* (Topeka: Kansas State Historical Society [KSHS], 1972), 513. See also Edward Charles Murphy and Others, *Destructive Floods in the United States in 1904*, U.S. Geological Survey (USGS) Water Supply and Irrigation Paper No. 147, Series M, General Hydrographic Investigations, 15, 58th Cong., 3d Sess., *U.S. Congressional Serial Set* Vol. No. 4877, Sess. Vol. No. 98, H.R.Doc. No. 464 (Washington, DC: GPO, 1905); H. A. Rice and Roger C. Rice, "The Relation of the Kansas Water Commission to the Flood Problem of Kansas," paper read before the Kansas Engineering Society, Tenth Annual Meeting, January 15–16, 1918, Lawrence, Kansas (Topeka: Smith, 1918), 7; Flood Control and Water Conservation Committee (FCWCC), *Report of the Flood Control and Water Conservation Committee to the Governor of the State of Kansas*, December 27, 1928 (Topeka: State Printer, 1928); "Flooding of the Neosho River," comp. Erin Burdick, undated typescript [ca. 2019], on file at Coffey County Historical Society, Burlington, KS; KSBA, *Twenty-First Biennial Report*; William W. Graves, *Annals of Osage Mission* (??; repr., St. Paul, KS: Graves Memorial Library, 1987); "The Neosho River Watershed—Center of Worst Kansas Flood—That of 1844—1951 Flood Losses," in Ralph Richards, *What Are We Going to Do About It?* (n.p.: s.p.?, [1952]), 16–17; and USACE Tulsa District, *Flood Plain Information*.

[16] "The old timer, whose crop for that year went down to the Mississippi and whose fences also kept them company, will never forget the flood of 1869. The [Osage] Mission folks reported it the worst flood since 1854, when it seems there was a record breaker" (L. Wallace Duncan, *History of Neosho and Wilson Counties, Kansas* [Fort Scott, KS: Monitor, 1902], 33).

[17] See, for example, James H. Holmes, testimony given on December 8, 1856, to Thaddeus Hyatt, Item Number: 2593, 2, Thaddeus Hyatt Coll. #401, Box 1 Folder 5, www.kansasmemory.org; and S. D. Flora, "The Climate of Kansas," in KSBA, *Twenty-First Biennial Report*, 342.

[18] See, for example, Mary Lou DeLong Atherly, *Yesterday's Tomorrow: A History of Strawn, Kansas, and Surrounding Territory* (self-pub., 1982), 3, quoting Frank W. Blackmar, *Kansas* (Chicago: n.p., 1912), 54, on file at Coffey County Historical Society. Although the river remains unspecified, according to the Indian commissioner that year, "the Osages have not, in a manner, raised anything, their corn having been destroyed by overflows of the streams early in the summer" (although the "streams" remain unnamed, the Osage still resided in the Neosho River basin in the 1850s). See also Andrew J. Dorn, United States, Office of Indian Affairs, Annual Report of the Commissioner of Indian Affairs, for the Year 1856, Southern Superintendency, Report No. 44, 131–72, quotation on 134, https://digicoll.library.wisc.edu/cgi-bin/History/History-idx?type=browse&scope=HISTORY.COMMREP.

[19] On the Cottonwood River in 1858, heavy rain brought the stream out of its banks and "washed away" wheat "on the bottom lands" (D. A. Ellsworth, comp., *History of Chase County*, 5, book out of binding, missing title page, and contained in blue ring binder, Chase County Historical Society, Cottonwood Falls, KS).

[20] "Overflow about the first of July [1867] on the Grand in Neosho County" (W. W. Graves, *History of Neosho County*, Vol. 1 [1949; repr., St. Paul, KS: Osage Mission Historical Society, 1986], 435).

[21] Neosho River "overflowed for several days during the first part of September [1868]" (Graves, *History of Neosho County*, 1:435).

[22] "Small flood last part of October [1870]" (Graves, *History of Neosho County*, 1:435).

[23] "July 1, [1871,] Neosho valley flooded" (Graves, *History of Neosho County*, 1:435).

[24] "January 22, [1873,] small flood; June 1, Neosho river very high; Osage Mission fair grounds flooded" (Graves, *History of Neosho County*, 1:435).

[25] "August 5, [1875,] small flood" (Graves, *History of Neosho County*, 1:435).

[26] "May 3, [1876,] small flood" (Graves, *History of Neosho County*, 1:435).

[27] "June 13, [1877,] big flood; washed out railroad track at Osage Mission" (Graves, *History of Neosho County*, 1:435). The 1877 flood on the Cottonwood River was reportedly one that "makes the traditional oldest inhabitant shrug his shoulders and scratch his head, and reluctantly admit that he 'never did saw anything like it in these parts afore.' . . . The only rival this flood has had in the annals of Kansas worthy of the name was in 1868, we believe, but this recent overflow was from one to two feet deeper than that one, in the Cottonwood valley" ("The Flood Here and Elsewhere," *Marion County Record*, May 25, 1877, unattributed and undated clipping, Binder: Floods and Natural Disasters, 11, Marion County Historical Society, Marion, KS).

[28] "May 22, [1878,] railroad track washed out again" (Graves, *History of Neosho County*, 1:435).

[29] "May 25, [1881,] small flood" (Graves, *History of Neosho County*, 1:435).

[30] In 1883, the Spring River flooded. Writing to the Indian Agent at Quapaw Agency, Charley Quapaw remarked, "We the Chief and head men wants to let you know that we do want to go working at the [farms?], you know that the rails are on the east side of the Spring River, river has been up all the Blessed Time we can't get over the river" (Charley Quapaw to Sir, August 11, 1883, Roll QA11, Quapaw Agency Records, Oklahoma History Center, Oklahoma City, OK [OKHC]).

[31] "May 7, [1884,] big flood; no mail for four days; October 1, another flood" (Graves, *History of Neosho County*, 1:435).

[32] Dependable records of flooding in the Neosho River watershed that date from the first half of the nineteenth century, especially for former Indian Territory/Oklahoma, are few, and diverse sources (especially county annals) provide varying lists of notable flood dates in specific locales. HRA relied on these kinds of sources for flood facts during most of the second half of the late nineteenth century due to a lack of time available to access original newspapers and the fact that many of the smaller newspapers (most of which covered Kansas during that period) are hard to locate and often in poor shape in county historical societies. In some cases, historical societies have compiled clippings files for flooding, but these kinds of collections were neither consistently comprehensive in scope nor uniformly collected. Exponential growth of local newspapers by the mid- to late 1880s led to more uniform coverage of Neosho River overflows in Kansas, which had been a state with official counties, county seats, and municipalities since 1861. Weather and flood reporting from Indian Territory was sparser until the 1890s when non-Indigenous people who were settling the area founded newspapers. News coverage in Oklahoma became more uniform and comparable to Kansas once it became a state in 1907. Additionally, HRA relied on the U.S. Signal Corps' *Monthly Weather Review* (which began publication in summer 1872 and was taken over by the U.S. Weather Bureau in 1891) for flood information from approximately 1889 forward.

[33] Laura M. French, *History of Emporia and Lyon County, Kansas* (Emporia, KS: Emporia Gazette, 1929).

[34] A. T. Dickerman, "The Early White Settlers among the Osages," presentation to Labette County Historical Society, November 13, 1878, reprinted in *Oswego Independent*, November 23, 1878, 28, Labette County Clippings, Vol. 1, KSHS. See also Graves, *History of Neosho County*, 1:434; and French, *History of Emporia and Lyon County*, 189.

[35] G. C. Snow, United States, Office of Indian Affairs, Annual Report of the Commissioner of Indian Affairs, for the Year 1867, Southern Superintendency, Report No. 113, 315–31, 324, https://digicoll.library.wisc.edu/cgi-bin/History/History-idx?type=browse&scope=HISTORY.COMMREP.

[36] Quotations from Graves, *History of Neosho County*, 1:435; and Duncan, *History of Neosho and Wilson Counties*, 97.

[37] Wright and Elliott, *Prevention of Injury by Floods*, 11.

[38] Murphy et al., *Destructive Floods in the United States in 1904*, 78.

[39] Graves, *History of Neosho County*, 1:435; and Graves, *Annals of Osage Mission*, 360.

[40] Duncan, *History of Neosho and Wilson Counties*, 33. See also "The Flood," [*(Iola) Register*], July 3, 1885, unattributed clipping, Folder: Floods, 1885-1904-1927-1951, clippings, Allen County Historical Society, Iola, KS; "The Neosho River Floods," typed manuscript and images, Folder: Strawn Area Photos, Binder Vol. 1, Neosho River and Churches, Coffey County Historical Society; and Wanda Christy, comp., *Coffey County*, Vol. 1, *A Glimpse into Its Past, Present, and Future!* ([Burlington, KS]: Coffey County Today, 1987).

[41] Graves, *Annals of Osage Mission*, 362.

[42] Flora, "Climate of Kansas," *Report of the Kansas State Board of Agriculture*, 280. See also "A Flood," *Kansas City Evening Star*, July 2, 1885, 1; and "Kansas Flood," *Dallas (TX) Weekly Herald*, July 9, 1885, 6.

[43] "Bodies Taken from the Water," *Aberdeen (SD) Weekly News*, July 17, 1885, 2.

[44] Wright and Elliott, *Prevention of Injury by Floods*, 11.

[45] Stoelzing reported that Chanute, Kansas, was flooded on June 26, 1888 ("First One in 28 Years").

[46] Between June 15 and June 20, 1889, portions of both Allen and Neosho Counties, Kansas, were once again underwater. According to the *Monthly Weather Review*, Allen County had "suffered severely from floods in the Neosho River and its tributaries. Crops have been badly damaged. There is a serious washout on the Saint Louis, Wichita, and Western Railroad" (*Monthly Weather Review* 17 [June 1889]: 155). In Neosho County, the flood stage on the Neosho River was "only two feet below that of 1885" (Graves, *History of Neosho County*, 1:435). Stoelzing, from Chanute, reported that a flood lasting five days began on June 15, 1889 ("First One in 28 Years"). See also "At Council Grove," *Tacoma (Washington) Daily Ledger*, May 18, 1889, 1.

[47] Stoelzing reported Chanute floods on May 9, October 12, and November 14, the latter of which he described as the highest ("First One in 28 Years").

[48] On June 27, 1891, in Lyon County, the water was within three inches of the 1877 high mark (French, *History of Emporia and Lyon County*). The Neosho flooded again on May 29 in Chanute (Stoelzing, "First One in 28 Years") and between June 19 and June 25, 1891. According to Graves, the June flood in Neosho County was "moderate" (Graves, *History of Neosho County*, 1:435).

[49] May and June 1892 were again flood months on the Neosho River in Kansas. Stoelzing reported a flood that began in Chanute on May 14 and lasted four days ("First One in 28 Years"). According to Graves, by May 19, the Neosho River had "been out of its banks for the past week, and within two feet of the 1885 marks" in Neosho County, destroying "much wheat" (*Annals of Osage Mission*, 448). Three separate flooding incidents occurred: a "high flood" on May 17, the second on May 31, and the third in early June when Graves reported that the Neosho was again out of its banks at St. Paul (Graves, *History of Neosho County*, 1:435; and Graves, *Annals of Osage Mission*, 449).

[50] On March 24, 1894, the *Terral (OK) Times* reported that "the Neosho River has been very high" (1), presaging the almost annual June floods, which reportedly took place between June 20 (the date on which Stoelzing reported flooding in Chanute ["First One in 28 Years"]) and June 28, the date on which Graves reported a "big flood" in Neosho County (Graves, *History of Neosho County*, 1:435).

[51] A. J. Henry, "Local Storms," *Monthly Weather Review* (September 1895): 327–29, quotation on 328. See also "Neosho River Floods," Coffey County Historical Society.

[52] *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938, 2. See also *Grand (Neosho) River and Its Tributaries*, 27.

[53] J. L. Schley, Major General, Chief of Engineers, to Congress, Re: Grand (Neosho) River, Oklahoma, Markham Ferry and Fort Gibson Reservoirs, January 12, 1939, in *Report on Survey . . . Grand (Neosho) River, Okla.*, October 29, 1938. See also J. L. Schley, Chief of Engineers, to Secretary of War, January 4, 1939, RG0980 [GRDA], Box 3, Folder 11, Federal Power Commission corr. re: Pensacola Dam, 1 of 2, 1937–1939, Oklahoma State Department of Libraries and Archives, Oklahoma City, OK (OSDLA); and S. L. Scott, Lt. Col., Corps of Engineers, [Little Rock] District Engineer, *Preliminary Examination of Pensacola, Markham Ferry, and Fort Gibson Reservoir Sites, Grand (Neosho) River, Oklahoma*, September 21, 1937 (and September 1937 map), Folder: Grand (Neosho) River, Okla, Preliminary Report Pensacola, Markham Ferry, Ft. Gibson Reservoirs, RG77, Corps of Engineers, Southwestern Division, Rivers and Harbors Studies and Reports, 1928–1942, Eagletown–Guadalupe, HM2000, Box 2, NARA-FW.

[54] "Neosho River Six Miles Wide," and "High Water at Chetopa," both in *(Oklahoma City) Daily Times-Journal*, December 21, 1895, 4. Between approximately 1895 through 1907 (the year of Oklahoma statehood), Oklahoma newspapers did not report on flooding at the same rate as did Kansas newspapers. Later accounts, however, indicated that flooding on Grand (Neosho) River occurred as often in Oklahoma as it did in Kansas (and, in fact, individual Kansans and the Weather Bureau often warned Oklahomans of flood crests that were moving downstream toward them). Presuming weather patterns and flooding have changed little over time, HRA attributes the dearth of flood coverage in Oklahoma to the fact that population centers were smaller and less developed and that newspapers were neither widespread nor comprehensive in their coverage of such goings on in Indian Territory. The Oklahoma City article is an exception that indicates the gravity of the December 1895 flood.

[55] Graves, *History of Neosho County*, 1:436; Burdick, "Flooding of the Neosho River"; Stoelzing "First One in 28 Years"; and "A Flood at Huntington, Kan.," *Tecumsah (OK) Herald*, May 30, 1896.

[56] Quotation from Graves, *History of Neosho County*, 1:436. See also Burdick, "Flooding of the Neosho River."

[57] Graves, *History of Neosho County*, 1:436. Quotations from "High Water in the Neosho Bottom Lands in Southern Kansas Are Flooded," *Kansas City Star*, July 5, 1899, 1; and "Chanute, KS, July 5," *Garfield County Democrat*, July 13, 1899.

[58] Burdick, "Flooding of the Neosho River;" Graves, *History of Neosho County*, 1:436; and Stoelzing "First One in 28 Years."

[59] French, *History of Emporia and Lyon County*, 190.

[60] Quotations, respectively, from *History of Chase County, Kansas* (Abstracts of *Leader News*), 1899–1999, comp. Patty J. Donelson, trans. Lorna Marvin, http://www.ksgenweb.org/chase/historyPat.html; and "Stalled by High Water," *Kiel (OK) Press*, June 12, 1902.

[61] Graves, *History of Neosho County*, 1:436.

[62] "Al Crooks Drowns," *Miami Record*, May 30, 1902, 1.

[63] "A Record-Breaking Flood," *Oklahoma City Weekly Times-Journal*, June 13, 1902. See also "The Flood in the Neosho River," *Norman (OK) Democrat-Topic*, June 13, 1902, 1.

[64] USACE Tulsa District, Survey Report on Flood Control, Morris County on Grand (Neosho) River in Kansas, Grand (Neosho) River and Its Tributaries, Oklahoma, Kansas, Missouri, and Arkansas, and Review Report on Flood Control, Lightning Creek, Labette Creek, and Flat Rock Creek, Tributaries to the Neosho River in Kansas, September 4, 1941, 35, Appendix II—Hydrology and Related Data, Appendix III—Geology and Soil Investigations, Appendix IV—Economic Data, Appendix V—Physical Data, Costs, Etc., Folder: Grand (Neosho) River, Survey Report, Tulsa District, Sept 4, 1941 [1 of 3 folders with same title in box], RG77, Corps of Engineers, Southwestern Division, Engineering Files—Harbors and Rivers, 1920–1940, Grand (Neosho) River–Gulf Intercoastal Water Way, HM2000, Box 22, NARA-FW.

[65] "Flood," undated typescript, and "Desolation and Destruction by Flood and Flames at Night," *Council Grove Republican*, June 5, 1903, both in Folder: 1903 Flood; and "Flood and Fire," [*Council Grove Republican*], v. 20, [June 5, 1903], unattributed clipping in Folder: Flood 1951, all at Morris County Historical Society, Council Grove, KS.

[66] USACE Tulsa District, *Survey Report on Flood Control*, 35.

[67] Graves, *History of Neosho County*, 1:436.

[68] "Water Covers Gas Field; Neosho River the Latest Stream to Overflow and Terrorize the People; Immense Damage Will Result," *O'Keene (I.T.) Eagle*, June 12, 1903, 3.

[69] "Railroad Traffic Delayed," *Guthrie (OK) Daily Leader*, June 1, 1903.

[70] Jack L. Cross, ed., "Thomas J. Palmer, Frontier Publicist," reprinted in part, *Chronicles of Oklahoma* 28, no. 4 (1950): 452–??, esp. 480. For more on the 1903 floods, see also "Other Kansas Towns Tell the Same Story; Streams out of Banks; Crops Ruined; People Leaving Homes; Many Drowned, . . . Neosho and Cottonwood Rivers Highest Ever Known," *Topeka Journal*, May 29, 1903, "Ruination and Sorrow . . . Cottonwood and Neosho Valleys Storm Swept," *Topeka Journal*, May 30, 1903, "Emporia and the Neosho Valley in Bad Shape," *Topeka Journal*, June 1, 1903, all in Floods in Kansas, Clippings, Vol. 1, KSHS; "Cottonwood and Neosho," and "Kansas Is Flooded . . . Chase County Has the Greatest Flood in Its History," both in [*Chase County Leader*], June 4, 1903, unattributed clippings, Folder: Floods, Chase County Historical Society; French, *History of Emporia and Lyon County*, 191; Burdick, "Flooding of the Neosho River"; Murphy et al., *Destructive Floods in the United States in 1904*, 90–91; Rice and Rice, "Relation of the Kansas Water Commission," 6; Flora, "Climate of Kansas," in KSBA, *Twenty-First Biennial Report*, 342; and FCWCC, *Report*, 5.

[71] Murphy et al., *Destructive Floods in the United States in 1904*, quotation on 78, see also 92.

[72] Proceedings and Debates of the First Session of the Sixty-Fourth Congress, Cong. Rec. 53 (May 13, 1916): 7900–3, quotation on 7902.

[73] "Chase County Flooded; The Cottonwood Bottoms Covered with Water from Bluff to Bluff," [*Chase County Leader*], June 9, 1904, and "The Flood," [*Chase County Leader*], July 14, 1904, unattributed clippings, Folder: Floods, Chase County Historical Society.

[74] "Terrifying Downpour; Central Kansas Is Completely Flooded," *Oklahoma State Capital*, June 3, 1904. See also "Neosho Valley Flooded: Hundreds Are Homeless; Neosho River Rose a Foot Every Hour Last Night," *Topeka Capital*, June 3, 1904, High Waters of 1904, Scrap Book, Vol. 5, KSHS.

[75] "Neosho River Floods," Coffey County Historical Society; quotation from "The Neosho River out of Its Banks," *Weekly Examiner* (Bartlesville, I.T), June 4, 1904, 3.

[76] Bennett Swenson reported that in 1944, July 1904 still held the record for the highest stage achieved at Neosho Rapids and Iola, Kansas (Swenson, "River Stages and Floods," *Monthly Weather Review* [May 1944]: 119–23).

[77] "Neosho Is Still Rising; It Is Higher than Ever Before at Iola and the Worst Is Feared," *Kansas City Journal*, July 9, 1904, High Waters of 1904, Scrap Book, Vol. 5, KSHS.

[78] "Neosho River an Inland Sea," *Canadian Valley News* (Jones City, OK), 3, no. 50, (Ed. 1), April 29, 1904, 4.

[79] "Kansas Flood Situation," *Anadarko (AR) Life*, June 11, 1904, 1.

[80] Graves, *History of Neosho County*, 1:441.

[81] William W. Graves, comp., *The Annals of St. Paul: A Third of a Century. From the Change of Name in 1895 to January 1929* (1942; repr., St. Paul, KS: Journal Press, 1976), 183.

[82] Quotation from "Oil Fields are Flooded; Phenomenal Rise in the Neosho River Causes It to Overflow at Chanute," *Kansas City Journal*, July 7, 1904. See also "Neosho Makes a New Record," *Abilene Reflector*, July 11, 1904, both in High Waters of 1904, Scrap Book, Vol. 5, KSHS.

[83] Graves, *Annals of St. Paul*, 185.

[84] "Neosho Is High," *Hennessey (OK) Eagle*, June 16, 1904, 2. See also "The Neosho River," *Vinita (OK) Daily Chieftain*, June 7, 1904, 3.

[85] "Toll Bridge in Danger," *Norman (OK) Democrat-Topic*, June 17, 1904, 2. See also USACE Tulsa District, *Flood Plain Information*. For more on the 1904 floods, see also "Neosho River Floods," Coffey County Historical Society; Burdick, "Flooding of the Neosho River"; Wright and Elliott, *Prevention of Injury by Floods*; Rice and Rice, "Relation of the Kansas Water Commission," 6; Flora, "Climate of Kansas," in KSBA, *Twenty-First Biennial Report*, 342; FCWCC, *Report*, 5; French, *History of Emporia and Lyon County*, 191; Christy, comp., *Coffey County*; "Some Water Marks," *Weekly Examiner* (Bartlesville, I.T.), June 11, 1904, 1; "Devastation in Its Path," *O'Keene (I.T.) Eagle*, July 15, 1904, 3; and "Flood Situation Improving," *Anadarko (AR) Life*, July 16, 1904, 1

[86] "Rivers and Floods," *Monthly Weather Review* (July 1905): 288; and "R.F.D. No. 1," *Miami Record-Herald*, August 25, 1905, 8.

[87] H. C. Frankenfield, "Rivers and Floods," *Monthly Weather Review* (June 1906): 283.

[88] *History of Chase County, Kansas*, http://www.ksgenweb.org/chase/historyPat.html; and quotation from "Neosho River Flooding," *Grove (OK) Sun*, June 8, 1906.

[89] "Death and Ruin by Oklahoma Flood," *Oregonian* (Portland, OR), May 25, 1909, 3.

