CHAPTER 2

THE B&O RAILROAD

A New Philosophy: 1890-1924

Rather than shut down the C&O Canal, however, the B&O Railroad chose to repair it. The prime reason behind the decision was that if the B&O closed the canal, the Washington County Circuit Court would have required its sale to insure that the C&O's bondholders would receive at least a partial repayment. With a sale, a bidding war would have broken out with other railroads interested in acquiring the canal's right-of-way. A competitor running a railway line along the path formerly followed by the canal would have forced the B&O to keep its transportation rates low, reducing revenue. Therefore, the Baltimore and Ohio Railroad decided to rebuild the C&O Canal and operate it as a canal, even if it lost money, rather than closing the waterway and risk losing its right-of-way. Under the supervision of the court, the B&O could control the canal through a group of trustees, ostensibly to generate revenue to pay off the canal's bondholders, but in reality setting the waterway's toll structure in its own interest and preventing the canal from falling into the hands of an effective competitor.[1]

Under the receivership, the C&O Canal entered a new era. The C&O Canal Company had operated the canal with the goal of it being a reliable, profitable waterway. To that end, the canal company expended vast sums of money to protect the canal from the Potomac River. The B&O Railroad, however, had a different priority--the success of its rail operation. The B&O repaired the canal after the 1889 flood, and kept it functioning for decades afterwards because the alternative was risking a takeover of the canal's right-of-way by a competitor. Hence, the B&O took the measures needed to keep the canal running, but it did not have the incentive of the C&O Canal Company to prevent flood damage. Sustainability was a much less important issue for the B&O receivers than it had been for the C&O Canal Company.

The repair of the canal after the 1889 flood set the tone for the B&O Railroad's tenure over the canal. The B&O initially estimated the cost of fixing the canal at $200,000. When it appeared that the expense might exceed this figure, the railroad lost enthusiasm for the project. Only a threat by the Washington County Circuit Court to sell the canal prompted the B&O finally to start the repairs. The indecision of the B&O Railroad

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[1]Sanderlin, The Great National Project, 263-66.

actually increased the expense, because the damage to the canal worsened while it sat abandoned. The railroad finished the repairs in September 1891 at a cost of over $430,000. Back in operation, the C&O Canal continued a fitful existence. Almost its entire traffic consisted of hauling coal for the Consolidation Coal Company, also owned by the railroad.[2]

Under the B&O Railroad, maintenance of the canal lagged. Indeed, an examination of the correspondence of George L. Nicolson, the general manager of the C&O Canal during the entire period of its receivership (1890-1938), indicates that he spent much more time considering easements and fending off encroachments to the canal than he did on maintenance or preventive work for the waterway.[3]

While preventing damage from intrusions, the B&O Railroad expended as little money as possible to maintain the waterway. The C&O Canal Company had spent beyond its resources on maintaining and improving the waterway. The B&O, through its trustees, was much more stingy. To minimize costs, the trustees tried to get other parties to repair damage from flooding whenever possible. When the ice guards on Dam 5 were damaged by a freshet early in the spring of 1913, George L. Nicolson suggested the canal shift two-thirds of the estimated $10,000 repair cost off on the owners of the Martinsburg Power Company, which had a generating station at the dam.[4] Even when other parties agreed to share costs, however, the representatives of the B&O were reluctant to spend money on the canal if they felt the expense could be put off. In 1921, it became apparent that leaks had developed in Dam 4. Representatives of the Hagerstown and Frederick Railway, which had bought the Martinsburg Power

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[2]Ibid., 266, 271.

[3]Still, defending the integrity of the canal against interlopers was important. The volume of economic activity and development increased in the Potomac Valley during the early twentieth century--much of it potentially harmful to the waterway. Nicolson battled businesses and municipalities that allowed their wastes to flow into the canal or whose activities made it more vulnerable to flooding. The efforts of George Nicolson at fending off destructive encroachments went far toward preserving the canal.

[4]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, Baltimore, 2 July 1913, Correspondence of Office of Trustees, 1913-38, Chesapeake and Ohio Canal Company, Entry 202, Record Group 79, Records of the National Park Service, National Archives, College Park, Md. [Hereafter Trustees' Correspondence, 1913-38].

Company, proposed splitting the cost of the repairs. Nicolson and the trustees, however, declined because they felt the leaks did not immediately endanger the dam.[5]

Despite the neglect of the Chesapeake and Ohio Canal by the B&O Railroad, some preventive work occurred on the canal during its tenure that aimed to minimize flood damage. After three breaks on the canal in the 1914 season caused a loss of twenty-nine boating days, the Evening Star, in Washington, D.C., reported that before the opening of the 1915 season "at many points the banks have been made heavier to prevent possible washouts if heavy rains come."[6]

Still, as in the case of repairs, the trustees tried to shift the cost of flood improvements to other parties whenever possible. An ice freshet damaged the wooden top of Dam 5 in February 1918. George L. Nicolson suggested to the trustees that it would be a good idea to replace the wooden top with one made of concrete. The trustees did not prove receptive to the idea because they saw the improvement as having greater benefits to the power company that rented the dam, than to the B&O Railroad. But they agreed to go along with the improvement after the Hagerstown and Frederick Railway Company agreed to share the cost of the concrete cap.[7]

The C&O Canal survived three decades of parsimony from the Baltimore and Ohio Railroad because the period from 1889 to 1924 was remarkably free of major freshets on the Potomac River. George L. Nicolson recalled that four "serious" floods affected the canal in 1897, 1902, 1907, and 1914.[8] Evidence from the papers of the trustees and newspapers indicates at least sixteen notable episodes of high water occurred between 1889 and 1924.

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[5]G. L. Nicolson, General Manager, to Hugh L. Bond, Jr., Trustee, Baltimore, 19 November 1921, Trustees' Correspondence, 1913-38. Nicolson might have been reluctant to spend the money repairing the leaks because the B&O had done considerable repair work to the dam twenty years earlier.

[6]Evening Star (Washington, D.C.), 9 March 1915, 20; Office of Trustees, to Hugh L. Bond, Jr, Baltimore, 18 January 1915, Trustees' Correspondence, 1913-38.

[7]G. L. Nicolson, General Manager, to Hugh L. Bond, Jr., Trustee, 29 April 1918; G. L. Nicolson, General Manager, to A. C. Polk, Construction Manager, Sanderson and Porter, 24 May 1918; President, Hagerstown & Frederick Railway Company, Frederick, to G. L. Nicolson, General Manager, 26 June 1918, Ibid.

[8]Sanderlin, The Great National Project, 276.

However, damage from these floods was quite small compared to the major floods of the nineteenth century. The river that had behaved so unfavorably for the Chesapeake and Ohio Canal Company, smiled upon the Baltimore and Ohio Railroad.[9]

The Railroad Faces Floods: 1924

The good fortune of the C&O Canal under the B&O Railroad came to abrupt end in 1924. In late March 1924, the first major flood in thirty-five years struck the canal. The damage from this flood occurred mostly on the upper portion of the canal, especially near Cumberland, Hancock, and Williamsport, although there were some significant breaks around Dam 1. Initial press reports were pessimistic. The Evening Star told its readers on March 31, "the entire Williamsport division of the Chesapeake and Ohio Canal has been destroyed and may never be rebuilt . . . when the waters receded today it was found that its banks had been obliterated." The Star indicated that canal officials doubted the waterway would ever be reconstructed.[10] However, as the water receded from the canal, optimism replaced fear as it became apparent that the damage was much lighter than expected. The Star reported on April 1 that George L. Nicolson was inspecting the canal with a view toward repairing it.[11] Likewise, the Morning Herald in Hagerstown informed the public the same day that the Williamsport division would be fixed in ten days.[12] Nicolson denied on April 2 that any plans existed to close the

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[9]A number of factors may explain the B&O Railroad's good fortune. First, it may simply have been a matter of probability. Floods do not occur at even intervals. The chance of a twenty-year flood is once every twenty-years, but such a deluge is possible at any time. In 1996, for instance, the C&O Canal experienced two twenty-year floods. Second, the clearing of the watershed stabilized or even dropped off by the end of the nineteenth century, meaning water did not run off as fast and cause bigger floods on the Potomac River. It is certainly no coincidence that the floods on the river got progressively worse over the course of the nineteenth century, while sustained deforestation was taking place in the Potomac basin. Third, the calm period on the river between 1890 and 1924 also may have been a product of long-term weather cycles.

[10]Evening Star (Washington, D.C.), 31 March 1924, 4.

[11]Ibid., 1 April 1924, 2.

[12]Morning Herald (Hagerstown), 1 April 1924, 1.

canal permanently because of the freshet, and announced that the Vang Construction Company had been hired to repair the damage.[13]

Two factors were behind the B&O's quick change of heart. First, when it became apparent that the repairs would not be too costly, the most major objection by the trustees to repairing the canal--the expense--disappeared. Indeed, the damage estimate for the flood came to only $30,000.[14] Second, there probably was still a lingering fear that if the railroad abandoned the canal, the courts would revoke the receivership and the B&O might lose control of the C&O Canal's right-of-way.

As repairs from the late March freshet drew to a close, another much more serious flood hit the canal in May 1924. The tributaries of the Potomac, particularly the Shenandoah, flooded and the high waters coursed down the river, mortally damaging the C&O Canal from Cumberland to the Tidewater. On May 13, Evening Star reported that, "in many places the waters of the Potomac and Chesapeake and Ohio Canal have merged and for miles the canal cannot be seen."[15]

A comprehensive damage estimate for the canal from the May 1924 flood was never drawn up, but it is evident that the waterway suffered along most of its 184.5 miles. Nicolson did submit a damage report from Cumberland down to Big Slackwater. From Cumberland to South Branch there was no additional damage to that from the March flood. From South Branch down to Dam 6, the towpath that had been replaced was washed out and further erosion had taken place. More scouring of the towpath occurred from Dam 6 to Hancock. The bridge over the feeder at Dam 6 had washed away. Near Williamsport, there were three breaks in the towpath (two below the town and one three and half miles above), sand bars in the canal prism, and general erosion.[16] A replacement parapet on the Conococheague aqueduct, built after a canal boat broke through the original stone parapet in April 1920, was torn

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[13]Evening Star (Washington, D.C.), 2 April 1924, 1; Morning Herald (Hagerstown), 2 April 1924, 1.

[14]H. R. Preston, Law Department, Baltimore and Ohio Railroad Company, to George M. Shriver, 11 April 1924, Trustees' Correspondence, 1913-38.

[15]Evening Star (Washington, D.C.), 13 May 1924, 1.

[16]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, Baltimore, 15 May 1924, Trustees' Correspondence, 1913-38.

off **(see Figure 4)**.[17] The damage to the lower portion of the canal was worse than above (although the precise damage points are undetermined). The Evening Star informed its readers that the "flood . . . has swept down the Potomac miles of the canal walls, from Harpers Ferry to Washington."[18] In many places the waters of the river and the canal became one **(see Figures 5 and 6)**.

In any case, the damage from the May flood was devastating, and the Star did not hesitate to tell the public that the canal "was likely doomed."[19] Because damage was less on the upper portion of the canal, the B&O Railroad briefly considered keeping the canal open from Cumberland to Williamsport (where coal bound for Baltimore was usually transferred to the railroad), but by early August 1924 the B&O dropped this idea in favor of closing the entire waterway.[20] Only the canal below Dam 1, and at Dams 4, 5, and 8 continued to operate, honoring existing agreements to provide water power and for electric power generation. To that end, the company quickly repaired two breaks in the canal embankment near Chain Bridge.[21] Nicolson conducted limited repairs on the rest of the canal. He had the "main and largest breaches" refilled to minimize damage to the canal from future freshets.[22] After these repairs were finished in January 1926, maintenance on the canal, outside the revenue generating areas, largely ceased.[23]

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[17]Evening Star (Washington, D.C.), 30 April 1920, 20; 12 May 1920, 7.

[18]Evening Star (Washington, D.C.), 14 May 1924, 1.

[19]Ibid.

[20]H. R. Preston, Law Department, Baltimore and Ohio Railroad, to G. L. Nicolson, General Manager, 22 May 1924, Trustees' Correspondence, 1913-38.

[21]Evening Star (Washington, D.C.), 15 May 1924, 4.

[22]H.R. Preston, Law Department, Baltimore and Ohio Railroad, to J. C. Shriver, Cumberland, 24 June 1924; G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 26 June 1924, Trustees' Correspondence, 1913-38.

