The Secret History of the Earliest Locks and Dams

"Now as to the duplication of locks and dams; two instead of one. Connected with this matter is a secret history, upon which I proceed as discreetly as may be to cast a little light. There is the city of St. Paul, and there is the city of Minneapolis. . . . Enough said. There are two locks."

—Maj. Francis R. Shunk, U.S. Army Corps of Engineers[1]

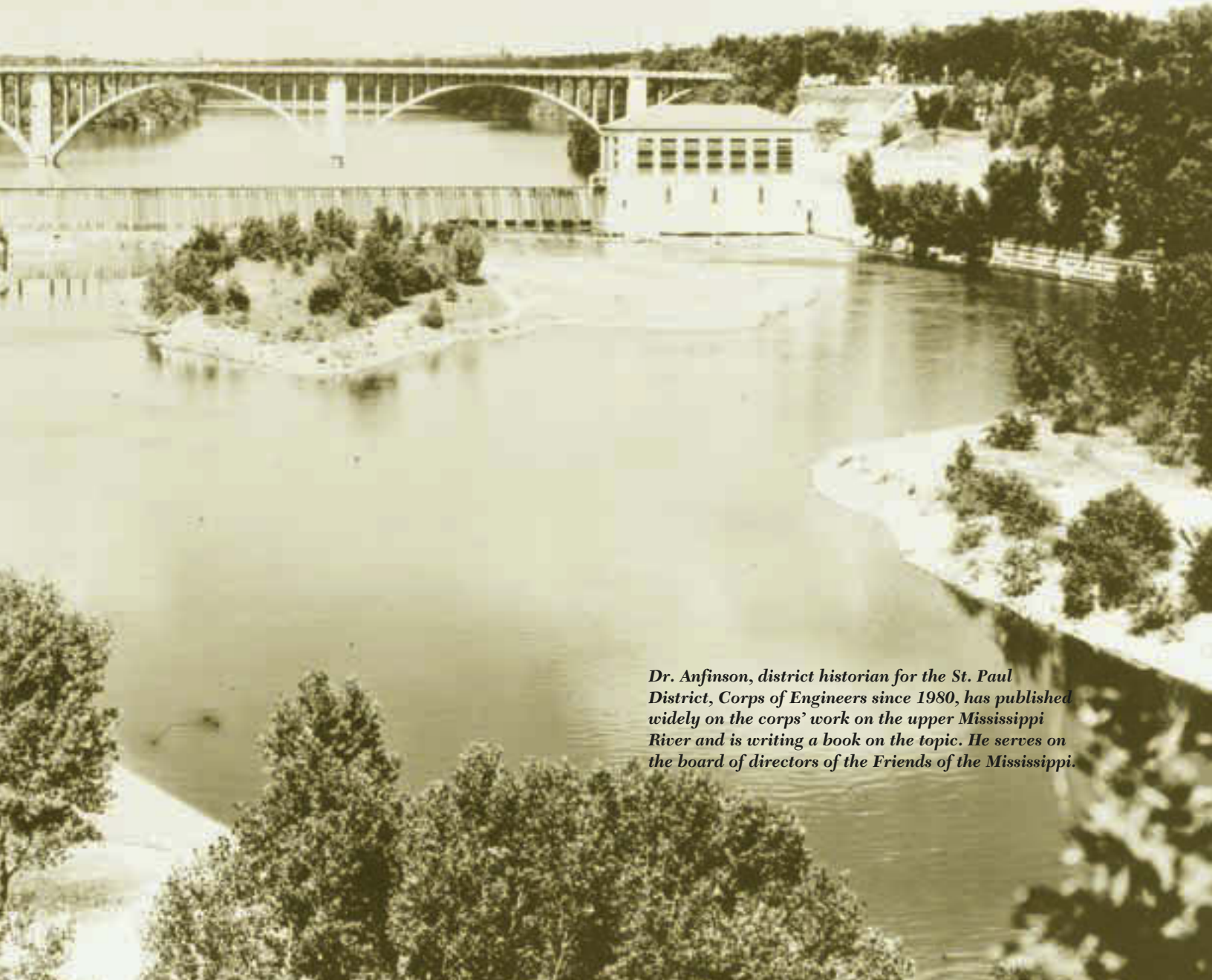
View looking up the Mississippi River near the Twin Cities' Lock and Dam No. 1, August 1939

Mississippi's

John O. Anfinson

Opened in 1907, Lock and Dam No. 2 was the first to straddle the Mississippi River, bringing navigation some four miles farther upstream to Minneapolis. Known as the Meeker Island Lock and Dam, it lay just above what is now the Lake Street Bridge between Minneapolis and St. Paul. Some three miles downstream, the U.S. Army Corps of Engineers was building its twin, Lock and Dam No. 1. But in 1909, when the engineers had nearly completed Lock No. 1 and were about to begin its dam, Congress directed them to destroy Lock and Dam No. 2 and revamp No. 1 to capture the river's hydroelectric power. When finally completed in 1917,

[1] Shunk to James C. Haynes, Feb. 17, 1909, U.S. Army Corps of Engineers, St. Paul District Records, St. Paul.



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Dam No. 1's reservoir submerged most of Lock and Dam No. 2's remains. (The lock walls are still visible if the water is not too high.)[2]

Historians and men of the times like Maj. Shunk have focused on the intense rivalry between St. Paul and Minneapolis as the reason why the corps recommended and Congress initially authorized two low dams where one high dam apparently would have worked best.[3] They have also sought to explain why Congress later reversed itself, approving a single high dam to replace the two low ones. Local rivalries and efforts underlie this story, to be sure, but national events—tied to a profound transformation in American history—played a greater role in Lock and Dam No. 2's unprecedented demise and the long delay in erecting a hydroelectric station once the high dam was in place.

