

YOUGHIOGHENY RIVER, PA.

LETTER

FROM

THE SECRETARY OF WAR

TRANSMITTING

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORTS ON
PRELIMINARY EXAMINATION AND SURVEY OF YOUGHIOGHENY
RIVER, PA., UP TO FIFTEENTH STREET, McKEESPORT

FEBRUARY 11, 1926.—Referred to the Committee on Rivers and Harbors and
ordered to be printed

WAR DEPARTMENT,
Washington, February 10, 1926.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

MY DEAR MR. SPEAKER: I am transmitting herewith a report, dated the 9th instant, from the Chief of Engineers, United States Army, on preliminary examination and survey of Youghiogheny River, Pa., up to Fifteenth Street, McKeesport, authorized by the river and harbor act of March 3, 1925, together with accompanying papers.

Sincerely yours,

DWIGHT F. DAVIS,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, February 9, 1926.

Subject: Preliminary examination and survey of Youghiogheny River,
Pa., up to Fifteenth Street, McKeesport.
To: The Secretary of War.

1. I submit for transmission to Congress my report on preliminary examination and survey of Youghiogheny River, Pa., up to Fifteenth Street, McKeesport, authorized by the river and harbor act of March 3, 1925, together with accompanying papers.

2. The Youghiogheny River is a tributary of the Monongahela River, which it enters from the east 15 miles above Pittsburgh. An existing project provides for canalization from the mouth at McKeesport to West Newton, $19\frac{1}{2}$ miles, but no work has been undertaken. This project was recommended for abandonment in 1916 and 1919, but Congress has taken no action thereon. Interested parties now desire a channel 10 feet deep and 200 feet wide from the Monongahela River to Fifteenth Street, McKeesport.

3. The district engineer reports that McKeesport, with a population of about 50,000, has a number of large industrial plants. Certain of these use the river for the transportation of coal, sand, and gravel. In 1924 such movements amounted to 275,000 tons, of which 157,000 tons were coal. The situation is favorable for the development of additional water terminals and an increase in waterborne tonnage. Some dredging has been done at local expense, but commerce is still handicapped by the fact that the channel in the Youghiogheny has less depth than is available on the lower Monongahela, over which the inbound and outbound tonnage must move. Monongahela River barges, which have loaded drafts of 8 to $8\frac{3}{4}$ feet, must underload to operate on the Youghiogheny at low water. The district engineer believes that a depth corresponding to that in the Monongahela would result in a considerably larger water movement and in an ultimate saving which would justify the necessary Federal expenditure. He recommends a channel up to Fifteenth Street 200 feet wide and 9 feet deep at datum of Monongahela River pool No. 2, at an estimated cost of \$35,000, with \$2,000 annually for maintenance.

4. The division engineer concurs with the district engineer as to the extent of the improvement, but considers that the local benefits which would result justify the requirement of a local contribution of 50 per cent of the first cost. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, agreeing with the district engineer.

5. After due consideration of the above-mentioned reports, I concur in the views of the district engineer and the Board of Engineers for Rivers and Harbors. The Monongahela River is one of the country's most successful improved waterways, its annual commerce being over 20,000,000 tons. The lower Youghiogheny River is essentially a harbor on the Monongahela. In its present condition a considerable traffic of general interest moves over it. The saving in transportation costs which would result from the use of fully loaded barges for the present and prospective commerce is sufficient to justify the comparatively small expenditure required of the United States for providing a deeper channel. I therefore report that modification of the existing project for the improvement of Youghiogheny River, Pa., is deemed advisable with a view to providing a channel 9 feet deep at low water of pool No. 2, Monongahela River, and 200 feet wide from the mouth to Fifteenth Street, McKeesport, Pa., in general as proposed by the district engineer, at an estimated cost of \$35,000, with \$2,000 annually for maintenance. The entire amount of the first cost should be made available in a single appropriation.