[23]Evening Star (Washington, D.C.), 31 January 1926, 6; 10 August 1924, 22.

FIGURE 4

Conococheague aqueduct, at Williamsport,
after the flood of May 1924

FIGURE 5

Lock 17, at Great Falls, during the flood of May 1924

FIGURE 6

Lock 52, below Hancock, during the flood of May 1924

Therefore, the flood of May 1924 proved a boon to the B&O Railroad. It allowed them to forego the considerable expense of maintaining the canal as an operating waterway, while still controlling of its right-of-way. To please the Washington County Circuit Court, the B&O maintained the fiction that the canal could quickly be put back into operation should the coal trade revive sufficiently to justify it. However, for all intents and purposes, the railroad largely left the remains of the canal to the mercy of the river.[24]

Abandonment and Disintegration: 1924-38

With the closing of the waterway, the B&O Railroad became reluctant even to repair genuine flood damage outside those areas that continued to generate revenue. In September 1926, runoff from heavy rain blew out two culverts, the first one mile below Dam 4 and the other below Williamsport. Despite the serious harm to the canal, Nicolson wrote the trustees, "I will do nothing unless you instruct me to make repairs."[25] Nicolson and trustees also hesitated to restore Dam 6 meaningfully, after the 1924 flood damaged it seriously and minor freshets that followed added to the deterioration. To the railroad, repairing Dam 6 would have wasted money because there was no power generation at that wooden structure. They allowed the dam to continue slowly falling apart until a fire finally destroyed it in 1934.[26]

However, it was impossible for the B&O Railroad to neglect utterly upkeep on the abandoned sections of the canal. Repairs the B&O did make to the canal fell into four categories. They made some repairs to satisfy government mandates. For instance. after a freshet in late April 1929, Nicolson fixed a break in the towpath near Round Top Mountain so the B&O could run water down the canal to flush mosquitoes out of the stagnant pools in the empty prism as required by the Maryland State Board of Health.[27]

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[24]Sanderlin, The Great National Project, 277-78.

[25]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 27 September 1926, Trustees' Correspondence, 1913-38.

[26]H. R. Preston, Trustee, to G. L. Nicolson, General Manager, 28 July 1932, Trustees' Correspondence, 1913-38; G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 1 September 1934, Ibid.

[27]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 2 May 1929, Ibid.

The B&O also repaired major structures whose loss would be noticeable and undermine the notion that the canal could be quickly returned to service. Such was the case of a road culvert at Sir John's Run, which it repaired after the October 1929 flood. The public used the culvert and would have complained.[28] Still other repairs were made simply because they were inexpensive. For example, Nicolson recommended repairing a damaged culvert after an April 1929 flood near Sandy Hook because it would cost only $238.[29] When repairs were not cheap, the trustees sometimes justified them to the B&O Railroad by reasoning they would avoid a greater expense in the future. The trustees themselves stated in their 1932 report to the Washington County Circuit Court that they had "made only such expenditures as were necessary to prevent serious depreciation in the Canal, and have repaired several small breaks . . . which if not repaired might later lead to much more serious breaks."[30]

After 1924, if the trustees were reluctant to fund repairs, they proved even more hesitant to fund improvements to minimize flood damage. The trustees entertained preventive work where they thought they might lessen their expenses, but rarely followed through on such projects. For instance, George L. Nicolson suggested in 1927 that replacement of the loose stone dam at Little Falls (Dam 1) that supplied the Georgetown level with a more permanent structure. Such a dam would save the $1,000 to $2,000 spent annually renewing the existing structure, which deteriorated rapidly from freshets and normal river flow. Still, while they considered this idea, they never actually built a more substantial dam at the Little Falls, instead finding the yearly expense of rebuilding the loose stone structure more economical.[31] The tenants at Dam 4, the Potomac Edison Company,

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[28]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 22 July 1929, Ibid. It is worth noting that the trustees apparently only authorized cheap, temporary repairs at Dam 6 that were washed away by a freshet the following October. See G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 19 October 1929, Ibid.

[29]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 6 May 1929 and 12 June 1929, Ibid.

[30]Report of the Surviving Trustees, Herbert R. Preston and George A. Colston, 27 June 1932, Brown et al. Trustees v. Chesapeake and Ohio Canal Company.

[31]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 25 February 1927; H. R. Preston, Trustee and General Solicitor, to George M. Shriver, Senior Vice-President, 6 February 1928, Trustees' Correspondence, 1913-38.

pushed the trustees to spend $25,000 to plug leaks at Dam 4, but the B&O Railroad apparently never initiated the project because of the expense.[32] The trustees did build a stone wall to protect a canal bank at Dam 3 after a freshet damaged it.[33]

When the canal closed in 1924, the condition of the waterway rapidly deteriorated in those areas not generating revenue for the railroad company. Nicolson was warned repeatedly by Maryland authorities that the canal was becoming a public nuisance: a dumping ground, with smelly, stagnant pools ideal for breeding mosquitoes.[34] This situation was not entirely the fault of the B&O Railroad since some communities along the canal used the waterway for waste disposal. The town of Glen Echo, in Montgomery County, and the City of Cumberland both dumped waste from sewer lines into the canal (the problem in both places predated the closing of the canal).[35] While Nicolson was willing to run water down the canal prism from time to time to deal with the mosquitoes, he did not feel that cleaning up dumped waste was the B&O's responsibility because it had not dirtied up the canal in the first place. True to form, however, Nicolson and the trustees did accede to the Civil Works Administration cleaning up the prism of the canal at Williamsport in 1933.[36] However, Nicolson had so given up on preserving the canal that he

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[32]Superintendent of Power, Potomac Edison Company, Hagerstown, to G. L. Nicolson, General Manager, 10 September 1930; American Asphalt Grouting Company, Chattanooga, Tenn., to G. L. Nicolson, General Manager, 13 September 1930, Ibid.

[33]G. L. Nicolson, General Manager, to H. R. Preston, Trustee, 31 October 1930, Ibid.

[34]Abel Wolman, Chief Engineer, State of Maryland, Department of Health, to G. L. Nicolson, General Manager, 14 June 1929, 5 September 1929, and 5 October 1931, Ibid.

[35]G. L. Nicolson, General Manager, to W. T. Pratt, Health Officer, Montgomery County, Rockville, 20 February 1923; to George W. Offutt, Jr., 20 February 1923; Robert B. Morse, Chief Engineer, to Abel Wolman, Chief Engineer, State Department of Health, 12 April 1923; George A. Pearre, Company Counsel, Baltimore and Ohio Railroad Company, to G. L. Nicolson, General Manager, 25 April 1923; Mayor and Council of Glen Echo, to C&O Canal Company, 6 May 1930; Charles S. Moore, to G. L. Nicolson, General Manager, 19 March 1931, Ibid.

[36]G. L. Nicolson, General Manager, to Messrs. Lane, Ballentine & Mish, Hagerstown, 20 December 1933, Ibid.

approved a request by farmers near Williamsport to dam off a portion of the canal bed as a watering hole for their stock.[37]

Hence, by the early 1930s the canal was in dilapidated condition, and was more so after the flood of March 1936, the largest ever recorded on the Potomac. The flood also was notable because of the high degree to which it affected the upper reaches of the Potomac River. Consequently, severe damage occured along the entire line of the canal from Cumberland to Georgetown **(see Figures 7, 8, 9, and 10)**. Dam 4, which had failed in the 1877 flood, did so again. An ice drift had already taken out part of the dam near its Maryland abutment in February 1936. The March flood widened the break.[38]

The B&O railroad limited its repairs of the C&O Canal after the flood of 1936 to the areas still generating revenue. These included the rubble dam at Little Falls (Dam 1) and the Georgetown level, which were necessary to provide water power. These repairs cost $25,460. Dam 4, which the trustees rented for power generation, was repaired by the tenant, the Potomac Edison Company. To help prevent future flood damage, Potomac Edison also installed a concrete cap-piece in place of the old ice guards.[39] The trustees admitted there was damage elsewhere, but unlike 1924 they were confident enough not to fix these injuries, merely to promise they would be put right at some future date before the canal went back into operation.[40]

Hence, under the B&O Railroad, the C&O Canal experienced a period of malign neglect. The B&O did as little as possible for the canal. Only the calm of the Potomac River from 1889 to 1924 prolonged its operation. Once the flood of May 1924 gave the railroad an excuse to close the canal--while maintaining control of its right-of-way--it did so. The B&O Railroad's inattention and the rivers flooding transformed the canal into a magnificent wreck.

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[37]G. L. Nicolson, General Manager, to F. Wine, Williamsport, 5 September 1934, Ibid.

[38]Unrau, The Major Floods, 41-44.

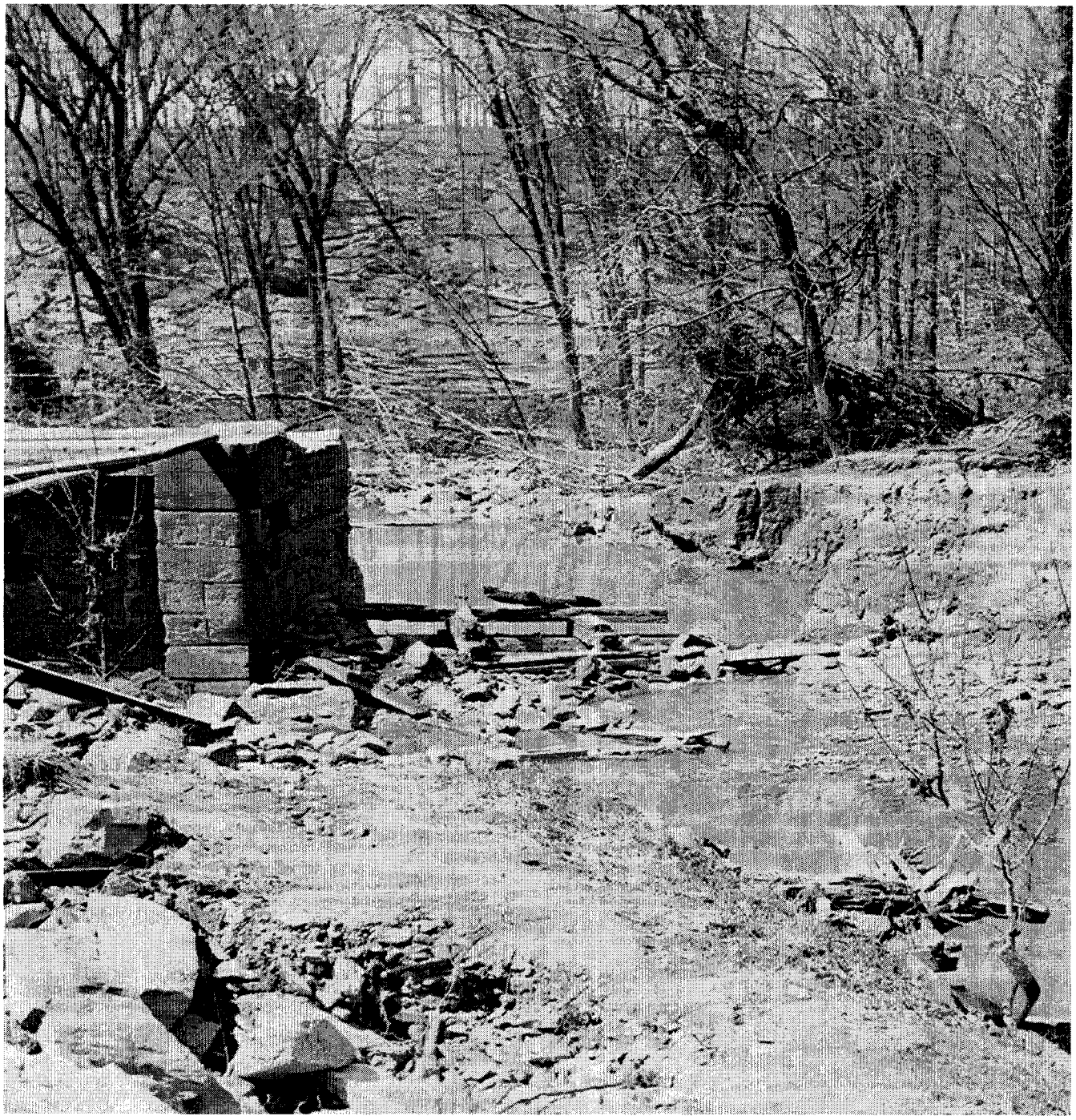
[39]Ibid., 44.

