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EEO/AA Employer

Re: Kanawha River Navigation System

The Nomination is a draft and the following properties are NOT listed on the National Register (Please see the individual forms for more information):

Winfield Locks and Dams	PU- 0028
Gallipolis Lock and Dam	MS-0073
London Locks and Dam	KA-4664
Marmet Locks and Dam	KA-4661

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NATIONAL REGISTER OF HISTORIC PLACES
MULTIPLE PROPERTY DOCUMENTATION FORM

This form is used for documenting multiple property groups relating to one or several historic contexts. See instructions in How to Complete the Multiple Property Documentation Form (National Register Bulletin 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900-a). Use a typewriter, word processor, or computer to complete all items.

 X New Submission Amended Submission

A. Name of Multiple Property Listing

KANAWHA RIVER NAVIGATION SYSTEM

B. Associated Historic Contexts

(Name each associated historic context, identifying theme, geographical area, and chronological period for each.)

The improvement of the Great Kanawha River with roller dams, for 9 foot navigation depth, to transport coal, chemicals, and products to outside markets, 1930-1937.

C. Form Prepared by

name/title	LARRY N. SYPOLT		
	INSTITUTE FOR THE HISTORY OF TECHNOLOGY AND INDUSTRIAL ARCHAEOLOGY		
	WEST VIRGINIA UNIVERSITY		
street & number	1535 MILEGROUND	telephone	304-293-2513
city or town	MORGANTOWN	state	WV
		zip code	26505-3748

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. (___ See continuation sheet for additional comments.)

Signature and title of certifying official Date

State or Federal agency and bureau

I hereby certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper

Date

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Table of Contents for Written Narrative

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Provide the following information on continuation sheets. Cite the letter and the title before each section of the narrative. Assign page numbers according to the instructions for continuation sheets in How to Complete the Multiple Property Documentation Form (National Register Bulletin 16B). Fill in page numbers for each section in the space below.

E. Statement of Historic Contexts (If more than one historic context is documented, present them in sequential order.)

Page Numbers
3

F. Associated Property Types (Provide description, significance, and registration requirements.)

11

Y
G. Geographical Data

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H. Summary of Identification and Evaluation Methods (Discuss the methods used in developing the multiple property listing.)

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I. Major Bibliographical References (List major written works and primary location of additional documentation: State Historic Preservation Office, other State agency, Federal agency, local government, university, or other, specifying repository.)

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Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 120 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

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SECTION E

STATEMENT OF HISTORIC CONTEXT

Introduction

The Kanawha River is formed by the New and Gauley Rivers, at Kanawha Falls, in southern West Virginia and flows in a northwesterly direction to the Ohio River at Point Pleasant, West Virginia, 266 miles below Pittsburgh, Pennsylvania. The drainage area of the watershed of the Kanawha River is 12,300 square miles. The basin is rugged and mountainous and the stream valleys are generally narrow with little level bottom land.

The Kanawha Basin has large natural resources in bituminous coal, natural gas, petroleum, salt and other minerals, and timber. The coal is of excellent quality. The principle industries are coal mining, agriculture, gas and petroleum productions, manufacturing, electrical metallurgy, chemicals and lumber.

Overland transportation in the eighteenth century to western Virginia was very slow due to the rugged Appalachian mountains. Water transportation was the more desirable route between eastern and western Virginia, but this too, was dangerous as no improvements had been made to the rivers. As more settlers crossed the Allegheny Mountains, better transportation routes were needed.

The Kanawha River became a major east-west transportation route for getting coal and other commodities to the Ohio River before the railroad and improved overland routes were established. Conversely, the Kanawha River was significant in the settlement pattern of West Virginia, as settlers came down the Ohio River and settled the Kanawha Valley from west to east. The Kanawha was part of the first major transportation route connecting eastern Virginia to the Ohio River.

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In the twentieth century, the Kanawha River became the only inland river navigation system entirely constructed with the roller gated dam system in the United States. The roller dam concept had only been used on selected dams throughout the United States, although there were several hundred roller gated dams constructed in Europe by this time. In the nineteenth century, the Kanawha River was the first to be completely controlled with wicket dams.