[90] Quotations from, respectively, "Cottonwood and Neosho Rivers Flood Valleys," *Topeka Capital*, July 10, 1909, and "Neosho and Cottonwood Rivers Raise 18 Feet," *Topeka Capital*, November 15, 1909, both in [Collection:] Floods in Kansas, Clippings, Vol. 7, KSHS. See also E. H. Bowie, "Rivers and Floods," *Monthly Weather Review* (July 1909): 399; and O. C. Burrows, "The Floods from Kansas City to St. Louis, MO," *Monthly Weather Review* (July 1909): 399.

[91] *Daily Republican* cited in Atherly, *Yesterday's Tomorrow*, quotations on 98–99.

[92] French, *History of Emporia and Lyon County*, quotations on 191–92.

[93] USACE Tulsa District, *Survey Report on Flood Control*, quotations on 25, 37.

[94] Graves, *History of Neosho County*, 1; and Isaac M. Cline, "Climatological Data for April, 1912: District No. 7, Lower Mississippi Valley," *Monthly Weather Review* (April 1912): 571–72, quotation on 572.

[95] "Flood Almost Equals that of 1895," *Galena (KS) Evening Times*, April 29, 1912, 1. See also "Spring River Flood Is Now Slowly Falling at Lowell," *Galena (KS) Evening Times*, April 30, 1912, 1.

[96] H. C. Frankenfield, "Rivers and Floods, May 1912," *Monthly Weather Review* (May 1912): 804. What Frankenfield meant by the term *lower Grand River* here is unclear, but typically when referring to the Grand, *lower* refers either to the entirety of the Grand River in Oklahoma or the section downstream from the confluence of the Grand and Spring Rivers.

[97] Graves, History of Neosho County, 1:436.

[98] French, *History of Emporia and Lyon County*, 192; "Neosho River Floods," Coffey County Historical Society; and Graves, *History of Neosho County*, 1:436.

[99] "Terrific Storms Sweep Country," *Miami Record-Herald*, May 28, 1915, 1.

[100] Alfred J. Henry, "Rivers and Floods, May 1915," *Monthly Weather Review* (May 1915): 239.

[101] "Neosho River Went on Week's Rampage; Receding," *Miami Record-Herald*, June 4, 1915, 1.

[102] Alfred J. Henry, "Rivers and Floods, September 1915," *Monthly Weather Review* (September 1915): 474–75, quotation on 474.

[103] Henry, "Rivers and Floods, September 1915," 475.

[104] "Cross Country Travel Held Up at Neosho River Bridge," *Miami Record-Herald*, supp., September 24, 1915, 1.

[105] Quotations from, respectively, "Rains Cause Washout on O.K.&M.," *Miami Record-Herald*, June 8, 1917; and Rainfall Wednesday Greatest in Years; 4.30 Inches, Reports," *Miami Daily Record-Herald*, November 7, 1918, 1. See also Alfred J. Henry, "Rivers and Floods, November 1918," *Monthly Weather Review* (November 1918): 525.

[106] "6 Inches of Rain in Last 24 Hours Gauge Here Shows; Heavy Downpour Which is General over Wide Section Does Damage over District; Creeks are Flooded," *Miami Record-Herald*, March 20, 1920, 1.

[107] Table I, Flood Stages March 1920, *Monthly Weather Review* (March 1920): 177.

[108] "1.60 Inches of Rain Fell Here Late Friday," *Miami Record-Herald*, June 4, 1920, 5; and "May an Unusually Wet Month with 6.08 Inches of Rain," *Miami Record-Herald*, June 11, 1920, 4.

[109] Quotations from, respectively, "Flood in Kansas . . . Neosho River State at Oswego Up to 22 Feet," *Topeka Journal*, April 9, 1927, 1926, Floods in Kansas, Clippings, Vol. 7, KSHS; and "Highway Traffic out of Miami on No. 7 Is Resumed," *Chickasha (OK) Daily Express*, April 18, 1927, 1. See also "River over Highway 7 Southwest of Miami," and "Like Flood of 1922," both in *Miami Record-Herald*, April 11, 1927, 1–2; "Flood at Standstill Here; Death Toll from Storms in Other Sections Passes 100," and "Neosho Believed to Be at Crest of 24-Foot Rise," both in *Miami News-Record*, April 15, 1927, 1; and "Report on Grand (Neosho) River, Kansas, Missouri, Arkansas, and Oklahoma," June 4, 1931, Appendix 3, Folder: Grand (Neosho) River, Volume 2, Appendix 1–3, June 1931, 2 of 2, RG77, Corps of Engineers, Southwestern Division, Engineering Files—Harbors and Rivers, 1920–1940, Galveston–Grand (Neosho) River, HM2000, Box 21, E. SW8, NARA-FW.

[110] "Airplane Views of Neosho River Flood in Vicinity of Miami," and "Reporter in Airplane, Finds Floods over Wide Territory; Fairground Under Water and Miami Packing Company's Plant is Endangered," *Miami Daily News-Record*, June 26, 1928, 1, clippings in Folder: Floods, Ottawa County Historical Society, Dobson Museum, Miami, OK (Dobson Museum). Note that these images were printed a week after the flood itself.

[111] Bennett Swenson, "River Stages and Floods," *Monthly Weather Review* (October 1941): 313–15, quotations on 314.

[112] "Water Forces Wyandotte's Schools Shut," *Miami Daily News-Record*, October 30, 1941, 1–2; quotation from "Floods Spreading Havoc over State," *Miami Daily News-Record*, October 30, 1941, 1.

[113] "Rainfall," typescript, May 1943, Folder: "History of the Grand River Dam Project with Reference to Reports of U.S. Army Engineers to Congress Prior to the Creation of the Grand River Dam Authority with Other Reports during the Construction of the Project," ca. second half of 1943, Box 30, Alva J. Hickerson Papers, Identifier: 1983-002, OSU Archives. See also M. V. Marcher, J. F. Kenny, and Others, *Hydrology of Area 40, Western Region, Interior Coal Province Kansas, Oklahoma, and Missouri: Neosho River, Verdigris River, Caney River, Spring River, Bird Creek*, USGS Water-Resources Investigations Open-File Report 83–266 (1984), 46, KSHS.

[114] Minutes of the Public Utility Board of the City of Miami, OK, May 21, 1943, Book 2, p. 1511, City Hall, Miami, OK (hereafter Miami PUB Minutes).

[115] "Dam Credited with Saving Big War Plant," *Tulsa Tribune*, May 11, 1943, Folder: Tables, Plates and Exhibits to Accompany Letter to Chief of Engineers, Dated May 29, 1943, from District Engineer, Tulsa District, Re: Flood of May 1943, Box 13, Hickerson Papers, OSU Archives.

[116] "Grand Lake Backs Up," *Tulsa World*, May 12, 1943, Folder: Tables, Plates and Exhibits to Accompany Letter to Chief of Engineers, Dated May 29, 1943, from District Engineer, Tulsa District, Re: Flood of May 1943, Box 13, Hickerson Papers, OSU Archives.

[117] Burnham to Wright, July 28, 1947. In this report, Burnham referenced a letter from R. C. Crawford, Brig. Gen., Acting Chief of Engineers, to Arthur Goldschmidt, July 2, 1947 [copy not found at GRDA-HQ].

[118] *Parsons Sun*, April 27, 1944, quoted in KSBA, Division of Water Resources, *Report of the Kansas State Board of Agriculture, December, 1944: River Basin Problems and Proposed Reservoir Projects for a State Plan of Water Resources Development* (Topeka: KSBA, 1945), 57.

[119] "Wyandotte Is Menaced by Rampaging Neosho Today," *Miami Daily News-Record*, April 13, 1944, 1.

[120] ["River Stages and Floods,"] *Monthly Weather Review* (December 1944): 2[49]–50.

[121] "Picher Business Area under Water, *Miami Daily News-Record*, June 22, 1948, 1; and "River near Crest, Flood Expected to Ease Grip on Area," *Miami Daily News-Record*, June 24, 1948, 1.

[122] "Rampaging Neosho Nears Crest," *Miami Daily News-Record*, July 28, 1948, 1. See also "Neosho Leaves Banks in Wide Kansas Region," *Miami Daily News-Record*, July 20, 1948, 1; "Neosho River at New Peak, Lake's Rising," *Miami Daily News-Record*, July 21, 1948, 1; "Five-Foot Rise since Monday; Families Flee," *Miami Daily News-Record*, July 27, 1948; and "Waters Recede in Miami after Neosho Crests,' *Miami Daily News-Record*, July 29, 1948, 1. Other sources place the gage 9 miles north of Miami (see Federal Emergency Management Agency [FEMA], Federal Insurance Administration, "Flood Insurance Study, City of Miami, Oklahoma, Ottawa County," June 1980, accessed February 27, 2022, https://hdl.handle.net/2027/txa.ark:/81423/m3m022).

[123] USACE Tulsa District, *Flood Plain Information*, 18.

[124] Scores of reports and articles have been written about the July 1951 floods. See, for example, USGS and Canada—Department of Resources and Development, Water Resources Division, ["The Kansas Floods of 1951"], *Water Resources Review*, August 9, 1951, and USACE, "Floods of June–July 1951, Kansas and Oklahoma, presentation at ASCE Meeting, Oklahoma City, OK, September 21, 1951, both in Folder: July 1951 Flood, Box 13, Hickerson Papers, OSU Archives.

[125] ["The Kansas Floods of 1951"], 3.

[126] Erling Helland Associates, "Report on the Miami Area Comprehensive Plan, Miami, Ottawa County, Oklahoma," April 16, 1979. Prepared for the City Planning Commission, Miami, OK, OSDLA.

[127] "Neosho Overflow," aerial photograph, [*Miami News-Record*], May 26, 1957, clipping in Dobson Museum.

[128] USACE Tulsa District, *Flood Plain Information*, 18.

[129] FEMA, "Flood Insurance Study," June 1980.

[130] "River Drop," and "The Wide Neosho (photograph)," both in *Miami News-Record*, June 17, 1964, 1; and "Floods Begin to Recede in Northeast," *Daily Oklahoman*, June 30, 1969, 40.

[131] "Neosho Rampage," *Parsons Sun*, April 20, 1970, 2; and "New Flood on Neosho," *Parsons Sun*, October 15, 1973, 1.

[132] "Miami Schools Dismiss; Some Evacuate Here; Crest on Wednesday," *Miami News-Record*, March 12, 1974, 1; quotation from Neosho River flood, photograph, [*Miami News-Record*], March 17, 1974, clipping, Dobson Museum.

[133] "Neosho Takes Generous Swath of Land near Chanute," *Wichita Eagle*, April 1, 1980, 13; Martin Thomas, "Rains Douse Area," *Parsons Sun*, May 31, 1982, 1; "River Here Expected to Crest Seven Feet above Flood Level," *Iola Register*, November 16, 1985, 1; "High Water Leaves Mark on City of Chanute," [*Chanute Tribune*, October 6, 1986], and "Overflowing River Floods Countryside," [*Chanute Tribune*, April 4, 1988], clippings, both in Folder: Chanute Flood, Genealogy Room, Chanute Public Library, Chanute, KS; "Storms Cause Flooding in Area," *Parsons Sun*, June 12, 1989, 1; "500 Leave Homes as Two Oklahoma Rivers Flood," *New York Times*, September 28, 1993; and "Flooding Toll Still Unknown," *Iola Register*, October 7, 1998, 2. Flooding immediately south of the Kansas border in Ottawa County, Oklahoma, suggests that the Neosho may also have flooded (depending on the point source of the flood) at upstream locations in southeastern Kansas in 1987, 1990, 1992, 1994, 1995, and 1997. See next note.

[134] "3 Flooded Counties Now Disaster Areas," *Daily Oklahoman/Times*, March 7, 1985, 33.

[135] Carla Hinton, "Records Fall; Water Rises," *Daily Oklahoman*, Mary 31, 1990, 1; "Strong Winds, Rains Pummel Parts of State," *Daily Oklahoman*, July 14, 1992, 6; "Heavy Rains, Floods Cripple Parts of State," *Tulsa World*, April 12, 1994, 1; "Floodwaters," photograph, *Grove Sun*, May 19, 1995; and "Blackwell Driver Dies in Flood," *Daily Oklahoman*, April 14, 1997, 81.

[136] Miami Kiwanis Club, *The Flood of '86: A Pictorial Study*. [Miami, OK: Kiwanis, 1986], OSDLA. See also, "Oklahoma Floods Force Thousands to Evacuate," *New York Times*, October 5, 1986, 26.

[137] "Flooding Forces Evacuation in Northeast Oklahoma," *UPI*, September 27, 1993, https://www.upi.com/Archives/1993/09/27/Flooding-forces-evacuation-in-northeast-Oklahoma/1678749102400/

[138] "Northeast Oklahoma Sustains More Flooding," *Iola Register*, May 10, 2000, 11; Oklahoma Climatological Survey, Oklahoma Monthly Climate Summary, May 2002, https://climate.ok.gov/summaries/monthly/2002/MCS_May_2002.pdf; Sheila Stogsdill, "Heavy Rains Bring Flood Warnings," *Oklahoman*, April 25, 2004; Oklahoma Farm Bureau, "Miami Flooding," *Oklahoma Country* (Fall 2007): 22; National Weather Service, *Monthly Report of River and Flood Conditions, December 2015*, https://www.weather.gov/media/tsa/e5/e5dec15.pdf; and Kimberly Barker, "Retreating Floodwaters Reveal Major Damage in Miami," *Joplin (MO) Globe*, June 12, 2019, https://www.joplinglobe.com/news/local_news/retreating-floodwaters-reveal-major-damage-in-miami/article_85748c11-e963-5335-b18c-a4bbf4c35e94.html.

[139] Oklahoma Farm Bureau, "Miami Flooding," *Oklahoma Country* (Fall 2007): 22. See also Sheila Stogsdill, "Rising Water Leaves Miami 'Indescribable,'" *Oklahoman*, July 5, 2007, https://www.oklahoman.com/story/news/2007/07/05/rising-water-leaves-miami-indescribable/61760229007/.

[140] Kimberly Barker, "Retreating Floodwaters Reveal Major Damage in Miami," *Joplin (MO) Globe*, June 12, 2019.

[141] Early attempts to control water flow on the Neosho River were the low dams people built across the river to harness power for adjacent industrial operations, notably mills. Examples were at Cottonwood Falls, Emporia, and Erie, Kansas, the latter of which the flood of 1885 destroyed forty feet. See Carrie Breese Chandler, "A History of the Old Mill at Cottonwood Falls," originally published in the *Chase County Leader*, February 7, 1934, in *Chase County Historical Sketches*, Vol. 1 (Cottonwood Falls, KS: Chase County Historical Society, 1940), 61–63; Murphy et al., *Destructive Floods in the United States in 1904*, 15; Graves, *Annals of Osage Mission*, 360; and "Neosho River," USGS, *Twenty-First Annual Report, 1899–1900*, Part IV—Hydrography (Washington, DC: GPO, 1901), 245–53.

[142] Different accounts conflict on when the first levee was constructed. According to Duncan's 1905 *History of Neosho and Wilson Counties* (105) and Graves's 1949 *History of Neosho County* (1:441), the year was 1890. According to Murphy et al., *Destructive Floods in the United States in 1904* (92), the year was 1892. See also Wright and Elliott, *Prevention of Injury by Floods*.

[143] Duncan, *History of Neosho and Wilson Counties*, 105.

[144] Duncan, *History of Neosho and Wilson Counties*, 106.

[145] Graves, *Annals of Osage Mission*, 445, quoting the *Journal*.

[146] Duncan, *History of Neosho and Wilson Counties*, 106.

[147] Duncan, *History of Neosho and Wilson Counties*, 106–7, quotation on 107. See also Graves, *History of Neosho County*, 1:439.

[148] Duncan, *History of Neosho and Wilson Counties*, 106.

[149] Duncan, *History of Neosho and Wilson Counties*, 107.

[150] Murphy et al., *Destructive Floods in the United States in 1904*, 92–93.

[151] Wright and Elliott, *Prevention of Injury by Floods*, 3, quotation on 7. See also "Yearbook of Department of Agriculture, 1908," *U.S. Congressional Serial Set* (1908): 1–822 (Washington, DC: GPO, 1909).

[152] Wright and Elliott, *Prevention of Injury by Floods*, 10.

[153] "Investigation of the Neosho Valley Floods by Drainage Engineers of the U.S. Office of Experiment Stations," *Kansas Farmer* 46, no. 14 (April 2, 1908): 419–20, quotations on 419; and Wright and Elliott, *Prevention of Injury by Floods*, 23–24.

[154] Wright and Elliott, *Prevention of Injury by Floods*, 22–23.

[155] Wright and Elliott, *Prevention of Injury by Floods*, 28.

[156] "Dams and Reservoirs—Their Uses—Proper Sizes," in Richards, *What Are We Going to Do About It?* 18–20, esp. 19.

[157] F. B. Nichols, "No Floods for Oswego; Livestock Is Featured behind High Levees on the Deming Ranch," *Farmers Mail and Breeze* (Topeka) 45, no. 7 (February 13, 1915): 1.

[158] Rice and Rice, "Relation of the Kansas Water Commission," 17.

[159] "Drainage Men Will Ask for Powers of Condemnation," *Topeka Capital*, June 22, 1916, Dams and Flood Control, Clippings, Vol. 1, KSHS.

[160] "Drainage Boards Organize, Adjourn," *Topeka Capital*, June 23, 1916, Dams and Flood Control, Clippings, Vol. 1, KSHS.

[161] Kansas Water Commission (KWC), *First Biennial Report, 1917–1918*, by H. A. Rice and Roger C. Rice (Topeka: Smith, 1919), 7–9; and Session Laws of Kansas, 1917, chapter 172, p. 218, in State of Kansas, *Session Laws, 1917, Passed at the Thirty-Seventh Regular Session—The Same Being the Twentieth Biennial Session—of the Legislature of the State of Kansas*, May 26, 1917 (Topeka: Smith, 1917).

[162] River and Harbor Act of 1916, July 27, 1916, ch. 260, 39 Stat. 391 (note: unable to locate actual text, only citation); and An Act to Provide for the Control of the Floods of the Mississippi River and of the Sacramento River, California, and for Other Purposes, States at Large, 64th Cong., 2d Sess., Ch. 144, March 1, 1917.

[163] "Floods in Kansas," H.R.Doc. No. 321, 65th Cong., 1st Sess., quoted in KWC, *Second Biennial Report, 1919–1920* (Topeka: Zumwalt, 1921), 9.

[164] "Floods in Kansas," quoted in KWC, *Second Biennial Report*, 10.

[165] KWC, *First Biennial Report*, 1917–1918, 8.

[166] KWC, *First Biennial Report, 1917–1918*, 9. The engineers were required to be qualified as at least associate members of the American Society of Civil Engineers.

[167] KWC, *First Biennial Report*, 1917–1918, 9.

[168] KWC, *First Biennial Report*, 1917–1918, 14, 19.

[169] KWC, *First Biennial Report*, 1917–1918, 9–10.

[170] KWC, *First Biennial Report*, 1917–1918, 29.

[171] KWC, *Fourth Biennial Report, 1923–1924* (Topeka: Walker, 1924), 3, 7.

[172] KWC, *Second Biennial Report*, 1919–1920, 11.

[173] KWC, *Fourth Biennial Report*, 1923–1924, 7.

[174] KWC, *Fourth Biennial Report*, 1923–1924, 6.

[175] KWC, *Fourth Biennial Report*, 1923–1924, 3.

[176] Compare KWC, *Surface Waters of Kansas, 1895–1919, Prepared in Cooperation with the U.S. Geological Survey* (Topeka: Walker, 1921), 17–18; KWC, *Surface Waters of Kansas, 1919–1924, Prepared in Cooperation with the U.S. Geological Survey* (Topeka: Walker, 1925), 12–13; and J. B. Spiegel, "Surface Waters of Kansas, 1924–1928," in KSBA, *Report of Division of Water Resources for the Biennium July 1, 1926, to June 30, 1928* (Topeka: KSBA, 1930), 18–19. Records from a gage "near Iola" covered August 1, 1895, through November 30, 1903, and October 12, 1917, through September 30, 1924. From 1895–1903, the gage was located at a city water and powerhouse four miles upstream from the gage that was extant in 1924. The U.S. Weather Bureau kept gaging records at Iola from December 1, 1903–October 11, 1917. Apparently, there were two gages, one "at Iola" and one "near Iola," beginning in 1917. See KSBA, *Report of the Kansas State Board of Agriculture, Division of Water Resources for the Quarter Ending June, 1936, Containing Stream-Flow Data for the Period from October 1, 1928, to September 30, 1935* (Topeka: Austin, 1937), 529.

[177] KSBA, *Report of the Kansas State Board of Agriculture, Division of Water Resources . . . Ending June, 1936*, 12.

[178] KWC, *Second Biennial Report*, 1919–1920, 5.

[179] KWC, *Second Biennial Report*, 1919–1920, 18–19.

[180] KWC, *Fourth Biennial Report, 1923–1924*, 8–9. The *Fourth Biennial Report* was the last that KWC published separately. The report for the commission's fifth biennium (which would prove to be its last and was sparse) was included in KSBA, *Twenty-Fifth Biennial Report, for the Years 1925 and 1926* (Topeka: KSBA, 1927).

[181] "Report of Division of Water Resources," KSBA, *Twenty-Sixth Biennial Report, 1927 and 1928* (Topeka: Walker, 1929), 216.

[182] "To Make Surveys in Kansas," *Topeka Journal*, May 17, 1927, Floods in Kansas, Clippings, Vol. 7, KSHS.

[183] "Artificial Lake and Dike Plans Given Approval; Actual Work, However, Must be Done Locally, Water Resources Committee Points Out," *Topeka Capital*, May 18, 1927, Floods in Kansas, Clippings, Vol. 7, KSHS. Knapp held the post of state irrigation engineer until becoming the first DWR chief engineer (also known as the State Engineer), a position he held until 1951. See Ken Kopp, "DWR Engineer Passes the Torch," *Kansas Lifeline* (March 2020): 100–3, https://krwa.net/portals/krwa/lifeline/2003/DWRChief.pdf.

[184] FCWCC, *Report*, 6.

[185] "Report of Division of Water Resources," *Twenty-Sixth Biennial Report, 1927 and 1928*, quotation on 216; and FCWCC, *Report*, 7–9.

[186] FCWCC, *Report*, 7–9.