Nature, one could say, initiated the rivalry between Minneapolis and St. Paul. From the Falls of St. Anthony to downtown St. Paul, the Mississippi River drops more than 100 feet, the rough equivalent of a 10-story building. This steep grade, combined with a narrow gorge and limestone boulders left by the gradual retreat of the falls, made the river above St. Paul treacherous, and few vessels traveled to Minneapolis. While the cataract turned back steamboats daring enough to venture into its mists, it gave Minneapolis the preeminent source of hydropower in the central United States.[4]

Their ties to the Mississippi River propelled Minneapolis and St. Paul down separate, successful paths. Each city began exploiting its river connection early and had become prosperous by the Civil War. St. Paul, a busy port, was the Mississippi's head of navigation. Minneapolis, first noted as the region's premier lumber-milling city, had become the nation's leading flour-milling center by 1880. Each city jealously guarded its tie to the river and tried to capture its neighbor's.[5]

In Minneapolis, civic and commercial boosters yearned to make their city the head of navigation. As early as 1850, they had tried to convince shippers that steamboats could reach the falls, offering the *Lamartine* $200 to journey upstream from St. Paul to prove their point. They raised funds during the 1850s to remove boulders and other obstacles. By 1852 they had begun discussing a lock and dam for the river above St. Paul, and in 1855 the *St. Anthony Express* proposed building two locks and dams: one at the falls and the other near Meeker Island, some three and one-half miles downstream.[6]

Opinion was split on this controversial proposal, even in Minneapolis, which stood to steal St. Paul's claim to fame. Resolving the problems raised by the proposed dams would prove more complex than designing and building them. Proponents and antagonists divided along city lines and economic interests. Most millers at St. Anthony Falls opposed any construction that would create a competing source of water power below them. Lumbermen, who needed the river open in order to float their logs to booms above St. Paul, sided with the millers. On the other hand, shippers and civic boosters in Minneapolis wanted the locks and dams that would make their city the head of navigation, securing them lower shipping rates and the prestige that accompanied that position. In St. Paul, some businessmen and boosters believed that a dam would deliver hydropower, allowing their city to develop milling and manufacturing as Minneapolis had done. But others feared that a lock and dam would make Minneapolis the head of navigation. With formidable support for each position, the project became mired in intense intercity and intracity rivalries.[7]

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[2] The views expressed in this article do not necessarily reflect those of the U.S. Army Corps of Engineers, the Department of the Army, or the Department of Defense.

[3] Much more evidence is necessary to prove this. Lucile M. Kane, "Rivalry for a River: The Twin Cities and the Mississippi," *Minnesota History* 37 (Dec. 1961): 309–23; Lucile M. Kane, *The Falls of St. Anthony: The Waterfall that Built Minneapolis* (St. Paul: Minnesota Historical Society Press, 1987), 92–97. Raymond H. Merritt, *Creativity, Conflict and Controversy: A History of the St. Paul District, U.S. Army Corps of Engineers* (Washington, D.C.: U.S. Government Printing Office [GPO], 1979), 140, contends, "Nowhere can the rivalry between Minneapolis and St. Paul be better illustrated than in the controversy over the proposal to build a lock and dam about two miles below the Washington Avenue Bridge at Meeker Island."

[4] Shortly after the glaciers withdrew from southern Minnesota some 10,000 years ago, St. Anthony Falls stretched across the river valley near downtown St. Paul. A thick limestone mantle formed the river bed. Just below this mantle lay a soft, sandstone layer. As water and ice eroded the sandstone out from underneath the limestone at the edge of the falls, the limestone broke off in large slabs, and the falls receded about 15 miles to its present location. See, for example, Kane, "Rivalry," 309.

[5] Kane, *Falls of St. Anthony,* 98–99.

[6] Kane, "Rivalry," 310–12. Meeker Island is gone now, probably dredged to improve navigation.

[7] Kane, "Rivalry," 309–23; Kane, *Falls of St. Anthony,* 175; Merritt, *Creativity,* 140.

Washington Avenue Bridge, Minneapolis, with the houses of Bohemian Flats clustered below, about 1885

Local interests continued to bicker for almost 20 years. The Minneapolis-based Mississippi River Improvement and Manufacturing Company, empowered by the state legislature in 1857 to build a lock and dam near Meeker Island, did nothing despite several extensions and the receipt of a federal land grant in 1868. Finally, in 1873, Congress appropriated $25,000 to improve navigation on the Mississippi River and directed the corps of engineers to build a lock and dam. It looked like the Minneapolis navigation faction had won at last. A dispute over returning the land grant, however, delayed the work for 20 more years.[8]