Chronicle of River Improvement

The Virginia General Assembly, encouraged by George Washington, recognized the importance of establishing a transportation route connecting the eastward flowing James River with the westward flowing Kanawha River, thus reaching the Ohio River. The water route would permit trade between the Ohio River and Tidewater Virginia.¹ Commodities, such as salt, were also needed by the inhabitants of eastern Virginia and could be brought back on the return from the Ohio. The first step taken towards improvement was in 1784 when the Virginia Assembly granted a charter to the James River Company, and authorized it to build a "state road" for wagons from Richmond to the Kanawha River.²

Construction began in 1785, and by 1790 the road was completed to the navigable waters of the Kanawha. It became the first road connecting eastern and western Virginia, and, in 1800, extended down the Kanawha River to the Ohio. Many leaders in Virginia had hoped to secure a water route from the Ohio River to Chesapeake Bay by canalizing the Kanawha and James rivers. A plan was devised to

¹ Wayland Fuller Dunaway, "History of the James River and Kanawha Co." (Ph.D. diss., Columbia University, New York, 1922), 9-20.

² Ibid., 19.

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provide slackwater for batteaus on these rivers, but as time passed, they found that this was not adequate for the trade on the rivers. Larger boats were needed and the James River and Kanawha Canal should be constructed to connect the James and Kanawha rivers and their tributaries. The canal would be constructed over the mountains in four divisions, to the Greenbrier River, where the Greenbrier, New and Kanawha rivers would be improved by slackwater and sluices for steamboat navigation. Under the Virginia system of public-state funding, Commonwealth resources were not sufficient to carry this plan out.

Consequently, the unimproved Kanawha River was only fit for navigation during periods of high water, such as the winter months and spring freshets. Kanawha Falls, extending across the width of the river, together with boulders and trees in other parts of the river, made navigation difficult and dangerous. The General Assembly, again in 1820, passed a bill providing for the improvement of the Kanawha, and work was started at Elk, Johnson, Tyler and Red House Shoals. A lack of funds prevented this work from being finished and work was stopped in two years. In 1825, the General Assembly provided another appropriation and the work was completed in 1828. A chute was cut through the rock ledges at Red House Shoal and Tyler Shoal. Sluices were cut and wing dams built at Debby, Eighteen, Knob, Tacket, Johnson, etc.

The first steamboat to attempt navigation of the Kanawha River was the Robert Thompson, in 1819. She ascended as far as Red House Shoal, but the strong current and lack of power prevented her from going further. The Andrew Donnally made the first successful run to Charleston in December 1820. In 1823, the Eliza also made

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a trip to Charleston.³ These pioneers started steamboat navigation from Kanawha Salines to the Ohio River. Soon after, many more steamboats began plying the Kanawha River from Gallipolis, Parkersburg, Cincinnati, Wheeling, Pittsburgh and other cities.

In 1840, Alva Hansford shipped the first flatboat of coal to Cincinnati, and salt and coal barges became a common sight on the Kanawha River.⁴ However, year round river transportation was not possible because the depth of the water changed with the seasons. In 1851, coalmen from along the river petitioned the General Assembly for improvements to help keep the river navigable year round. The General Assembly created the Kanawha Board to study improvements to the Kanawha River in 1858.

Not many improvements were undertaken between 1858 and the Civil War. This conflict, together with the 1861 flood (the worst in the valley's history), stalled river improvements and almost completely stopped coal and salt shipments. Thus, nothing was accomplished until after the Civil War.

The Kanawha Board was re-established in 1863 by the new state of West Virginia. It was entitled to issue bonds and collect tolls for river improvements.⁵ Federal funds were also appropriated for river improvement, but by 1883,

³ James Morton Callahan, Semi-Centennial History of West Virginia (Charleston, WV: Centennial Commission of West Virginia, 1913), 92-3.

⁴ Stan Cohen and Richard Andre, Kanawha County Images (Charleston, WV: Pictorial Histories Publishing Co., 1992), 51.

⁵ (West) Virginia, Legislature, "An Act to Amend and Re-enact the Act Passed May 15, 1862, Entitled 'An Act to Reorganize the Kanawha Board,'" Chapter 40, 1862-3, Ordinances and Acts of the Restored Government of Virginia, Prior to the Formation of the

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the Kanawha Board ceased operation and the task was left to the U.S. Army Corps of Engineers.

In 1875, the Corps of Engineers first major project on the Kanawha River called for a constant six foot river depth for navigation in the Kanawha River. The Kanawha River Slackwater Project planned a series of twelve locks and dams from Kanawha Falls to Point Pleasant. This number was later changed to eleven. The uppermost dams would be of the fixed type and the lower ones would be of the moveable, Chanoine wicket type to allow for barges, rafts, ice and debris to pass over them. Eventually only ten dams were built--two fixed and eight moveable.⁶ When completed in 1898, the Kanawha River became the first river in the country to be completely channeled with wicket dams. River traffic blossomed over the next few decades, as did the size of the tows using the Kanawha River.