[187] FCWCC, *Report*, 32–34.

[188] An Act Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control, and for Other Purposes, June 22, 1936, H.R. 8455, P.L. No. 738, 74th Congress, Sess. II, 1578–79, 1594, 1596 (hereafter, Flood Control Act of 1936).

[189] "Flood Control," *Hearings before the Committee on Flood Control, House of Representatives*, January 18–26, 1928, 70th Congress, 1st Sess., "On the Control of the Destructive Flood Waters of the United States," Part 5, Mississippi River and Its Tributaries (Washington, DC: GPO, 1928), quotations on 3035a–3035b.

[190] "Flood Control," *Hearings*, quotations on 3039–40.

[191] "Knapp Explains Kansas Flood Control Bills," *Topeka Capital*, August 8, 1929, Kansas Board of Agriculture, Clippings, Vol. 1, 1872–1955, KSHS; and KSBA, *Twenty-Seventh Biennial Report, for the Years 1929 and 1930* (Topeka: KSBA, 1931), 280. The *Twenty-Seventh Biennial Report* made no mention of the Conservancy Act, which had been ruled unconstitutional in 1930 before the report went to press.

[192] KSBA, *Twenty-Seventh Biennial Report*, 280.

[193] "First Action Is Taken in Flood Invested Areas;" and Kansas State Planning Board, *Water: It's Use and Control in Kansas, an Outline* (Topeka: State Planning Board, October 1936), 10, 17–18.

[194] "First Action Is Taken in Flood Invested Areas."

[195] "First Action."

[196] Kansas State Planning Board, *Water . . . Use and Control*, 10.

[197] FCWCC, *Report*, 13.

[198] "Flood Control on the Mississippi River and Its Tributaries," *Hearings before the Committee on Flood Control*, H.R., April 29–May 2, 1930, 71st Cong., 2d Sess., Pt. 3 (Washington, DC: GPO, 1930), 837.

[199] "Flood Control on the Mississippi River and Its Tributaries," *Hearings*, 846.

[200] "Flood Control on the Mississippi River and Its Tributaries," *Hearings*, 846.

[201] "Flood Control on the Mississippi River and Its Tributaries," *Hearings*, 847.

[202] *Arkansas River and Tributaries*, 1243. See also Kansas State Planning Board, *Neosho-Verdigris Drainage Basin Report* (Topeka: Planning Board, 1936), 16.

[203] Levee Project Estimates ca. 1931, Folder: Grand (Neosho) River, Memphis District—Volume 3, Appendix 4–6, June 1931, RG77, Corps of Engineers, Southwestern Division, Engineering Files—Harbors and Rivers, 1920–1940, Grand (Neosho) River–Gulf Intercoastal Water Way, HM2000, Box 22, NARA-FW. See also "Report on the Grand (Neosho) River, A Tributary of the Arkansas River," Submitted in Compliance with Letter, Chief of Engineers, February 15, 1934, Folder: Grand (Neosho) River, Feb. 15, 1934, RG77, Corps of Engineers, Southwestern Division, Engineering Files—Harbors and Rivers, 1920–1940, Galveston–Grand (Neosho) River, HM2000, Box 21, NARA-FW.

[204] Graves, *History of Neosho County*, 1:441–42.

[205] T. C. Hughes, City Engineer, Tulsa, "Oklahoma's Natural Water Supply: Its Conservation, and Effect on Climate, on Agriculture, and on Manufactures," 1912, Folder: Water, Flood Control, Cement, and Crops 1907–1923, Joseph Thoburn Collection, 1986.001, Box 10, Conservation, Flood Control, and Farming, OKHC.

[206] "Flood Bill through House," *Harlow's Weekly* 20, no. 8 (February 25, 1921): 3.

[207] "Flood Bill through House," 3.

[208] Minutes of Meeting of State Flood Control Legislative Committee, November 27, 1923, 2, Folder: Flood Control 1923–1927, Thoburn Collection, Box 10, OKHC.

[209] Quotations, respectively, from A Bill Entitled an Act to Provide for the Creation and Organization of a State Conservation Commission and Prescribing the Duties and Defining the Powers Thereof," draft, ca. November 27, 1923 ["1924" handwritten on document], sec. 7, p. 2, Folder: Flood Control 1923–1927, Thoburn Collection, Box 10, OKHC; and Minutes . . . State Flood Control Legislative Committee, November 27, 1923, 3.

[210] Minutes . . . State Flood Control Legislative Committee, November 27, 1923, 4.

[211] See "Oklahoma State Chamber of Commerce to Citizens of Oklahoma Who Are Interested in Flood Control," [1924], Folder: Water, Flood Control, Cement, and Crops 1907–1923, Thoburn Collection, Box 10, OKHC; and E. E. Blake, "Flood Control Law Advocated for Oklahoma," *Harlow's Weekly*, February 9, 1924, 12, 14 (essentially, the same document).

[212] J. F. Owens to J. B. Thoburn, June 19, 1924, Folder: Flood Control 1923–1927, Thoburn Collection, Box 10, OKHC.

[213] E. E. Blake, "Flood Control and Irrigation," *Harlow's Weekly* 23, no. 28 (July 12, 1924): 11, 13–14, quotations on 11.

[214] E. E. Blake, Commissioner of Drainage, Irrigation, and Reclamation Commission, to Governor M. E. Trapp, October 26, 1926, State of Oklahoma Commission of Drainage, Irrigation, and Reclamation Collection, Box 1, OSDLA. See also E. E. Blake, Misc. correspondence, Folder: 1927–28 Flood Control Correspondence, E. E. Blake, E. E. Blake Papers, 2006.03, Box 1 [of 1], OKHC. Note: Blake was heavily involved in debates 1927/1928 about the utility of levees (preferred by "civilian engineers") versus reservoirs for flood control (preferred by Army engineers and Blake himself).

[215] Blake to Trapp, October 26, 1926, 2.

[216] Blake to Trapp, October 26, 1926, 2–3.

[217] Blake to Trapp, October 26, 1926, 3.

[218] See USGS, Water Resources Research, for Oklahoma Planning and Resources Board, *Oklahoma Water: Quantity, Occurrence, and Quality of Surface and Ground Water*, March 1, 1945, 29, Industrial Development and Parks Department, Box 6, OSDLA; and "Rivers and Floods," *Monthly Weather Review* (September 1904): 402–3.

[219] Blake to Trapp, October 26, 1926, 4.

[220] Blake to Trapp, October 26, 1926, 5.

[221] Blake to Trapp, October 26, 1926, 8–9, quotation on 9.

[222] Blake to Trapp, October 26, 1926, 10–11, quotation on 10.

[223] Blake to Trapp, October 26, 1926, 12.

[224] As reported in "Flood Prevention Possible; Oklahoma Irrigation Commissioner Says Reservoir System Would Prevent Recurrence of Floods," *Topeka Capital*, October 15, 1926, Floods in Kansas, Clippings, Vol. 7, KSHS.

[225] "Flood Prevention Possible."

[226] Victor E. Harlow, "Floods Bring Renewed Talk of Control," *Harlow's Weekly* 26, no. 16 (April 16, 1927): 4–5, 16, quotation on 5.

[227] Victor E. Harlow, "Ratify the Flood Control Compact," editorial, *Harlow's Weekly* 26, no. 11 (March 12, 1927): 3.

[228] Victor E. Harlow, "The Flood Control Problem," editorial, *Harlow's Weekly* 26, no. 17 (April 23, 1927): n.p.

[229] "Board Espouses Water Storage," *Miami News-Record*, June 1, 1927, 8.

[230] Victor E. Harlow, "Ave, Blake!" editorial, *Harlow's Weekly* 27, no. 2[?] (May 26, 1928): n.p.

[231] "Reservoir System Planned for Control of Floods," *Harlow's Weekly* 27, no. 32 (August 11, 1928): 10.

[232] "The Status of Flood Control," *Harlow's Weekly* 27, no. 4[?] (November 3, 1928): quotation on 7, 14.

[233] "The Oklahoma Conservation Commission," *Miami News-Record*, June 24, 1930, 2. Reporters that referred to the "conservation commission" were referring to the DIRC.

[234] D. P. and Times Bound files, *Times*, August 18, 1933, 2, cited in Amelia Harris, "Has Anyone Seen the State Flood Plan?" Folder: Water—Bibliography, 1941, Box 80, Water, Federal Writers Project Coll. 1935–1942, 1981.105, OKHC. See also "Oklahoma at Washington," *Harlow's Weekly* (August 26, 1933): 3–4.

[235] "Oklahoma at Washington," 3.

[236] D. P. and Times Bound files, 2.

[237] "Oklahoma at Washington," 3.

[238] D. P. and Times Bound files, 2.

[239] "Oklahoma at Washington," 3.

[240] "Oklahoma at Washington," 3.

[241] Levee Project Estimates ca. 1931; and "Report on the Grand (Neosho) River," February 15, 1934.

[242] Synopsis of District Engineer's Report, June 19, 1931, 15. See also "Confidential: Flood Control Act of 1936," Hearings before the Committee on Commerce, Senate, March 30, 1936, 74th Cong., 2d Sess., on H.R. 8455, An Act Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control and for Other Purposes, Pt. 2 (Washington, DC: GPO, 1936), esp. 68–69, 73–74, 107.

[243] See Map of Miami, Indian Territory, platted May 19, 1891, redrawn by City of Miami Engineering Department, 1991; and Map of Miami, Indian Territory, Ottawa Reservation, [August 14, 1899?], both at City Hall, Miami, OK.

[244] "The Bridge Charter," *Miami Republican*, March 22, 1901; quotation from "The Bridge" *Miami Republican*, April 5, 1901.

[245] "The Wagon Bridge," *Miami Republican*, May 10, 1901; and "The Wagon Bridge Is a Certainty," *Miami Republican*, May 10, 1901.

[246] "That Bridge Bugaboo," *Miami Record-Herald*, October 20, 1925, 1.

[247] As reported in "Building of Miami Railroad Bridge Established New Fast Record," *Miami Daily Record-Herald*, July 13, 1919, 4.

[248] On August 15, 1900, Miami street commissioner Thomas McBee reported that he had "put in 15 single culberts [*sic*], 3 double, and repaired 3 old ones" (August 15, 1900, City of Miami, Board of Commissioners Minutes [hereafter Miami Commissioners' Minutes], Book 1, 30, City Hall, Miami, OK. See also October 22, 1917, Miami Commissioners' Minutes, Book 7/12/15–4/9/19, 97–101.

[249] March 29, 1918, and April 16, 1918, Miami Commissioners' Minutes, Minute Record D, 5/3/15–4/30/19, 345 and page number unknown, respectively.

[250] April 12, 1920, Miami Commissioners' Minutes, 8/3/19–5/2/21, 324–25; and August 9, 1921, Miami Commissioners' Minutes, Minute Record F, 5/9/21–3/15/26, 36.

[251] January 9, 1922, Miami Commissioners' Minutes, Minute Record F, 5/9/21–3/15/26, 70.

[252] "Only 17 Arrests Made by Police Last Month," *Miami Record-Herald*, November 24, 1922, 1.

[253] June 9, 1921, n.p., and September 6, 1921, 43, both in Miami Commissioners' Minutes, Minute Record F, 5/9/21–3/15/26.

[254] "Proposal Made to Build Levee at Riverview Park Following Second Flooding in Two Weeks," *Miami Daily Record-Herald*, March 29, 1922, 1.

[255] "Wall Will Be Built to Protect Bridge," *Miami Daily Record-Herald*, April 30, 1922, 1.

[256] "City Plans to Keep River out of Park," *Miami Daily Record-Herald*, July 18, 1922, 1.

[257] July 30, 1923, Miami Commissioners' Minutes, Minute Record F, 5/9/21–3/15/26, 185.

[258] "Crews Busy on Park Projects," *Miami News-Record*, April 27, 1924, 1. See also "River Rise Causes Damage at Dam," *Miami News-Record*, April 30, 1924, 1; "River Falls Rapidly Following Overflow," *Miami News-Record*, May 2, 1924, 1; "High Water Continues to Delay Work at Dam, *Miami News-Record*, May 8, 1924, 2; and "Workmen Rebuild River Cofferdam," *Miami News-Record*, May 11, 1924, 1.

[259] Project at Dam Is near Final Stages," *Miami News-Record*, May 25, 1924, 1. For a good overview photograph of the dam as it appeared in 1954 (with what appears to be a lock), see Neosho River, Miami, Low Water, Sept. 1954, courtesy Dobson Museum, accessed February 13, 2023, https://www.facebook.com/photo?fbid=559731372855295&set=pcb.559732412855191. Only small pieces of the ends of the dam exist at Riverview Park today.

[260] "Crews Busy on Park Projects," 1.

[261] "Concert to Mark Riverview Park's Official Opening," *Miami News-Record*, May 10, 1925, 1.

[262] "Workmen Rebuild Cofferdam," *Miami News-Record*, May 11, 1924, 1; and "Project at Dam Is near Final Stages," *Miami News-Record*, May 25, 1924, 1.

[263] October 10, 1929, Miami Commissioners' Minutes, Minute Record F-1, 3/22/26–5/4/31, 293. In 1891, the Miami Tollbridge Company Ferry joined Miami on the east side of the Neosho River at the foot of Ninth Avenue. Today, the highway bridge meets Miami at Eighth Ave. and Ninth Ave. is a park road running south of the municipal pool. Maps indicate that none of the blocks associated with this purchase (164, 165, 170, 171, 172, and 173) had been developed residentially. Compare Map of Miami, Indian Territory, Ottawa Reservation, [August 14, 1899?], and Map of Miami, Indian Territory, platted May 19, 1891, redrawn by City of Miami Engineering Department, 1991, both at City Hall, Miami, OK; and current tax parcel map on the Ottawa County Assessor's website, accessed January 11, 2023, http://lmweb.dyndns.org:6580/MapView-Ottawa/.

[264] February 28, 1927, Miami Commissioners' Minutes, Minute Record F-1, 3/22/26–5/4/31, 83.

[265] May 7, 1927, Miami PUB Minutes, Book 1, 2, City Hall, Miami, OK.

[266] See Map of Miami, Indian Territory, Ottawa Reservation, [August 14, 1899?], and Map of Miami, Indian Territory, platted May 19, 1891, redrawn by City of Miami Engineering Department, 1991, both at City Hall, Miami, OK.

[267] April 19, 1929, Miami PUB Minutes, Book 1, 101.

[268] June 7, 1929, Miami PUB Minutes, Book 1, 108.

[269] September 10, 1929, Miami PUB Minutes, Book 1, 120.

[270] October 10, 1929, 293; October 19, 1929, 297–98; and October 28, 1929, 300–2, all in Miami Commissioners' Minutes, Minute Record F-1, 3/22/26–5/4/31.

[271] June 30, 1930, Miami Commissioners' Minutes, Minute Record F-1, 3/22/26–5/4/31, 377–79.

[272] "Work Begun at Dam," *Miami Daily News-Record*, July 25, 1933, 1.

[273] July 17, 1933, Miami Commissioners' Minutes, Minute Record F-2, 5/6/31–10/3/38, 204. See also July 10, 1933, 351, and July 21, 1933, 353, both in Miami PUB Minutes, Book 1.

[274] "Repair of Dam Nearing Finish," *Miami Daily News-Record*, August 13, 1933, 1.

[275] Resolution, June 5, 1944, Brown Binder, City Hall, Miami, OK. See also Miami PUB Minutes, Book 2, n.p.

[276] Joseph L. Arnold, *The Evolution of the 1936 Flood Control Act* (Fort Belvoir, VA: USACE, Office of History, 1988), 4–5, quotation on 5.

[277] Arnold, *Evolution of the 1936 Flood Control Act*, 5.

[278] Arnold, *Evolution of the 1936 Flood Control Act*, 3.

[279] 23 Stat. 133, 1884, quoted in Gifford Pinchot, "The Long Struggle for Effective Federal Water Power Legislation," *George Washington Law Review* 14, no. 1 (December 1945): 9–20, quotation on 10.

[280] 26 Stat. 426, 454, 1890, cited in Pinchot, "Long Struggle," 10.

[281] 26 Stat. 1101 (1891) and 29 Stat. 120 (1896) quoted in Pinchot, "Long Struggle," 10.

[282] 30 Stat., 1121, 1151, cited in Pinchot, "Long Struggle," 10; and USACE, "Multipurpose Waterway Development," accessed December 29, 2022, https://www.usace.army.mil/About/History/Brief-History-of-the-Corps/Multipurpose-Waterway-Development/.

[283] USACE, "Multipurpose Waterway Development." The Corps of Engineers did install a power station substructure at Lock and Dam #1 on the upper Mississippi River. The government later leased the power facility to the Ford Motor Company. In 1919, the Corps began construction of Dam #2 later renamed Wilson Dam as a hydroelectric facility at Muscle Shoals on the Tennessee River. Support for the facility, which was intended to supply power for nitrate production, declined with the end of World War I, and its completion was threatened. However, by 1925 that project was substantially finished.

[284] Arnold, *Evolution of the 1936 Flood Control Act*, 4, 5.

[285] "An Act to Create a Federal Power Commission; to Provide for the Improvement of Navigation; Development of Water Power; the Use of Public Lands in Relation Thereto . . . and for Other Purposes," June 10, 1920, ch. 285, 41 Stat. 1063 (Federal Water Power Act of 1920). For a version with explanatory notes on later modifications, see https://www.energy.gov/sites/prod/files/2015/06/f22/FWPA1920.pdf.

[286] Graves, *History of Neosho County*, 1:441; and Duncan, *History of Neosho and Wilson Counties*, 105–7.

[287] Graves, *History of Neosho County*, 1:441.

[288] Floods in Kansas, letter from the Secretary of War, transmitting, with a letter from the Chief of Engineers, R*eport on Preliminary Examination of Floods in the State of Kansas*, August 7, 1917, referred to the Committee on Flood Control and ordered to be printed, with illustrations, August 7, 1917, 65th Cong., 1st Sess., H.R.Doc. No. 321, *U.S. Congressional Serial Set* (Washington, DC: GPO, 1917).

[289] J. R. Van Frank, "Preliminary Examination of Neosho River, Kansas, from the North Line of Neosho County to the South Line of Labette County," October 19, 1896, Letter from Capt. William L. Sibert, November 24, 1896 and Letter from the Secretary of War, Transmitting, with a Letter from the Chief of Engineers, Report of Examination of Neosho River, Kansas, etc.), December 14, 1896, Referred to the Committee on Rivers and Harbors and Ordered to be Printed, December 14, 1896, 54th Cong., 2d Sess., Serial Set Vol. No. 3505, Session Vol. No. 29, H.R.Doc. 83. See also Graves, *History of Neosho County*, 1:441; and "Provisions for Western Rivers," *Guthrie (OK) Daily Leader*, April 5, 1896, 1.

[290] Rivers and Harbors Appropriation Act of 1899, March 3, 1899, Ch. 425, Sec. 9, 30 Stat. 1151. 33 U.S.C. § 401 et seq.

[291] U.S. Army Corps of Engineers, "Multipurpose Waterway Development."

[292] An Act to Provide for the Control of the Floods of the Mississippi River and of the Sacramento River, California, and for Other Purposes, States at Large, 64th Cong., 2d Sess., Ch. 144, March 1, 1917. For a history of the act, see Matthew T. Pearcy, "A History of the Ransdell-Humphreys Flood Control Act of 1917, *Louisiana History* 41, no. 2 (Spring 2000): 133–59. Quotation from Arnold, *Evolution of the 1936 Flood Control Act*, 3.

[293] Arnold, *Evolution of the 1936 Flood Control Act*, 15.

[294] Arnold, *Evolution of the 1936 Flood Control Act*, 16.

[295] Federal Water Power Act of 1920.

[296] Rivers and Harbors Act of March 3, 1925 (43 Stat 1186). Quotation from Arnold, *Evolution of the 1936 Flood Control Act*, 16.

[297] Arnold, *Evolution of the 1936 Flood Control Act*, 16–17.

[298] Taylor quoted in Arnold, *Evolution of the 1936 Flood Control Act*, 16.

[299] *Arkansas River and Tributaries*, 1215–341.

[300] "Flood Survey Started Here; Government Engineers in Miami to Map Neosho River for Control Job," *Miami Daily News-Record*, July 1, 1929, 1. See also "Grove News," *Miami News-Record*, June 23, 1929, 6.

[301] Synopsis of District Engineer's Report, June 19, 1931, 11.

[302] See Levee Project Estimates, ca. 1931; and Synopsis of District Engineer's Report, June 19, 1931.

[303] Levee Project Estimates ca. 1931. The information in this document was included in the later "Report on the Grand (Neosho) River," February 15, 1934.

[304] Synopsis, June 19, 1931, 10.

[305] Synopsis, June 19, 1931, 11.

[306] Synopsis, June 19, 1931, 12.

[307] Synopsis, June 19, 1931, 12.

[308] Synopsis, June 19, 1931, 12–13.

[309] Synopsis, June 19, 1931, 13.

[310] Synopsis, June 19, 1931, 11, 12–13.

[311] Synopsis, June 19, 1931, 13.

[312] "Report on the Grand (Neosho) River," February 15, 1934, 5–6.

[313] "Report on the Grand (Neosho) River," February 15, 1934, Appendices 25–29.

[314] Flood Control Act of 1936, 1571.

[315] R. V. Smrha, "Kansas Plan for Neosho River Basin Development," *Journal of the American Water Works Association* 39, no. 7 (July 1, 1947): 673–79, quotation on 674.

[316] KSBA, Division of Water Resources, *Progress on a State Plan of Water Resources Development, during the Period July 1, 1941, to September 30, 1942* (Topeka: KSBA, December 1942), 22, Folder: Grand Neosho River, T.D. [Tulsa District], Report of the Kansas State Board of Agriculture, 1942, RG77, Corps of Engineers, Southwestern Division, Survey Reports, 1937–1965, Grand Neosho River–Guadalupe River, HM2000, Box 17, NARA-FW.

[317] Secretary of War to Congress, July 29, 1935, quoted in KSBA, *Report . . . July 1, 1941, to September 30, 1942*, 21.

[318] *Arkansas River and Tributaries*, 1215–17, quotation on 1217.

[319] Arnold, *Evolution of the 1936 Flood Control Act*, 3.

[320] Arnold, *Evolution of the 1936 Flood Control Act*, 22.

[321] An Act Authorizing the Construction, Repair, and Preservation of Certain Public Works on Rivers and Harbors, and for Other Purposes, August 30, 1935, Chap. 831, §5, 49 Stat. 1048, quotation on 1039–40.