H. TAYLOR,

Major General, Chief of Engineers.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

SYLLABUS

The Board of Engineers for Rivers and Harbors concurs with the district engineer in recommending modification of the existing project for the improvement of Youghioghenny River, Pa., so as to provide for a channel 200 feet wide and 9 feet deep from the mouth to Fifteenth Street, McKeesport, at an estimated cost of \$35,000, with \$2,000 annually for maintenance.

[Third indorsement]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., December 22, 1925.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. The following is in review of the reports on preliminary examination and survey of Youghioghenny River, Pa., up to Fifteenth Street, McKeesport, authorized by the river and harbor act approved March 3, 1925.

2. The Youghioghenny River is located in southwestern Pennsylvania, entering the Monongahela from the east, 15 miles upstream from Pittsburgh. There is an existing project for its improvement by the United States providing for canalization from the mouth for $19\frac{1}{2}$ miles to West Newton, at a cost estimated in 1910 as \$1,050,000. No construction work on this project has been undertaken, and in 1916 and 1919 the War Department recommended its abandonment. Congress has taken no action on these recommendations.

3. The city of McKeesport lies at the mouth of the river. The reach covered by the present item of law is about $1\frac{1}{4}$ miles long. It is part of the pool created by Dam No. 2 on the Monongahela River and has a governing low-water depth of 7 feet. Interested parties desire a channel up to Fifteenth Street 10 feet deep and 200 feet wide.

4. McKeesport is an important manufacturing city with a population, including that of the immediate vicinity, of about 50,000. The district engineer lists nine industrial plants, engaged principally in the production of iron and steel manufactures and tin plate, which employ a total of 17,000 men. The six leading industries had in 1923 an average monthly output of 510,000 tons, and in 1922 the total value of their products was nearly \$120,000,000. Certain of these industries utilized the river to obtain coal, sand, and gravel, which in recent years have constituted the entire water-borne traffic. This commerce for the past six years has averaged 236,000 tons a year. In 1924 it was 275,000 tons, of which 157,000 tons were coal.

5. The district engineer states that the lower Youghioghenny is an important adjunct to the Monongahela. A substantial traffic has already developed at the existing terminals in the stretch under consideration, which traffic also moves on the Monongahela and contributes to the commerce and economic benefits of that stream. The locality is advantageously situated for the development of additional terminals. Local interests in 1919 dredged at their own expense 74,000 cubic yards of material in the river channel, which work has materially facilitated the existing commerce. Water movement is, however, handicapped by the fact that the controlling depth is less than that on the lower Monongahela, over which inbound and outbound commerce must move. Typical Monongahela River barges are designed for loaded drafts of from 8 to $8\frac{3}{4}$ feet. Such barges

must underload to operate on the Youghiogheny at low water, which not only increases the cost of water transportation but tends to discourage its use. The district engineer believes that the provision of a depth corresponding to that in the lower Monongahela would result in a considerably larger water movement, and that the producers of iron and steel products and tin plate at McKeesport would ship by water certain of their products which they now ship by rail. He estimates that the savings on moving the existing traffic would be about 65 cents per ton on coal and 30 cents per ton on sand and gravel. These savings are for the entire haul, on both the Monongahela and Youghiogheny Rivers. If prorated between the two on a distance basis, the saving allocated to the Youghiogheny would be materially less than the computed annual cost to the United States of the work now proposed. The district engineer believes, however, that the increase in commerce, including the movement of iron and steel at a prospective saving of 45 cents a ton, will ultimately show a saving even on this basis; and if the savings on all or a reasonable part of Monongahela haul are considered, the total is much in excess of annual charges. He recommends a channel 200 feet wide up to Fifteenth Street, and 9 feet deep at Monongahela River pool No. 2 level, at an estimated cost of \$35,000, with \$2,000 annually for maintenance. Maintenance dredging would be required only about every 7 years. An 8-foot channel would cost initially \$20,000, and maintenance cost would be about the same as for a 9-foot channel. In view of the difficulty of allocating the benefits of the work, he believes that cooperation should be limited to the maintenance of proper depth from the main channel to the individual terminals.