Ten locks in a seventy-five mile route were too time-consuming for the larger tows because barges had to be locked through separately. Federal legislation in 1929 called for a nine foot depth in the Ohio River. This put a greater burden on the Kanawha River shippers who wanted to expand their coal businesses. Congress authorized the construction of the London and Marmet locks and dams on

State of West Virginia, With the Constitution and Laws of The State of West Virginia, to March 2d, 1866 (Wheeling, WV: John Frew, 1866), 27.

⁶ Thomas E. Jeffries, Assistant Engineer, Charleston, WV, letter to Capt. F.W. Altstaetter, Wheeling, WV, September 4, 1909, pp. 5-7; RG 77, Entry 1348, File K1146-77 (Misc. Officers Letters-Kanawha), NARA, Philadelphia, PA.

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the Kanawha River as part of the 1930 River and Harbor Act⁷ and construction started on them in 1930. The Kanawha River would now have a nine foot depth and only three locks and dams. The locks and dams would be located at London, Marmet and Winfield, with one dam on the Ohio River, at Gallipolis, creating the pool to Winfield. Construction was started on London and Marmet in 1930, opening the dam for partial service on September 13, 1933, and completed and placed in full service on May 12, 1934.

The lower Kanawha project was authorized by the Public Works Administration (PWA) and the National Recovery Administration (NRA) in 1933 (PWA/NRA Contract W516 Eng.726) and the River and Harbor Act of 1935. Construction at Winfield began in 1933. The locks and dam were placed in partial service on September 1, 1935, and completed and placed in full service on August 20, 1937. The country was still suffering from the Great Depression when the London and Marmet locks and dams were authorized. Many unemployed workers were given employment on the nations inland rivers by federal work relief projects such as the one on the Kanawha River. The local economy in the Kanawha valley was bolstered by the construction of these locks and dams. Construction that started in the early 1930s at London and Marmet and continued at Winfield and Gallipolis until 1937, brought millions of needed dollars to an economically depressed region. When the lock and dam system was completed, and the river in good navigable shape, it came to play an important part in the war effort during World War II.

⁷ Otis K. Rice, Charleston and the Kanawha Valley: An Illustrated History (Woodland Hills, CA: Windsor Publications, 1981), 76-7.

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The dams had another benefit, aside from providing navigation. In 1934, the Kanawha Valley Power Company was granted a license to construct hydro-power plants at the abutment ends of London and Marmet dams by Federal Power Commission Project No. 1175. Kanawha Valley Power was granted a license for the same purpose at Winfield Locks and Dam under Federal Power Commission Project No. 1290. An Act of Congress approved on June 10, 1920, authorized the Federal Power Commission to issue licenses for the purpose of constructing and operating power projects in conjunction with dams constructed for the improvement of navigation. The license authorized Kanawha Valley Power to operate the power stations for 50 years on an annual rental basis. Power was to be provided to the Kanawha Valley by the least expensive and most cost-efficient means available.

The Kanawha River provided a steady source of water power for the turbines in the hydropower plants. The simple building of the power plant and joint venture of cooperative construction by federal and private capital were necessary to bring the cost of electricity below that of steam station output.⁸ Homes, businesses and mines could now afford electricity.

Conclusion

Even today, the Kanawha River is a main transportation route for the Kanawha Valley to outside markets, and coal continues to be the main commodity along the Kanawha River. Every year since 1982, new records have been made in the tonnage of coal shipped down the Kanawha River to the Ohio and Mississippi rivers. The Kanawha River will continue to be a lifeline for the Kanawha Valley as coal

⁸ Philip Sporn and E.L. Peterson, "Design Features of the London and Marmet Hydro Development," Power Plant Engineering LXI, No. 2 (February 1937), 80-2.

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production and shipments by river continue to grow.

KANAWHA RIVER COAL SHIPMENTS⁹

SUMMARY

1875	161,932 tons	1880	(No Report Kept)
1885	712,493 tons	1890	966,462 tons
1895	879,304 tons	1900	1,240,680 tons
1905	1,460,680 tons	1910	1,248,040 tons
1915	1,205,530 tons	1920	1,322,700 tons
1925	984,408 tons	1930	1,296,571 tons
1935	1,896,495 tons	1940	3,714,793 tons
1945	3,606,965 tons	1950	4,703,456 tons
1955	5,802,149 tons	1960	6,523,791 tons
1965	7,912,766 tons	1970	7,390,578 tons
1975	5,670,661 tons	1980	8,753,386 tons
1985	10,047,629 tons	1990	16,156,000 tons
1994	17,309,000 tons	1995	(n/a at time)

The Winfield Locks handle the bulk of traffic on the Kanawha River. According to statistics compiled by the Corps of Engineers, the Winfield Locks make more lockages than all other locks on inland rivers managed by the Corps.