[322] Arnold, *Evolution of the 1936 Flood Control Act*, 22.

[323] Bill Caldwell, "Henry Holderman Was a Determined Visionary," *Joplin (MO) Globe*, October 31, 2020. See also W. R. Holway, "Dams on the Grand River," *Chronicles of Oklahoma* 26, no. 8 (Autumn 1948): 329–34; and W. R. Holway, *A History of the Grand River Dam Authority, State of Oklahoma, 1935–1968*, 2 Vols. (Tulsa: GRDA, 1968–1969), esp. 1:1–4, on which most of this section is based. See also Henry C. Holderman, interview by James R. Carselowey, September 15, 1937, transcript, *Indian-Pioneer History* 29, Grant Foreman Collection, Folder: Rivers, Okla, Grand River Dam, Okla, OKHC.

[324] Caldwell, "Henry Holderman."

[325] Holway, "Dams on the Grand River," 329; and Holway, *History of the Grand River Dam Authority*, 1:2.

[326] "Construction Expected to Begin Soon on Grand River Dam Project, Labeled One of Biggest Power Undertakings in U.S.," *Miami Daily Record-Herald*, December 20, 1921, 6.

[327] C. Orville Elliott, "An Analysis of the Production and Distribution of Electric Power by the Grand River Dam Authority" (PhD. diss., University of Oklahoma, 1958), 16.

[328] Fred W. Insull, PSCO, to Federal Power Commission, Declaration of Intention, May 25, 1923, 1, Folder: Power Projects: Grand River, OK, RG77, Corps of Engineers, Southwestern Division, Engineering Files—Harbors and Rivers, 1920–1940, Power Projects: Dixie Power–White River, HM2000, Box 56, E. SW8, NARA-FW.

[329] William V. King, Acting Executive Secretary, Federal Power Commission, to General Beach, re: Declaration of Intention, Public Service Company of Oklahoma, June 8, 1923, Folder: Power Projects: Grand River, OK, Box 56, NARA-FW.

[330] Donald H. Connelly, District Engineer, Memphis District, to Chief of Engineers, U.S. Army, October 16, 1923, 3, Folder: Power Projects: Grand River, OK, Box 56, NARA-FW.

[331] Connelly to Chief of Engineers, October 16, 1923, 4.

[332] H. Taylor, Acting Chief of Engineers, to Chief of Engineers, U.S. Army, October 22, 1923, Folder: Power Projects: Grand River, OK, Box 56, NARA-FW.

[333] April 12 date comes from the permit itself—application is not in folder, although the April 3 map is. See Federal Power Commission, Preliminary Permit, Project No. 498, Public Service Company of Oklahoma, July 25, 1925; and Public Service Company of Oklahoma, Application for Proposed Permit, Project No. 498, Map, April 3, 1924; both in Folder: Power Projects: Grand River, OK, Box 56, NARA-FW.

[334] Lewis W. Call, Acting Executive Secretary, Federal Power Commission, to George F. Short, Attorney General, State of Oklahoma, July 17, 1924, Folder: Power Projects: Grand River, OK, Box 56, NARA-FW.

[335] FPC, Preliminary Permit, July 25, 1925, 1, 3.

[336] PSCO, Application for Proposed Permit, Map, April 3, 1924.

[337] FPC, Preliminary Permit, July 25, 1925, 3–4.

[338] FPC, Preliminary Permit, July 25, 1925, 6.

[339] Holway, "Dams on the Grand River," 330; and Holway, *History of the Grand River Dam Authority*, 1:3.

[340] Holway, *History of the Grand River Dam Authority*, 2, sec. 6:1.

[341] All quotations from Elliott, "Grand River Dam Authority," 17.

[342] Holway, "Dams on the Grand River," 330; Elliott, "Grand River Dam Authority," 18; and Holway, *History of the Grand River Dam Authority*, 1:4.

[343] "Grand River Dam Job Set for Dec. 1," *Miami Daily News-Record*, October 29, 1930, 1.

[344] "Grand River Electric Project," *Harlow's Weekly* (November 16, 1929): 5, 16.

[345] "Grand River Electric Project," 16.

[346] *Tulsa World*, February 4, 1940, quoted in Elliott, "Grand River Dam Authority," 18.

[347] Conservation Commission, Minutes, re: "Application of Grand Hydro for Appropriation of Waters of Grand River," August 29, 1931, Soil Conservation Board, Box 2, OSDLA.

[348] "Ownership of River Beds at Issue in Suit against Ottawa County," *Miami Daily News-Record*, October 11, 1931, 1.

[349] "Riverbed Suit," *Harlow's Weekly* (October 17, 1931): 10.

[350] Holway, "Dams on the Grand River," 330; and Holway, *History of the Grand River Dam Authority*, 1:4.

[351] Elliott, "Grand River Dam Authority," 20–21.

[352] Richard Lowitt, "Developing the Grand River Dam Authority, Part 1, 1935–1944," *Chronicles of Oklahoma* 87, no. 2 (Summer 2009): 132–65.

[353] "Disney Water Proposals," *Harlow's Weekly* (December 1, 1934): 6.

[354]Lowitt, "Developing the Grand River Dam Authority, Part 1, 1935–1944," 132–65.

[355] O. D. Hall, "Inauguration Day and the Legislature," *Harlow's Weekly* (January 19, 1935): 4–5

[356] Lowitt, "Developing the Grand River Dam Authority, Part 1," 134.

[357] "Grand River Dam Project," *Harlow's Weekly* (March 4, 1935): 8–9, quotation on 8.

[358] "Grand River Dam Project," 9.

[359] Holway, *History of the Grand River Dam Authority*, 2:1.

[360] Unless otherwise noted, this paragraph is based on Holway, "Dams on the Grand River," 331; the text of the enabling act, transcribed in Holway, *History of the Grand River Dam Authority*, 2:1–4; and Lowitt, "Developing the Grand River Dam Authority, Part 1," 134–35.

[361] Holway, *History of the Grand River Dam Authority*, 2, sec. 2:1–2.

[362] See Holway, *History of the Grand River Dam Authority*, 2, sec. 2:6–7; and Elliott, "Grand River Dam Authority," 23.

[363] "Governor at Vinita," *Harlow's Weekly* (May 25, 1935): 11.

[364] Holway, *History of the Grand River Dam Authority*, 2:4.

[365] Holway, *History of the Grand River Dam Authority*, 2:9

[366] Lowitt, "Developing the Grand River Dam Authority, Part 1," 136; Holway, "Dams on the Grand River," 331; and Holway, *History of the Grand River Dam Authority*, 2, sec. 2:9–10.

[367] Holway, "Dams on the Grand River," 331; and Holway, *History of the Grand River Dam Authority*, 2, sec. 2:4. See also "No Grand River Legislation Soon," *Harlow's Weekly* (November 28, 1936): 11; and "Grand River Dam to Get Support," *Harlow's Weekly* (December 12, 1936): 3.

[368] Holway, "Dams on the Grand River," 331; and Holway, *History of the Grand River Dam Authority*, 2, sec. 2:4. See also "Grand River Again," *Harlow's Weekly* (January 16, 1937): 7.

[369] Lowitt, "Developing the Grand River Dam Authority, Part 1," 140.

[370] Holway, *History of the Grand River Dam Authority*, 2, sec. 2:10–11 and Lowitt, "Developing the Grand River Dam Authority, Part 1," 138–40.

[371] Lowitt, "Developing the Grand River Dam Authority, Part 1," 140. See also U. S. Russell, "Grand River Hydro-Electric Project Is Approved," *Harlow's Weekly* (September 18, 1937): 5–6.

[372] Compare descriptions of the celebration (with different dates) in Holway, *History of the Grand River Dam Authority*, 2, sec. 3:1; and Thelma K. Shumake, "Grand River Dam," May 2, 1939, Folder: Rivers, Okla, Grand River Dam, Okla, OKHC.

[373] Shumake, quoting the *Phoenix* and *Oklahoman*, in "Grand River Dam," May 2, 1939, 2–5, 7.

[374] Holway, *History of the Grand River Dam Authority*, 2, sec. 3:6; and Lowitt, "Developing the Grand River Dam Authority, Part 1," 140. See also "Choosing Key Officials for Dam Project a Big Task," *Harlow's Weekly* (October 30, 1937): 8.

[375] Holway, *History of the Grand River Dam Authority*, 2, sec. 3:9, 6–7, and sec. 6:1; and Lowitt, "Developing the Grand River Dam Authority, Part 1," 140.

[376] Quotation from Holway, *History of the Grand River Dam Authority*, 2, sec. 6:1; and see E. M. Markham, Maj. Gen., Chief of Engineers, to Col. Horatio B. Hackett, Asst. Admin. Federal Emergency Administration of Public Works, June 8, 1937; and Harold L. Ickes, Administrator [FEAPW], to Brig. Gen. M. C. Tyler, Acting Chief of Engineers, November 17, 1937, both in unlabeled folder, Box 3373 Legal, Misc. Legal Files 1937–1976, GRDA-HQ. See also "Brief Terms in Grand River Dam Contract," *Harlow's Weekly* (October 23, 1937): 14.

[377] Holway, *History of the Grand River Dam Authority*, 2, sec. 6:1.

[378] Unless otherwise noted, all quotations in this paragraph are from Holway, *History of the Grand River Dam Authority*, 2, sec. 6:2. The exact date of Holway and Cochrane's meeting with Reybold is unknown, but it must have pre-dated the April 22, 1938, plans the engineers ultimately submitted to and received approval on from the Corps.

[379] Holway, *History of the Grand River Dam Authority*, 2, sec. 6:3.

[380] Flood Control Act of 1936, 1578–79, 1596.

[381] W. R. Holway, Consulting Engineer, to Edward P. Marshall, GRDA General Counsel, April 20, 1945, conveying [Don McBride], "Statement on the Part of the Grand River Dam Authority," undated typescript, 2, [Master Files], GRDA-HQ

[382] *Arkansas and Its Tributaries*, 1250.

[383] Federal Power Commission, Docket No. DI–141, Declaration of Intent, February 11, 1938, also includes license articles, etc., Envelope: 1941–1946, Miscellaneous, Box 5095 Pensacola Misc. Records, 1940–1946, GRDA-HQ.

[384] Holway, *History of the Grand River Dam Authority*, 2, sec. 6:3–4.

[385] Holway, *History of the Grand River Dam Authority*, 2, sec. 6:4–5, quotations on 4.

[386] An Act Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control, and for Other Purposes, June 28, 1938, H.R. 10618, P.L. No. 761, 75th Cong., Sess. 3, 1215–26, quotations on 1215 (hereafter, Flood Control Act of 1938).

[387] "Comprehensive Flood-Control Plans and Works for Reservoirs, Levees, and Floodwalls," H.R. Rep. No. 2353 to Accompany H.R. 10618, 75th Cong., 3d Sess., *U.S. Congressional Serial Set* (1938): 1–38, esp. 20.

[388] All quotations in this paragraph are from Holway, *History of the Grand River Dam Authority*, 2, sec. 6:5. The Corps and other entities, however, had completed preliminary reporting.

[389] Holway, *History of the Grand River Dam Authority*, 2, sec. 6:5. According to Holway, a January 4, 1939, Corps report, advocated for reservoir construction on the Grand for flood control and noted that it would "yield a considerable economic benefit" especially downstream along the lower Mississippi and Arkansas Rivers. However, the Corps also found that building reservoirs for flood control alone "'would adversely affect hydroelectric development on the Grand River in Oklahoma, a condition not in accord with public interest" (cited in W. R. Holway, Consulting Engineer, to Edward P. Marshall, GRDA General Counsel, April 20, 1945; and [Don McBride], "Statement on the Part of the Grand River Dam Authority," undated typescript, [Master Files], GRDA-HQ).

[390] Federal Power Commission, Order Authorizing Issuance of License for Major Project, Project No. 1494, January 27, 1939, RG0980 [GRDA], box 3, folder 11, Federal Power Commission corr. re: Pensacola Dam, 1 of 2, 1937–1939, OSDLA. See also Oklahoma Planning and Resources Board, Division of Industrial and State Planning, Grand River Dam Authority and Pensacola Dam, confidential memorandum, ca. September 1945 (cover letter, Don McBride, OK Planning and Resources Board, to Hon. Robert S. Kerr, Governor of Oklahoma, September 8, 1945), 39 Box 5094 Legal, Pensacola & Kerr Misc. Records, 1940–1964, GRDA-HQ.

[391] R. L. Davidson, GRDA General Counsel, to Representative Lincoln Battenfield, January 31, 1939, Folder: Legislation, Box 3399 Pensacola/Hydro, Legislation and Legal Cases from 1940s, GRDA-HQ.

[392] R. V. L. Wright, GRDA General Manager, to Federal Power Commission, February 17, 1939, RG0980 [GRDA], box 3, folder 11, Federal Power Commission corr. re: Pensacola Dam, 1 of 2, 1937–1939, OSDLA.

[393] W. R. H[olway] to R. V. L. Wright, re: Flood Control Policy, April 4, 1939, Folder: Holway & Neuffer, General Mgr. Files [1930s], Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ.

[394] Federal Power Commission, Order Modifying Authorization for Issuance of License, Project No. 1494, April 28, 1939; and Federal Power Commission, Order Further Modifying Authorization for Issuance of License, Project No. 1494, July 5, 1939, both in RG0980 [GRDA], box 3, folder 11, Federal Power Commission corr. re: Pensacola Dam, 1 of 2, 1937–1939, OSDLA. See also Holway, *History of the Grand River Dam Authority*, 2, sec. 6:5–6.

[395] GRDA Board, Resolution No. 299, July 11, 1939, RG0980 [GRDA], box 3, folder 11, Federal Power Commission corr. re: Pensacola Dam, 1 of 2, 1937–1939, OSDLA; Federal Power Commission, Washington, DC, License for Major Project, Project No. 1494, Oklahoma–Missouri Grand River Dam Authority, July 12, 1939, [Master Files], GRDA-HQ (document scanned at GRDA was both incomplete and dated July 12, 1939, so is therefore not the final license, which HRA was unable to locate as of this writing; and quotation from "Grand River Dam Authority Gets Federal Power License," *Harlow's Weekly* 51, no. 27 (July 8, 1939): 3. See also "Army Engineers Enter Grand River Dam Case," Harlow's Weekly (July 1, 1939): 3.

[396] License for Project No. 1494.

[397] License for Project No. 1494.

[398] Holway cited in "Grand River Dam Authority Faces Delay in Power Sale," *Harlow's Weekly* 51, no. 43 (October 28, 1939): 2.

[399] "Grand River Dam Authority Gets Rebuff in Land Case," *Harlow's Weekly* (October 21, 1939): 4.

[400] "Grand River Dam Authority Developments Come Fast," (2) and "Land Acquisition Speed Is Needed," (3) both in *Harlow's Weekly* 51, no. 50 (December 16, 1939).

[401] "Brief Terms in Grand River Dam Contract," *Harlow's Weekly* (October 23, 1937): 14; and "Grand River Dam Authority to Ask for Time Extension," *Harlow's Weekly* (October 14, 1939): 4.

[402] "Washington Conference Fails to Solve Grand River Matter," *Harlow's Weekly* (November 18, 1939): 4.

[403] "State Senate Passes Bill Giving Governor Full Control of GRDA While Board Ponders Empty Till," *Miami Daily News-Record*, March 7, 1939, 1; and "Grand River Dam Fight Breaks on Two Fronts," *Harlow's Weekly* (November 25, 1939): 3.

[404] "Washington Conference Fails to Solve Grand River Matter," *Harlow's Weekly* (November 18, 1939): 4.

[405] "Grand River Dam Fight Breaks," 3.

[406] "PWA Ready to Name Manager for Grand River Project," *Harlow's Weekly* 52, no. 1 (January 1, 1940): 2.

[407] "Lee Makes Charges in Grand River Dam Case," *Harlow's Weekly* 52, no. 1 (January 1, 1940): 2.

[408] Formal documentation of his exact hire date has not been found, however, Miami PUB minutes from March 1, 1940, indicate that Clonts was present and serving as general manager at a meeting that day (Miami PUB Minutes, March 1, 1940, 1014).

[409] "Grand Lake's Dam Dedicated by Turner," November 4, 1939, Photograph 2012.201.OVZ001.6516, Gateway to Oklahoma History, https://gateway.okhistory.org/ark:/67531/metadc1702369/?q=%22Grand%20River%22%20flood.

[410] Curtis Ward, "Celebration Follows Court Dam Decision," *Harlow's Weekly* (January 5, 1938): 14–15, quotations on 15.

[411] "Grand River Dam Authority Again Faces Fund Shortage," *Harlow's Weekly* (April 29, 1939): 4.

[412] Memorandum Brief, GRDA, a Public Corporation, vs. Grand-Hydro, a Corporation, et al., in the District Court of Mayes County, State of Oklahoma, No. 6375, Box 3362 Legal Pensacola Years, 1941–?, GRDA-HQ.

[413] "Grand River Dam Authority Land Purchase Efforts Fail," *Harlow's Weekly* (February 18, 1939): 5.

[414] "Grand River Dam Authority Gets Federal Power License," *Harlow's Weekly* 51, no. 27 (July 8, 1939): 3.

[415] "Grand River Dam Authority Fights for Site Title," *Harlow's Weekly* (October 7, 1939): 6; and "Grand River Dam Authority Moves to Acquire Dam Site," *Harlow's Weekly* (January 27, 1940): 2. For more on the Grand-Hydro suit, see R. L. Davidson, General Counsel to GRDA Board of Directors, October 14, 1940, Folder: Miscellaneous No. 2—1940, Box 3312 Pensacola 1940; Memorandum Brief, GRDA, a Public Corporation, vs. Grand-Hydro, a Corporation, et al., in the District Court of Mayes County, State of Oklahoma, No. 6375, Box 3362 Legal Pensacola Years, 1941–?; and Settlement Agreement between Grand River Dam Authority, a Public Corporation, and United States of America, August 1, 1946, 7, Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, all at GRDA-HQ.

[416] "Grand River Dam Fight Breaks," 3.

[417] "Grand River Dam Fight Breaks," 3.

[418] "Organized Efforts to Force High Land Payments Charged," *Harlow's Weekly* (November 25, 1939): 3–4, quotation on 3.

[419] "Organized Efforts," 4.

[420] "Efforts Continued to Disqualify Judge," *Harlow's Weekly* (December 2, 1939): 4.

[421] R. L. Davidson, General Counsel, to GRDA Board of Directors, October 14, 1940, Folder: Miscellaneous No. 2—1940, Box 3312 Pensacola 1940, GRDA-HQ.

[422] "Grand River Dam Authority to Ask for Time Extension," *Harlow's Weekly* (October 14, 1939): 4.

[423] Davidson to GRDA Board of Directors, October 14, 1940, 2.

[424] Order Further Modifying Authorization for Issuance of License, Project No. 1494, July 5, 1939, [Master Files], GRDA-HQ.

[425] "Holway's Monthly Report Reveals Job's Progress," *Harlow's Weekly* 51, no. 50 (December 16, 1939): 2–3, quotation on 2.

[426] Q. B. Boydstun to Col. C. H. Chorpening, Tulsa District Engineer, May 15, 1947, 1, [Master Files], GRDA-HQ.

[427] Boydstun to Chorpening, May 15, 1947, 2.

[428] France Paris, GRDA GM, to Federal Power Commission, March 17, 1948, Folder: Master File 45, Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ.

[429] City of Miami Resolution, November 7, 1938, Brown Binder, unpaginated, City Hall, Miami, OK.

[430] "Neosho Dam Is Labeled City's No. 1 Project," [*Miami News-Record*], April 21, 1939, accessed February 13, 2023, https://www.facebook.com/photo?fbid=559731689521930&set=pcb.559732412855191.

[431] First discussion of hiring Wood occurred on May 29, 1939, Book 2, 906–7; the contract was executed on June 2, 1939, Book 2, 909–11, both in Miami PUB Minutes. The PUB referred to a map accompanying the June 2, 1939, report that marked the proposed spot for the low-water dam, but neither the report nor the map has been found.

[432] Miami PUB Minutes, July 28, 1939, Book 2, 927–28. (Note: document missing in HRA's collection; description taken from research log.)

[433] Miami PUB Minutes, October 3, 5, 1939, Book 2, 942–44. Miami PUB included GRDA reports on Miami power plant operations in the meeting minutes. See also Minutes, February 8, 1940, Book 2, 994–1006, and February 16, 1940, Book 2, 1009.

[434] Miami PUB Minutes, October 20, 1939, Book 2, 939.

[435] Miami PUB Minutes, February 2, 1940, Book 2, 992.

[436] All quotations from W. R. Holway to Mayor W. W. Dobson and City of Miami, February 1, 1940, Folder: Correspondence—Engineers, Holway & Neuffer, Box 2902 Dalrymple v. GRDA, Box 2—Discovery Material, 1938–1939 Eng. Originals, GRDA-HQ. Note: mention is made in this letter of a "Miami sewer" survey (Contract 13-A, Book F 98), but this document has yet to be found.

[437] Minutes, February 16, 1940, Book 2, 1009.

[438] Miami PUB Minutes, March 1, 1940, Book 2, 1014.

[439] Miami PUB Minutes, April 9, 1940, Book 2, 1052.

[440] Miami PUB Minutes, April 23, 1940, 1063. GRDA also presented a proposal for power rates and charges (minutes, 1064–75).

[441] Miami PUB Minutes, May, June 1940, Book 2, 1105, quotations on 1109.

[442] R. L. Davidson, General Counsel to GRDA Board of Directors, October 14, 1940, Folder: Miscellaneous No. 2—1940, Box 3312 Pensacola 1940, GRDA-HQ.

[443] T. P. Clonts to Frank Nesbitt, Miami PUB, letter re: settlement of damages to City of Miami, November 12, 1940, transcribed in Minute Book 2, quotation on 1167, terms of agreement on 1169–73. See also Minutes of a Recessed Meeting of the Board of Directors of the Grand River Dam Authority, Held at Vinita, Oklahoma, November 12, 1940, on file at GRDA-HQ; and City of Miami Resolution No. A48, December 2, 1940, Brown Binder, City Hall, Miami, OK.