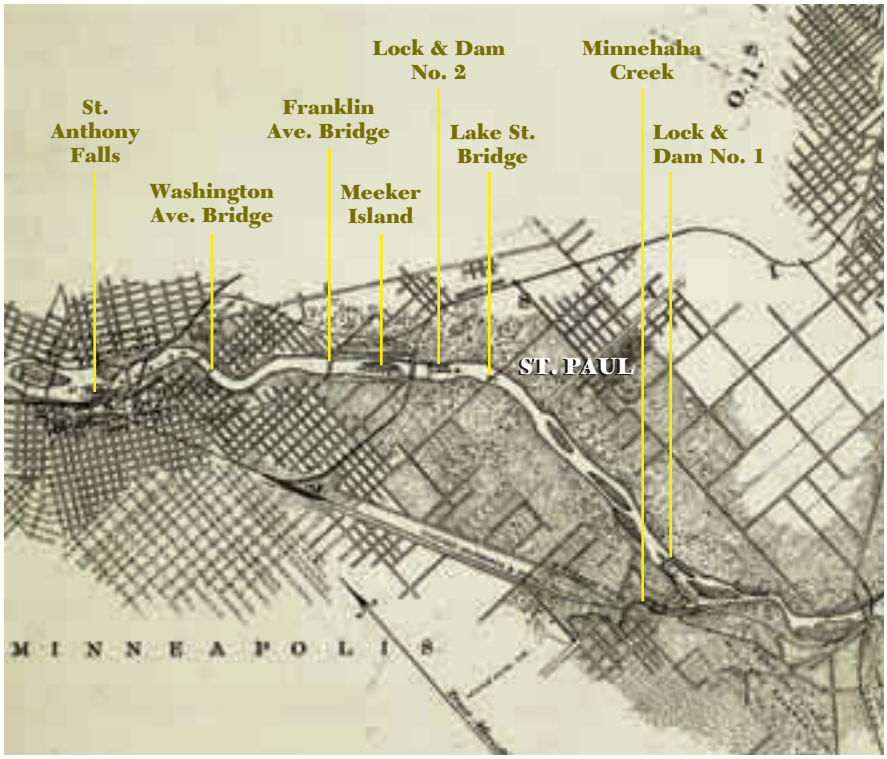
In 1893 the action finally began. That February, the corps' chief of engineers directed Maj. Alexander Mackenzie of the Rock Island District "to prepare new and exact estimates for locks and dams." Like corps engineers before him, Mackenzie concluded that two locks and dams were needed in order to bring navigation to an old steamboat landing below St. Anthony Falls, near the Washington Avenue Bridge. Lock and Dam No. 1, above Minnehaha Creek, would have a vertical raise or lift of 13.3 feet. Lock and Dam No. 2, about 2.9 miles upstream below Meeker Island, would have a raise of 13.8 feet. While sufficient for navigation, the two low dams would not support hydropower.[9]

Accepting Mackenzie's study and under continual pressure from navigation proponents in Minneapolis, Congress authorized the "Five-Foot Project in Aid of Navigation" in the 1894 River and Harbor Act, directing the corps to build Lock and Dam No. 2. Lock and Dam No. 1 was not approved until 1899. That same year, the St. Paul District began work on No. 2, having spent the preceding five years obtaining land titles and funding and completing the design. It would not begin Lock and Dam No. 1—just below the present Ford Bridge—until 1903. By 1907, with Lock No. 1 about 20 percent complete, Lock and Dam No. 2 was finished, and on May 19, the *Itura* became the first steamboat to pass through.[10] St. Paul thus suffered a double setback: Minneapolis had captured the coveted status of

[8] Kane, "Rivalry," 318–20, 322; *Annual Reports of the Chief of Engineers, U.S. Army, 1887,* p. 1,663, *1888,* p. 1,536–39, *1915,* p. 1,887, hereafter abbreviated as *Annual Report.*

[9] *Annual Report, 1894,* p. 1,682–83; Senate, *Construction of Locks and Dams in the Mississippi River,* 53d Cong., 2d sess., 1893–94, Exec. Doc. 109, serial 3,163, vol. 4, p. 2–3. It would take a third lock and dam with a 10.1-foot lift to bring navigation to St. Anthony Falls and a fourth lock to bring navigation above it.

[10] Merritt, *Creativity,* 141–42; House, *Laws of the United States Relating to the Improvement of Rivers and Harbors . . . 1790 to 1897,* 62d Cong., 3d sess., 1913, H. Doc. 1,491, serial 6,396, vol. 1, p. 704; Senate, *Construction of Locks,* 2; *Annual Report, 1908,* p. 530, 1,649–50; *1907,* p. 1,578–79; Kane, *Falls of St. Anthony,* 175, says, "United States army engineers responded in 1894 by announcing plans for two locks and dams." This implies that the corps authorized the project, making that body a proactive proponent, which is not demonstrated.



Detail from a 1915 U.S. Army Corps of Engineers map of the upper Mississippi River, with overlay

The short-lived Lock and Dam No. 2, about 1906, with the Short Line (today's Soo Line) railroad bridge in background. Part of the lock, midground at right, is still visible at low water.

head of navigation, but the state's capital had not secured hydropower. Few, if any, spectators watching the *Itura* paddle through Lock No. 2 imagined that the new facility would be destroyed within five years. Yet some local leaders had already begun planning for its demise.

Locks and Dams No. 1 and 2 were begun during one of the great transforming eras in American history. In 1890, four years before Congress initially authorized the dams, the U.S. Census Bureau announced that the American frontier no longer existed. Many Americans suddenly realized that the country's natural resources were finite. This realization, coupled with the industrializing nation's growing pressure on its resources, spawned a conservation movement that shaped American politics for 25 years. This national context is key to understanding why anyone would have considered changing so radically the costly Twin Cities dams project, finally moving toward completion.[11]

Conservationists in President Theodore Roosevelt's administration led the movement, preaching carefully planned and efficient use of resources. For rivers, this meant that building projects should not only aid navigation but also capture hydroelectric potential, prevent flooding, and provide recreation and irrigation. Sharing the vision of Progressive Era reformers who sought to make all aspects of business and government more efficient, the conservation movement, ac-cording to historian Donald C. Swain, "became a national fad."[12]

[11] Carolyn Merchant, ed., *Major Problems in Environmental History* (Lexington, Mass.: D.C. Heath and Co., 1993), 338–40.