6. The division engineer points out that this section of the river is comparable to a siding on a main-line railroad. It serves primarily as a terminal or harbor for the delivery of coal, sand, and gravel, and in his opinion if it were improved this would still be its primary use. The localization of benefits is indicated by the dredging carried out by private interests at their own expense. He recommends improvement as proposed by the district engineer, but only on condition that local interests contribute 50 per cent to the first cost. Capitalizing this first cost, and adding 4 per cent of it to the annual maintenance to obtain the total annual charge, such a contribution would correspond approximately to 20 per cent of this charge.

7. The lower Youghiogheny River is essentially a harbor on the Monongahela, handling in its unimproved condition a considerable traffic of bulk commodities. The savings on these, if allocated partially to the Youghiogheny on a mileage basis, are, as pointed out by the district engineer, less than would be the annual charge of the proposed improvement. Such an allocation is not, however, fair to the project. The tonnage moves for considerable distances on the Monongahela. It is reasonable to assume that, were the Youghiogheny not navigable, the Monongahela tonnage would be reduced correspondingly, and it is therefore fair, in considering the propriety of the improvement, to credit it with the full measure of benefits derived from the entire water movement of the material in question. On this basis it is evident that the savings, even with the present commerce, would outweigh the cost of the proposed work. While the traffic is low grade, this is also true of the Monongahela, 98 per cent of the traffic on which is of this character; nevertheless the Monon-

gahela is considered one of the most successful waterway improvements of the United States. The high efficiency of the Monongahela commerce is due largely to the standardization of the carriers and their utilization of the maximum available depth. It is proper that any important tributary should be provided with the same depth, in order that this highly efficient system of water transportation can be extended to it. There is good reason to assume that the work would result in the stimulation of the present traffic, and eventually in the development of a water movement of metals and their manufactures and miscellaneous cargo, nearly half a million tons of which now move on the Monongahela. The cost of the proposed work is small, and the dredging heretofore done in the main channel by private interests, at their own expense, is nearly equal in yardage to that now proposed to be done by the Government. The board considers that the improvement is a worthy one, and that further cooperation on the part of local interests should not be demanded, in view of the work already done by them, the diversity of the beneficiaries, and the present and prospective importance of McKeesport as an element in the Pittsburgh industrial district. It therefore concurs with the district engineer, and recommends that the existing project for the Youghiogheny River, Pa., be modified so as to provide for a channel 9 feet deep at low water of pool No. 2 Monongahela River, and 200 feet wide from the mouth of the river to Fifteenth Street, McKeesport, Pa., along the general lines proposed by the district engineer, at an estimated cost of \$35,000, with \$2,000 annually for maintenance. The entire amount of the first cost should be made available in a single appropriation.

7. In compliance with law, the board reports that there are no questions of terminal facilities, waterpower, or other subjects so related to the project proposed that they may be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interests of navigation.

For the board:

HERBERT DEAKYNE,
Colonel, Corps of Engineers,
Senior Member Present.

PRELIMINARY EXAMINATION OF YOUGHIOGHENY RIVER, PA.

SYLLABUS

The improvement desired is the dredging of an adequate channel in the Youghiogheny River from its mouth up to Fifteenth Street, McKeesport, Pa., a distance of 6,530 feet. In view of existing commerce thereon and its probable increase, this reach is regarded as an important adjunct to the Monongahela River. The benefit to be derived from this improvement will not be local but will extend to the Monongahela River and the Allegheny River and quite possibly the Ohio River. No survey is required. The district engineer considers this reach of river worthy of improvement.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Pittsburgh, Pa., July 7, 1925.

Subject: Preliminary examination of the Youghiogheny River, Pa.

To: The Chief of Engineers, United States Army.

(Through the Division Engineer).