⁹ Compiled from U.S. Army Corps of Engineers Annual Reports and Waterborne Commerce of the United States.

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SECTION F

STATEMENT OF SIGNIFICANCE

The Kanawha River navigation system is significant under Criterion A for the themes of transportation and maritime history. The Kanawha River was a major transportation route for getting coal and other commodities to the Ohio River before the railroad and improved overland routes were established. The Kanawha River was significant in the settlement pattern of West Virginia, as settlers came down the Ohio River and settled the Kanawha Valley from west to east. This river was also the first to be completely controlled with wicket dams and the first to be completely dammed with roller gated dams in the United States. The Kanawha was also one of the first major transportation routes which planned to connect eastern Virginia to the Ohio River.

The Kanawha River system is also significant under Criterion C for the theme of engineering. It is the only inland river navigation system entirely constructed with the roller gated dam system in the United States. The roller dam concept had only been used on selected dams throughout the United States, although there were several hundred roller gated dams constructed in Europe by this time. Earlier, in the nineteenth century, the Kanawha River was the first to be completely dammed with wicket dams. The roller dam system remains the same today as it did when constructed in the 1930s, with only minor modifications.

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SECTION G

GEOGRAPHICAL DATA

The Kanawha River is located entirely in the state of West Virginia. The London, Marmet and Winfield locks and dams are located on the Kanawha River, while the Gallipolis Locks and Dam are located in the Ohio River. The Gallipolis Locks and Dam is considered part of the Kanawha Navigation System because it dams the Ohio River to form a navigation pool to the Winfield Locks and Dam.

The Kanawha River extends through four counties in West Virginia. These counties are Putnam, Mason, Kanawha and Fayette. The U.S. Geological Survey quadrangles through which the Kanawha River flows include Gallipolis, Beech Hill, Mont Alto, Robertsburg, Winfield, Mount Olive, Bancroft, Saint Albans, Alum Creek, Charleston West, Charleston East, Belle, Cedar Grove, Montgomery, Beckwith, and Gauley Bridge. Gallipolis Locks and Dam are located in the Apple Grove quadrangle on the Ohio River. The drainage area of the watershed is 12,300 square miles. The Kanawha River flows in a northwesterly direction from Kanawha Falls to Point Pleasant, where it enters the Ohio River.

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SECTION H

IDENTIFICATION & EVALUATION METHODS

The multiple property nomination of locks and dams comprising the Kanawha River Navigation System was conducted by Dr. Emory L Kemp and Larry N. Sypolt, of the Institute for the History of Technology and Industrial Archaeology, West Virginia University Eberly College of Arts and Sciences, and under a grant provided by the United States Army Corps of Engineers, Huntington District. The Corps of Engineers specified the four locks and dams in current use in that system as the focus of the project. The locks and dams in the Kanawha navigation system were all constructed during the 1930s, and are all over fifty years old. They currently remain in the condition as built, with little modification. However, increased coal and commodity traffic necessitate the upgrading of the lock facilities for future use, and Winfield Locks are known to pass the most lockages of any lock system operated by the Corps of Engineers on the inland river system.

The Kanawha River system was the first river navigation system in the United States to be completely dammed with the patented roller gate system. The dams are strictly used for navigation purposes and not flood control. They provide a nine foot navigation depth for river traffic, the same as on the Ohio River, which carries much of the commodities, especially coal, to outside markets. With only minor improvements, the dams remain in relatively the same condition as when constructed. With the present system in use for almost sixty years, the utilitarian design has proven a cost effective choice.

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The first task undertaken was to identify resources at West Virginia University libraries and special collections. This turned up many books, periodical articles and government documents relating to river history and federal legislation. The next step involved searching the Huntington District office for records, photographs and related materials specifically dealing with the Kanawha River. Marshall University library was then visited, and finally, private individuals were visited to review their holdings of private river history collections. Site visits were made to each of the lock and dams structures to see what information was available in their holdings. Two final trips were made to the National Archives in Suitland, Maryland, and the National Archives Branch office in Philadelphia, Pennsylvania, where Record Group 77, U.S. Army Corps of Engineers, was extensively searched for all materials dealing with the history and construction of the locks and dams on the Kanawha River.