[12] Here and below, see Donald C. Swain, *Federal Conservation Policy, 1921–1933* (Berkeley: University of California Press, 1963), 3, 6–7; Samuel P. Hays, *Conservation and the Gospel of Efficiency* (Cambridge: Harvard University Press, 1959), 100–101. As Hays points out, "A low dam for navigation, for example, might prevent construction of a higher dam at the same site that would produce hydroelectric power as well."

Many businesses and some government agencies, however, resisted multiple-purpose conservation which threatened their control over natural resources and their focus on single-purpose development. During the debate's early years, the corps of engineers insisted that one sole purpose—navigation—should supersede all other uses of rivers. As a result, Congress, the president, and the corps fought over the federal government's role in conserving the nation's water resources from the early 1900s until 1920.

Theodore Roosevelt, 1918

The development of hydroelectricity during these decades further divided Americans and, locally, greatly affected the fate of Locks and Dams No. 1 and 2. Between 1894, when Congress authorized construction, and 1906, when it would call for the first review of the as-yet-uncompleted project, hydroelectric power came of age. The Niagara Falls hydropower plant opened in 1894, demonstrating that hydroelectricity was more than a curiosity. Long-distance electric power transmission became feasible about the turn of the century. All aspects of developing and controlling this dramatically new power source, with its implications for national economic development, were vigorously debated. Whoever obtained the best sites stood to make millions of dollars and gain the economic clout to dictate regional growth. No other use of the country's navigable rivers so strongly challenged navigation's historic supremacy and the corps of engineers' river-improvement mission.[13]

Roosevelt had spurred the controversy in 1903 by vetoing a bill that would have granted a private company the right to build a hydroelectric dam on the Tennessee River at Muscle Shoals, Alabama. Like many conservationists, the president wanted federal control of water-power sites on government land and believed that taxpayers should be reimbursed for the use of these sites. To this end, Roosevelt and his allies argued that the locations should be leased to private companies for a limited time and that the government should be able to collect an annual rent for usage. Conservationists charged that Congress had been giving away hydropower sites for little or no fee and granting indefinite or excessively long operating leases. They also worried that the few large firms that had taken many of the best sites would soon monopolize the country's hydroelectric power. In contrast, states' rights advocates, power companies, and the corps of engineers argued that private businesses had the right to build dams and power plants as long as the structures did not impede navigation. They contended that states, not the federal government, should establish fees and set time limits on leases. Asserting the federal government's role in hydroelectric-power development, Roosevelt's veto message warned Congress to set time limits and fees, asked it to draft a standard policy for reviewing and distributing grants for power sites, and insisted that companies should reimburse the federal government for work created by building power plants at government dams.[14]

Congress continued to approve projects with some restrictions. In 1904, at Hales Bar on the Tennessee River, for example, legislators required the corps to build the lock but made the Chattanooga Tennessee River Power Company pay for the dam. The company received the power at no charge and won a 99-year lease.[15]

Responding to continued pressure from Roosevelt and increasing requests for hydropower grants, Congress stepped toward regulation with the General Dam Act of 1906, requiring the corps to approve plans and specifications for hydroelectric projects and allowing it to direct power com-

[13] Philip V. Scarpino, *Great River: An Environmental History of the Upper Mississippi, 1890–1950* (Columbia: University of Missouri Press, 1985), 22.

[14] *Congressional Record*, 57th Cong., 2d sess., 1903, vol. 36, pt. 3: 3,071–72; Jerome G. Kerwin, *Federal Water-Power Legislation* (New York: Columbia University [?], 1926), 8–11, 82–84, 111–25. The Muscle Shoals bill would have given a grant without fair competition, although it did provide for corps review and "reasonable charges."

[15] Leland Johnson, *Engineers on the Twin Rivers: A History of the Nashville District Corps of Engineers, United States Army* (Washington, D.C.: GPO, 1978), 163–64; Scarpino, *Great River*, 23–24; Roald Tweet, *A History of the Rock Island District, U.S. Army, Corps of Engineers, 1866–1983* (Washington, D.C.: GPO, 1984), 246.

panies to build locks at their own expense. The act also let the United States regulate the flow of water at dams, but it did not set a time limit on leases. By 1908, Roosevelt had approved 25 special acts for hydroelectric-power development but vetoed others, including a project on northern Minnesota's Rainy River that did not carry a fee or time limit. In his veto message, the president again argued, "Every permit . . . should specifically recognize the right of the Government to fix a term for its duration and to impose such charge or charges as may be deemed necessary to protect the present and future interests of the United States." He also suggested that Congress direct some agency to ensure that every plan considered navigation and hydroelectric power, so that one did not prevent the best development of the other. As the Twin Cities' two low dams precluded hydroelectric power, Roosevelt's stand strengthened the movement to revamp them. The local decision to push for a high dam would thrust the Twin Cities into the national debate over hydroelectric-power development.[16]

By the turn of the century, citizens of Minneapolis and St. Paul, reflecting national enthusiasm, recognized that they had missed a tremendous opportunity. They had observed the transition to hydroelectric power firsthand and recognized the wealth it could bring. In 1882 the Minnesota Brush Electric Company had opened the first hydroelectric central station in the United States at St. Anthony Falls. Although it had a limited generating capacity and few customers, it heralded a new age. Between 1894 and 1895 the Minneapolis General Electric Company (corporate successor of Minnesota Brush) built its Main Street Station at St. Anthony Falls, and in 1897 the Pillsbury-Washburn Company completed its Lower St. Anthony Falls dam and hydroelectric plant. These projects and successful long-distance power transmission demonstrated hydroelectricity's practicality and economic value.[17]