1. The following report on the preliminary examination of the Youghiogheny River, Pa., is submitted in compliance with instruc-

tions from the Chief of Engineers in letter ¹ dated March 19, 1925. The examination was made in conformity with the item in the river and harbor act approved March 3, 1925, which reads as follows:

SEC. 8. That the Secretary of War is hereby authorized and directed to cause preliminary examinations and surveys to be made at the following-named localities:

* * * * *

Youghiogheny River, Pa., up to Fifteenth Street, McKeesport.

2. *Description of watershed.*—The Youghiogheny River is an inland river, tributary to the Monongahela River, into which it empties at McKeesport, Pa., 15.6 miles above latter's mouth. The watershed is situated principally in the southwestern part of Pennsylvania. The source of the stream, however, is in the region of the border line of Preston County, W. Va., and Garrett County, Md., whence it flows in a northerly direction out of Maryland into Pennsylvania to the town of Confluence. From this point the course of the Youghiogheny is northwesterly to its junction with the Monongahela at McKeesport. Portions of Fayette, Somerset, Westmoreland, and Allegheny Counties, Pa., and Garrett County, Md., are included in the watershed. A general map ¹ of river accompanies this report.

3. *Description of locality.*—The locality under consideration is limited by law to the Youghiogheny River from its mouth up to Fifteenth Street, McKeesport. This reach, which is part of pool created by Dam No. 2, Monongahela River, is 6,530 feet long and has a minimum width of 330 feet and a maximum width of 430 feet between normal pool shore lines. The city of McKeesport is situated on the right bank of the river from its mouth to and beyond Fifteenth Street and on the left bank from the mouth to the borough of Port Vue. Three highway bridges cross this reach of the river—at Third Avenue, Fifth Avenue, and at Fifteenth Street, respectively. The Pittsburgh, McKeesport & Youghiogheny Railroad also crosses at Fourth Avenue thereabove following the left bank of the Youghiogheny. Extensive river flats or bottom lands are adjacent to the right bank of the river in this locality and to the left bank between the mouth and Fifth Avenue. Up river from Fifth Avenue on the left side a precipitous bluff intervenes which recedes somewhat just below Fifteenth Street, where there is a limited flat. The locality is essentially industrial and commercial on both sides of the river, although not now fully so occupied. On the right bank terminal facilities are now located at Fourth Avenue, Fifth Avenue, and Ninth Avenue, which transfer, principally, sand and gravel from barges to stock piles. Immediately above Fifteenth Street there is also a private coal terminal. Opposite Fifteenth Street, in Port Vue Borough, on the left bank, the McKeesport Tin Plate Co. operates a large tin plate works with an extensive modern river wall terminal for handling coal. The river front between Fifth Avenue and Ninth Avenue, McKeesport, is being utilized for park purposes, and between Thirteenth Avenue and Fifteenth Street for municipal purposes by the city. The river front on the left bank between Fifth Avenue and the flat at Fifteenth Street is limited by width and topography to use for railroad purposes. The remainder of the river front for the most part is unoccupied and is situated advantageously for prospective commercial or industrial uses.

¹Not printed.

4. *Previous reports.*—Several reports have been made relative to the improvement of the Youghiogheny River for navigation purposes. These reports have not been limited, however, entirely to the river below Fifteenth Street, McKeesport. The four latest reports were made as follows:

(a) Preliminary examination: Youghiogheny River to Connellsville, Pa. (H. Doc. No. 330, 60th Cong., 1st sess., 1907). Unfavorable recommendation.

(b) "Reexamination" of (a): Youghiogheny to Connellsville, Pa. (Committee Doc. No. 9, 61st Cong., 2d sess., 1909). Favorable recommendation to West Newton, Pa., three locks and dams, single chamber, Monongahela standard, at an estimated cost of \$1,050,000. Unfavorable recommendation, West Newton, Pa., to Connellsville, Pa.

(c) Preliminary examination: Youghiogheny up to West Newton, Pa. (H. Doc. No. 1284, 64th Cong., 1st sess., 1916). Unfavorable recommendation.