[40]Report of the Surviving Trustee, Herbert R. Preston, 8 June 1936, Brown et al. Trustees v. Chesapeake and Ohio Canal Company.

FIGURE 7

Lockhouse 6, below Dam 1, during the flood of March 1936

FIGURE 8

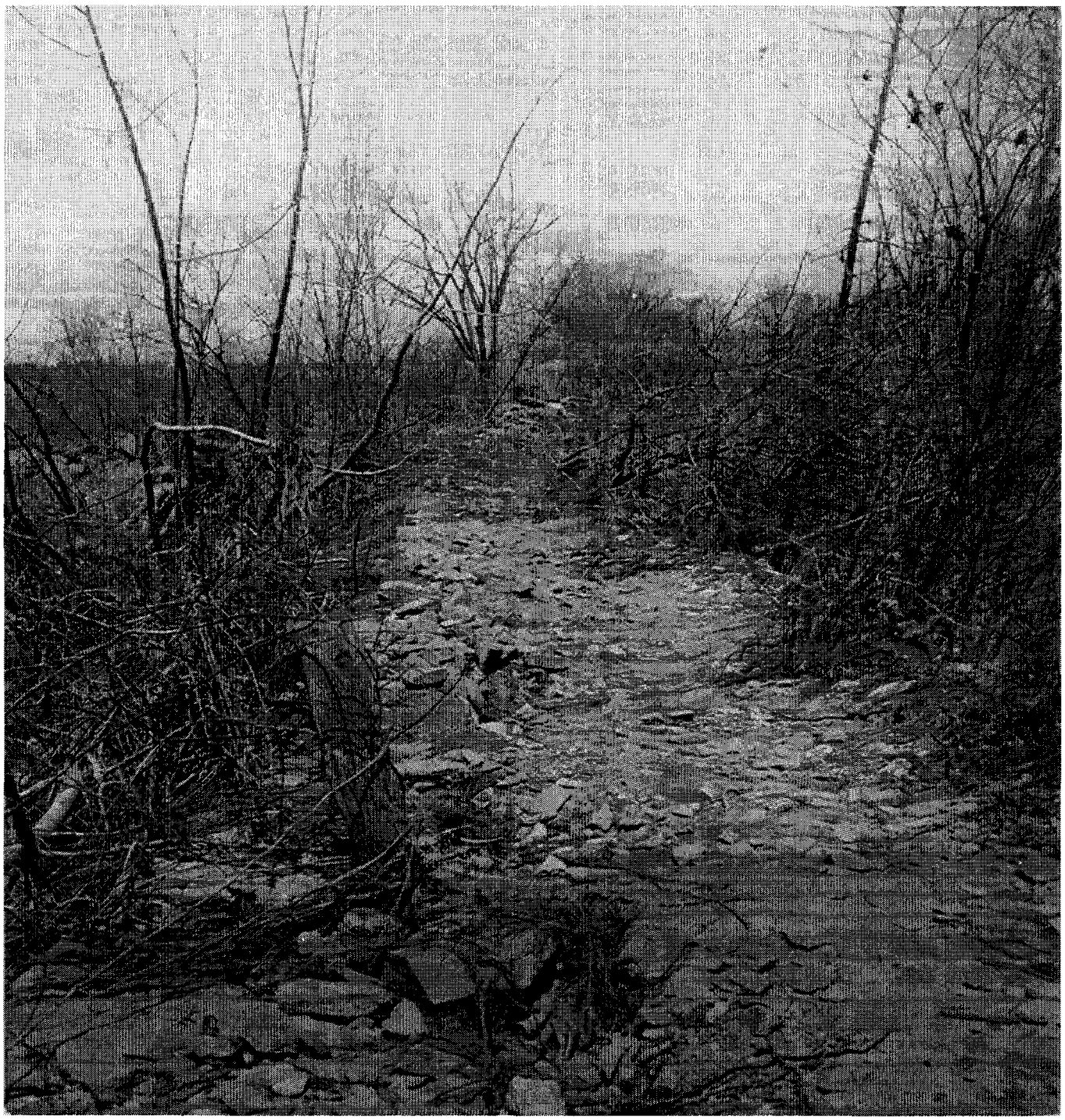


Lock 6, below Dam 1, after the flood of March 1936

FIGURE 9

Lock 15, upstream end of Widewater, after the flood of March 1936

FIGURE 10



Eroded towpath near Lock 18, at Great Falls,
after the flood of March 1936

CHAPTER 3

THE NATIONAL PARK SERVICE

The Canal Revived: 1938-42

By 1938, the Baltimore and Ohio Railroad was in financial trouble, and it sold the C&O Canal to the federal government to repay money borrowed from the Reconstruction Finance Corporation. The federal government was willing to buy the canal because it had long recognized its historic value and recreational potential. Repairing the canal also was viewed as a worthwhile project that could provide employment to workers made jobless during the Great Depression.[1]

In acquiring the C&O Canal, however, federal officials paid little thought to its vulnerability to the Potomac--despite the fact that the most devastating flood ever recorded on the river had occured a scant two years before.[2] Instead, they gave their attention to restoring the canal between Georgetown and Seneca. Congress appropriated $500,000 for the project, which included repairing and rebuilding canal structures, as well as clearing the prism of debris and rewatering it.

The Civilian Conservation Corps (CCC) established two camps to participate in the repairs. The young men in these camps initially cleared trash from around the canal, and then graded the prism and towpath. The Public Works Administration (PWA) oversaw more complex projects such as rebuilding locks, bridges, and repairing large breaks, with actual work done by private contractors, most notably the D.C. construction firm, Corson and Gruman. According to NPS historian Barry Mackintosh:

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[1]Barry Mackintosh, C&O Canal: The Making of a Park (Washington, D.C.: National Park Service, 1991), 5-11.

[2]The National Park Service was certainly aware that flooding was a potential problem. A citizen of Cumberland, Harry J. Athey, had written Franklin Roosevelt in 1941, suggesting the C&O Canal could be transformed into either an underground highway or a bomb shelter with its roof also serving as an emergency landing strip for planes. The White House forwarded the letter to NPS, which in turn passed the letter to Frank T. Gartside, assistant superintendent of National Capital Parks. Gartside wrote Athey, politely suggesting his ideas were impractical because, "the canal property, in many places, is subject to complete inundation during periods when the river is in flood stage." See Frank T. Gartside, Assistant Superintendent, National Capital Parks, to Harry J. Athey, Cumberland, 24 July 1941, Administration, Protection and Maintenance File 1460/C&O-5.

> The work on the canal proceeded expeditiously. By February 1940 the 23 locks from Georgetown to the inlet at Violettes Lock had been returned to operating condition. The stonework of some had required only minor resetting and repointing; others had been completely reconstructed. All had received new wooden gates, with ironwork salvaged from the old ones and from locks further up the canal. At Widewater a large break from 1936 flood (requiring some 30,000 cubic yards of fill), two small dams, and some rubble wall had been repaired by Corson & Gruman Company under a $101,000 contract. In addition to clearing the channel, the CCC had repaired lesser breaks and surface wash elsewhere along the towpath and would proceed to develop picnic areas at Carderock and Great Falls. . . . The lockhouses at Locks 5, 7, and 10 were upgraded during 1939 with modern plumbing, heating, and electrical systems.[3]

The NPS repair plan included some provisions for flood control. Contractors reconstructed a historic spillway at the Foundry Branch, and repaired and improved flood structures at Widewater, historically a vulnerable location on the canal (see p. 108). Certainly the renovation of the canal made it better able to resist flood damage. However, except at the Foundry Branch and Widewater, the repairs proceeded with little consideration of how well they would protect the canal against the river.[4]

In some instances compliance with federal regulations and changing responses by other agencies apparently slowed the pace of the repairs of the C&O Canal. While Maryland politicians had scrutinized the waterway during the era of the canal company, and the Washington County Circuit Court watched during the receivership period, as a unit of the federal government the canal became subject to a much more oversight, regulation, and control, which could hinder repairs. Activities on the canal were sometimes under the regulatory jurisdiction of another federal agency other than the National Park Service. An early example of this problem was the repairs at Widewater in 1939. The work there was delayed by the Department of Labor, which set wage rates for federal contracts. The Labor Department initially informed NPS that rubble masons and cut stone masons should be paid different wages, and the Park Service wrote its contract for Widewater on that basis. Shortly before bids for the project were opened, however, the Labor Department told NPS that all

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[3]Mackintosh, The C&O Canal, 35-36.

[4]Ibid., 31.

masons should be paid the same. The change made it necessary to restart the bidding process and the beginning of work on the Widewater project was delayed.[5]

A much bigger problem for the C&O Canal under NPS control was that it was totally dependent on Congress for funding. While Congress initially appropriated $500,000 to restore the canal, it neglected to fund regular maintenance. The nature of politics made it easier to appropriate large sums of money to repair a damaged canal than to fund a maintenance staff that would prevent damage. The Park Service could not even spend revenue the canal generated from water rents and power generation directly on the canal. Such money went to the federal treasury.[6]

World War II and the Flood of 1942

The entry of the United States in World War II, in December 1941, brought an end to the repairs of the canal, which were drawing to a close in any case because the National Park Service had exhausted the $500,000 appropriation for that purpose. The war also resulted in the disbandment of the CCC, which had been maintaining the canal in lieu of direct congressional funding.

The war could not have occurred at a worse time for the C&O Canal. Less than a year after Pearl Harbor, it was hit by a major freshet in October 1942. The flood largely stemmed from the Shenandoah River, where water levels actually exceeded the great flood of 1870 on its lower stretches. Consequently, the October 1942 flood affected the Potomac mostly below Harpers Ferry. At several points the river crested even higher than it had in 1936.[7]

The flood devastated the newly-repaired section of the canal from Seneca to Georgetown. The Park Service did what it could to prevent damage. The Evening Star reported "workmen were opening the canal locks to permit the rising waters to empty into the Potomac River."[8] Despite these efforts the canal overflowed near Fletcher's Boat House, damaging nearby railroad tracks and

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[5]Evening Star (Washington, D.C.), 24 August 1939, B4.

[6]Ibid., 18 September 1940, B5.

[7]Potomac River and Tributaries, House Document No. 622, 18-20.

[8]Evening Star (Washington, D.C.), 16 October 1942, A2.

washing three freight cars into the river. A break in the canal developed there, and another above Chain Bridge, in addition to a large break at Widewater (see **Figures 11 and 12**).[9] There also was damage to the canal upstream, with some breaks in the canal embankment, and trees and other debris were scattered on the towpath.[10] Arthur E. Demaray, associate director of the National Park Service, estimated it would cost $250,000 to repair the canal upstream as far as Great Falls.[11]

Just as World War II brought an end to the repair of the C&O Canal, the conflict hindered fixing it after the 1942 flood. The War Production Board, which regulated industrial production to further the war effort, prohibited federal civilian construction projects over $10,000 during the war. The B&O Railroad patched the breach in the canal at Fletcher's Boathouse bordering its tracks, but repairing the remainder of the canal required more creativity.[12] Arthur E. Demaray suggested restoring the canal from Georgetown to Dam 1, because the C&O Canal could provide an alternate means of supplying water to the Dalecarlia Reservoir in the event that both of the normal conduits from Great Falls were bombed or sabotaged.[13] Demaray's idea transformed the repair of the canal from a prohibited recreation project into a national security concern, which gained the approval of the War Production Board in November 1942. While the repair of the remainder of the canal would have to wait until after the war, its proximity to the national capital and the National Park Service's security argument enabled at least a partial repair of the canal during the war.

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[9]Ibid., 17 October 1942, A1; 19 October 1942, B1; Chris Baumann, Widewater: An Assessment for Historic Preservation ([Sharpsburg, Md.]: C&O Canal National Historical Park, National Park Service, Department of the Interior, 1984), 60.

[10]For a description of damage in the canal from Swain's Lock to Seneca see William G. Haywood, Associate Civil Engineer, to F. F. Gillen, Acting Superintendent, National Capital Parks, 22 October 1942, Flood and Droughs File 1570-35, National Capital Parks, National Park Service, Washington National Records Center, Suitland, Md.

[11]Arthur E. Demaray, Associate Director, National Park Service, to the Secretary of the Interior, 23 October 1942, Administration, Protection and Maintenance File 1460/C&O-5.