This awakening led residents and business interests in the Twin Cities to question the usefulness of two low dams. Laying aside their longstanding feud, the cities began working together to convince the corps and Congress to review and revamp the still-incomplete project. Congressman Frederick C. Stevens of St. Paul, with unusually strong support from the corps' St. Paul District Commander Shunk, led the effort. As a result, Congress established a commission to study the issue in the 1906 River and Harbor Act.[18]

On March 28, 1907, barely a month before the *Itura* paddled triumphantly through Lock No. 2, the commissioners first met in St. Paul to study data and visit the locks and dams. They did not meet again until September 26, when they completed their report and forwarded it to Alexander Mackenzie, now the chief of engineers. Disappointing hydroelectric-power boosters, the commissioners determined that the low head at Locks and Dams No. 1 and 2 made developing hydroelectric power economically infeasible. Furthermore, the existing project, when complete, would serve navigation needs. They did not consider building a high dam to supply electricity more cheaply because, they speculated, higher energy costs and demand from the Twin Cities' growing population would someday make the relatively expensive power gained from the low-head dams more valuable. Then, the hydropower capacity of the two sites would be worth capturing. In 20 to 25 years, they suggested, the cities could even consider building a single high dam downstream of Lock and Dam No. 1. In the meantime, the report reassured Minneapolis that it would remain the head of navigation and that St. Paul would not get hydropower.[19]

Water-power advocates did not quit, however, after the commission's report. The river's steep slope and narrow gorge at the incomplete Lock and Dam No. 1—and the location within the major metropolis on the upper Mississippi River—made it an ideal hydroelectric site. Furthermore, just before the commission's first meeting in 1907, Congress had enacted a major change

[16] Kerwin, *Water-Power,* 111–12, 114–15, 117, 119, 122.

[17] Kane, *Falls of St. Anthony,* 134, 151, 154. The subject of who initially called for a reassessment of the project for its hydroelectric-power potential—and why—deserves much more research.

[18] In the *Stillwater Daily Gazette,* Sept. 8, 1906, p. 2, Stevens claimed, "Through my efforts a commission has been created . . . for the purpose of examining the possibilities of the use of water flowing over the government dams between St. Paul and Minneapolis, for power and light purposes."

[19] House, *Surplus Water Over Government Dam in Mississippi River, between St. Paul and Minneapolis, Minn.*, 60th Cong., 1st sess., 1907–08, H. Doc. 218, serial 5,288, p. 2–6. The commissioners were Maj. W. V. Judson from the Corps of Engineers, J. E. Woodwell from the Treasury Department, and Maj. Amos W. Kimball from the Quartermaster Corps.

Work site for Lock and Dam No. 1 in 1907, before construction stopped

that the commissioners did not consider: It had approved creation of a deeper, six-foot channel for the river between St. Paul and St. Louis.[20]

In 1878 Congress had authorized the corps to create a four-and-a-half-foot channel for that stretch of the river, which the engineers had been trying to achieve by dredging and by building wing and closing dams. Long, narrow piers of rock and brush, wing dams pointed into the river from the shoreline or bank of an island, narrowing the river and making it flow faster so that it would scour away sandbars. Closing dams shut off side channels to focus water into one channel. Navigation boosters believed that this project was inadequate and that a deeper channel would increase river commerce. Surviving scrutiny by the corps and the Rivers and Harbors Committee, the six-foot-channel project was included in the 1907 River and Harbor Act. Below St. Paul, this new twist required no great changes, as it called for narrowing the channel further. Above the city, however, it forced the corps to reassess its plans for Locks and Dams No. 1 and 2 and added to the growing popular interest in revamping them.

As directed by Congress in 1894, the engineers had designed the locks and dams for a five-foot channel. They now had to revise their plans. Whatever they decided, the already expensive project's cost would increase; however, the expense of starting over in order to supply hydropower could now be compared to the cost of modifying the structures. Since the dams would

[20] Here and below, see *Annual Report, 1908,* 530; House, *Mississippi River between Missouri River and St. Paul, Minn.,* 59th Cong., 2d sess., 1906–07, H. Doc. 341, Serial 5,153, p. 2.

have to be one foot higher to achieve the deeper channel, their hydropower potential would increase somewhat. Responding to this circumstance and continued public pressure for a high dam, Congress in 1909 authorized the corps to reexamine the hydropower question. That spring, pending the outcome of the new study, the corps suspended work on Lock and Dam No. 1, now 75 percent complete, having spent $1,149,453 on the Twin Cities project.[21]

For the new study, the corps appointed a board of engineers, including Majs. Shunk, Charles S. Riche, and Charles S. Bromwell, who considered both navigation and hydropower. First, they examined whether the corps could easily and cheaply adapt the locks' and dams' five-foot channel to the new six-foot project and quickly concluded that minor changes would produce an adequate six-foot channel.[22]

Developing hydroelectric power raised more difficult concerns. Reevaluating the hydropower capacity of the river between Minneapolis and St. Paul, the board concurred with the 1907 study: the low dams could not generate power economically, even with the additional foot of height from a six-foot channel. Only a high dam built at the site of Lock and Dam No. 1 would make hydroelectric power economical. A 30-foot dam would yield, the engineers estimated, 15,000 horsepower.[23]