[444] December 2, 1940, resolution, release, and full text of the flowage easement transcribed in Minute Book 2, 1176–81. Fitzgerald followed up with a letter to GRDA assistant counsel Boydstun that the final resolution did not include one piece of language that GRDA had requested "because it would be incorrect." Fitzgerald noted that "the sum paid would not be nearly sufficient to locate and reconstruct the sewer system and water system and it was the understanding at the time we talked about that matter that we would use that sum in a WPA project; it being probably sufficient for the sponsor's part" (E. C. Fitzgerald to Q. B. Boydstun, December 3, 1940, transcribed in Minute Book 2, 1182).

[445] Cited to Minute Book G, Page 122, in Black Binder, W. C. Glenn, "A resumé of principal official acts of government of the City of Miami, Oklahoma, from August 16, 1899, to January 1, 1946, as compiled from the records of said City," City Hall, Miami, OK.

[446] R. V. L. Wright, R. L. Davidson, and W. R. Holway to GRDA Board of Directors, September 29, 1939, Folder: Non-Contract Construction, Grand River Project—Relocation of Utilities and Highways, Highways and Roads, Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ.

[447] Ottawa County, Commissioners' Journal, No. 6, Beginning February 10, 1936, November 6, 1939, 239–40, and January 2, 1940, 249, Ottawa County Clerk's Office, Miami, OK.

[448] R. L. Davidson, General Counsel to GRDA Board of Directors, October 14, 1940, Folder: Miscellaneous No. 2—1940, Box 3312 Pensacola 1940, GRDA-HQ.

[449] T. P. Clonts, R. L. Davidson, and W. R. Holway to GRDA Board of Directors, August 3, 1940, Folder: Non-Contract Construction, Grand River Project—Relocation of Utilities and Highways, Highways and Roads, Box 2893. See also W. R. Holway to H. H. Ferguson, PWA Project Engineer, December 22, 1939, Folder: Correspondence—Engineers, Holway & Neuffer, Box 2902 Dalrymple v. GRDA, Box 2—Discovery Material, 1938–1939 Eng. Originals, both at GRDA-HQ.

[450] Davidson to GRDA Board, October 14, 1940.

[451] Minutes of a Recessed Meeting of the Board of Directors of the Grand River Dam Authority, Held at Vinita, Oklahoma, December 10, 1940, 8, on file at GRDA-HQ.

[452] Ottawa County, Commissioners' Journal, No. 6, December 28, 1940, 298–99; and Minutes of the Regular Monthly Meeting of the Board of Directors of the Grand River Dam Authority, Held at Vinita, Oklahoma, January 6, 1941, GRDA-HQ. See also Resolution No. 3, [Ottawa County Commissioners], December 28, 1940, Folder: Ottawa County, Box 2902 Dalrymple v. GRDA, Box 2—Discovery Material, 1938–1939 Eng. Originals, GRDA-HQ.

[453] See Lester M. Mark, Project Engineer, PWA, to T. P. Clonts, GRDA General Manager, January 16, 1941, Folder: Ottawa County, Box 2902 Dalrymple v. GRDA, Box 2—Discovery Material, 1938–1939 Eng. Originals, GRDA-HQ; Minutes of a Recessed Meeting of the Board of Directors of the Grand River Dam Authority, Held at Vinita, Oklahoma, January 21, 1941, GRDA-HQ; and Resolution No. 3 ("the correct resolution"), Ottawa County, Commissioners' Journal, No. 6, 309.

[454] Ottawa County, Commissioners' Journal, No. 6, March 8, 1941, 314–16.

[455] Ottawa County, Commissioners' Journal, No. 6, January 27, 1945, 532.

[456] E. K. Burlew, Acting Secretary of the Interior to Will Rogers, Chairman, House Committee on Indian Affairs, "Transferring Indian Lands to Grand River Dam Authority," April 20, 1940, printed in S.Rep. No. 1633, leg. day April 24, 1940, 76th Cong., 3d Sess., *U.S. Congressional Serial Set* (1940): 1–2, quotation on 1. See also H.R.Rep. No. 1940, "Transferring Indian Lands to Grand River Dam Authority," April 9, 1940, n.p., in the same volume.

[457] Committee on Indian Affairs, "Transferring Indian Lands to Grand River Dam Authority," *U.S. Congressional Serial Set* (1940): 1–2.

[458] An Act to Transfer Certain Indian Lands to the Grand River Dam Authority, and for Other Purposes, Public Law No. 597, 76th Cong., Chapter 322, 3d Sess., H.R. 7901, approved June 11, 1940, Folder: Misc., RG75, Records of the Bureau of Indian Affairs, Records of the Miami Indian Agency, Records of the Administrative Division, Records Relating to Land, Appraisal Records, Correspondence, 1930–1943, Miscellaneous, Box No. 5, E.107, NARA-FW.

[459] See Clyde W. Finn, Land Field Agent, to J. M. Stewart, Director of Lands, Office of Indian Affairs, March 8, 1939; H. A. Andrews, Superintendent, Quapaw Indian Agency, to Rex H. Barnes, Asst. Land Field Agent, February 28[illegible], 1939; and quotation from Clyde W. Finn, Land Field Agent, to H. A. Andrews, Superintendent, Quapaw Indian Agency, February 24, 1939, all in Folder: Land Acquisition (Miscellaneous), RG75, Records of the Bureau of Indian Affairs, Records of the Miami Indian Agency, Records of the Administrative Division, Records Relating to Land, General, Land Transaction Files, 1938–1959, Box No. 2, E.93, E.94, NARA-FW.

[460] Burlew to Rogers, April 20, 1940.

[461] All quotations from U.S. Engineer Office, Tulsa, Oklahoma, "Operation of Pensacola Reservoir during Flood of April 1941, Grand (Neosho) River, Arkansas River Basin," May 1942, Folder: Pensacola Reservoir (Grand [Neosho] River), OK, T.D. [Tulsa District], 1942, RG77, Corps of Engineers, Southwestern Division, Reports and Studies on Waterways, 1936-1943, Tulsa District: Pensacola-Washita River, HM2000, Box 7, E. SW12, NARA-FW. See also W. C. Burnham, Hydraulic Engineer, to Edward P. Marshall, General Counsel, November 17, 1941, memorandum on Regulation of Flood Water Storage by District Engineer, Corps of Engineers, above Elevation 745, [Master Files], GRDA-HQ.

[462] Full original document is Brig. Gen. John J. Kingman, Acting Chief of Engineers, to Secretary of War, Rules and Regulations for the Operation of the Pensacola Dam, Grand River, Oklahoma, in the Interest of Flood Control," File No. 7495 (Grand River Dam Authority) 60, June 21, 1941, Folder: No. 16,098, District Court of Ottawa County, Board of Education of the Town of Wyandotte, etc. vs. Grand River Dam Authority [ca. 1941–1943], Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ. A partial transcription of the original is in Burnham to Marshall, November 17, 1941, memorandum, 2–3.

[463] See, for example, Telegrams, Board of Education of the Town of Wyandotte, etc. vs. Grand River Dam Authority, Folder: No. 16,098, District Court of Ottawa County, Board of Education of the Town of Wyandotte, etc. vs. Grand River Dam Authority [ca. 1941–1943], Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ.

[464] An Act Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control, and for Other Purposes, August 18, 1941, H.R. 4911, P.L. No. 228, 77th Cong., Sess. 1, 638–51, esp. 645 (hereafter, Flood Control Act of 1941).

[465] Franklin D. Roosevelt, "Executive Order, Directing the Federal Works Administration to Take Possession of and Operate a Certain project of the Grand River Dam Authority," Executive Order No. 8944, November 19, 1941, *Federal Register* 6, no. 228 (November 25, 1941): 5947.

[466] Quoted in [Q. B. Boydstun],"Suggested Proposal of Secretary of the Interior for Settlement of Affairs between Grand River Dam Authority and the United States," draft [ca. June 1945?], "Synopsis of the History of Grand River Dam Authority," undated typescript [June 1945?], [Master Files], GRDA-HQ. See also Douglas G. Wright, Special Representative for the Administrator, to FPC, June 15, 1942, [Master Files], GRDA-HQ.

[467] Grand (Neosho) River and Its Tributaries, Oklahoma, Kansas, Missouri, and Arkansas, February 19, 1946, H.R.Doc. No. 442, reprinted with correspondence in *U.S. Congressional Serial Set* (Washington, DC: GPO, 1948): 1–71, esp. 35.

[468] "History of the Grand River Dam Project, November 21, 1941, to September 30, 1945," 4.

[469] "Southwestern Power Administration," *Official Congressional Directory*, corrected to February 14, 1947 (Washington, DC: GPO, 1947): 605.

[470] Grand (Neosho) River and Its Tributaries, Oklahoma, Kansas, Missouri, and Arkansas, February 19, 1946, H.R.Doc. No. 442, reprinted with correspondence in *U.S. Congressional Serial Set* (Washington, DC: GPO, 1948): 1–71, esp. 35.

[471] KSBA, *Progress on a State Plan of Water Resources Development . . . September 30, 1942*, 18.

[472] Gaging data from USGS 07185000 Neosho River near Commerce, OK (1940–2022) and USGS 07189500 Neosho River near Grove, OK (1925–1939), accessed February 7, 2023, waterdata.usgs.gov.

[473] Holway, "Dams on the Grand River," 332.

[474] Telegrams, Board of Education of the Town of Wyandotte, etc. vs. Grand River Dam Authority, Folder: No. 16,098, District Court of Ottawa County, Board of Education of the Town of Wyandotte, etc. vs. Grand River Dam Authority [ca. 1941–1943], Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ. Note: there is a full list of the directions the Corps gave GRDA from April 17–November 17, 1941, in Master Files, GRDA-HQ.

[475] W. C. Burnham, Hydraulic Engineer, to Douglas G. Wright, Special Representative for the Administrator, February 4, 1943, Summary with Data of Reservoir Operations, 1942, 1 [Master Files], GRDA-HQ.

[476] Edward P. Marshall, GRDA General Counsel, to C. A. West, GRDA Acting General Manager, Re: Potential Liability Resulting from Flooding of Uncontrolled Lands, November 12, 1941, quotation on 2, Folder: Miscellaneous—No. 3—1941, Box 2897 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ.

[477] Douglas G. Wright, Special Representative for the Administrator, to H. A. Montgomery, U.S. District Engineer, Tulsa, December 16, 1941, Folder: Tables, Plates and Exhibits to Accompany Letter to Chief of Engineers, Dated May 29, 1943, from District Engineer, Tulsa District, Re: Flood of May 1943, Box 13, Alva J. Hickerson Papers, Identifier: 1983-002, OSU Archives.

[478] Edward P. Marshall, General Counsel, to Lt. Col. H. A. Montgomery, December 18, 1941, re: Flood Damage Claims c. GRDA, [Master Files], GRDA-HQ.

[479] Lt. Col. H. A. Montgomery, Tulsa District, to Edward P. Marshall, GRDA General Counsel, February 19, 1942, in [Master Files], GRDA-HQ.

[480] Edward P. Marshall, GRDA General Counsel, to GRDA Board, February 24, 1942, [Master Files], GRDA-HQ.

[481] Edward P. Marshall, GRDA General Counsel, to FPC, March 24, 1942, [Master Files], GRDA-HQ.

[482] Judge William M. Thomas to Col. A. J. Montgomery, Tulsa District Engineer, May 13, 1942, [Master Files], GRDA-HQ.

[483] Leon M. Fuquay, FPC, to Edward P. Marshall, GRDA General Counsel, May 18, 1942, [Master Files], GRDA-HQ.

[484] Edward P. Marshall, GRDA General Counsel, to Leon M. Fuquay, FPC, June 5, 1942, [Master Files], GRDA-HQ.

[485] Edward P. Marshall, GRDA General Counsel, to Douglas G. Wright, Special Representative for the Administrator, June 5, 1942, [Master Files], GRDA-HQ.

[486] Douglas G. Wright, Special Representative for the Administrator, to FPC, June 15, 1942, [Master Files], GRDA-HQ.

[487] Wright to FPC, June 15, 1942.

[488] [Leon M. Fuquay], FPC, to Douglas G. Wright, Special Representative for the Administrator, July 3, 1942, [Master Files], GRDA-HQ.

[489] Kansas Water Resources Board, State Water Plan Studies—Part A: Preliminary Appraisal of Kansas Water Problems, Section 7, Neosho Unit, June 1961, 51, KSHS.

[490] "Statement of Douglas G. Wright, Administrator, Southwestern Power Administration, Accompanied by Arthur Goldschmidt, Director, Division of Power, Department of the Interior," March 1, 1944, in *Interior Department Appropriation Bill for 1945, Hearings Conducted by the Subcommittee [on Interior Department Appropriations]*, Part 1 (Washington, DC: GPO, 1944), 177.

[491] W. C. Burnham, Hydraulic Engineer, to Douglas G. Wright, Special Representative for the Administrator, June 5, 1943, Memorandum re Reservoir Operations through Flood Period—May 1943, 2, [Master Files], GRDA Headquarters, Choteau, Oklahoma.

[492] "Dam Credited with Saving Big War Plant," *Tulsa Tribune*, May 11, 1943.

[493] Pool level from Burnham to Wright, June 5, 1943, 2; and quotation from "Grand Lake Backs Up," *Tulsa World*, May 12, 1943.

[494] Wright, statement, 176.

[495] Graham quoted in Lowitt, "Developing the Grand River Dam Authority, Part 1," 154. See also Resolution, Pryor Chamber of Commerce, May 21, 1943; N. R. Graham to Tulsa Chamber of Commerce, May 18, 1943; Record of Grand River Dams, [1943]; "C. of C. Asks GRD Inquiry," *Tulsa Tribune*, May 18, 1943; "GRD Operation Criticized," *Tulsa World*, May 19, 1943; "3-Dam Control 'Flood Answer,'" *Tulsa Tribune*, May 19, 1943; Muskogee Chamber of Commerce, "Petition to the Oklahoma Delegation in Congress," May 24, 1943; "GRDA Policy Disregards Other Areas, Graham Says," *Tulsa World*, May 30, 1943; "GRDA Policy Disregards Other Areas, Graham Says," *Tulsa World*, May 30, 1943; "Grand River Dam Inquiry Essential," *Tulsa World*, May 31, 1943; "Wright Answers Graham's Charge," *Tulsa World*, June 2, 1943; "Graham Pens New Reply to Wright," *Tulsa World*, June 3, 1943; "Wright Declares GRD Co-Operated," *Tulsa World*, June 5, 1943; "GRDA Made Dam, 'Power Project,' Engineer Admits," *Tulsa World*, June 9, 1943; "E. H. Moore Cites First GRD Plans," *Tulsa World*, June 19, 1943; "Holway Answers Moore's Charges," *Tulsa World*, June 23, 1943, Folder N. R. Graham Report, Grand River, 1943 Flood; and additional documents compiled in Folder: Tables, Plates and Exhibits to Accompany Letter to Chief of Engineers, Dated May 29, 1943, from District Engineer, Tulsa District, Re: Flood of May 1943, all in Box 13, Alva J. Hickerson Papers, Identifier: 1983-002, OSU Archives.

[496] Douglas G. Wright, Special Representative for the Administrator, to Western Power Office, May 25, 1943, Memorandum on Protest of the Operating Policy of Pensacola Reservoir during the Flood of May 8 to May 24, 1943, quotations on 2, [Master Files], GRDA-HQ.

[497] "Grand River Dam," editorial, May 19, 1943.

[498] Wright, Memorandum on Protest," 3.

[499] Wright, statement, 177.

[500] Wright, statement, 178.

[501] Wright, statement, 178. See also W. C. Burnham, Hydraulic Engineer, to Douglas G. Wright, Administrator, June 28, 1946, Folder: Tables, Plates and Exhibits to Accompany Letter to Chief of Engineers, Dated May 29, 1943, from District Engineer, Tulsa District, Re: Flood of May 1943, Box 13, Alva J. Hickerson Papers, Identifier: 1983-002, OSU Archives.

[502] "FWA Would Pay for Personal Losses in Flood," [*Tulsa Tribune*?], [June?] 1943, RG0980 [GRDA], box 3, Folder GRDA-Newspaper clippings + a Few Photo, 1938–1964, OSDLA.

[503] "Thomas Pushes Legislation to Help This Area," *Miami Daily News-Record*, June 13, 1943, 1, 7, quotation on 7.

[504] "Thomas Pushes Legislation," 7.

[505] Miami PUB Minutes, June 18, 1943, Book 2, 1515–16.

[506] Miami PUB Minutes, June 18, 1943, Book 2, 1516.

[507] Miami PUB Minutes, July 2, 1943, Book 2, 1521.

[508] Miami PUB Minutes, July 7, 1943, Book 2, 1524. Whether the City completed the survey is unclear; in November when Burns & McDonnell checked on whether Miami still needed their services, the City noted that it was "still not ready to move ahead" perhaps because it was waiting for the results of the SWPA's land and easement acquisition and settlement of pending damage claims and condemnation suits (Miami PUB Minutes, November 3, 1943, Book 2, 1562–63).

[509] Edward P. Marshall, GRDA General Counsel, to Perry Porter, Attorney, July 21, 1943, [Master Files], GRDA-HQ.

[510] "GRD's Director Discloses Plan to Buy Acreage," and "Ickes Named by FDR to Sell GRD Power," *Miami Daily News-Record*, August 1, 1943, 1.

[511] Miami PUB Minutes, August 3, 1944, Book 2, 1665–69, quotation on 1666.

[512] "U.S. Puts Crimp in Hopes for Grand Lake Boom," [*Tulsa Tribune*?], August 10, 1943, clipping, Folder GRDA-Newspaper Clippings + A Few Photos, 1938–1964, Box 3, RG0980 [GRDA], OSDLA.

[513] "Lake Elevation to 755 Only in Time of Flood," *Miami Daily News-Record*, November 28, 1943, 10.

[514] "U.S. Sues for Land in County," *Miami Daily News-Record*, March 14, 1944, 1.

[515] Edward P. Marshall, GRDA General Counsel, to Don McBride, Oklahoma Planning and Resources Board, February 24, 1945, 1, Folder (MC) Miscellaneous, Box 5095 Pensacola Misc. Records, 1940–1946, GRDA-HQ.

[516] Marshall to McBride, February 24, 1945, 2.

[517] An Act Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control, and for Other Purposes, December 22, 1944, H.R. 4485, P.L. No. 534, 78th Cong., 2d sess., 887–907, quotation on 890 (hereafter, Flood Control Act of 1944).

[518] Oklahoma Planning and Resources Board, confidential memorandum, ca. September 1945, GRDA-HQ.

[519] "Synopsis of the History of Grand River Dam Authority," undated typescript [June 1945?], 3–5.

[520] "Action to Return GRDA to State Is Passed by Solons," *Miami Daily News-Record*, May 23, 1946, 5; "Authorizing Return of Grand River Dam Project to Grand River Dam Authority of Oklahoma," House Report No. 2107, May 23, 1946, and "Authorizing Return of Grand River Dam Project to Grand River Dam Authority of Oklahoma," Senate Report No. 1500, June 13, 1946, *U.S. Congressional Serial Set* (1946): 1–4; and Flood Control, Hearings before the Committee on Commerce, Senate, on H.R. 6597, An Act Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control, and for Other Purposes, June 24–26, 1946, 79th Cong., 2d sess. (Washington, DC: GPO, 1946).

[521] Settlement Agreement between Grand River Dam Authority, a Public Corporation, and United States of America, August 1, 1946, Box 2893 Dalrymple v. GRDA, 1940–1941 Originals, GRDA-HQ.

[522] Settlement Agreement, August 1, 1946, 14, 18.

[523] Settlement Agreement, August 1, 1946, 14.

[524] Settlement Agreement, August 1, 1946, 18.

[525] Settlement Agreement, August 1, 1946, 27.

[526] An Act to Authorize the Use of Certain Lands of the United States for Flowage in Connection with Providing Additional Storage Space in the Pensacola Reservoir of the Grand River Dam Project in Oklahoma, and for Other Purposes, August 9, 1946, Public Law 79-712, Chapter 944, 79th Cong., 2d Sess., *U.S. Statutes at Large* 60, Main Section (1946): 974–75.

[527] "U.S. Returns Grand River Dam to State: Transfer Effected at Twin Conferences in Tulsa and Kansas City," [*Tulsa Tribune*?], [August 21, 1946], n.p., Folder GRDA-Newspaper Clippings + A Few Photos, 1938–1964, OSDLA. See also "Grand River Transfer Effected Here Today," [*Tulsa Tribune*?], [August 21, 1946], in same folder.

[528] Douglas G. Wright, Administrator, Southwestern Power Administration, to Col. C. H. Chorpening, Tulsa District Engineer, August 21, 1946; Col. C. H. Chorpening to GRDA, August 23, 1946; and Douglas G. Wright, Administrator, Southwestern Power Administration, to John L. Saunders, USGS, August 28, 1946, [Master Files], GRDA-HQ.

[529] W. C. Burnham, Hydraulic Engineer, to Douglas G. Wright, Administrator, July 28, 1947, 1, regarding sufficient flowage easements and referring to Brig. Gen. R. C. Crawford, Acting Chief of Engineers, to Arthur Goldschmidt, July 2, 1947, 1, [Master Files], GRDA.

[530] Burnham to Wright, July 28, 1947, 1.

[531] Burnham to Wright, July 28, 1947, 2.

[532] Black & Veatch, "Report on Pensacola Reservoir Backwater Effect on Sanitary and Storm Sewer Systems at Miami, Oklahoma," December 1942, and cover letter from Bert F. Steves to District Engineer, U.S. Engineer Corps, Tulsa, December 28, 1942, Folder: Pensacola Reservoir (Grand [Neosho] River), OK, T.D. [Tulsa District], 800.922, 1942, RG77, Corps of Engineers, Southwestern Division, Reports and Studies on Waterways, 1936–1943, Tulsa District: Pensacola-Washita River, HM2000, Box 7, NARA-FW.

[533] Burnham to Wright, July 28, 1947, 2.

[534] Burnham to Wright, July 28, 1947, 3.

[535] Burnham to Wright, July 28, 1947, 5.

[536] *Annual Report of the Chief of Engineers, United States Army*, 2 parts, House Document No. 658 (Washington, DC: GPO, 1942), 1:982–84.

[537] USACE, "History of Fort Gibson Lake," accessed December 2, 2022, https://www.swt.usace.army.mil/Locations/Tulsa-District-Lakes/Oklahoma/Fort-Gibson-Lake/History/#:~:text=Abandoned%20by%20the%20government%20in,of%20the%20first%20log%20fort.

[538] Glen Roberson, "Grand River Dam Authority," *Encyclopedia of Oklahoma History and Culture*, accessed December 2, 2022, https://www.okhistory.org/publications/enc/entry.php?entry=GR006.