[12]Washington Post, 14 November 1942, 5B

[13]Demaray to the Secretary of the Interior, 23 October 1942, Administration, Protection and Maintenance File 1460/C&O-5.

FIGURE 11

Break in the towpath embankment at Fletcher's Boathouse, above Georgetown. Flood of October 1942

FIGURE 12

Widewater, looking upstream, after the flood of October 1942

While the acquiescence of the War Production Board removed an obstacle, it did not lead to the immediate repair of the C&O Canal. Work on the canal between Georgetown and Dam 1 required a congressional appropriation. Preoccupied with the legislative problems created by the war, Congress did not immediately act. The Army Corps of Engineers, which managed the water supply for the District of Columbia, volunteered to repair the feeder canal from the Dam 1 to the main canal, and make the alterations in the waterway that would allow it to supply water to the Dalecarlia Reservoir.[14] However, the cost for the remainder of the repairs fell on the shoulders of the National Park Service. Congress finally appropriated money in April 1943 to repair the canal as far as Dam 1. The Park Service made the announcement of the contract for the repair project in May 1943 and the contract was awarded the following month to Corson and Gruman, the same firm that had repaired Widewater before the war.[15] Corson and Gruman completed the work by early autumn, and the Park Service resumed the popular canal boat trips in early October 1943.[16]

The Park Service tried to make the section of the canal it restored during World War II more flood resistant. Parts of the towpath were rebuilt with a clay and cement mixture to make them more durable. The Public Roads Administration conducted tests to determine the optimal mix of clay and cement. After the towpath was rebuilt, the contractor riprapped the towpath embankment in places to prevent erosion. Besides the towpath, the Park Service also experimented with making the Dam 1 more sustainable. Since the earliest days of the canal, the dam had been composed of rubble stone and had to be rebuilt almost every year. The contract with Corson and Gruman called for 200 feet of the dam, the portion that had been most badly washed in 1942, to be replaced by a dam with a concrete core wall.[17] Finally, the

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[14]E. A. Schmitt, Head Engineer, United States Engineer Office, Washington, D.C., to F. F. Gillen, Acting Superintendent, National Capital Parks, Washington, D.C., 21 November 1942, Ibid.

[15]Irving C. Root, Superintendent, National Capital Parks, to Major D. M. Radcliffe, U.S. Engineers Office, Washington, D.C., 17 May 1943, Ibid.

[16]Evening Star (Washington, D.C.), 4 October 1943, A2.

[17]F. F. Gillen, Acting Superintendent, National Capital Parks, Washington, D.C., to Arthur D. Hill, Jr., Acting Assistant Solicitor, Department of Labor, Washington, D.C., 16 April 1943; and Thomas H. MacDonald, Public Roads Administration, Washington, D.C., 14 May 1943; P. E. Smith, Engineer, to Robert C. Horne, Chief, Engineering Division, National Capital Parks, 17 October 1946, Administration, Protection and Maintenance File 1460/C&O-5.

Park Service helped develop a contingency plan for the canal in event of flooding. It drew up the plan as part of a larger flood emergency plan for Washington, D.C. The plan was to go into effect for the canal when the gauge of the Potomac at Wisconsin Avenue in Georgetown reached 12.6 feet or higher. Under those conditions, NPS would install the planks in the stop lock above Widewater and warn residents living along the canal.[18]

The Postwar Years: 1945-1972

After the end of World War II, the Park Service repaired the rest of the restored portion of the canal from Georgetown to Seneca. The Park Service resurfaced the towpath from Georgetown to Seneca, repaired washouts at Locks 7 and 8, and constructed a spillway at Lock 7. Only Widewater, from the stop lock on Level 16 to Old Angler's Inn, remained unrepaired. This project was deemed too expensive at that time.[19] The Park Service arranged with the Corps of Engineers to water the canal from Old Angler's Inn to Lock 5, by a diversion of surplus water from the Washington Aqueduct. It also constructed a temporary earth dam at the entrance to Widewater near Old Angler's Inn to prevent the aqueduct water from flowing back into that area. However, the supply of water from the aqueduct was erratic and the canal between Locks 5 and 14 was often only partially full.[20]

While repairs proceeded on the restored portion of the C&O Canal, great uncertainty existed in the National Park Service during the late 1940s and 1950s about the canal west of Seneca. The canal's prospects there were part of a larger struggle about

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[18]F. F. Gillen, Acting Superintendent, National Capital Parks, Washington, D.C., to Lt. Col. Byron Bird, Chief, Engineering Division, U.S. Engineer Office, Washington, D.C., c. Autumn 1843, Flood and Droughs File 1570-35.

[19]The estimated cost of the repairs from Lock 5 to Seneca after the October 1942 flood was $140,000. Of that figure, about 75 percent or $105,000 was needed to repair Widewater. By 1953, because of inflation, the price to repair Widewater had jumped to $150,000. See Robert C. Horne, Chief, Engineering Division, to Harry T. Thompson, Associate Superintendent, National Capital Parks, 1 December 1953, Administration, Protection and Maintenance File 1460/C&O-5.

[20]H. E. Van Gelder, Landscape Architect to Harry T. Thompson, 12 June 1945; National Capital Parks Press Release, 1 February 1946, Ibid.; Mackintosh, C&O Canal, 48.

development in the Potomac flood plain. Responding to the devastating floods of the 1920s, 30s, and 40s, the Army Corps of Engineers proposed a series of fourteen dams in the Potomac basin, that would have permanently inundated seventy-eight miles of towpath, and the Monocacy and Antietam aqueducts. The Park Service opposed the dams as did the vast majority of the public. Instead, NPS adopted an existing proposal to build a parkway along the route of the Chesapeake and Ohio Canal above Great Falls. Others, most notably Supreme Court Justice William O. Douglas, opposed both the dams and the parkway, insisting on the preservation of the canal in its existing state from Georgetown to Cumberland. Douglas and his supporters feared vehicular traffic on the parkway would mare the peacefulness and natural beauty along the towpath.

Despite the atmosphere of uncertainty, efforts continued to make the C&O Canal more sustainable. After the Corps of Engineers' plan for dams was defeated in spring of 1945, the Park Service sought to use the Corps' expertise to make the canal more sustainable. John Nolen Jr., Director of Planning for the National Capital Park and Planning Commission, wrote:

> I am convinced that properly designed revetments, spillways, diversion levees and other facilities could mitigate if not entirely eliminate the bad wash-outs that occurred in the 1924, 1936 and 1942 floods. It is probably not feasible to attempt protections from what might be called minor erosion or wash-outs, but such major damage as occurred at Widewater and the upper part of the Feeder Canal could be eliminated.[21]

The Corps of Engineers, declined to help, stating that it lacked congressional authority to assist the National Park Service in protecting the C&O Canal from the Potomac.[22]

While the Park Service opposed the dams proposed by the Corps of Engineers in the Potomac Basin, they decided to cooperate with the Corps' flood control plans for Cumberland, Maryland, the western terminus of the canal. The Corps wanted to

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[21]John Nolen Jr., Director Planning, to General Grant, 9 April 1945, National Park Service, Central Classified File, 1933-49, National Capital Parks, 650-03, Record Group 79, Records of the National Park Service, National Archives, College Park, Md. [Hereafter Central Classified File, 1933-49, 650-03].

[22]Minutes, 205th Meeting of the National Capital Park and Planning Commission, 19-20 April 1945, Administration, Protection and Maintenance File 1460/C&O-5.

remove Dam 8 (which NPS owned), an action that would make it difficult for the Park Service ever to rewater the canal above Dam 5. The Corps also wanted to build a levee that would cover the last mile of the canal and towpath and raise the grade of the old canal basin in Cumberland.[23]

The Park Service fell in with the Corps of Engineers plans for Cumberland because by late 1945 managers doubted the wisdom of restoring the canal west of Seneca. The cost of maintaining a rewatered canal from Cumberland to Georgetown was too high. Arthur E. Demaray, associate director of the Park Service summed up the developing position in a letter to the Secretary of the Interior, Harold Ickes. He told Ickes that the canal maintained between Georgetown and Seneca "should be ample to disclose to the visiting public the historical aspects of the canal, and also should be ample to actively maintain as a recreational area."[24]

Another reason NPS cooperated with the Corps of Engineers flood control project in Cumberland was because it would protect the remainder of the canal property in the area. After World War II, the National Park Service began planning to build a parkway along the canal right-of-way, and the Corps of Engineers improvements would provide flood protection for the upper part of the road and the visitor's center planned for the terminus of the parkway at Cumberland.

In fact, supporters of the C&O Canal Parkway within the National Park Service promoted the parkway project, in part because they thought a road would hold up better against the Potomac than a canal. As part of the planning for the parkway, the Park Service commissioned a study of the possible effects of flooding on the proposed road. Henry G. Weeden, a civil engineer and author of the study, admitted that while "occasional interruptions" would occur to traffic because of flooding, the road would be more sustainable than the canal. Weeden wrote:

> While the records show that the past floods were very costly to the Chesapeake and Ohio Canal Company it must be borne in mind that the maintenance and operation of a canal located

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[23]William G. Hayward, Civil Engineer, P. E. Smith, Chief, Engineering Division, and Merel S. Sager, Planning Division, to Irving C. Root, Superintendent, National Capital Parks, Washington, D.C., 24 October 1945; Minutes, NCP Staff Meeting, 24 October 1945, Ibid.; Mackintosh, The C&O Canal, 53.

[24]A. E. Demaray, Associate Director, National Park Service, to the Secretary of the Interior, 11 December 1945, Administration, Protection and Maintenance File 1460/C&O-5.

> in the flood plain of a river and subjected to periodic innundation offers a peculiar problem. Floods of short duration that might prove disastrous to a canal embankment do not constitute a serious problem in highway maintenance and traffic control.[25]

For those levels that were subject to flooding, he pointed out that many federal roads existed in Washington, D.C., that were subject to high water. "The majority of the roads in East and West Potomac Park, the lower sections of Rock Creek and Potomac Parkway and Anacostia Park are especially subject to innundation," he wrote, "and traffic on the Mt. Vernon Memorial Highway is interrupted occasionally." However, Weeden said nothing about how well these roads had come through floods. He merely recommended masonry revetments to protect the embankments of the C&O Canal Parkway against the river.[26]

As the debate over the western portion of the canal heated up in the early 1950s, the Park Service tried to make the restored canal between Georgetown and Seneca more flood proof. By 1946, it had pronounced the concrete cap, laid on a portion of Dam 1 during World War II, a success. While the unprotected stones laid at Little Falls Dam in 1943 and again 1944, had largely washed away, the 200 feet of the structure with the concrete cap was still intact. P. E. Smith, a NPS engineer, recommended capping the entire dam at a cost of $119,000. He figured the money would be quickly recouped by saving the government from having to relay stones regularly at the dam.[27] The project gained added urgency the summer of 1948, when the river fell low enough that the leaky rubble dam could not divert enough water to supply water power in Georgetown. However, nothing was done immediately because of a lack of funds.[28] It

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[25]Henry G. Weeden, Civil Engineer, "A Study of the Potomac River Related to the Construction of a Parkway Along the Route of the Chesapeake and Ohio Canal," National Capitol Parks, U.S. Department of the Interior, Washington, [1950], 11. Note this report was included verbatim in Congress, House, Committee on Public Lands, Chesapeake and Ohio Canal Report, 81st Cong., 2d sess., 1950, House Document No. 687.

[26]Ibid, 9-12.

[27]P. E. Smith, Engineer, to Robert C. Horne, Chief, Engineering Division, National Capital Parks, 17 October 1946, Administration, Protection and Maintenance File 1460/C&O-5.

[28]Robert C. Horne, Chief, Engineering Division, National Capital Parks, to Harry T. Thompson, Assistant Superintendent, National Capital Parks, 28 July 1948, Ibid.

was not until September 1949 that capping of Dam 1 started. Park Service work crews completed the project in late November.[29] A report written in 1954 indicated the concrete cap on the rest of the dam was working, and "no dislodgement of stones or breaching of the dam has since occurred," with exception of a minor "wash-through on Snake Island, which became apparent in the fall of 1950, at a point where the Island was largely cobble and gravel."[30]

Existing commitments made it impossible for the National Park Service to ignore the condition of the canal above Seneca. The Park Service had taken over the leases of Dams 4 and 5 when it bought the canal in 1938. However, the condition of these dams had deteriorated so much by the late 1940s, there was a real danger that they would fail. Of particular concern was the guard bank at Dam 4. The Potomac Edison Company, the tenant at Dam 4, wanted to rebuild the guard bank and place a concrete cap at the feeder inlet of the dam to prevent water leaking through the lock gates there. They proposed doing the work themselves for costs plus 15 percent to cover the administrative expenses, but the Park Service was unable to accept the offer because federal rules prohibited non-bid repair contracts over $500.[31] Dam 5 also was a source of trouble. Potomac Edison notified NPS in October 1951 that the gates of the feeder lock at Dam 5 were deteriorating and could collapse at any time. The power company complained they had given the Park Service notice of this problem in 1947, but nothing had been done. NPS apologized for its inaction, citing the scarcity of maintenance funds for the canal above Seneca, and proceeded to make emergency repairs on the lock gate.[32] By

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[29]George E. Clark, Construction and Repair Division, to Robert C. Horne, Chief, Engineering Division, National Capital Parks, 3 January 1950, Ibid.