The board considered two options for building a new dam: having the corps construct it alone or in partnership with a private or municipal party. Recognizing the merits of being the sole builder, the board remarked that a single structure would save operating and maintenance costs and time, requiring boats to pass through only one lock. If Congress would authorize a nine-foot-channel depth, there would be no need to modify the dam again for any future navigation projects. The corps could use the proceeds from the sale of hydroelectricity to pay for constructing and operating the new facility, and the federal government would have an endless surplus of power. Holding to standard corps policy, however, the board determined that the corps could not build the high dam alone. As Shunk explained to Minneapolis Mayor James C. Haynes after extolling the advantages of a high dam: "Now comes the difficulty. The United States has no business to meddle with water-power, and must confine its attention strictly to features affecting navigation." Had the corps not completed Lock and Dam No. 2, it could have recommended one lock and dam, built at the government's expense. But, having determined that the two low dams would secure the depth needed for navigation, the board concluded that another party would have to pay the extra cost of building a high dam.[24]

Francis R. Shunk of the St. Paul District, U.S. Army Corps of Engineers

[21] House, *Laws of the U.S.*, 2: 1,343; *Annual Report, 1909,* p. 561, *1910,* p. 1,800. Merritt, *Creativity,* 142, claims that unnamed Twin Cities business interests used the delays in beginning No. 1 "to press for a larger dam that would generate electrical power."

[22] House, *Mississippi River, St. Paul to Minneapolis, Minn,* 61st Cong., 2d sess., 1911, H. Doc. 741, serial 5,132, p. 5.

[23] House, *Mississippi River,* 5–6, also stating that placing the dam farther upstream would require a lower dam to avoid loss of fall at the Pillsbury-Washburn hydroelectric station and dam at Lower St. Anthony Falls. Building it downstream would flood the Minnehaha Creek gorge, "one of the natural attractions of the city of Minneapolis."

[24] Shunk to Haynes, reciting a position neither he, President Roosevelt, nor conservationists held; House, *Mississippi River,* 5–6.

On the morning of June 9, 1909, the board held a public hearing in St. Paul to determine who would support and finance the proposed high dam. Representatives from St. Paul and Minneapolis strongly favored the change. To their surprise, the state—specifically, the University of Minnesota—also showed interest. And, to their dismay, private companies appeared and backed the high dam.[25]

The corps fueled the municipalities' worry over private development. Shunk told representatives that the board "would listen to proposals from outside interests to pay all extra cost necessary to raise the dam to such a height as would produce desired power." Hoping to get cheap hydropower for themselves, city and state representatives worried that the government would start a bidding war, and they "bitterly denounced" the "commercial attitude of the government."[26]

Encouraged by the corps' position, A. W. Leonard, manager of Minneapolis General Electric, reported that his firm could submit a proposal within 60 days and would pay the government the extra cost of constructing a high dam, estimated at $230,000. Paul W. Doty, representing the St. Paul Gas Light Company, stated that private enterprise could develop the water power better than the state or cities. Representatives from the cities insisted that the federal government should favor them, citing states' rights, one of the principal arguments against federal involvement in hydroelectric-power development. Water power, they contended, was a natural resource that belonged to the cities and the state. They asked the board to grant them time to prepare a proposal, which would take much more than 60 days.[27]

Representatives of Minneapolis, St. Paul, and the state met after the morning session to plan strategy. They formed a nine-person commission—three members from each party—to prepare a proposal for sharing the cost of building a high dam. No offer could be tendered, however, until after the next legislative session in two years, as the state constitution prohibited issuing the bonds needed to build the project. In addition, both cities' charters barred them from making expenditures for such purposes. While the state's ability to amend its constitution was in doubt, the board's report to the chief of engineers noted, "It is the opinion of the mayors of the two cities, of representatives of the city councils, and of all the representative citizens who spoke at the hearing that there will be no difficulty in obtaining legislative action modifying the charters at the next session of the State legislature." Both cities passed resolutions favoring the project.[28]

Because Minneapolis and St. Paul owned so much of the land above the dam site, the board dismissed the possibility of working with a private company, stating that it was "abundantly evident" that the two cities would not relinquish the land. Proposing to work with a private company "would be equivalent to a recommendation that the high dam not be built." The two cities would rather see the power go to waste than let a private firm develop it.[29]

Thus the board members recommended that the corps of engineers work with both cities to build the new high dam. The two longtime rivals agreed to split the cost of the new structure and to share the hydropower. Minneapolis even offered to advance St. Paul's share. Based on this overwhelming interest, the board asked Congress to modify the navigation project to raise Dam No. 1 to 30 feet, with the two cities paying the extra cost.[30]

On January 31, 1910, the board submitted its report to W. L. Marshall, the new chief of engineers, who endorsed the recommendations but made an important change. Contrary to the standard corps position, he urged Congress to fund the entire project, asserting, "Construction of such a lock and dam by the Government alone is feasible, practicable, and legal under existing conditions." Sharing the costs with a nonfederal partner, he warned, had proven "conducive to friction and misunderstanding, and often attended by serious complications." If the government paid the full

[25] *Minneapolis Tribune,* June 9, 1909, p. 1; House, *Mississippi River,* 5.

[26] *Minneapolis Tribune,* June 9, 1909, p. 1; *St. Paul Pioneer Press,* June 10, 1909, p. 4.

[27] *Minneapolis Tribune,* June 10, 1909, p. 2; *St. Paul Pioneer Press,* June 10, 1909, p. 4; House, *Mississippi River,* 5. For national context, see Kerwin, *Federal Water-Power Legislation,* 8–9, 82–84, 135, 159.

[28] House, *Mississippi River,* 8–9; *St. Paul Pioneer Press,* June 10, 1909, p. 4.

[29] House, *Mississippi River,* 7, 8. In contrast, the *Minneapolis Tribune,* June 10, 1909, p. 2, reported that those present at the public meeting voted to go on record as favoring the building of the high dam, whether by the state, the cities, or a private interest.