(d) Preliminary examination: Youghiogheny from its mouth to West Newton, Pa., including a report on existing and prospective water terminals (H. Doc. No. 60, 66th Cong., 1st sess., 1919). Unfavorable recommendation.

In accordance with the recommendation of the Board of Engineers for Rivers and Harbors, a project was adopted for improvement of the lower Youghiogheny to West Newton, Pa., reports upon which are contained in the annual reports of the Chief of Engineers, United States Army, for 1910 to 1919, inclusive.

5. *Existing project.*—The existing project for the Youghiogheny River, Pa., was adopted by the river and harbor act of June 25, 1910 (River and Harbor Committee Doc. No. 9, 61st Cong., 2d sess.), and provided for canalization of the river from its mouth to West Newton, Pa., a distance of 19½ miles by the construction of three locks and dams, estimated in 1910 to cost \$1,050,000. The same act appropriated \$100,000 for commencing this improvement. A survey was made from the mouth to West Newton, sites for the three locks and dams selected, borings made at the sites and plans partly prepared for the first lock and dam. The amount expended was \$12,194.75. No actual construction work was done, however, and on April 1, 1915, the balance of the funds on hand, \$87,805.25, was transferred to the improvement of the Ohio River under authority of the river and harbor act of March 4, 1915. This act also ordered a preliminary examination of the Youghiogheny covering the same locality as before and in the report thereon (H. Doc. No. 1284, 64th Cong., 1st sess.) legislation was recommended to authorize the abandonment of the project. No action was taken by Congress in the matter. The river and harbor act approved August 8, 1917, again authorized a preliminary examination of the Youghiogheny River in this locality. The report thereon, by the district engineer, dated June 27, 1918, was submitted by the Chief of Engineers under date of April 11, 1919 (E. D. 31106/48), to the Secretary of War. The previous recommendation for the abandonment of the existing project was renewed but, so far as known, no congressional action has yet been taken on this recommendation.

6. *Navigable condition.*—In its original condition the river was not navigable except on its lower portion at times of freshet. The con-

struction of Dam No. 2, Monongahela River, in 1841, produced slack water for about 4.7 miles above the mouth of the Youghiogheny. In 1848 a private corporation, chartered by the State of Pennsylvania, built two locks and dams extending slack water to West Newton, 19½ miles above the mouth. These works were damaged by freshets and ice and were finally abandoned in 1865. During their existence small packet boats navigated as far as West Newton. At the end of the fiscal year 1919 (year of the latest published annual report pertaining to the Youghiogheny River) back water from pool No. 2, Monongahela River, permitted navigation for a distance of 2 miles above the mouth by barges drawing not more than about 5.5 feet.

The Youghiogheny up to Fifteenth Street is now, as heretofore, entirely within the back-water influence of Dam No. 2, Monongahela River, which is located 4.4 miles below the mouth of the Youghiogheny. The present controlling depths, minimum and maximum, are not due entirely, however, to the influence of Dam No. 2, Monongahela, since private interests who use this reach have at various times in the past done considerable dredging at their own expense in order to make use of the river. Annual reports of the Chief of Engineers show that dredging has been done as follows:

Locality	Year	Amount
Private terminal, below Fifteenth Street.....	1912	<i>Cubic yards</i> 3, 720
Channel at river mouth.....	1914	-----
Private terminals.....	1919	76, 400
Channel up to Fifteenth Street.....	1919	73, 980

This dredging has contributed materially to the extensive commerce which has developed on this reach and to the controlling depth now available as follows:

	Controlling depth
Low water depth, at normal pool stage level, Dam No. 2, Monongahela River.....	feet... 7
Mean depth.....	do... 8
High water depth, at overtopping of lock walls, Lock No. 2, Monongahela River.....	feet... 15

The water surface has a range in fluctuation of approximately 27½ feet, based upon normal pool level and the elevation of the flood of March, 1907.