[30]Robert C. Horne, Chief Engineer, National Capital Parks, "Construction and Maintenance of the C&O Canal Dam No. 1, Little Falls, Brookmont, Maryland," 27 July 1954, Ibid.

[31]Harry T. Thompson, Assistant Superintendent, to George S. Humphrey, Vice President, Operation and Engineering, Potomac Edison Company, 14 October 1949, Ibid.

[32]George S. Humphrey, Vice President, Operation and Engineering, Potomac Edison Company, to Irving C. Root, Superintendent, National Capital Parks, 12 October 1951; Harry T. Thompson, Associate Superintendent, National Capital Parks, to George S. Humphrey, Vice President, Operation and Engineering, Potomac Edison Company, 19 November 1951; Lorin A. Davis, Chief, Administrative Division, National Capital Parks, to Director, National Park Service, 20 March 1952, Ibid.

early 1953, however, Potomac Edison was again lamenting the condition of Dams 4 and 5. Nothing had been done about the guard bank at Dam 4, and a sink hole had developed at Dam 5. The Park Service engineers who examined these problems recommended grouting and filling the sinkhole at Dam 5 and replacing the missing guard bank at Dam 4, as well as solving the drainage problem at that dam. They warned "the situation is critical and it is impossible to judge the extent of the hidden damage that might cause a collapse in several years or even the next freshet."[33] As with Dam 1 in the late 1940s, funds were not available to start the repairs immediately. Potomac Edison suggested it pay for the work and deduct future rental payments against the cost. However, federal law prohibited the Park Service from accepting the power company's offer. The finance officer for the Park Service suggested that a solution to the problem would be to negotiate a new rental agreement for Dams 4 and 5, passing maintenance responsibility for the dams to Potomac Edison, in exchange for lower rent. The only alternative would be to divert rehabilitation funds from the budget of National Capital Parks for 1954 to pay the $30,000 needed for the project.[34] It appears from correspondence after the flood of October 1954, that the Potomac Edison Company did the work at Dams 4 and 5 based on a renegotiated rental agreement. What Potomac Edison did at Dam 5 is not known, but at Dam 4, according to a Park Service naturalist, they:

> . . . razed the superstructure of the old canal stop lock and have left only the deck and stringers spanning the canal at the top of the stone abutments . . . they have poured a concrete wall forming a dam across the canal between the stone abutments and have provided therein a vertical slit into which a piece of metal may be dropped to block the water. They have also built a concrete wall between the south abutment of the stop lock and their dam.[35]

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[33]Robert C. Horne, Chief, Engineering Division, to Harry T. Thompson, Associate Superintendent, National Capital Parks, 19 June 1953, Ibid.

[34]Keith Neilson, Finance Officer, to Director, National Park Service, 30 July 1953, Ibid.

[35]W. Drew Chick, Jr., Chief Park Naturalist, to Superintendent, National Capital Parks, 9 November 1954, Ibid.

Potomac Edison also repaired Dam 4 after the October 1954 flood caused by Hurricane Hazel.[36]

As the 1950s progressed, the Park Service paid more attention to western portion of the C&O Canal. The parkway plan was dead by the mid-1950s, primarily because of the effective advocacy of William O. Douglas. In place of the parkway, the NPS decided it would restore towpath continuity from Georgetown to Cumberland, with a view to gaining national park status for the canal. In 1957, crews were hired to clear the canal and towpath west of Seneca of accumulated growth and fix the many breaks that had developed there over the years. In addition, the repair of Widewater finally began in 1953 and was completed by 1957. By September 1958, a hiker could finally walk the entire 184.5 miles of the canal without detouring around flood damage.[37]

Achieving towpath continuity was easier, however, than maintaining it. Even without major floods, localized freshets and other hazards such as city sewer run-off and muskrats, could cause significant trouble.[38] Some first-time canal users, particularly bicyclists, found it harder to travel the towpath than they had imagined because of breaks and erosion caused by minor floods. Likewise, the accumulation of weather and flood damage had left many aqueducts and culverts along the canal in a severely deteriorated state. Some culverts had collapsed already, the victim of cavities created by tree roots growing down from the abandoned canal prism. The cavities allowed water seepage to gradually break down the mortar in the culverts. Accumulation of debris in their interiors obstructed water flow so that flash floods overwhelmed them and washed out the berm of the towpath. The dams also continued to cause problems. In 1964, it was necessary to make major repairs to Dam 4 after a

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[36]Harry T. Thompson, Associate Superintendent, National Capital Parks, to C. G. McVay, Manager of Power Production, Potomac Edison Company, Hagerstown, Ibid.

[37]Evening Star (Washington, D.C.), 6 September 1958, A24.

[38]Harry T. Thompson, Superintendent, National Capital Parks, to Director, National Park Service, 23 July 1958, Administration, Protection and Maintenance File 1460/C&O-5. For a general description of the maintenance problems of thee C&O Canal during a non-flood period see Cornelius W. Heine, Assistant Regional Director, Conservation, Interpretation, and Use, National Park Service, to Robert L. Wiggins, Old Museum Village of Smith's Clove, Montroe, N.Y., 18 August 1964, Administrative Correspondence, 68A-3048, National Capital Region, National Park Service, Washington National Records Center, Suitland, Md. [Hereafter Administrative Correspondence, National Capital Region, 68A-3048].

major leak was discovered in the Maryland abutment. The lime cement used by the C&O Canal Company to construct the dam had dissolved over time creating fissures in the structure of the dam. The fissures necessitated pumping in cement under pressure to plug them and rebuilding the earthen portion of the abutment. Without the repairs of Dam 4 in 1964, it is likely the fissures would have grown bigger and that the dam would have eventually failed.[39]

Still, the National Park Service enjoyed a period of relatively few floods on the Potomac through the late 1940s, 1950s and 1960s. Of course, minor floods affected the canal. High water, significant enough to cause appreciable damage to the C&O Canal occurred in May 1947, October 1954, August 1955, July 1956, January 1958, May 1958, April 1960, February 1961, and March 1967. In May 1947, a culvert in the District of Columbia near Canal Road and Weaver Terrace blew out during a rain storm, unable to handle runoff from a modern storm drain.[40] The remains of Hurricane Hazel passed through the Potomac basin in October 1954, flooding the canal from Big Slackwater to Harpers Ferry, around Point of Rocks, and in other areas. Breaks to the canal occurred near Harpers Ferry and new fill at Dam 4 was washed away.[41] Hurricane Diane caused flooding in August 1955 leading to some minor breaks in the towpath **(see Figures 13, 14, and 15)**.[42] A flash flood in the Washington metro area in July 1956 caused a 100-foot break in the towpath just above Pennyfield Lock (No. 22). Heavy rains the same month contributed to a rock slide 150 feet below the Paw Paw Tunnel.[43] Flooding in January 1958 scoured the embankment and eroded the towpath near a pumping

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[39]Edwin M. Dale, Superintendent, C&O Canal National Monument, Hagerstown, to Mason Gigeous, Potomac Fish and Game Club, Williamsport, 4 March 1964, Administrative Correspondence, National Capital Region, 68A-3048; Daily Mail (Hagerstown), 15 April 1964, 32; 8 August 1964, 18.

[40]Evening Star (Washington, D.C.), 29 May 1947, A14; 30 May 1947, B1.

[41]Private R. A. Fallin, to Chief, U.S. Park Police, 2 November 1954, Administration, Protection and Maintenance File 1460/C&O-5.

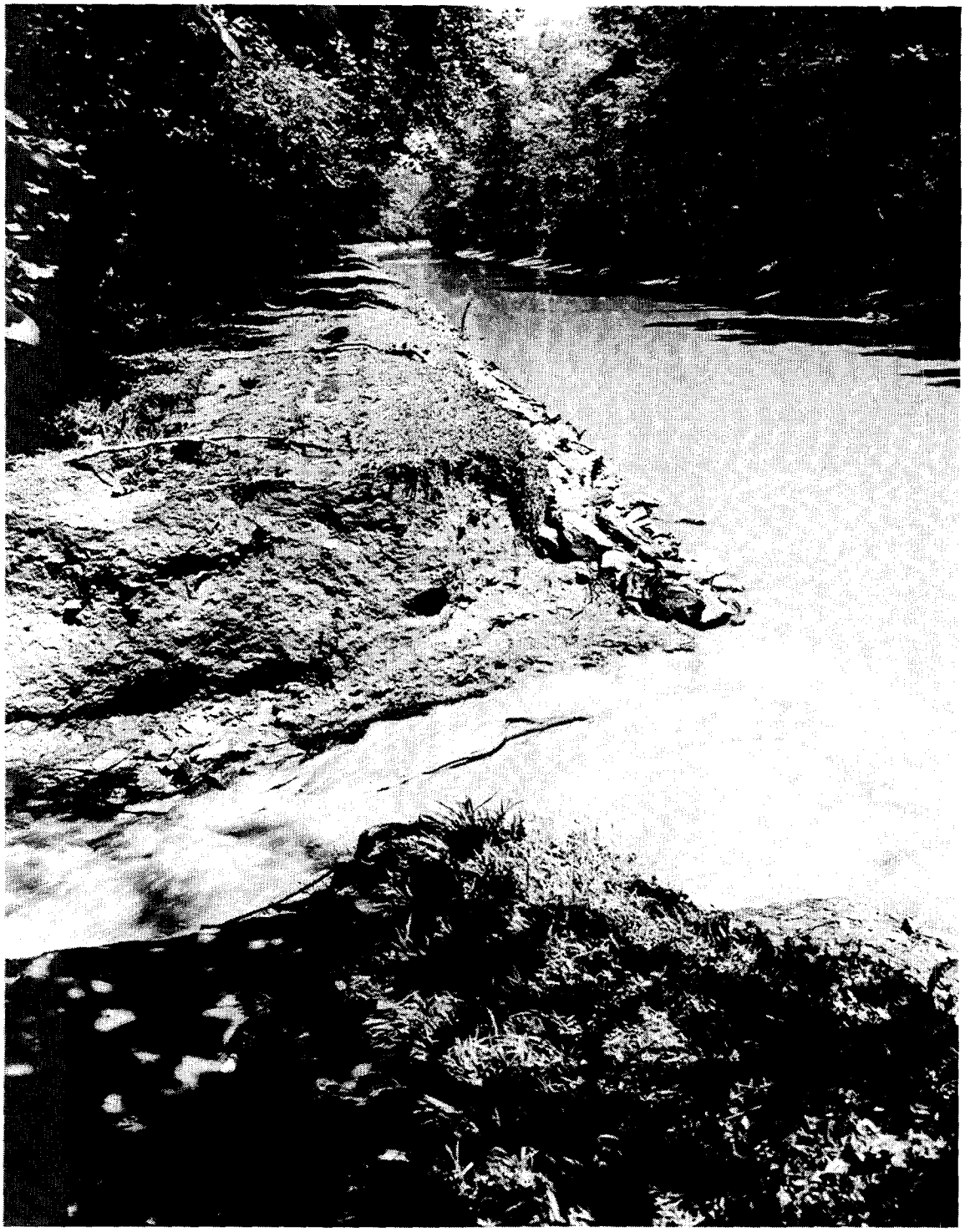
[42]Evening Star (Washington, D.C.), 19 August 1955, A1; 20 August 1955, A1, A24.

[43]Robert C. Horne, Acting Associate Superintendent, National Capital Parks, to the Director, National Park Service, 25 July 1956, Administration, Protection and Maintenance File 1460/C&O-5.