[30] House, *Mississippi River,* 8–9, 12–13. The board eliminated the state from consideration because its constitution was not likely to be amended. The Minneapolis resolution included hydropower for the University of Minnesota.

Men and animals laboring to complete Lock and Dam No. 1 in 1914

cost, he argued, then it could keep complete control of the water power.[31]

Although the board's report did not show it, at least one of its members agreed with Marshall: Maj. Shunk. Like other proponents, Shunk argued that a high dam would be easier to operate, save time, and would pay for itself. In a move that historian Raymond Merritt calls uncharacteristic for a corps representative, Shunk tried to convince the business community to support the project, hoping that if the Twin Cities demonstrated enough demand, Congress would authorize and fund the dam. Taking a strident conservationist stand, he asserted, "The whole issue was not a legal concern, but a moral matter." In a 1909 letter to Mayor Haynes, Shunk complained, "There is something wrong about partial measures and technically restricted vision." Officially, however, he agreed that the federal government had only the authority to regulate navigation.[32]

Meanwhile, the national debate over hydropower regulation was nearing a temporary compromise, no doubt affecting Marshall's assessment of the high-dam proposal. On June 23, 1910, President William H. Taft, Roosevelt's successor, signed a new water-power act requiring the secre-

[31] *Annual Report, 1910,* p. 1,799–1,800; House, *Mississippi River,* 3–4. Hays, *Conservation,* 114, presents information that would explain Marshall's decision. When some members of the Inland Waterways Commission suggested that private parties pay for the hydropower portion of a navigation dam, "the Corps of Engineers and many in Congress objected that this would give rise to conflicts in operation and administration." The commission decided that the federal government would pay the construction costs and lease the power.

[32] Merritt, *Creativity,* 144–45; Shunk to Haynes.

Lock and Dam No. 1, showing innovative prefabricated design that allowed for cold-weather construction, nearing completion, 1916

tary of war and the corps to evaluate all plans for hydroelectric-power development to promote a river's "navigable quality and . . . the full development of water power." The act also required developers to reimburse the federal government when the corps built a dam with hydroelectric-power features and provided for a 50-year time limit. It did not, however, require a user fee, an ominous sign that the debate would continue. Two days later, Congress approved the Twin Cities' high dam, "*Provided*, That in the making of leases for water power a reasonable compensation shall be secured to the United States." In 1910 the St. Paul District then began modifying Lock and Dam No. 1 with federal funding. Corps engineers blasted out the lock floor, raised the lock walls, and developed an innovative design for the dam. Congress allowed the corps to build the base for a hydropower station but not the station itself, leaving it to a nonfederal entity to develop the water power in the future. To ensure safe navigation above the new lock and dam, the engineers demolished the top five feet of Dam No. 2 in 1912, only five years after it had opened.[33]

[33] River and Harbor Act, June 25, 1910, in House, *Laws of the U.S.,* 2: 1,377, 1,419–20; *Annual Report, 1910,* 1,799–1,800. Kerwin, *Water-Power,* 128–30, is critical of this act allowing charges for the privilege of using federal waters. At Lock and Dam No. 1, however, the federal government recouped the costs of modifying the dam by charging a fee for using the power. Section 12 of the 1912 River and Harbor Act gave the secretary of war the authority to "provide in the permanent parts of any dam authorized at any time by Congress for the improvement of navigation such foundations, sluices, and other works, as may be considered desirable for the future development of its water power"; House, *Laws of the U.S.,* 2: 1,564–65.

Finally, in 1917, the St. Paul District completed Lock and Dam No. 1. Even so, the long-awaited structure did not escape renewed national controversy about water-resource development. By getting the high dam, conservationists and hydropower supporters had demonstrated the importance of multiple-purpose river development: Congress agreed that harnessing the river's potential justified destroying a relatively new lock and dam. But Congress still had not resolved the question of whether to charge private companies for using water power produced at federal sites. Conservationists had refused to let the issue drop, arguing that water power, especially from navigable rivers, belonged to the country and that rent payments could pay for all waterway projects. As historian Samuel P. Hays states, "Hydroelectric power provided the financial key to the entire multiple-purpose plan." Lock and Dam No. 1, built to capture hydropower but not provided with a power station, was embroiled in this debate, again illustrating how great national contests shaped events in Minnesota.[34]

President Taft, who had been Roosevelt's secretary of war, questioned his predecessor's vetoes of hydroelectric projects. Yet Henry L. Stimson, who became Taft's secretary of war in 1911, liked the idea of collecting fees from water-power users to build multiple-purpose projects. In 1912 Stimson convinced Taft to veto the Coosa Dam project in Alabama because it did not provide for a rental fee. One year later, when the Connecticut River Company sought permission from Congress to construct a hydroelectric dam, Alabama Senator John Bankhead blocked the permit. He and other states' rights advocates feared this project would set a precedent because the company had agreed to a rental fee and a limited lease. As a result, the government became deadlocked over hydroelectric-power development. "This impasse," historian Philip Scarpino contends, "brought a hiatus to hydroelectric development in navigable rivers." Finally, under President Woodrow Wilson, Congress passed the Water Power Act of 1920, establishing both a policy for national hydroelectric-power development and the Federal Power Commission. Only then did the government begin considering propositions to build a hydroelectric plant at Dam No. 1, which had been ready and waiting for three years.[35]