[539] *Grand (Neosho) River and Its Tributaries*, 38.

[540] *Grand (Neosho) River and Its Tributaries*, 41. Public hearings revealed that most local entities and private individuals wanted the proposed projects but neither wanted to pay for them nor met the basic requirements that federal assistance required. The first hurdle was the fact that Kansas had not created a legal mechanism by which to create public entities within the state with which the government could contract and that could also guarantee the government against future claims for damages on account of construction and operation of the project. Even with the creation of such entities, it was almost impossible to secure enough local support or funds to purchase the land and flowage rights, secure rights-of-way, etc., shared costs of planning and construction, and bear all costs of operation and maintenance once the structure was built. As one report noted, "Were all costs to be borne by the federal government, there appears to be little doubt the attitude expressed at these hearings would be entirely different. However, the belief has grown that ultimately the federal government will assume all costs in connection with the protection of cities and agricultural lands from flood damage." What people misunderstood was that the goals of the federal government in most cases was improving streams as they related to navigable waters downstream—a priority that was often in direct conflict with state and local interest in domestic and industrial water supply, urban and rural flood control, irrigation, pollution, and other primarily local concerns. See Kansas State Planning Board, *Water Resources of Kansas*, Kansas Legislative Council Publication No. 66, November 1937, KSHS, 6–7.

[541] Christy, comp., *Coffey County*, 72.

[542] Flood Control Act of May 17, 1950, Public Law 516, 81st Cong., 2nd Sess., Chapter 188. See also USACE, "History of Council Grove Lake," https://www.swt.usace.army.mil/Locations/Tulsa-District-Lakes/Kansas/Council-Grove-Lake/History/; "History of Marion Reservoir," https://www.swt.usace.army.mil/Locations/Tulsa-District-Lakes/Kansas/Marion-Reservoir/History/; and "History of John Redmond Reservoir," https://www.swt.usace.army.mil/Locations/Tulsa-District-Lakes/Kansas/John-Redmond-Reservoir/History/, all accessed December 1, 2022.

[543] FEMA, "Flood Insurance Study," June 1980.

[544] Seth E. Studley, *Changes in High-Flow Frequency and Channel Geometry of the Neosho River Downstream from John Redmond Dam, Southeastern Kansas*, U.S. Geological Survey Water-Resources Investigations Report 96-4243 (1996), 1.

[545] Erling Helland Associates, "Zoning Ordinance for the City of Miami, Oklahoma," June 18, 1979, 45, prepared for the City Planning Commission, Miami, OK, OSDLA.

[546] FEMA, "Flood Insurance Study," June 1980, 1.

[547] FEMA, "Flood Insurance Study," June 1980, 4, 6, quotation on 2.

[548] FEMA, "Flood Insurance Study," June 1980, 6.

[549] FEMA, "Flood Insurance Study," June 1980, 7.

[550] FEMA, "Flood Insurance Study," June 1980, 8. See also Federal Emergency Management Agency, "Flood Insurance Study, City of Miami, Oklahoma, Ottawa County," September 30, 1988, accessed February 27, 2022, https://hdl.handle.net/2027/txa.ark:/81423/m3m022, which is almost exactly the same as the 1980 report.

[551] FEMA, "Flood Insurance Study," June 1980, 8–9.

[552] FEMA, "Flood Insurance Study," June 1980, 8.

[553] FEMA, "Flood Insurance Study," June 1980, 16.

[554] Army Corps of Engineers, "Southwestern Division Report," Energy and Water Development Appropriations for 1990, *Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives*, February 1, 1989, 101st Congress, 1st Sess. (Washington, DC: GPO, 1989), 918.

[555] Army Corps of Engineers, "Status Report, Southwestern Division," *Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives*, July 21, 1991, 102d Congress, 1st Sess. (Washington, DC: GPO, 1991), 565.

[556] "Southwestern Division Report," February 1, 1989, 871.

[557] "Status Report, Southwestern Division," July 21, 1991, 565.

[558] An Act to Provide for Improvements to the Rivers and Harbors of the United States, to Provide for the Conservation and Development of Water and Related Resources, and for Other Purposes, December 16, 2016, S. 612, PL 322, 114th Cong., 130 Stat. 1631, n,p., https://www.congress.gov/114/plaws/publ322/PLAW-114publ322.pdf.

[559] An Act to Authorize Appropriations for Fiscal Year 2020 for Military Activities of the Department of Defense, for Military Construction, and for Defense Activities of the Department of Energy, to Prescribe Military Personnel Strengths for Such Fiscal Year, and for Other Purposes, December 20, 2018, S. 1790, PL 92, 116th Cong., 1333 Stat. 1198, n.p., https://www.congress.gov/116/plaws/publ92/PLAW-116publ92.pdf.

Appendix A: Photographic Chronology of Flooding in the Neosho (Grand) River Watershed

1885

Figure 1. Neosho River flood, Burlington, Coffey County, Kansas, July 4, 1885.
Source: Wanda Christy, comp., *Coffey County*, Vol. 1, *A Glimpse into Its Past, Present, and Future!*

Pre-1892

Figure 2. Neosho River flood, Burlington, Coffey County, Kansas, n.d. [pre-1892].
Source: Coffey County Historical Society, Burlington, KS.

1898

Figure 3. Neosho River flood, near Council Grove, Morris County, Kansas, 1898.
Source: Kansas State Historical Society, Digital Collection, Image 622748.

1902

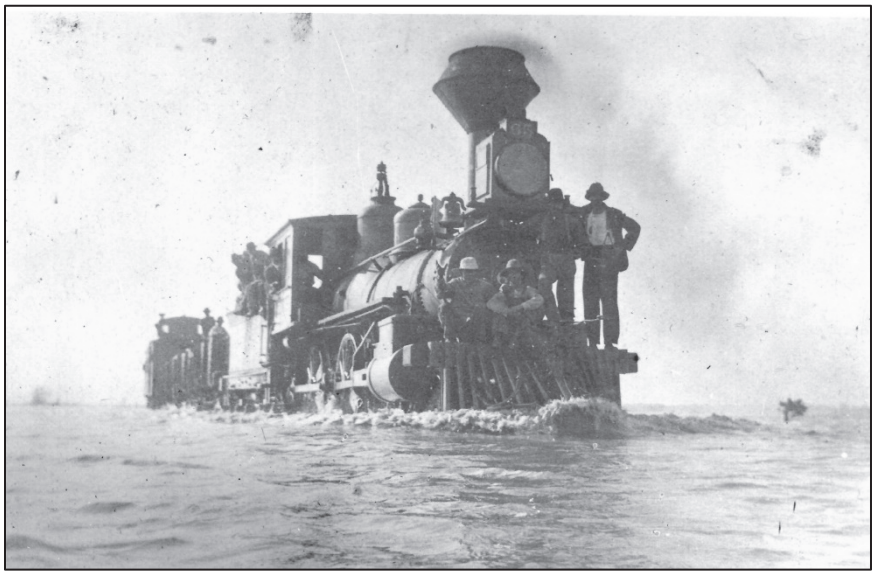


Figure 4. Neosho River flood, Hartford, Lyon County, Kansas, ca. 1902.
Source: Lyon County Historical Society, Emporia, KS.

Figure 5. Neosho River flood, Burlington, Coffey County, Kansas, June 8, 1902.
Source: Coffey County Historical Society, Burlington, KS.

Figure 6. Cottonwood River flood, Marion, Marion County, Kansas, June 3, 1902.
Source: Marion County Historical Society, Marion, KS.

Figure 7. Neosho River flood, Iola, Allen County, Kansas, ca. 1902.
Source: Allen County Historical Society, Iola, KS.

1903

Figure 8. Cottonwood River flood, Marion, Marion County, Kansas, May 29, 1903.
Source: Marion County Historical Society, Marion, KS.

Figure 9. Aftermath of May 28, 1903, Neosho River flood. Council Grove, Morris County, Kansas, photo dated June 4, 1903.

Source: Morris County Historical Society, Council Grove, KS.

1904

Figure 10. Neosho River flood, Strawn, Coffey County, Kansas, July 7, 1904.

Source: Coffey County Historical Society, Burlington, KS.

Figure 11. Neosho River flood, Iola, Allen County, Kansas, ca. 1904.
Source: Allen County Historical Society, Iola, KS

1909

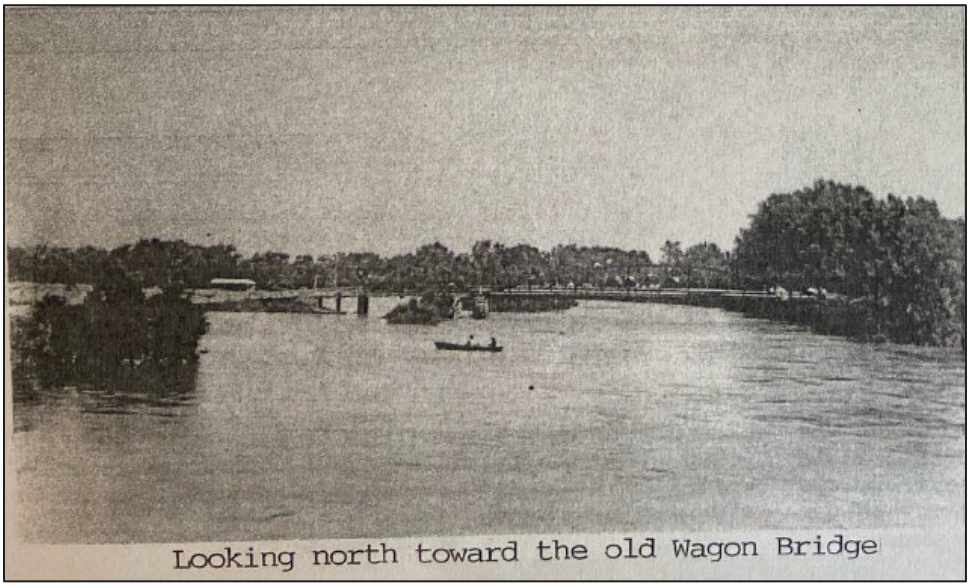


Figure 12. Neosho River flood, LeRoy, Coffey County, Kansas, July 11, 1909.
Source: Wanda Houck Christy and Della Becker Meyer, comps., "LeRoy, Kansas: The Birth of a Small Town," typed manuscript, 2014, Coffey County Historical Society, Burlington, KS.

1910

Figure 13. Cottonwood River flood, Marion, Marion County, Kansas, January 13, 1910.

Source: Marion County Historical Society, Marion, KS.

1916

Figure 14. Cottonwood River flood, Marion, Marion County, Kansas, June 11, 1916.

Source: Marion County Historical Society, Marion, KS.

1922

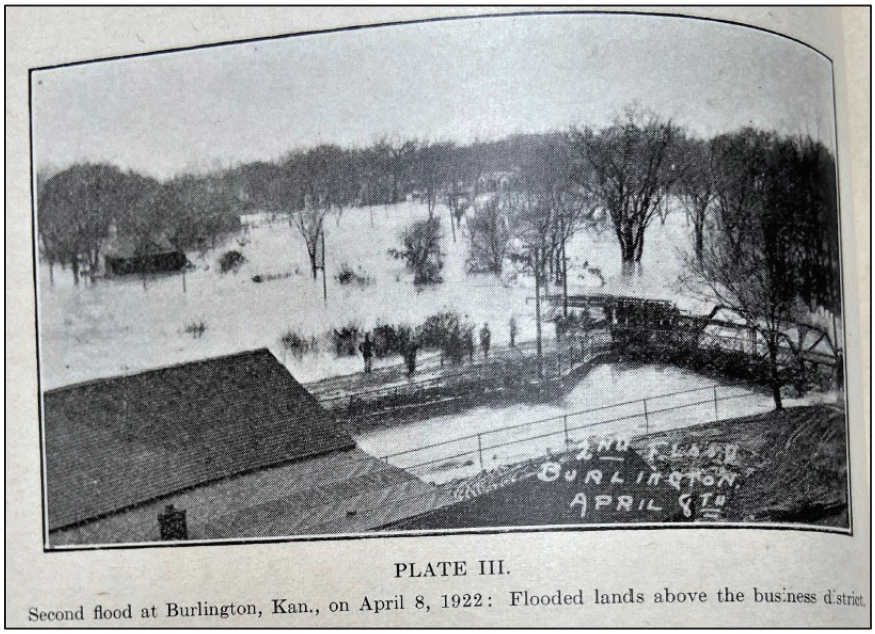


PLATE III.

Second flood at Burlington, Kan., on April 8, 1922: Flooded lands above the business district.

Figure 15. Rock Creek (Neosho River tributary) flood, Burlington, Coffey County, Kansas, April 8, 1922.

Source: Kansas Water Commission, *Third Biennial Report, 1921–1922* (Topeka, KS: Walker, 1922). On file at Kansas State Historical Society, Topeka.

Figure 16. Neosho River flood, Miami, Ottawa County, Oklahoma, April 9, 1922.[1]

Source: Dobson Museum, Ottawa County Historical Society, Miami, OK.

[1] Velma Nieberding reprinted this image in her book and noted that it was taken at the south end of Main Street showing the former entrance to the park. She refers to an "X" on the photo in her book, which is barely visible on the pillar at the left (just above the horses' rumps), and notes that this structure "is believed to be the old low-water bridge replaced in 1967" (*History of Ottawa County* [Marceline, MO: Walsworth, 1983], 193).

1923

Figure 17. Cottonwood River flood, exact location unknown, June 10, 1923.
Source: Chase County Historical Society, Cottonwood Falls, KS.

Figure 18. Neosho River flood, Council Grove, Morris County, Kansas, July 4, 1923.
Source: Morris County Historical Society, Council Grove, KS.

Figure 19. Tar Creek (Neosho River tributary) flood, Picher, Ottawa County, Oklahoma, June 14, 1923.

Source: Garnet L. Hood, scrapbook, n.d., Oklahoma History Center, Oklahoma City.

1926

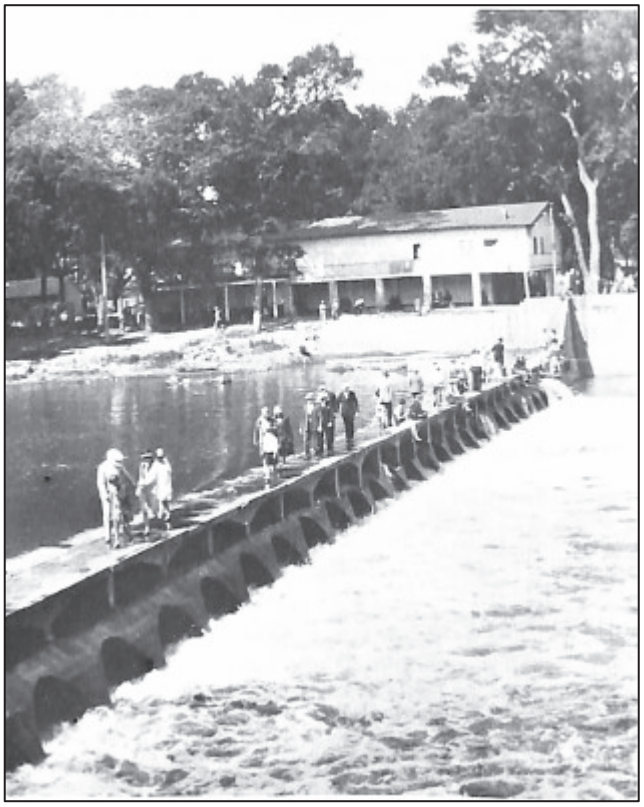


Figure 20. Low-water dam, Riverview Park, Miami, Ottawa County, Oklahoma, May 16, 1926.

Source: George and Frances Webb, eds., *Reflections, Miami, Oklahoma, 1891–1991* ([Miami, OK?]: Sooner Printing, 1991), 43. On file at Dobson Museum/Ottawa County Historical Society, Miami, OK.

Figure 21. Neosho River flood, Burlington, Coffey County, Kansas, September 12, 1926.
Source: Coffey County Historical Society, Burlington, KS.

1927

Figure 22. Neosho River flood, Council Grove, Morris County, Kansas, June 17, 1927.
Source: Morris County Historical Society, Council Grove, KS.

Figure 23. Cottonwood River flood, Cottonwood Falls, Kansas, ca. 1927.
Source: Chase County Historical Society, Cottonwood Falls, KS.

1928

Figure 24. Neosho River flood, Miami, Ottawa County, Oklahoma, June 26, 1928.
Source: *Miami News-Record*, June 26, 1928, on file at Dobson Museum, Ottawa County Historical Society, Miami, OK.

1929

Figure 25. Neosho River flood, Council Grove, Morris County, Kansas, ca. 1929. Compare with Figure 29.

Source: Morris County Historical Society, Council Grove, KS.

1935

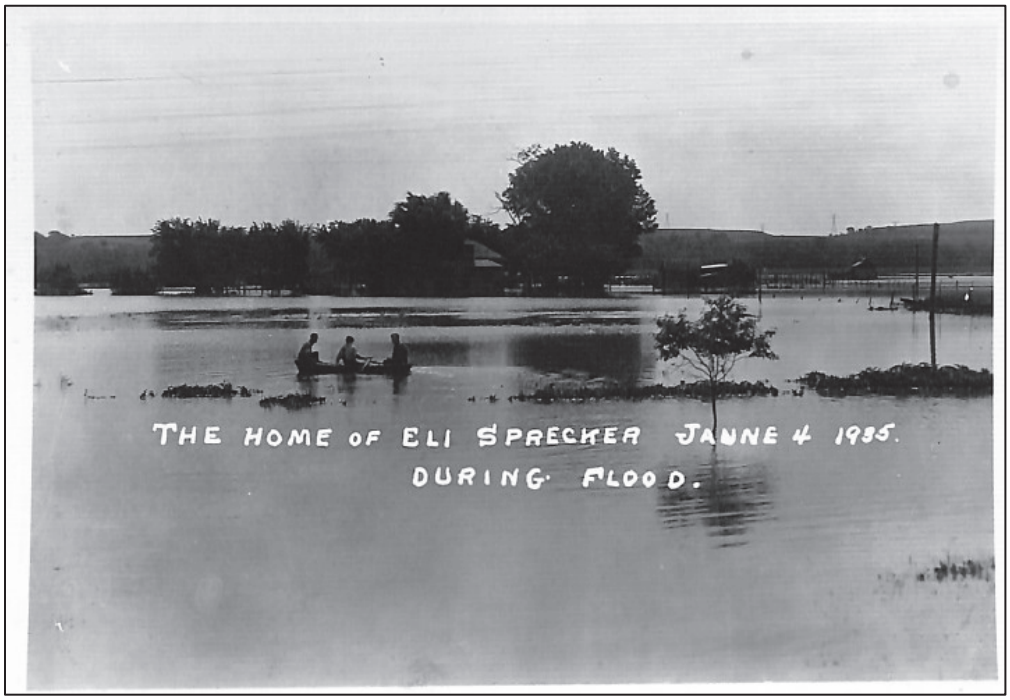
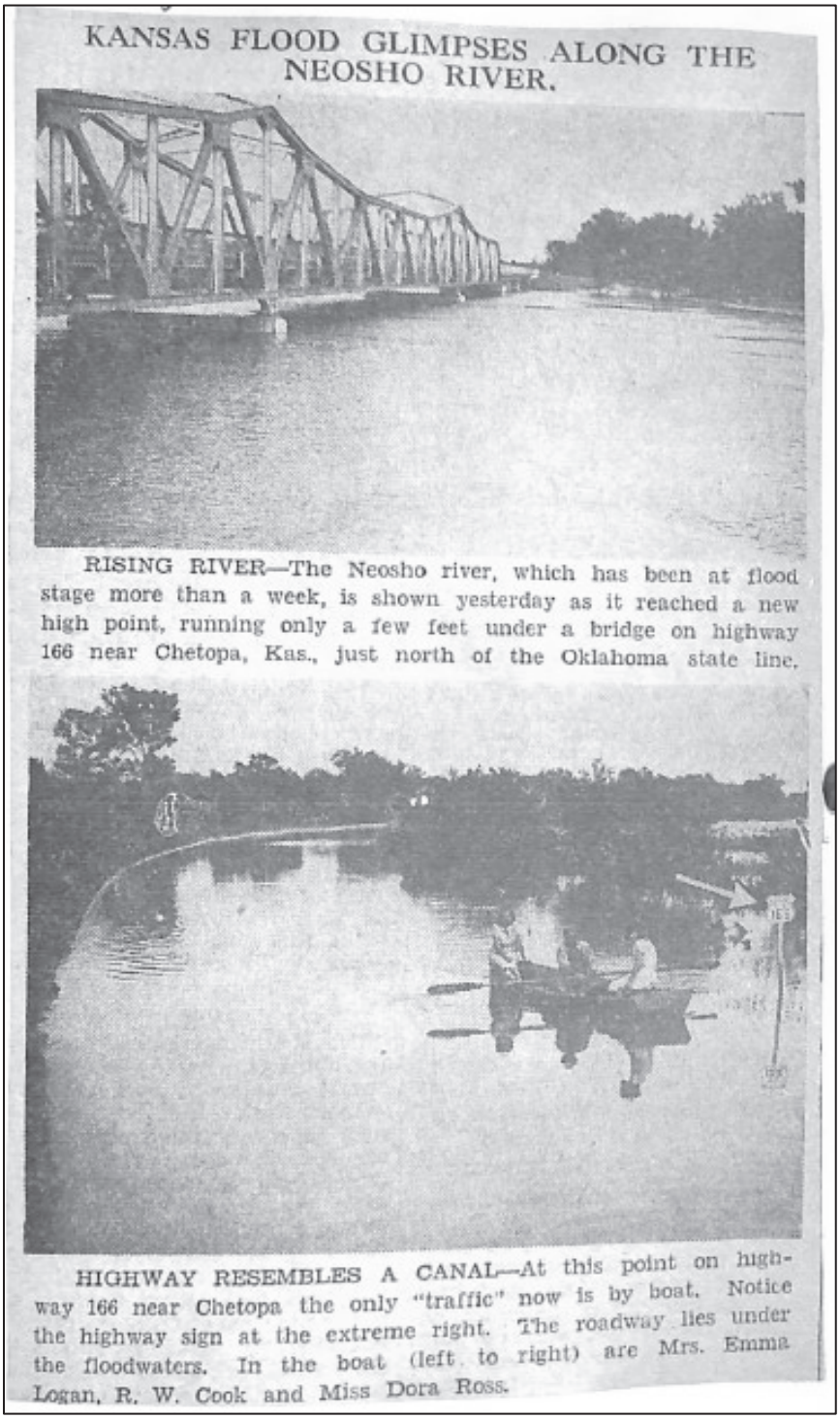


Figure 26. Neosho River flood, vicinity of Council Grove, Morris County, Kansas, June 4, 1935.