FIGURE 13

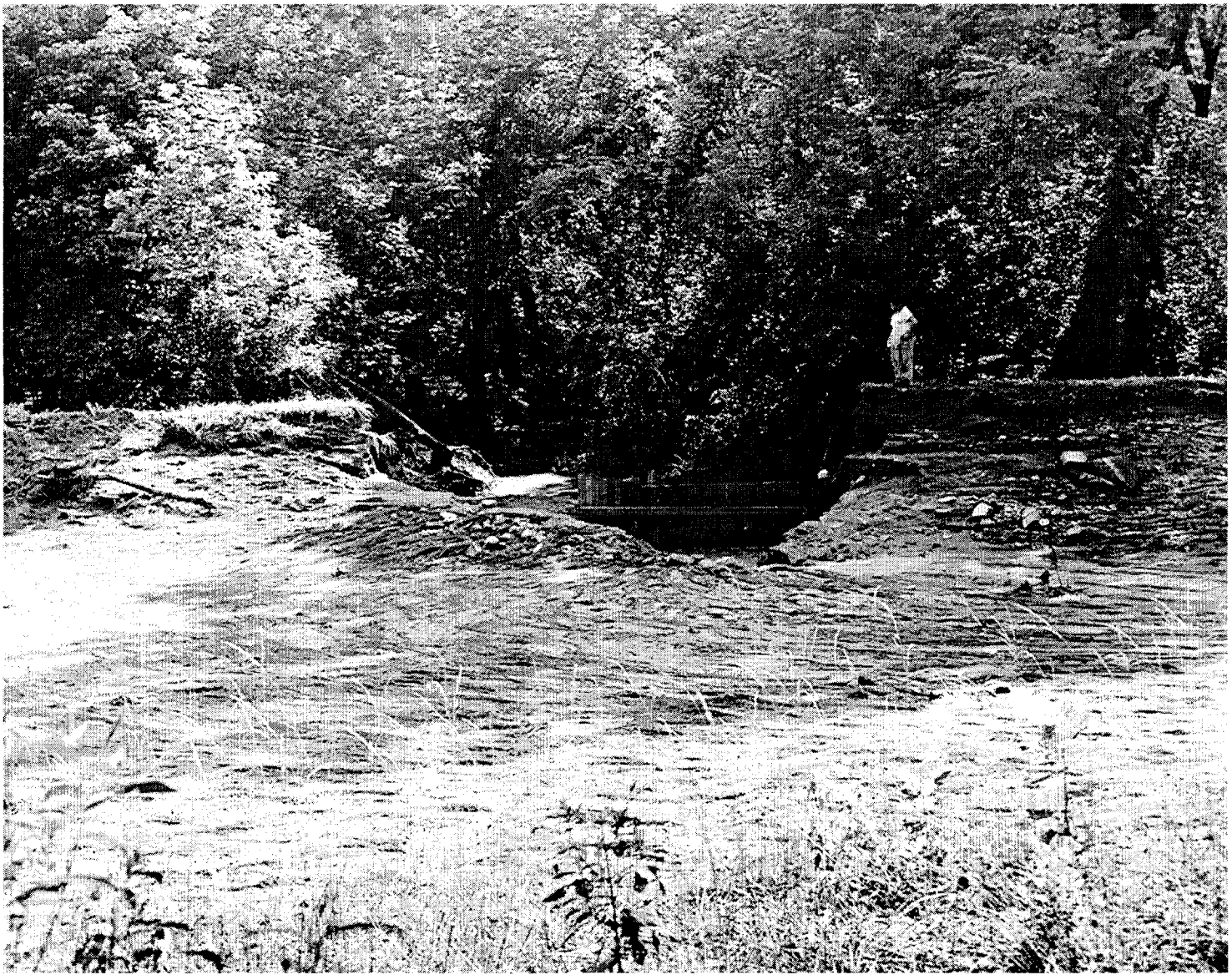
Spectators observe flood waters from the Virginia side of Great Falls. Flood of August 1955

FIGURE 14



Break in towpath, 1/4 a mile above Lock 20
at Great Falls. Flood of August 1955

FIGURE 15



Break in the towpath at Lock 7,
near Glen Echo. Flood of August 1955

station being constructed to supply water to Rockville, Maryland.[44] High water in May 1958, caused a break in the feeder canal running water to the main channel from Dam 1.[45] Flooding in April 1960 led to the loss of 1,000 yards of fill material used to build ramps across the towpath for Park Service vehicles.[46] Several breaks in the towpath between Cumberland and Seneca resulted from flooding during February 1961.[47] A flood in March 1967, the worst since the flood of Hurricane Hazel, damaged the canal between Oldtown and Seneca. A second flood later the same month compounded the injury, requiring $72,000 in repairs.[48]

In the decades following World War II, the National Park Service continued to refine its flood contingency plans for the C&O Canal. The main preventive step in the earlier plan had been to install planks in the stop lock above Widewater when the level of the river rose above 12.6 feet at Wisconsin Avenue in Georgetown. In 1958, the Park Service added new steps. In addition to installing the planks at Widewater, the canal barges were to be docked in a safe location. When the river reached sixteen feet, workers would empty the Georgetown level of the canal and open the gates on Locks 1, 2, 3, and 4 to allow flood waters to pass through unimpeded. They also would close the paddles on the feeder lock at Lock 5 and open the spillways at Fletcher's Boathouse and Foundry Branch. This plan was composed

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[44]Robert C. Horne, Chief, Division of Design and Construction, to Chief, Engineering Branch, 2 January 1958, Ibid.

[45]Harry T. Thompson, Superintendent, National Capital Parks, to Director, National Park Service, 23 July 1958, Ibid.

[46]Morning Herald (Hagerstown), 18 April 1960, 1.

[47]George A. Palmer, Assistant Regional Director, Region Five, National Park Service, Philadelphia, Pa., to Majorie A. James, Washington, D.C., 21 April 1961, Administrative Correspondence, National Capital Region, 68A-3048; Evening Star (Washington, D.C.), 20 February 1961, B1; 21 February 1961, D1.

[48]W. Dean McClanahan, Superintendent, C&O Canal National Monument, Hagerstown, to the Director, 28 April 1967, National Capital Parks Regional Office, General Records, 72A-6215, National Park Service, Washington National Records Center, Suitland, Md [Hereafter General Records, 72A-6215].

under the auspices of National Capital Parks, and did not include provisions for the canal west of Seneca.[49]

The 1972 Flood

After thirty years of relative peace, the largest flood since 1936 struck the C&O Canal in June 1972. The cause of the flood was Hurricane Agnes, whose remnants passed through the Potomac watershed. The flood was most destructive to the canal below Hancock, with the damage getting progressively worse closer to Washington, D.C. Sixty-six miles of towpath eroded and were left impassable, and twenty-six breaks occured, seventeen downstream of Seneca **(see Figure 16)**. The worst break on the canal occured at Widewater, where the flood tore a 300-foot gash thirty feet deep in the towpath. Eighty-six culverts suffered damage, twenty-two extensively; even more were clogged with silt and debris. All the aqueducts suffered, particularly on the Monocacy River where the downstream wing wall collapsed in the face of a tremendous flow coming into the Potomac from this tributary. The flood also washed away bridges, damaged locks and lockhouses, and left trees and debris scattered over the towpath and canal prism. The initial damage estimate was $7 million, but that figure quickly rose as the full accounting of the injury to the canal, by then a national historical park, became clearer.[50] An estimate prepared by A. W. Franzen, architect for the Harpers Ferry National Historical Park, dated July 14, 1972, put the damage at $9,926,000. Franzen also indicated it would take nearly $60,000,000 to restore properly the canal downstream of Hancock.[51] The latter figure included the accumulated deterioration to structures on the canal, which was intermixed and sometimes impossible to differentiate from 1972 flood damage. In September 1972, a NPS fact sheet estimated it would take $34 million to repair the C&O Canal NHP.[52]

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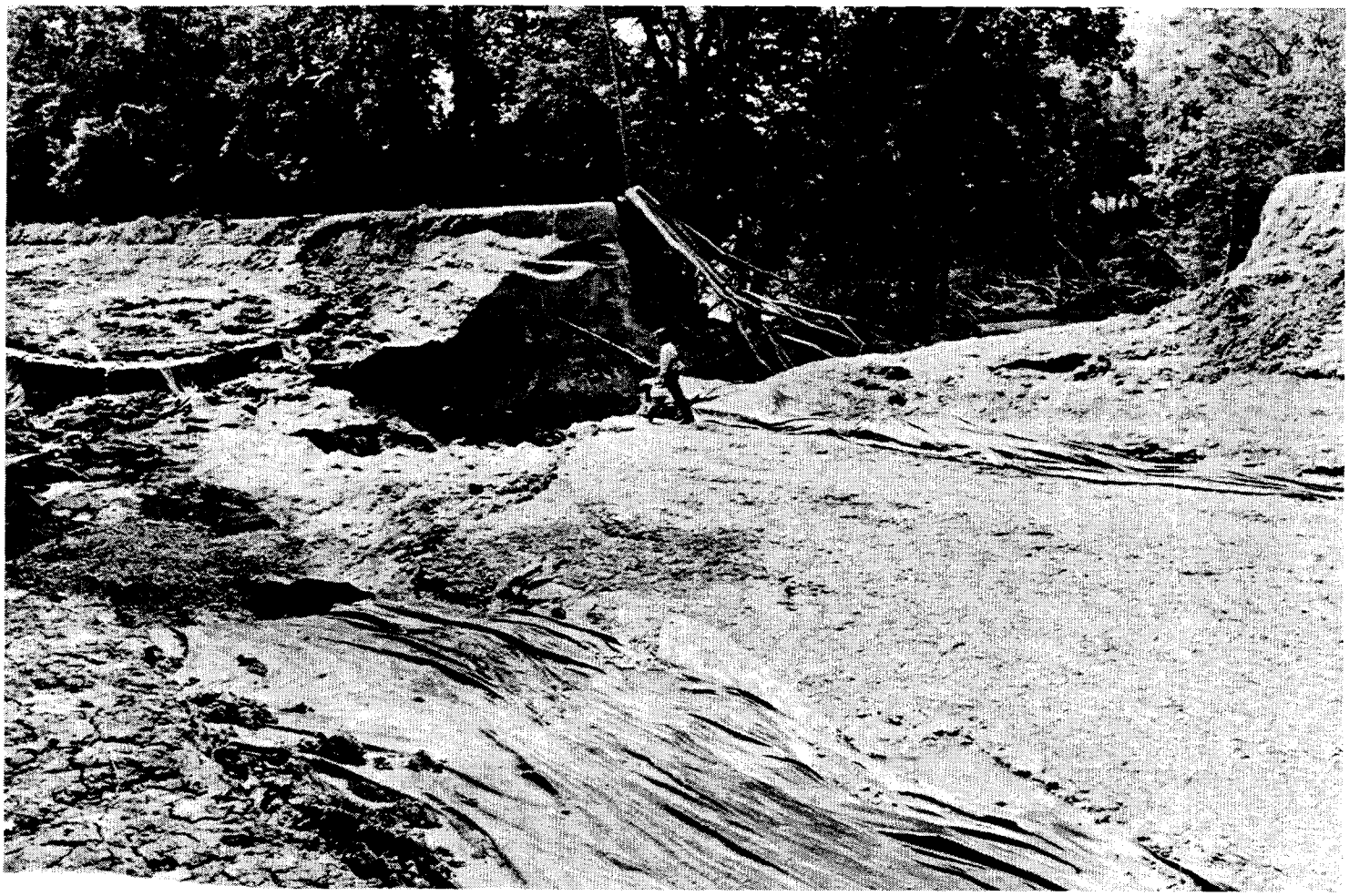
[49]National Capital Parks Organization Manual For Emergency Flood Control For Predicted Stages of 9.0 to 26.0 Low Water Datum At Wisconsin Avenue Gauge, February 1958, Flood and Droughs File 1570-35.

[50]Washington Post, 1 July 1972, A1.

[51]A. W. Franzen, Architect, Harpers Ferry National Historical Park, to Joseph R. Prentice, Engineering Technician, National Capital Parks, 14 July 1972, Flood File, Chesapeake and Ohio Canal National Park, Sharpsburg, Md. [Hereafter C&O Canal Flood File].

[52]Fact Sheet: Storm Damage at the C&O Canal NHP, 20 September 1972, Ibid.; Mackintosh, The C&O Canal, 161.