Three locks and dams on the Kanawha River and the Gallipolis Locks and Dam, which forms the navigation pool up to Winfield Dam, were researched and nominations to the National Register of Historic Places were prepared.

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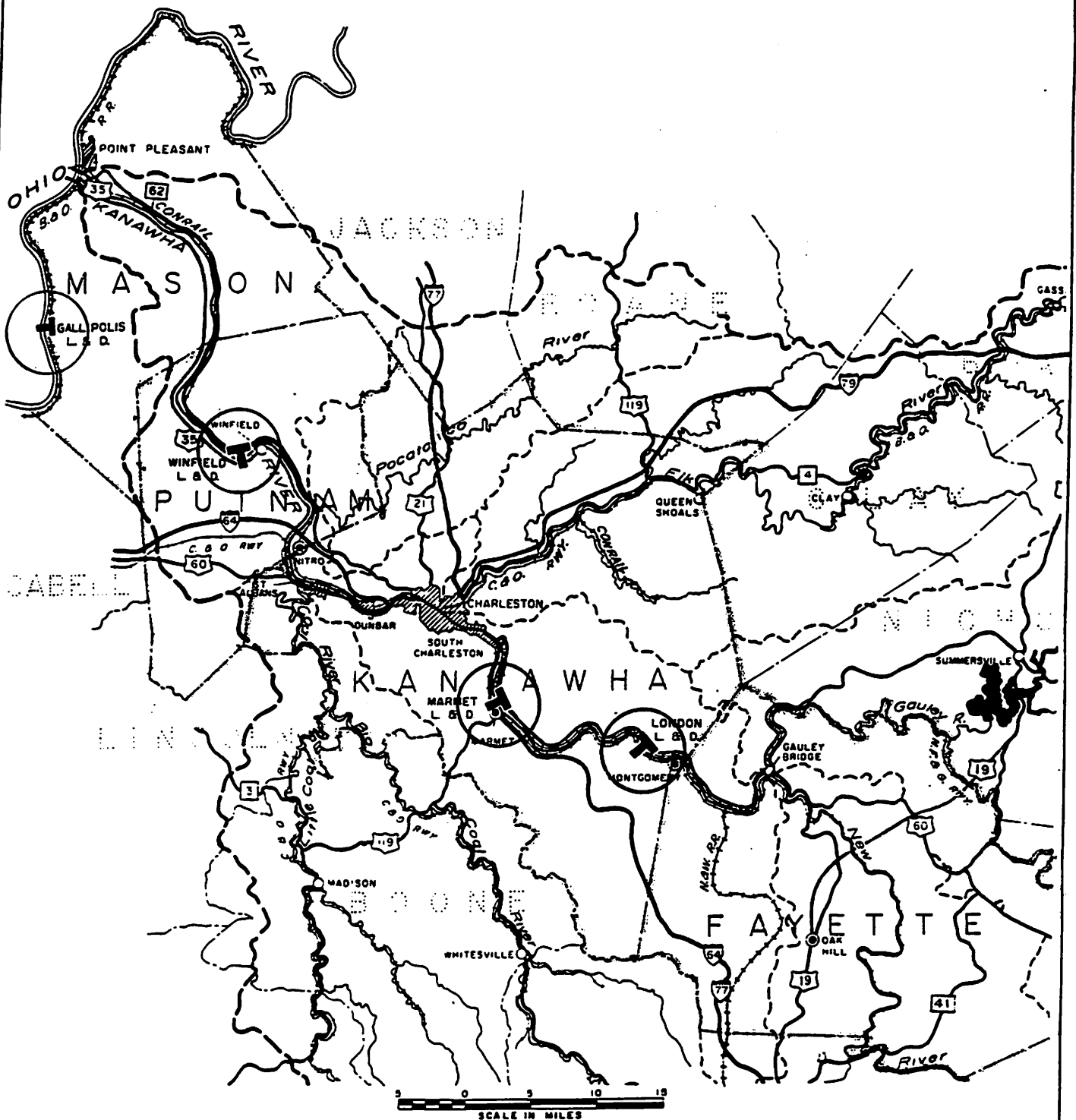
OTHER

Addison Scott Collection, Special Collections Department, James E. Morrow Library,
Marshall University, Huntington, WV.

Record Group 77, Corps of Engineers, National Archives and Records Administration,
Washington National Records Center, Suitland, MD.

Record Group 77, Corps of Engineers, National archives and Records Administration,
Philadelphia Branch, PA.

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KANAWHA RIVER NAVIGATION STUDY

HURTINGTON DISTRICT
CORPS OF ENGINEERS
MARCH 1962