The head room and width of channel at existing bridges is as follows:

Bridge	Distance above mouth	Type	Number of spans	Channel span	
				Width between channel piers	Clear height above normal pool (No. 2, Monongahela River)
Third Avenue, McKeesport.....	<i>Miles</i> 0.1	Highway.....	3	<i>Feet</i> 307	<i>Feet</i> 37.6
Pittsburgh, McKeesport & Youghiogheny R. R.	.2	Railway.....	4	202	36.3
Fifth Avenue, McKeesport.....	.3	Highway.....	3	311	49.5
Fifteenth Street, McKeesport.....	1.3	do.....	4	300	42.0

7. *Difficulties attending navigation.*—The principal difficulty now attending navigation on this reach is that of insufficient depth during the low-water stage. The demand for additional depth is occasioned by the increased efficiency of loading of barges on the Monongahela where the commerce now principally originates, and to the more extensive use of modern steel barges of larger size and draft. The low-water stage usually extends through the late summer and fall with little interruption by high water. These seasons are the most advantageous for river movements. The annual navigation season is similar to that of the Monongahela and has averaged 360 days for the past few years. The existing commerce has its approach through pool No. 2, Monongahela River, which has a minimum navigable depth of 11 feet, on which as a rule the coal comes downstream and the sand and gravel upstream.

8. *Commerce.*—Various interests have already taken advantage of the Youghioghenny and commerce has developed to a considerable extent due to the proximity of the navigable Monongahela and the industrial and commercial McKeesport district. The traffic, which is entirely bulky freight, is classified and comparative as follows for the calendar period 1919–1924:

Youghioghenny River traffic

Classes and commodities	Amount, in short tons			Value		Average haul (miles)
	By commodities		By classes	By commodities	By classes	
	Up-bound	Down-bound				
1919						
Nonmetallic materials:						
Coal	168,068					
Gravel	10,901					
Sand	15,460					
Stone	896					
Cement	120					
Machinery	830					
Waste dredged material		31,500				
Total			227,775		\$1,314,949.40	1.82
1920						
Nonmetallic minerals			270,995		1,490,710.20	
Coal, bituminous	217,654			\$1,436,516.40		
Gravel	28,786			28,786.00		
Sand	24,022			24,022.00		
Stone	535			1,385.80		
Machinery and vehicles	75		75	15,000.00	15,000.00	
Total			271,070		1,505,710.20	
1921						
Nonmetallic minerals			187,191		578,897.00	
Coal, bituminous	111,916			503,622.00		
Gravel	31,687			31,687.00		
Sand	43,588			43,588.00		
Total			187,191		578,897.00	
1922						
Nonmetallic minerals			169,932		444,804.50	0.....
Coal, bituminous	78,535			353,407.50		
Gravel	44,566			44,566.00		
Sand	46,831			46,831.00		
Total			169,932		444,804.50	

Youghiogheny River traffic—Continued

Classes and commodities	Amount, in short tons		Value		Average haul (miles)	
	By commodities		By classes	By commodities		By classes
	Up-bound	Down-bound				
1923						
Nonmetallic minerals			284, 977		\$921, 725. 00	
Coal, bituminous	181, 928			\$818, 676. 00		
Gravel	46, 151			46, 151. 00		
Sand	56, 898			56, 898. 00		
Total			284, 977		921, 725. 00	
1924						
Nonmetallic minerals			275, 436		825, 443. 50	
Coal, bituminous	157, 145			707, 152. 50	1. 5	
Gravel	58, 522			58, 522. 00	0. 6	
Sand	59, 769			59, 769. 00	0. 5	
Total			275, 436		825, 443. 50 1. 1	

Comparative statement of traffic

Calendar year	Short tons	Value	Calendar year	Short tons	Value
1919	227, 775	\$1, 314, 949. 40	1922	169, 932	\$444, 804. 50
1920	271, 070	1, 505, 710. 20	1923	284, 977	921, 725. 00
1921	187, 191	578, 897. 00	1924	275, 436	825, 443. 50

9. *Navigation rates.*—The existing commerce on the Youghiogheny is not transported by common carriers, the cost of transportation by water being usually absorbed in the price of the commodities f. o. b. terminals. No deliveries are received and no shipments made by joint rail and water haul.