FIGURE 16



Break in the towpath near Glen Echo
caused by the flood of June 1972

Like thirty years earlier, the C&O Canal was slow to recover from the flood. While World War II had hindered the repair of the canal in the 1940s, the delay after the 1972 flood was caused by the White House. The $34 million supplemental appropriation request by the Interior Department became stalled in the Office of Management and Budget (OMB), which wanted to restrain federal spending.[53] All the repairs to the canal in 1972 were stopgap measures funded out of C&O Canal NHP's fiscal 1973 maintenance budget and $400,000 diverted to the park by the Secretary of the Interior, Rogers C. B. Morton. Because of OMB resistance, it was not until 1973 that the repair of the canal began in earnest. Even then the funding for repairs was inadequate. The C&O Canal NHP received an additional $1.8 million for repairs as part of its 1974 budget.[54] It was not until September 1973 that NPS awarded the first contract, in the amount of $353,800, for repairs between Georgetown and Lock 5 **(see Figure 17)**.[55]

Considerably more money than $1.8 million was required to restore the remainder of the canal. The urgent need for funds was accentuated when the Catoctin aqueduct, sagging after decades of neglect and flooding, finally collapsed during heavy rains in late October 1973.[56] Additional money came in the form of funds for the 1976 Bicentennial of the United States. The C&O Canal NHP was designated to receive $3 million for repairs in fiscal 1975 from bicentennial money. Secretary Morton pushed the OMB for an additional $10 million appropriation. However, the OMB rejected the Secretary's request because officials were afraid that if it acquiesced, every congressional representative would be pushing for reconsideration of proposed NPS construction projects in their district.[57]

The National Park Service used the bicentennial funds to form the C&O Canal Restoration Team in September 1973, under the leadership of Richard G. Huber, a Washington, D.C.-based

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[53]Washington Post, 1 October 1972, E1; 8 October 1972, D6.

[54]Ibid., 25 November 1973, D1.

[55]Ibid., 15 September 1973, B3.

[56]Ibid., 1 October 1972, E1; 8 October 1972, D6.

[57]Francis M. Wiles, Director of Budget, Office of Budget and Management, to the Files, 21 June 1974, C&O Canal Flood File.

FIGURE 17

Dump trucks carry clay dirt in November 1973
to repair the canal after the flood of June 1972

landscape engineer working for NPS' Denver Service Center. The first task of the restoration team, in consultation with the superintendent of the C&O Canal NHP, William R. Failor, was to establish repair priorities. With only $3 million committed, funding was nowhere near the $34 million originally requested for flood repair and stabilization. It was necessary to decide what parts of the canal most urgently needed work, and what parts could be left until later. With the collapse of the Catoctin aqueduct no doubt still in mind, Huber and his team decided in January 1974 to concentrate on the canal's masonry structures instead of the towpath, which the public was already clamoring to see reopened. Huber justified the decision on flood control and historic preservation grounds, stating:

> We are cognizant of the facts that the towpath is used extensively by bikers and hikers, and that towpath continuity has been and probably still is a major concern. However, if the overall significance of this historic resource is to be maintained we believe there is an urgent need now to stabilize, repair, or restore the many masonry structures which are in such a bad state of disrepair. Most of these structures are water control devices, designed to handle or provide for the control of water, and unless they are re-established as such, damage from high water and floods will continue to occur. We believe that damage from restoration of the towpath to its historic grade is a very important factor in the overall canal picture as it relates to water control. However, it is our opinion it should not take prededance [sic] over repair and stabilization of the structures which handle or provide for the control of water.[58]

The list of seventeen structures designated in the spring of 1974 to be completed by 1976 reflected the water control and historic preservation priorities set by the restoration team. At the top of the list was the stop lock above Widewater. This device had been inoperative during the 1972 flood, contributing to the massive towpath breaks there.[59] The remaining sixteen projects involved repair and stabilization work on five aqueducts, five culverts, three locks and the guard locks at Dam

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[58]Richard H. Huber, Restoration Team Leader, C&O Canal, to Director, National Capital Parks, 30 January 1974, Ibid.

[59]Dales Sipes. Interview by Donald R. Shaffer, 14 April 1997.

4, 5, and 6, the Mule Barn at Four Locks, and the Busey Cabin.[60] The team also compiled a list of twenty additional projects if more funds became available.[61] By the time Huber and his group disbanded, they had actually completed twenty-seven separate projects, costing $4.2 million. These included aqueducts, culverts, locks, and other masonry structures in the original plan, and towpath restoration from Foundry Branch to Great Falls, as well as the repairs at Widewater.[62] Indeed, the bicentennial work emphasized towpath continuity to an extent not originally foreseen by Richard Huber and his group.

The organization of labor for the restoration of the C&O was a complex affair. Besides the work overseen by the restoration team, additional projects fell under the supervision of the chief of maintenance for the C&O Canal NHP, Dale Sipes. It was necessary for Huber and Sipes to divide the work. Huber and his team generally oversaw the expensive, complex, and high-profile projects.[63] They brought in architectural and engineering firms to design seven of them, two were planned by the Federal Highway Administration (the stabilization of the Monocacy and Tonoloway aqueducts), and the remainder by the restoration team itself. Even then, park maintenance personnel did the actual field work for thirteen of the twenty-seven bicentennial projects (contractors did the remainder).[64] Therefore, park maintenance crews worked at times under the supervision of the restoration team and other times under their own division chief. While the restoration team and park maintenance worked amicably, Dale Sipes

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[60]John A. Townsley, Deputy Director, National Capital Parks, to Restoration Team Leader, 11 April 1974, C&O Canal Flood File. The seventeen projects approved included for fiscal 1974: 1) Stop Lock 16; 2) Monocacy aqueduct; 3) Lock 43; 4) Little Monocacy culvert; 5) Tonoloway aqueduct; 6) Little Catoctin aqueduct; for fiscal 1975: 7) Culvert at Milepost 135.17; 8) Fifteenmile Creek aqueduct; 9) Mule Barn at Four Locks; 10) Busey Cabin; 11) Guard Locks at Dams 4, 5, and 6; 12) Muddy Branch culvert; 13) Evitts Creek aqueduct; 14) Culvert-Waste Weir at Milepost 119.78; 15) Lock 23; 16) Lock 54; 17) Sideling Hill Creek aqueduct.

[61]Richard G. Huber, Restoration Team Leader, to Director, National Capital Park, 6 May 1974, Ibid.

[62]Merrill J. Mattes, Landmarks of Liberty: A Report on the American Revolution Bicentennial Development Program of the National Park Service (Washington, D.C.: History Division, National Park Service, 1989), 18-29.

[63]Richard G. Huber. Interview by Donald R. Shaffer, 1 April 1997.

[64]Mattes, Landmarks of Liberty, 17.

thought the presence of Huber's group was unnecessary. Sipes believed his men had developed an expertise with canal structures that the restoration team did not have and that they could have completed the repairs on their own with much greater speed.[65]

With the bicentennial funding in place, the restoration team and park personnel made considerable progress on the repairing the canal in 1974. The greatest priority that year was restoring the continuity of the towpath. The park managed to repair the towpath from Georgetown to Seneca in 1974, with the exception of Widewater. A bridge across Lock 34 near Harpers Ferry restored towpath continuity in the Piedmont section of the canal, and a foot bridge allowed traffic to cross Catoctin Creek (in place of the collapsed aqueduct). Water control structures also received attention. Culverts with the highest priority received extensive work. An effort also was made to clean the debris out of as many culverts as possible to ensure the unimpeded flow of water underneath the canal. Contractors stabilized the foundation of the Monocacy aqueduct and the remains of the collapsed aqueduct at Catoctin Creek.[66] The park gave the most attention in 1974 to the heavily used sections of the canal near Washington, where more of the damage from the 1972 flood had occurred. By August 1974, the first five miles of the canal from Georgetown to Brookmont, Maryland had been rewatered.[67]

Repairs on the canal continued in 1975. Park maintenance employees finished the repairs of Widewater in October, restoring towpath continuity in the canal below Seneca. It also raised the level of the towpath between Locks 5 and 10 to historic grade and worked on the repairs of several culverts, locks, and other projects. Contractors finished repairs of the stop lock above Widewater in August 1975, completed the stabilization of three aqueducts and started two more, and placed concrete bulkheads in the guard locks of dams 4, 5, and 6. The bulkheads proved quite worthwhile, preventing the uncontrolled flow of water down the canal from the dams in times of floods.[68]

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[65]Sipes interview.

[66]Annual Report, 1974, Chesapeake and Ohio Canal National Historical Park, 20-21.

[67]Washington Post, 20 August 1974, C1.

[68]Annual Report, 1975, Chesapeake and Ohio Canal National Historical Park, 29-33. George Hicks, a former maintenance foreman on the canal believes the bulkheads were one of the most effective flood control measures taken after the 1972 deluge. "We found that putting those bulkheads . . . really

The stop lock and bulkheads were just some of the steps the park took after the 1972 flood to prevent future damage from high water to the C&O Canal. The official policy was to accomplish this task through existing flood control structures. The Park Service attributed much of the flood damage on the canal to the fact that many of the existing water control devices were not functional in June 1972. "We have found that the floodproofing features included in the original design and construction of the canal are adequate today," a report on the subjected stated. "The problem is that these features have been allowed to deteriorate over the past 100 years where they do not function as their intended purpose." The C&O Canal NHP indicated that a purpose of its restoration of the canal was to make these structures function properly. "Good judgment," according to one report, "has dictated that the floodproofing features must be put back in those areas where repairs are made. These include stop locks, waste weirs, restoring towpath to historic grade to permit even overflow rather than concentrated overflow in low areas and the rebuilding of culverts."[69]

Flood proofing features consisted of modern features at some locations on the canal, such as the concrete bulkheads at the guard locks of Dams 4, 5, and 6. Huber's restoration team also utilized modern technology at Widewater. They tried to increase the stability of the tall and vulnerable towpath embankment there by reinforcing it with gabions (see p. ?). Park maintenance forces also stabilized culverts using concrete bands.[70]

Using modern flood control structures or repairs was counter to NPS policy for preservation of historic structures and landscapes where they were noticeable or obtrusive. Consequently, at least one dramatic idea to protect the canal was not adopted. It called for protecting the canal with a levee between towpath and the river. To provide adequate protection, however, the levee would have had to have been at least thirty feet tall in places. Such a levee would not only have been prohibitively expensive to build, but upsetting to park visitors by blocking the view of the river from the towpath and clashing

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eliminated a lot of our damage," he told the author. See George Hicks. Interview by Donald R. Shaffer, 14 April 1997.

[69]Report of the C&O Canal National Historical Park to Harry C. McKittrick, Office of Management of Budget, 29 October 1974, C&O Canal Flood File.

[70]Ibid. Hicks and Huber interviews.

with the nineteenth-century charm of the canal.[71] It also proved impossible to install more modest modern flood control devices to the canal in high-use areas. NPS wanted to add a modern culvert at Widewater, but dropped the idea when a member of the C&O Canal Commission, the nineteen-member citizen's advisory group to the park on policy matters, threatened to sue to block the installation of the structure.[72]

By the end of 1976, Richard Huber and his team had finished their work on the C&O Canal. The date that repairs of damage from the 1972 flood ended is hard to determine because damage from floods and neglect were often indistinguishable. The C&O Canal NHP achieved towpath continuity by the end of 1975, but it took many years' more effort to bring the towpath back to historic grade along the length of the canal. Except for the massive infusion of money that had come from the Bicentennial, work on major structures proceeded slowly, particularly the expensive repairs of the culverts. Lack of funds limited the park to stabilizing no more than three culverts a year. Park maintenance forces continued restoration and stabilization during the remainder of the 1970s and into the 1980s.[73] A statement prepared for the formulation of the 1979 budget summarized the extent of the work on the canal since 1972. "We have stabilized 5 locks, 3 guard locks, 7 aqueducts, 10 culverts, a mule barn, 6 lockhouses, the Paw Paw Tunnel ravine, 2 major breaks in the towpath at Wide Water and rebuilt and resurfaced approximately 17

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[71]Huber interview. The park did install dikes in 1976 to protect the Sideling Hill Creek, Town Creek and Evitts Creek aqueducts from storm runoff, but this measure was nowhere near as ambitious as trying to protect the canal from the Potomac with massive levees. See Annual Report, 1976, Chesapeake and Ohio Canal National Historical Park, 20.