Source: Morris County Historical Society, Council Grove, KS.

1938



KANSAS FLOOD GLIMPSES ALONG THE NEOSHO RIVER.

RISING RIVER—The Neosho river, which has been at flood stage more than a week, is shown yesterday as it reached a new high point, running only a few feet under a bridge on highway 166 near Chetopa, Kas., just north of the Oklahoma state line.

HIGHWAY RESEMBLES A CANAL—At this point on highway 166 near Chetopa the only "traffic" now is by boat. Notice the highway sign at the extreme right. The roadway lies under the floodwaters. In the boat (left to right) are Mrs. Emma Logan, R. W. Cook and Miss Dora Ross.

Figure 27. Neosho River flood, near Chetopa, Labette County, Kansas, June 1, 1938.

Source: *Kansas City Star*, Flood Clippings, Vol. 8, Kansas State Historical Society, Topeka.

1941

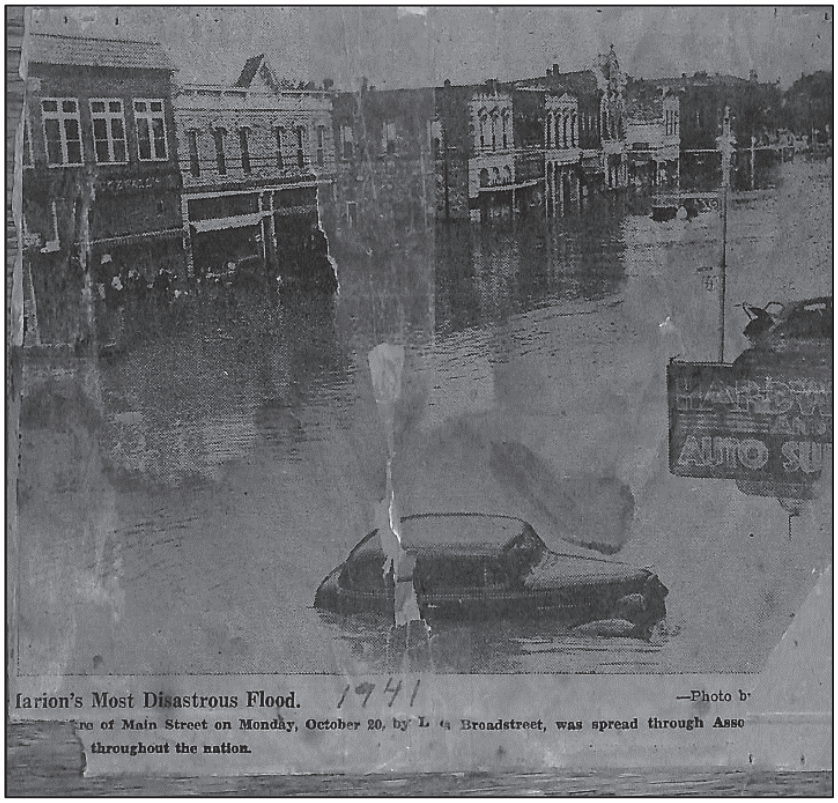


Figure 28. Cottonwood River flood, Marion, Marion County, Kansas, October 20, 1941.

Source: Marion County Historical Society, Marion, KS.

Figure 29. Neosho River flood, Council Grove, Morris County, Kansas, October 20, 1941. Compare flood level on buildings with Figure 25.

Source: Morris County Historical Society, Council Grove, KS.

1943

Figure 30. Spring River flood, Baxter Springs, Cherokee County, Kansas, May 1943. Source: Baxter Springs Historical Society, Baxter Springs, KS.

1944

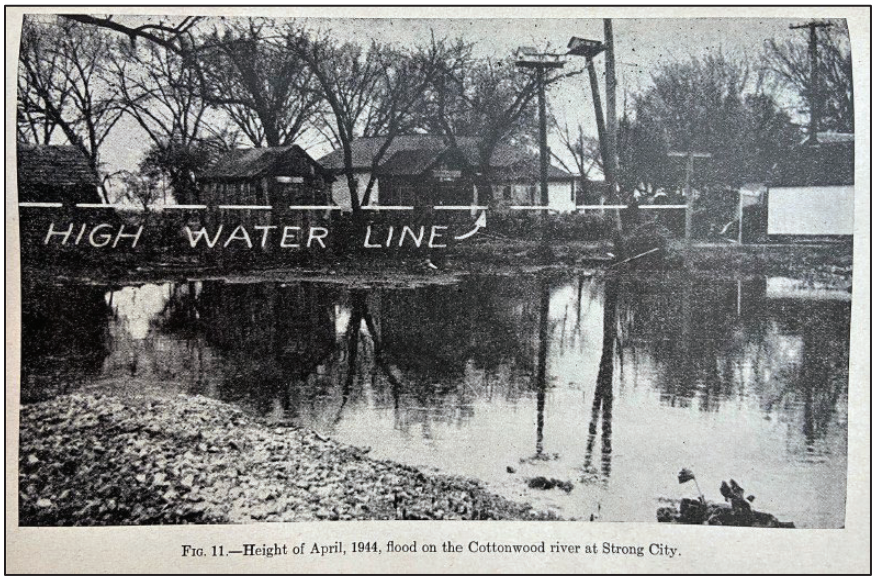


FIG. 11.—Height of April, 1944, flood on the Cottonwood river at Strong City.

Figure 31. Cottonwood River flood, Strong City, Chase County, Kansas, April 1944. Source: Kansas State Board of Agriculture, Division of Water Resources, *Report of the Kansas State Board of Agriculture, December, 1944: River Basin Problems and Proposed Reservoir Projects for a State Plan of Water Resources Development* (Topeka: Kansas State Board of Agriculture, 1945), 55.

FIG. 15.—Levee break south of Erie during April, 1944, flood.

Figure 32. Neosho River flood, Erie, Neosho County, Kansas, April 1944.

Source: Kansas State Board of Agriculture, Division of Water Resources, *Report of the Kansas State Board of Agriculture, December, 1944: River Basin Problems and Proposed Reservoir Projects for a State Plan of Water Resources Development* (Topeka: Kansas State Board of Agriculture, 1945), 60.

FIG. 16.—Breaks in levees west of St. Paul during the 1944 flood.

Figure 33. Neosho River flood, St. Paul, Neosho County, Kansas, April 1944.

Source: Kansas State Board of Agriculture, Division of Water Resources, *Report of the Kansas State Board of Agriculture, December, 1944: River Basin Problems and Proposed Reservoir Projects for a State Plan of Water Resources Development* (Topeka: Kansas State Board of Agriculture, 1945), 61.

1945

Figure 34. Neosho River flood, Burlington, Coffey County, Kansas, April 17, 1945.

Source: Coffey County Historical Society, Burlington, KS.

1948

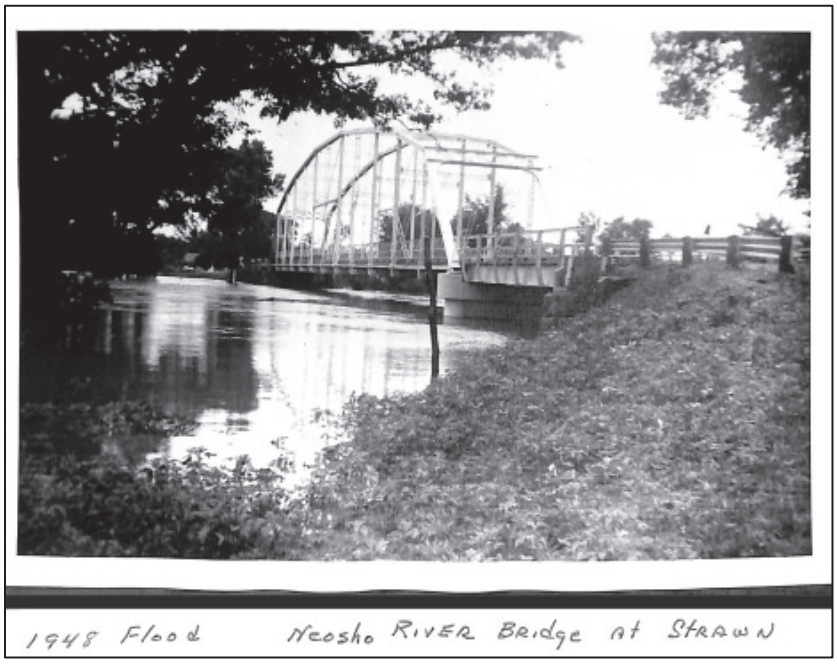


Figure 35. Neosho River flood, Strawn, Coffey County, Kansas, [July?], 1948.

Source: Coffey County Historical Society, Burlington, KS

Figure 36. Neosho River flood, Burlington, Coffey County, Kansas, July 22, 1948. Compare flood level on buildings with Figure 42.

Source: Coffey County Historical Society, Burlington, KS.


24, 1948. * 3

WET GROUNDS, NO GAME TODAY—Floodwaters from the swollen Neosho river today left the baseball park at Iola, Kas., looking much more like a haven for water polo enthusiasts than for followers of the diamond sport. The park was left a sea of water marked only by the fences and bleachers by the record flood, which caused damage estimated at nearly 1 million dollars to crops and property in the area.

Figure 37. Neosho River flood, Iola, Allen County, Kansas, July 24, 1948.

Source: Allen County Historical Society, Iola, KS.

Figure 38. Neosho River flood, Kansas Gas & Electric plant, east of Parsons, Labette County, Kansas, July 25, 1948.

Source: Labette County Historical Museum, Parsons, KS.

1949

Figure 39. Neosho River floodwaters turned into ice floes, Council Grove, Morris County, Kansas, February 12, 1949.

Source: Morris County Historical Society, Council Grove, KS.

1951

Figure 40. Cottonwood River flood, Marion, Marion County, Kansas, [July] 1951.
Source: Marion County Historical Society, Marion, KS.

Figure 41. Neosho River flood, Council Grove, Morris County, Kansas, July 11, 1951.
Source: Morris County Historical Society, Council Grove, KS.

Figure 42. Neosho River flood, Burlington, Coffey County, Kansas, July 1951. Compare flood level on buildings with Figure 36.

Source: Coffey County Historical Society, Burlington, KS.

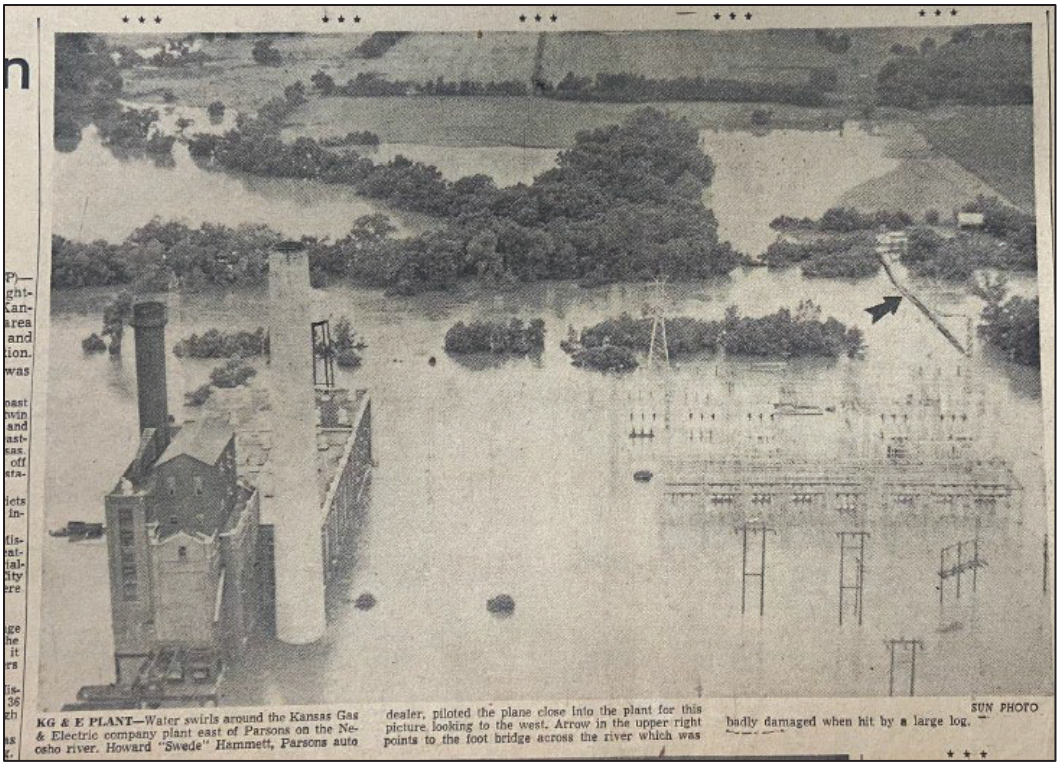


Figure 43. Neosho River flood, Kansas Gas & Electric plant east of Parsons, Labette County, Kansas, July 14, 1951.

Source: Labette County Historical Museum, Parsons, KS.

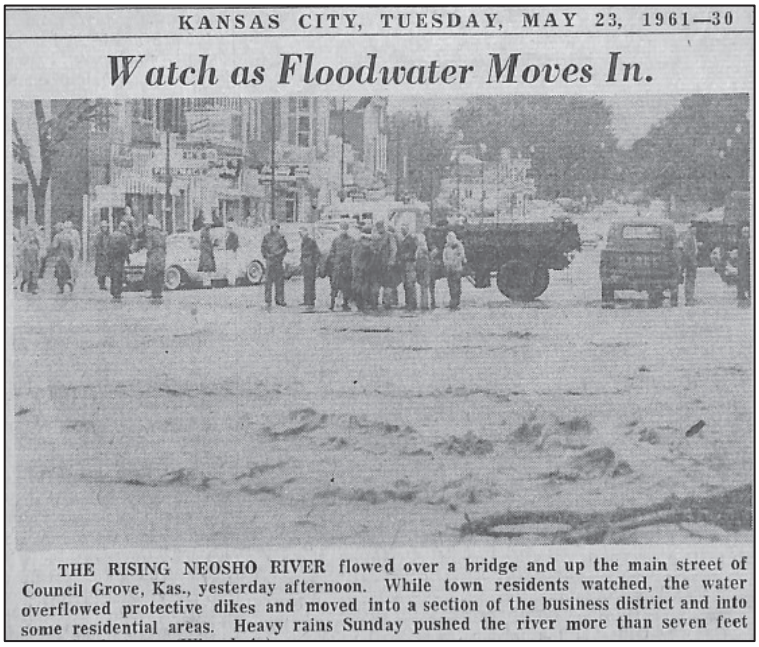
Figure 44. Neosho River flood, Miami, Ottawa County, Oklahoma, July 1951. Source Dobson Museum, Ottawa County Historical Society, Miami, OK.

1957

Figure 45. Neosho River flood, Commerce, Ottawa County, Oklahoma, May 26, 1957.

Source: Dobson Museum, Ottawa County Historical Society, Miami, OK.

1961


KANSAS CITY, TUESDAY, MAY 23, 1961—30

Watch as Floodwater Moves In.

THE RISING NEOSHO RIVER flowed over a bridge and up the main street of Council Grove, Kas., yesterday afternoon. While town residents watched, the water overflowed protective dikes and moved into a section of the business district and into some residential areas. Heavy rains Sunday pushed the river more than seven feet

Figure 46. Neosho River flood, Council Grove, Morris County, Kansas, May 23, 1961.

Source: Morris County Historical Society, Council Grove, KS.

1964

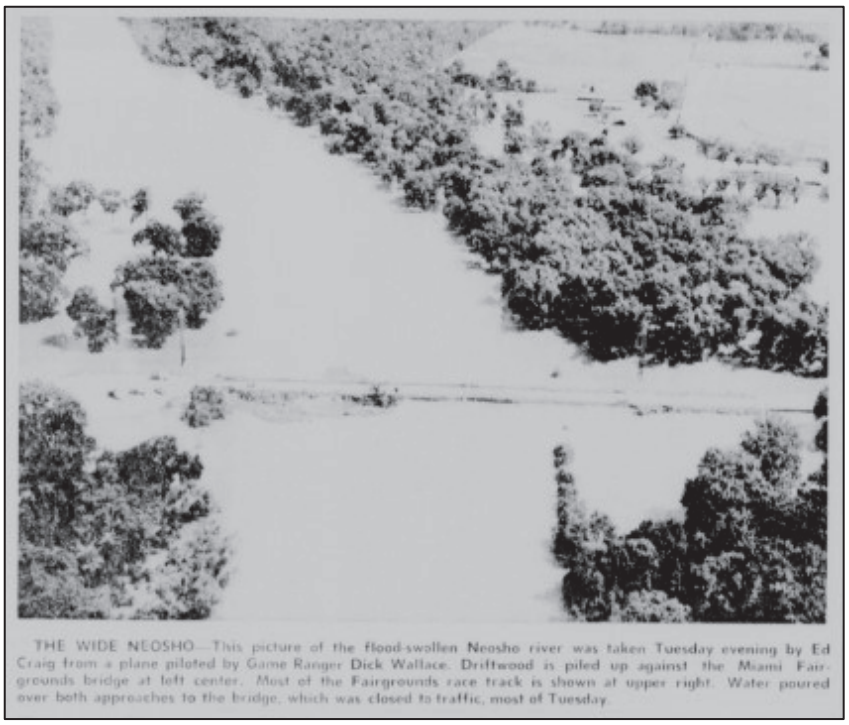
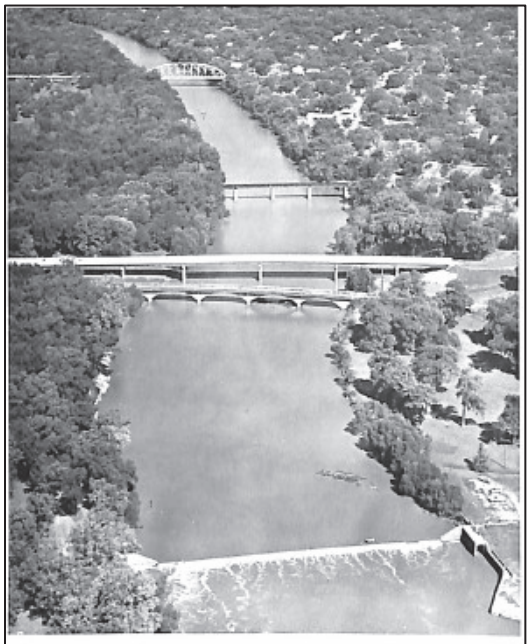

THE WIDE NEOSHO—This picture of the flood-swollen Neosho river was taken Tuesday evening by Ed Craig from a plane piloted by Game Ranger Dick Wallace. Driftwood is piled up against the Miami Fairgrounds bridge at left center. Most of the Fairgrounds race track is shown at upper right. Water poured over both approaches to the bridge, which was closed to traffic, most of Tuesday.

Figure 47. Neosho River Flood, Miami, Ottawa County, Oklahoma, June 17, 1964.

Source: *Miami News-Record*, June 17, 1964.

1967



The white ribbon in the center of this photo was in 1967 the new bridge over the Neosho River in southern Miami. It was just upstream from the old fairgrounds bridge it replaced. Further upstream is the railroad bridge and further still the U.S. 69 span. In foreground, water pours over the low-water bridge in Riverview Park.
(Ed Craig)

Figure 48. Bridges and low-water dam on the Grand (Neosho) River, Miami, Ottawa County, Oklahoma, ca. 1967.

Source: George and Frances Webb, Eds., *Reflections, Miami, Oklahoma, 1891–1991* ([Miami, OK?]: Sooner Printing, 1991), 107. On file at Dobson Museum/Ottawa County Historical Society, Miami, OK.

1974

THE MAIL GOES THROUGH—Neither rain, snow, sleet nor Neosho flood waters stopped postman B.G. (Bill) Hampton from his appointed rounds this morning. Here he utilizes the last bit of dry land to reach the front steps at 119 Fifth southwest.

Figure 49. Neosho River flood, Miami, Ottawa County, Oklahoma, March 12, 1974.

Source: *Miami News-Record*, March 12, 1974.

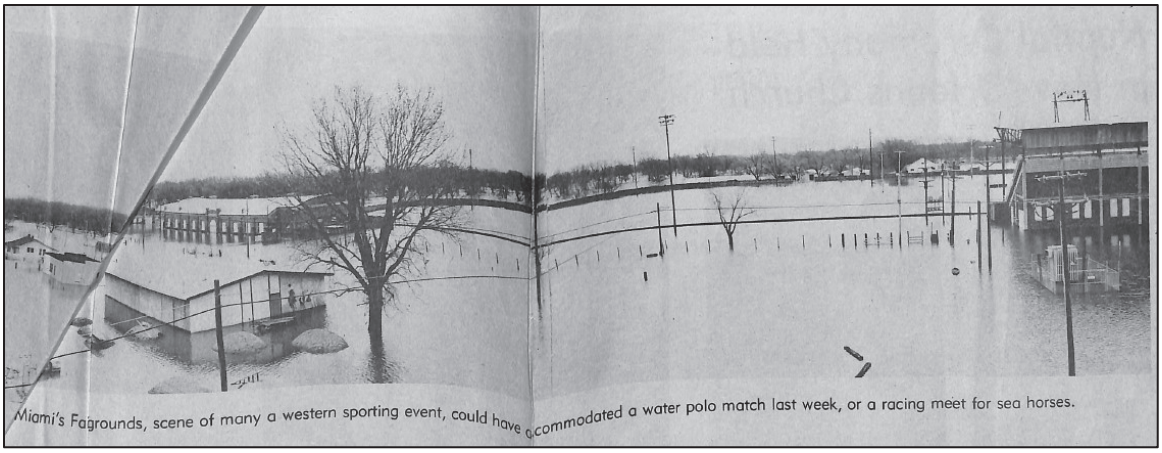


Figure 50. Neosho River flood, Miami, Ottawa County, Oklahoma, ca. March 12, 1974.
Source Ottawa County Historical Society, Dobson Museum, Miami, OK.

1986

Figures 51. Neosho River flood, Miami, Ottawa County, Oklahoma, October 1986.