In the early 1920s St. Paul boosters, holding out the possibility of cheap hydropower, succeeded in wooing the Ford Motor Company which was seeking to decentralize its Detroit operation. By 1923, having purchased more than 167 acres near Lock and Dam No. 1, Ford began building its Twin Cities assembly plant and applying for the license to generate power at the government's dam. That summer, the Federal Power Commission accepted the proposal, which was backed by the city of St. Paul. Ford completed the powerhouse in 1924, and production at the assembly plant began the next year, bringing jobs and tax revenues to St. Paul. Complying with the 1920 act, the company's lease was limited to 50 years. It required Ford to provide 7,250 horsepower per year to Lock and Dam No. 1 and reimburse the federal government $95,440 annually for administering the lease and "for the use, occupancy and enjoyment of its lands or other property." Finally, 60 years after first proposed, Minneapolis had its lock and dam and St. Paul its hydropower.[36]

In an era when conservation had become a fad, destroying a new lock and dam seemed unconscionable. Many people questioned why Congress had authorized two dams rather than one and tried to assign blame. In 1909–10 two sets of students at the University of Minnesota wrote theses considering how the school might use the power generated at the proposed high dam. One pair charged that Congress rejected the first bill for a high dam in 1894, "on the grounds that power development was beyond the scope of the project—waterway improvement." Three engineering students repeated this charge and blamed the two-dam project on the rivalry between Minneapolis and St. Paul. Years later, historian Lucile Kane contended, "The lock and dam built near Meeker Island proved to be an embarrassment to the government—a 'shocking blunder' some called it." This blunder, she says, "weighed heavily on the minds of the engineers responsible for the decision." Maj. Shunk also faulted intercity politics and defended the corps.

[34] Hays, *Conservation,* 114; *Congressional Record,* 57th Cong., 2d sess., 1903, vol. 36, pt. 3: 3,072.

[35] Scarpino, *Great River,* 65; Hays, *Conservation,* 119. Kerwin, *Water-Power,* 142, contends that Taft opposed limits and fees but gave in to Stimson to avoid a "family row" with a cabinet member. Hays, *Conservation,* 115–21, says that the 1920 act represented a compromise, permitting hydroelectric-power development but separating it from other water-related development. This essentially ended hopes for the multiple-purpose approach for more than a decade.

[36] Merritt, *Creativity,* 146; Nicholas Westbrook, ed., *A Guide to the Industrial Archeology of the Twin Cities* (St. Paul: Society for Industrial Archeology, 1983), 31, 105; Federal Power Commission, *License on Navigable Waters, Project No.362, Minnesota, Ford Motor Company,* June 7, 1923, St. Paul District Records.

Electricity at the High Dam

Ford Motor Company's 50-year federal lease to generate electricity from the Mississippi River expired on June 6, 1973, after which the powerhouse (at right in photo) operated with annual permits. In 1980 the Federal Energy Regulatory Commission granted a new license—with the same $95,440 annual fee set in 1923—which is due to expire in 2003. Negotiations for the twenty-first century are already underway.

By the 1980s, Ford Motor had become the largest non-utility producer of electricity in Minnesota, averaging 250,000 kilowatt hours per day. Industrial archaeologists in 1983 noted, "The pride of the powerhouse crew in their historical facility is evident in its condition." Even after supplying free power to the lock and dam (as required by lease) and its own truck-assembly plant, Ford was able to sell about half of the electricity generated at the high dam to St. Paul's Northern States Power for general redistribution to area consumers.

SOURCES: Nicholas Westbrook, ed., *A Guide to the Industrial Archeology of the Twin Cities* (St. Paul: Society for Industrial Archeology, 1983), 32; Federal Energy Regulatory Commission, *Order Issuing a New License (Major), Ford Motor Co., Project No. 362*, July 2, 1980.

In his letter to Mayor Haynes, after detailing how Congress and the corps made rigorous scientific decisions in selecting sites and building water-resource projects, Shunk could only explain the Twin Cities' two locks and dams by saying, "Such things happen in countries where people have votes."[37] I have found no evidence to demonstrate that Congress rejected a high-dam proposal in 1894 or that the corps considered building two dams to be a blunder. Nor have I found direct evidence showing that the agency selected two dams to satisfy the political and economic interests of Minneapolis. The details behind these matters remain a secret.

There would have been no issue with the dual structures had hydroelectricity not come of age. Locks and Dams No. 1 and 2 were caught in the vortex of great ideological and technological developments that no engineer or politician foresaw. One contemporary, W. C. Tiffany, acknowledged the waste in tearing down Dam No. 2 but defended the change: "It would be unfair to criticize the lack of foresight in an owner of city real estate who builds a six-story building for failing to foresee that in a few years the growth of the city would demand its being wrecked to give place to a sky-scraper."[38] Lock and Dam No. 1, the Ford plant, and the sometimes visible remains of the Meeker Island lock and dam symbolize not only an era of bitter controversy between Minneapolis and St. Paul—they symbolize how great national events shape local history.

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[37] George W. Jevne and William D. Timperley, "Study of Proposed Water Power Development at U.S. Lock and Dam No. 1, Mississippi River Between St. Paul and Minneapolis" (Ph.D. diss., University of Minnesota, 1910), 1; Jon Gjerde, *Historical Resources Evaluation, St. Paul District Locks and Dams on the Mississippi River and Two Structures at St. Anthony Falls,* unpublished manuscript for St. Paul District, Sept. 1983, p. 84, copy in St. Paul District Records; Walter C. Beckjord, Ralph M. Davies, and Lester H. Gatsby, "A Study of Proposed Water Power Development at U. S. Lock and Dam No. 1, Mississippi River between St. Paul and Minneapolis" (Ph.D. diss., University of Minnesota, 1909), 1–2; Kane, "Rivalry," 322; Shunk to Haynes.

[38] W. C. Tiffany, "Preparing the Upper Mississippi for Modern Commerce," *American Review of Reviews* (New York) 47 (Fall 1913): 181–82.

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