[72]John Frye. Interview by Donald R. Shaffer, 5 May 1997. In all fairness, the National Park Service could not please everyone when it came to the issue of historical authenticity and the C&O Canal. Carrie Johnson, a Washington Post journalist criticized the Park Service for the non-historical way it had stabilized the canal's aqueducts. "The agency," she wrote, "lacks the millions of dollars, the craftsmen and the engineering lore to rebuild all the aqueducts precisely as they were. So it has settled for propping up the most rickety ones without trying the preserve or echo the canal's 19th-century style." Yet other people complained when the park did aim for historical authenticity. Bicyclists griped about the use of shale, a historically authentic towpath material, because it caused flat tires and was hazardous to fall on. See Washington Post, 1 May 1979; 22 September 1983, MD3.

[73]Hicks interview. Hicks indicated that the informal policy was to stabilize one culvert a year in each of the three districts of the park.

miles of towpath," it stated.[74] In 1978, the Park Service ordered a $2.7 million project for the canal in Georgetown, principally aimed at stabilizing the retaining walls and dealing with the persistent leakage of water from the canal.[75] It also financed restoration work for one lift lock, six lockhouses, and six culverts the same year through the State of Maryland's Land Heritage Program. Land Heritage represented the first major of infusion of Maryland money into the canal in over a century.[76]

As repair of old injuries continued, smaller floods inflicted new damage on the C&O Canal in the years following 1972. The canal was hit by a flood in October 1976, which cost $70,000 to repair. Although damage was spread across the park, the most significant expense from this flood came when the foot bridge over Catoctin Creek washed away. The bridge collapse meant an interruption in the continuity of the towpath, so recently reestablished.[77] George Hicks, a maintenance foreman with the canal at the time, attributed the loss of the bridge to poor design. According to Hicks:

> [The bridge] was a steel I-beam fabricated with a concrete deck with metal railing up the sides, and we had to drop this railing every time Catoctin Creek was coming up. If we didn't, it was going to collect a lot of brush. Well, that I-beam washed up out of its seat--we had them set on gabion baskets--and that I-beam is still laying in the creek bed of Catoctin Creek; it washed out.[78]

The 1976 flood was followed by another flood in February 1979. This deluge occurred after the rapid melt-off of snow from a major blizzard. However, the damage from the canal was minor. Water from the river flowed into the canal at Locks 6 and 7, but did so little harm it did not even merit attention in the annual report of the C&O Canal for 1979. The Washington Post, however,

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[74]FY 79 Briefing Statement, C&O Canal National Historical Park, 31 January 1978, C&O Canal Flood File.

[75]Washington Post, 26 October 1978, DC1, DC5.

[76]Annual Report, 1976, Chesapeake and Ohio Canal National Historical Park, 34.

[77]1976 Annual Park Report, 22-23.

[78]Hicks interview.

carried a photograph of the flood waters running around the lockhouse at Lock 7--a favorite television image in future floods.[79]

The largest flood on the Potomac to that date after the 1972 flood occurred in February 1984. It was caused by six inches of rain in twelve hours in the Blue Ridge, aggravated by the frozen ground in the mountains that meant the water ran off immediately rather than seep into the ground. Consequently, flooding was most acute in Frederick and Washington counties, where tributaries run out of the Blue Ridge. Seventy miles of towpath there went completely underwater. Portions of the canal flooded from Cumberland all the way to Georgetown and damage occurred along the entire line. The condition of the canal, which was in much better shape than when Agnes had struck in 1972, helped limit the damage. Most structures of the canal came through the flood well. The main injury was to the towpath, with breaks and erosion in some areas, and silt and debris covering it in others. The cost to repair the canal was put at $580,000. The National Park Service funded $300,000 of that figure from its emergency fund, and another $280,000 was reallocated from other portions of the C&O Canal's budget.[80]

The 1985 Flood

The damage from 1984 was not entirely repaired when a larger flood hit the canal in November 1985. High water affected the C&O Canal NHP from the Oldtown to Georgetown, but the deluge was most memorable at the confluence of the North and South branches of the Potomac River. The South branch flooded so severely that water backed up at its confluence with the North branch and trees and other debris actually floated upstream on the North branch for a time. Unlike most other floods, much of the worst damage was on the upper portion of the canal. The Paw Paw Tunnel flooded for the first time since 1936 and the park visitor's center in the town of Hancock also went under water. While the 1985 flood was notable for the large amount of damage on the upper portion of the canal, there also was significant injury downstream. Opposite Harpers Ferry, a perennial trouble spot, the towpath at Lock 33 completely washed away under the pressure of the Shenandoah River and there was a massive blowout in the

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[79]Washington Post, 27 February 1979, C1, C6.

[80]Ibid., 16 February 1984, C1, C5; 17 February 1984, B1, B6; 18 February 1984, B1-B2; 19 February 1984, C4; 3 March 1984, B2; National Parks (May/June 1984): 34; C&O Canal National Historical Park Flood Damage, 2/14-2/17/84, c. 1984, C&O Canal Flood File.

canal below Fletcher's Boathouse above Georgetown. The post-Agnes work continued to pay off, as most damage was to the towpath rather than to masonry structures. Towpath eroded for miles, and more than thirty breaks occurring in its embankment. The damage estimate for entire park was $9.3 million.[81]

Repairs proceeded more promptly after the 1985 flood, than it had in 1972. The C&O Canal NHP got funding much quicker. Superintendent Richard Stanton closed 70 percent of the park, more than was strictly necessary, according to Barry Mackintosh, to reinforce his appeal for repair money.[82] Exaggerating the damage worked, encouraging Congress to make an emergency appropriation of $2 million for immediate repair needs, in the midst of a period of austerity for the National Park Service as a whole.[83]

The repairs after the 1985 flood were done by mostly park maintenance crews, who were much better equipped than they had been in June 1972. Repair work started sooner than in 1972, because the bidding process for contractors was eliminated and planning simplified. Indeed, some repairs began almost immediately. Gordon Gay, chief of interpretation for the C&O Canal NHP during the 1985 flood, remembered that maintenance crews started pulling debris off the Monocacy aqueduct "just practically days after the water went down."[84]

The experience after the 1985 flood also showed park personnel exhibited greater expertise in repairing the canal and more sensitivity to working in a national park than contractors.

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[81]Washington Post, 15 November 1985, C7; Richard Stanton, "The Flood of '85," Superintendent, C&O Canal Historical Park, 29 November 1985, C&O Canal Flood File; Gordon Gay. Interview by Donald R. Shaffer, 30 April 1997; Hicks interview; Edwin M. Dale, Superintendent, C&O Canal National Monument, Hagerstown, to George A. Palmer, Acting Regional Director, Northeast Region, National Park Service, Philadelphia, Pa., 23 November 1962, Administrative Correspondence, National Capital Region, 68A-3048.

[82]Mackintosh, The C&O Canal, 168.

[83]Baltimore Sun, 7 May 1986, 14. While budgetary times were tough, Stanton engaged in a bit of historical revisionism when he claimed that money had been much quicker in coming after the 1972 flood than after 1985. He told Baltimore Sun columnist Matt Seiden, "We got the money just like that." Stanton, who had overseen the repairs of the canal after 1972 for National Capital Parks, certainly knew better.

[84]Gordon Gay. Interview by Donald R. Shaffer, 30 April 1997.

J. D. Young, assistant superintendent of the C&O Canal NHP at the time, stated in this regard:

> . . . most private sector organizations unless they have done extensive work with the Park Service, are not that sensitive to the values of the historic fabric of a historic structure like the C&O Canal, and therefore you need to have someone in charge of that kind of an operation who knows what to do and what not to do. For instance, if you were just to turn a private contracting company loose on the towpath and give them specifications and say, "Go down and fix this break in the towpath," and they had trouble getting their dump trucks to the towpath, they're just as apt to cut the trees down to get by. Park Service personnel would evaluate that first. And primary in their minds is always the protection of the resource, and that's not true in the private sector because they're not working with historic resources and historic structures that need to be protected.[85]

Still, for all the values and expertise the park maintenance department brought to the post-1985 repairs, they needed help. One of the biggest tasks created by the 1985 flood was trash removal. High water had left large amounts debris covering the towpath and canal prism, and removing it was a monumental task, particularly at a time when the C&O Canal NHP faced the prospect of no additional funds forthcoming from Congress. A solution, however, came from Superintendent Richard Stanton. Stanton proposed inviting boy and girl scout troops, among the biggest users of the towpath, to a "Cleanup Camporee." The scouts would camp along the canal and spend their mornings as volunteers picking up trash, and then have the remainder of the day for scouting activities.[86] The plan called for about 10,000 scouts to pick up trash over the summer of 1986, although about 8,700 actually participated. The Camporee was deemed a major success. Secretary of the Interior, Donald P. Hodel, visited Williamsport for the kickoff on June 1. By mid-July the project was half complete. The scouts finished the bulk of trash pickup by the

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[85]J. D. Young. Interview by Donald R. Shaffer, 16 April 1997.

[86]The use of volunteers on the canal was not entirely without precedent. The park had informally used volunteers to rebuild stone walls near Great Falls after the Agnes flood, and "level walkers" of the C&O Canal Association had reported conditions along the towpath for years. However, volunteers never had been used in the C&O Canal National Historical Park on such a massive scale before 1986. See Montgomery County Sentinel, 31 August 1972, A1.

end of August, prompting Stanton to reopen the towpath ahead of schedule.[87]

The completion of the Camporee did not end the repair of the canal. Much of the towpath was still in poor condition. Repairs resumed on the canal in the spring of 1987. With the towpath clear, park maintenance could get heavy vehicles near the canal and work on filling in the breaks and restoring damaged towpath. It was also necessary to clean out the culverts that had filled with silt and debris during the flood. The park contracted out the culvert work and the repair of towpath in the Palisades District, while park maintenance crews did the remainder of the work. Repair work on the canal continued into 1988.[88]

After the 1985 flood, there was talk of installing non-historic flood prevention structures on the canal. Soon after the flood waters receded, Richard Stanton wrote to the park staff:

> A few modifications to the canal seem essential. For example, a flood control structure below Fletcher's will be designed. As in Agnes, a blowout between Foundry Branch and Fletcher's saved the Lock 3 complex in Georgetown. Some kind of large hand-controlled weir must be installed. Other non-historic strenghening [sic] will also be considered.[89]

While the C&O Canal NHP considered non-historic water control structures after the 1985 flood none appears to have been built, other than collapsible handrails on the Olmsted Island bridges at Great Falls. It was hoped the handrails, which could be removed during a flood, would prevent the accumulation of

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[87]Washington Post, 28 August 1986, MD9. Although the scouts were the largest component of the volunteers, other people gave their time as well. Some of these volunteers came from local civic and interest groups. National Guard and Army personnel participated in the cleanup and the Defense Department lent equipment to the park. Volunteers contributed a total of 43,925 hours to the restoration of the canal after the 1985 flood. See Young interview; C&O Canal National Historical Park, Fiscal 1989 Budget Briefing Statement, 9 January 1988, C&O Canal Flood File.

[88]Washington Post, 6 April 1987, D8; Richard L. Stanton, Superintendent, C&O Canal, to Regional Director, National Capital Region, 13 April 1987; Manus J. Fish, Regional Director, National Capital Region, to Carrie Johnson, Chairman, C&O Canal National Historical Park Commission, 13 April 1987 (draft); C&O Canal National Historical Park, Fiscal 1989 Budget Briefing Statement, 9 January 1988, C&O Canal Flood File.

[89]Stanton, "The Flood of '85," Ibid..

debris on the structure--the main cause of its failure during the 1972 flood. The park also repaired a historic waste weir near Chain Bridge and rebuilt a high wall at the Dam 4 winch house, but otherwise it settled for putting the canal the way it had been before the flood.[90]

Like the C&O Canal Company, the National Park Service, during its first forty-seven years' management of the canal displayed an active interest in making the historic resource more sustainable. In the pre-World War II restoration, after the floods of 1942, 1972, and 1985, and at other times it took specific actions to strengthen the canal against the force of the Potomac River. Some of these preventive efforts succeeded, such as the bulkheads on Dams 4 and 5. Yet inadequate funding and certain federal regulations hindered the effectiveness of the National Park Service in flood damage prevention. The post-1972 rehabilitation of the C&O Canal NHP increased its ability to withstand floods, but still could not save the canal from significant damage during a major flood.

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[90]Ibid.; Young interview. According to J. D. Young, Dick Stanton opposed rebuilding the Olmsted Island bridge, until public pressure forced him to embrace the project.