Source: Miami Kiwanis Club, comp., *The Flood of '86* (Miami, OK: [Kiwanis, 1987?]). On file at Dobson Museum/Ottawa County Historical Society, Miami, OK.

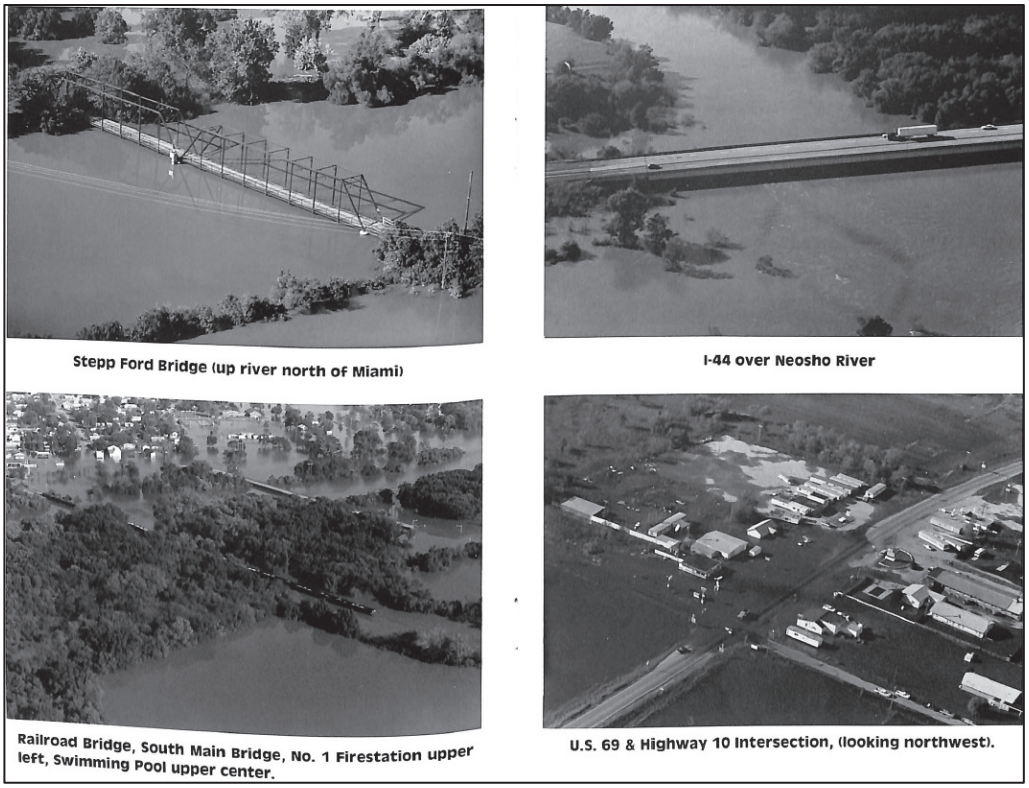


Figure 52. Neosho River flood, Miami, Ottawa County, Oklahoma, October 1986.

Source: Miami Kiwanis Club, comp., *The Flood of '86* (Miami, OK: [Kiwanis, 1987?]). On file at Dobson Museum/Ottawa County Historical Society, Miami, OK.

2007

Figure 53. Neosho River and Tar Creek flood, Miami, Ottawa County, Oklahoma, July 2007. Note the Miami softball complex (blue roofs, *left*) and fairgrounds (long buildings, *middle*).

Source: *Oklahoma Country*, Fall 2007.

2019

Figure 54. Neosho River and Tar Creek flood, Miami, Ottawa County, Oklahoma, June 2019.
Source: Laurie Sisk, *Joplin Globe*.

Appendix B. Chronology of Flooding in the Neosho (Grand) River Watershed

Neosho River Watershed Flooding Chronology

Year	Event
1826	Kansas climatologist T. B. Jennings described flooding on the Neosho in 1826 as "**carrying away wigwams, houses, and gathered and ungathered crops**."
1836	According to accounts gathered in the Coffey County Historical Society,(CCHS) Sac and Fox chief Soconut, "**swam his horse from bluff to bluff** (Indian Hill to Ottumwa Hill)" during the 1836 Neosho flood.
1844	Superintendent Thomas H. Harvey arrived at the Osage Sub Agency on May 22, 1844, where he found the Neosho, "very high, having overflowed its banks and covered the bottoms to a considerable depth, . . . **in most places more than a mile wide**."
1854	According to residents of Osage Mission (later St. Paul), the flood that year was a "**record breaker**."
ca. 1855-1856	"Spring rains sent the Neosho River out of its banks, flooding lowlands all through the area that was to be colonized [by a group of vegetarians." (*Iola Register*)
1857	A compilation of historical information from Emporia and Lyon Counties, Kansas, reported, "**A destructive flood swept down the Neosho**, carrying with it wigwams, houses and crops."
1865	*Neosho County Journal (NCJ)* described the Neosho as "very high."
1866	Neosho Indian Agent, G. C. Snow, reported that the Quapaws had suffered "severely" in 1866 "for food and clothing. Their crops were quite **all destroyed last year by the floods**"
1867	Neosho "overflow" in early July. *(NCJ)*
1868	Neosho "**overflowed for several days** during the first part of September." *(NCJ)*
1869	Neosho"**rose twenty feet in nine hours** and washed the ferry boats away." July saw the region "**submerged with the highest water in fifteen years**," with the Neosho "**rushing along over a stretch a mile in width**." *(NCJ)*
1870	A "small flood" occurred in late October. *(NCJ)*
1871	In July, the Neosho valley was flooded. *(NCJ)*
1873	Neosho was "very high" and had flooded the Osage Mission fairgrounds. *(NCJ)*
1875	A "small flood" occurred in August. *(NCJ)*
1876	Another "small flood" occurred in May. *(NCJ)*
1877	May 1877 flood was one "which makes the traditional oldest inhabitant shrug his shoulders and scratch his head, and reluctantly admit that he '**never did saw anything like it in these parts afore**.'" *(Marion County Record)*
1878	The Neosho **washed out the railroad track** "again." *(NCJ)*
1881	Another flood on the Neosho. *(NCJ)*
1884	"Big flood; no mail for four days" in May and another Neosho overflow in October. *(NCJ)*
1885	A 1948 Kansas State Board of Agriculture climate report noted that the July 1885 flooding of the Neosho was "**one of the greatest on record**" at Burlington and "**also close to the highest water ever known**" at Oswego.
1888	Chanute resident and weather watcher, Henry Stoelzing, reported a Neosho flood that year.
1889	Neosho "**was five miles wide at Humboldt**" during the 1889 flood. *(Spirit of Kansas)*

Neosho River Watershed Flooding Chronology

Year	Event
1890	Three separate Neosho floods at Chanute in 1890, with the highest in November. (Stoelzing)
1891	***City of Miami founded within Indian Territory.***
1891	According to a history of Emporia and Lyon Counties, in June 1891, the water was **within three inches of the 1877 high mark**.
1892	***First levees built on the Neosho in Neosho County.***
1892	Neosho had "**been out of its banks for the past week, and within two feet of the 1885 marks**. Much wheat has been destroyed." *(NCJ)*
1894	Neosho was "very high" that spring. *(Terral Times)*
1895	The U.S. Army Corps of Engineers (Corps) called the 1895 flood, "**one of the greatest floods**" in the history of the Neosho River valley. Originating in southern Kansas, the flood "was constantly augmented in crest flow as it traveled downstream throughout the Oklahoma reach, where it caused exceptionally high stages at Wyandotte as well as at Wagoner." **The Corps estimated the peak discharge at Grove at 250,000 cfs**.
1896	"Rising" Neosho was expected to cause "much damage" at Humboldt in late May. *(Tecumsah Herald)*
1898	"Average-size flood" lasted approximately a week in May. *(NCJ)*
1899	Neosho was "out of its banks . . . and steadily rising," with levees breached "in several places," the bottom lands flooded "for miles up and down the river," and the water **nearly reaching the height of the 1885 flood**. *(Kansas City Star)*
1900	Flood in Chanute lasted seven days in September. (Stoelzing)
1901	***St. Louis–San Francisco Railway ("Frisco") railroad truss bridge constructed over the Neosho in Miami.***
1901	As reported in a local history, on April 13 the Cottonwood River south of Emporia was a mile wide and **the Neosho up 22 feet**.
1902	Neosho "reached the highest mark this morning and is still rising. . . . The river is a **mile wide**." *(Oklahoma City Weekly Times Journal)*
1903	"Floods in Indian territory have delayed traffic on the railroads seriously." Neosho was **three miles wide** in some locations and "covered with water [up] to ten feet deep. The Neosho river above Miami, I.T. has covered the prairie farms for miles south of the river's main channel." *(Guthrie Daily Leader)*
1904	Neosho inundated the new Miami toll bridge with "three feet of water. The freshet **ruined a thousand acres of corn**. Rural mail wagons cannot get one mile from the post office. The water reached within two feet of the Frisco bridge." *(Norman Democrat Topic)*
1905	"One of the heaviest rains known to the oldest settlers visited this section of the country Friday night. As a result, both the Neosho and Spring rivers were out of their banks." *(Miami Record-Herald [MRH])*
1906	Heavy rains "caused flood stages in a considerable portion of the Neosho River." *(Monthly Weather Review [MWR])*
1907	Neosho overflowed from January 18–24, 1907. *(NCJ)*
1908	**Flood stages at almost every location on the Neosho between Iola and Fort Gibson**. *(MWR)*
1909	Neosho and Cottonwood Rivers "**broke all previous records**" for flooding during the winter season. *(Topeka Capital)*

Neosho River Watershed Flooding Chronology

Year	Event
1910	January floods again "**broke all records**" for winter flooding with ice dams causing flooding in the streets of Strawn. *(CCHS)*
1911	Flood at Lowell on the Spring River "**was worst ever experienced** at that place with the water nearly running over the dam." *(Galena Evening Times)*
1912	Neosho at flood stage "from Oswego southward, causing damage to crops and enforced suspension of business," and an estimated loss of $40,000. *(MWR)*
1912	***Missouri, Oklahoma & Gulf railroad bridge constructed over the Neosho.***
1915	Neosho on a "week's spree, a wild and reckless rampage, spreading ruin in its wake, overflowing its banks and surrounding territory. . . . **The city park is completely inundated**." *(MRH)*
1916	In June, the Neosho had been "in flood throughout its entire course in Kansas during the month. **In duration the flood was one of the longest on record**." *(MWR)*
1917	Tar Creek "on a rampage." *(MRH)*
1918	Heavy rain caused flooding in low places in the city, "and in many sections yards and streets were submerged. Water flowed over sidewalks in streams even in the high residence sections." *(MRH)*
1919	Workers building a new railroad bridge at Miami were discouraged from starting the job until "after the usual floods . . . had come and gone." *(MRH)*
1920	Neosho and Spring Rivers and Tar Creek, "[were] extremely high and [had] inundated the lowlands." (*MRH*)
1921	At their own peril, "hundreds of people" gathered at the South Main St. bridge to watch water "**14 feet above normal**" and a log jam wash out the approaches to the new bridge over the Neosho. *(MRH)*
1922	Due to heavy rains and flooding in Kansas, the Neosho was once again out of its banks at Miami where water "**entirely covered Riverview Park . . . and was flowing approximately two feet deep through the auditorium**." *(MRH)*
1923	1923 was a year of "outstanding floods" on the Neosho in both Kansas and Oklahoma brought on by "**four weeks of almost continuous and frequently excessive rains**" and with crest stages "**higher than any previously recorded**." *(MWR)*
1924	***Low dam at Riverview Park in Miami completed.***
1924	Crews repairing damages caused by fall and winter floods to the low dam and dance pavilion at Riverview Park were again facing setbacks due to the Neosho's rapid rise that spring. *(Miami News-Record [MNR])*
1926	"**Disastrous floods**" on the Neosho. *(MWR)*
1927	In April, the Neosho **rose 24 feet in the Miami area**, inundating highways and railroads, **causing 22 deaths**, and leading to an estimated half million dollars in damage. *(MNR)*
1928	Neosho was out of its banks in Iola and "from two to three feet over its banks in Coffey county, Parsons, and south to the Oklahoma line." *(Topeka Journal)*
1929	Neosho "flooding most of the bottom farms and causing considerable damage to growing crops." *(MNR)*
1930	June saw flood stages on the Neosho at Oswego and Fort Gibson. *(MWR)*
1931	Late fall rains caused "moderate" floods on the Neosho, which achieved flood stages at Le Roy, Iola, Chanute, Parsons, and Oswego. *(MWR)*
1932	"Young men with a knack for doing dangerous tricks" were riding logs on the Neosho over the "inundated" low dam in Miami "during its perilous flood stage." *(Miami Daily News-Record [MDNR])*

Neosho River Watershed Flooding Chronology

Year	Event
1933	Neosho flood waters had blocked highways in the Miami area in three directions; Ottawa County was expected to experience "**its highest water in several years**." *(MDNR)*
1935	***State of Oklahoma created the Grand River Dam Authority (GRDA).***
1935	***In 1935, the "largest truss span in Oklahoma" at the time, according to a history of Ottawa County, was completed over the Neosho at Miami (location of current Rte. 66 bridge at approximate corner of E and 3rd Streets SW).***
1935	"Disastrous floods" occurred on the Neosho. (Kansas State Planning Board)
1936	***Congress enacted the Flood Control Act of 1936, which authorized several levee projects along stretches of the Neosho in Kansas, as well as "preliminary examinations and surveys for flood control" at "Pensacola Reservoir, Oklahoma."***
1937	Two "moderate overflows" of the Neosho. *(MWR)*
1938	***Congress enacted the Flood Control Act of 1938, which authorized many projects, arguably including the Pensacola Dam, and required the Secretary of War to acquire title to all lands necessary for the authorized dam and reservoir projects.***
1938	"Big flood" of the Neosho reported in numerous news outlets in Kansas and Oklahoma.
1939	***The Federal Power Commission issued the original license for the Pensacola Project to GRDA.***
1939	***Iola levee operational.***
1940	***Congress enacted a special statute that granted GRDA title to all federal and Native American–owned lands in the Project area, up to elevation 750 feet.***
1940	***Pensacola Dam completed.***
1941	**Floods were "the rule, rather than the exception," in the Neosho watershed** from April to October, where flood stages were "reached or exceeded . . . every month during this period except in May." *(MWR)*
1941	***Congress enacted the Flood Control Act of 1941, which directed the Corps to provide flood control at Pensacola Dam.***
1941	***FDR's Executive Order 8944 directed FWA administrator to take over Pensacola Dam for the war effort.***
1942	On the Cottonwood and Neosho, "crest stages were generally 3 to 5 feet above bankfull" in June "with the **overflow lasting about a week**." *(MWR)*
1943	***1901 Frisco railroad truss bridge replaced with another with no trusses.***
1943	According to FEMA, the Neosho "rose to its crest stage above bankfull in 76 hours at an average rate of 0.13 foot per hour with a maximum rate of 0.6 foot per hour and remained above bankfull stage for about 11 days."
1944	Flooding broke "all known records at Chanute, Erie, and St. Paul, and at the highway bridge east of Parsons," with the Neosho "**one vast sea, in some places four or five miles wide**." *(Parsons Sun)*
1944	***Congress enacted the Flood Control Act of 1944, which again granted the Corps all flood-control responsibilities at the Project.***
1945	"Big flood" washed out a railroad track near St. Paul and water from the Neosho overtopped levees. *(NCJ)*
1946	Neosho reached flood stage at Oswego in January. *(MWR)*
1946	***Congress enacted special legislation that returned the Pensacola Hydroelectric Project to GRDA following World War II, and in doing so, confirmed ownership responsibilities related to the conservation and flood pools.***

Neosho River Watershed Flooding Chronology

Year	Event
1948	According to gaging information, the two crests that occurred at Commerce in 1948 were the **third- and fourth-highest known floods**, respectively, in order of magnitude at that location (prior to 1969).
1949	"Minor flooding along the Neosho at various locations." *(MWR)*
1950	The Corps reported that heavy rainfall caused a spring flood on the Neosho.
1951	U.S. Geological Survey reported that the Neosho "reached **flood heights far in excess of any previously known** as result of heavy storms."
1954	According to a 1979 consultant's report on the Miami Area Comprehensive Plan, "major floods causing **extensive damage to Miami development** occurred."
1955	Gaging information recorded the Neosho at Commerce above the 15-foot flood stage.
1957	"Swollen Neosho river waters spread over farmlands and roads." (*MNR*).
1958	"Neosho was flooding from Burlington, KS, to its mouth, with four to five feet of flooding lowlands in Miami." *(Tulsa Tribune)*
1959	Flooding on the Neosho. (CCHS)
1960	Another Neosho flood. (CCHS)
1961	Gaging information recorded that the crest at Commerce was the **fifth-highest known flood in order of magnitude** at Commerce (prior to 1969).
1962	Four separate floods on the Neosho. (CCHS)
1964	***Council Grove Dam/Reservoir completed.***
1964	High floodwaters at the Third Ave. bridge and **Miami fairgrounds had been flooding for a few days**. *(MNR)*
1965	***John Redmond (Strawn) Dam/Reservoir completed.***
1965	Another Neosho flood. (CCHS)
1967	***New "fairgrounds" bridge constructed over Neosho at Miami immediately upstream from the 1921 concrete arch bridge, which it replaced.***
1967	Neosho crested near Commerce above flood stage. *(MNR)*
1968	***Marion Dam/Reservoir completed.***
1969	In Miami, the Neosho **flooded Riverview Park and closed the park road**. *(Daily Oklahoman)*
1970	"Neosho rampage." *(Parsons Sun)*
1971	"Minor flooding" on Neosho. *(Tulsa World)*
1972	Neosho 2 feet over flood stage at Commerce. *(Daily Oklahoman)*
1973	Neosho "did the expected" and overflowed into Labette County lowlands. *(Parsons Sun)*
1974	Due to flooding, "Miami's Fairground . . . could have accommodated a water polo match last week, or a racing meet for sea horses." (clipping, Dobson Museum)
1975	Neosho receding after a "hit-run" flood of from 3 to 4 feet. *(Parsons Sun)*
1976	"**At least 3 bridges across Neosho and Spring in Ottawa County were blocked**" due to flooding. *(Tulsa World)*
1977	"High water brought a halt" to construction near the Miami fairgrounds. *(MNR)*
1978	Neosho 3 feet over flood stage at Commerce and expected to crest at 5 feet over flood stage. *(Tulsa World)*

Neosho River Watershed Flooding Chronology

Year	Event
1979	Neosho "spilling out of its banks . . . gorged by rain concentrations." *(Parsons Sun)*
1980	Neosho "takes generous swath of land near Chanute." *(Wichita Eagle)*
1982	"Pumped up by heavy rains," the Neosho overflowed in Labette and Neosho Counties; more flooding expected into NE Oklahoma. *(Parsons Sun)*
1985	Ottawa County declared a disaster area due to flooding. Neosho **crested 13 feet above flood stage at Miami, damaging 300 homes and dozens of businesses**. *(Daily Oklahoman/Times)*
1986	"**One of the worst floods ever experienced in Miami** resulted from days of record-setting rainfall." (Miami Kiwanis Club pamphlet)
1987	***Congress enacted Public Law No. 100-202, which directed the Corps to investigate solutions to flooding problems in the City of Miami, including the adequacy of the United States' easements for flood control at the Pensacola Project.***
1987	Runoff from Tar Creek flooded streets and "at least 10 houses" in Miami and the Neosho was expected also to flood. *(Tulsa World)*
1988	Neosho crested at Chanute 7.9 feet above flood stage. *(Chanute Tribune)*
1989	Neosho flooding near Parsons and at Oswego; at Chetopa, "**most of the city park near the banks of the Neosho was standing under water**." *(Parsons Sun)*
1990	Neosho caused the flooding of Miami's Riverview Park. *(Daily Oklahoman)*
1992	Rain "forced the Neosho River from its banks, causing flooding" and closing streets in Miami. *(Daily Oklahoman)*
1992	***FERC relicensed the Pensacola Project for a new 30-year term, maintaining that "The Grand Lake flood pool . . . is controlled by the Corps for flood control storage, as mandated by the Flood Control Act of 1944, and not subject to Commission authority."***
1993	Neosho crested 9.5 feet above flood stage at Miami, **covering nearly two dozen city streets with water**." *(Daily Oklahoman)*
1994	"In Miami, **30–35 homes were evacuated** as the Neosho River inched out of its banks . . . eight months ago, a flood prompted the evacuation of the same homes." *(Tulsa World)*
1995	Neosho floodwaters **closed State Highway 125 near Miami fairgrounds**. *(Grove Sun)*
1996	***Congress enacted the Water Resources Development Act of 1996, which directed the Corps to undertake a real estate adequacy analysis at the Pensacola Project and authorized the Corps to acquire additional acreage from willing sellers.***
1997	"Neosho River spilling out of its banks near Commerce." *(Daily Oklahoman)*
1998	"**Major flooding** along the Neosho River near Oswego." *(Iola Register)*
2000	***Congress enacted the Water Resources Development Act of 2000, which directed the Corps to purchase easements for lands adversely affected by backwater flooding at the Pensacola Project.***
2000	"Neosho "**came within a foot of homes" in Miami**. *(Iola Register)*
2002	"A two-day total of 2.84 inches of rain at Miami helped push the Neosho River out of its banks, sending it six feet above flood stage." (Oklahoma Climatological Survey)
2004	Neosho and Spring both above flood levels, "cutting off access to low-lying areas." *(Oklahoman)*
2007	Neosho **overflow "engulfed" Miami, flooding over 600 homes in Miami alone**. (Oklahoma Farm Bureau)

Neosho River Watershed Flooding Chronology

Year	Event
2015	"Moderate" flooding of Neosho near Commerce. (National Weather Service)
2018	***Congress enacted the Water Infrastructure Improvements for the Nation Act, which directed the Corps to convey to GRDA all property interests of the United States at the Pensacola Project, while retaining the Corps' exclusive jurisdiction over flood control.***
2019	Neosho had its eighth-highest crest at Commerce since 1940 with **Miami hit hard by a "record-breaking" flood**. *(Joplin Globe)*
2019	***Congress enacted the National Defense Authorization Act for Fiscal Year 2020, which Congress confirmed the Corps' exclusive jurisdiction over flood control at the Pensacola Project, prohibited other agencies from regulating water surface elevations, and defined the FERC-licensed project to consist only of lands within the then-current Project boundary.***