10. *Improvement of navigation.*—Dam No. 2, Monongahela River, being an integral part of the Monongahela River project furnishes a stable condition of back water in the Youghiogheny and provides a substantial corresponding controlling depth which has been improved by dredging. Further improvement which would make a satisfactory low-water depth available can be made most advantageously by additional dredging. Inquiry among navigation and terminal interests indicates that a channel 200 feet wide and 10 feet in depth below normal pool No. 2, Monongahela, would prove adequate for navigation needs. As determined from an available map¹ of this reach, dredging to the extent of approximately 90,000 cubic yards will be necessary. The bed of the river is composed of silt, sand, and gravel, the latter predominating. The maintenance of such a channel would not be difficult since the back water influence extends well beyond the limits of the improvement. The preliminary examination indicates that dredging is the most practicable method of improvement.

11. *Necessity for improvement.*—It may be open to question whether the present navigable condition should not suffice for the commerce

¹ Not printed.

already developed and as to whether prospective additional commerce might better be developed on the Monongahela in this vicinity where sufficient controlling depth is already available. This reach of the Youghiogheny is, however, so favorably situated that it is a natural adjunct to the Monongahela as well as the logical site of the development of terminal facilities, private and public, water and rail-water, for the McKeesport district. Important facilities are already established. The traffic developed is indicative.

12. *Water supply.*—The nature of the probable improvements necessary being such that no lock and dam construction is involved, the question of water supply does not enter. The Youghiogheny has a drainage area of 1,732 square miles. The minimum discharge rate is about 75 second-feet as measured by this office. The maximum discharge rate is estimated to be about 100,000 second-feet.

13. *Terminal and transfer facilities.*—Terminal facilities, which are all privately owned, are already well developed, as follows:

(a) Builders Supply Co., located at the foot of Fourth Avenue, McKeesport, 0.2 mile above mouth. This terminal has a McMyler electrically operated hoist, the daily capacity of which is about 500 tons. Commodities unloaded: Sand and gravel from barges.

(b) Atlantic Refining Co., located above Fifth Street bridge, on the left bank. Commodity unloaded: Gasoline from barge tanks.

(c) John Serena Co., located at the foot of Fifth Avenue, McKeesport, 0.3 mile above the mouth. This terminal has a stiff-leg derrick, the daily capacity of which is about 400 tons. Commodities unloaded: Sand and gravel from barges.

(d) Bowman Bros. Co., located at the foot of Ninth Avenue, McKeesport, 0.6 mile above the mouth. This terminal has a McMyler steam-operated hoist, the daily capacity of which is about 500 tons. Commodities unloaded: Sand and gravel from barges.

(e) The McKeesport Tin Plate Co. is located on the left bank at Fifteenth Street bridge, 1.2 miles above the mouth. This company has a modern river wall fronting along its property and its terminal facilities consist of a 35-ton McMyler locomotive crane, the capacity of which is 750 tons per day, and two Brown locomotive cranes, the capacity of each being about 500 tons per day. These facilities are operated on a standard-gauge railroad track connected with the Pittsburgh, McKeesport & Youghiogheny Railroad. Commodity unloaded: Coal from barges.

(f) Youghiogheny & McKeesport Ice Co., located immediately above Fifteenth Street on the right bank, 1.2 miles above the mouth, has a stiff-leg derrick hoist for unloading coal from barges.

There are no public terminals on the Youghiogheny, the demand for such in the McKeesport district being served by the Monongahela River wharf, 0.3 mile below the mouth of the Youghiogheny. There is abundance of desirable frontage on the Youghiogheny available for future terminal purposes, both private and public should they become necessary. This frontage is located principally on the right bank in the city of McKeesport where numerous avenues terminate at the river, permitting easy accessibility for truck distribution from terminals. The proximity of the Baltimore & Ohio Railroad on the right bank and the Pittsburgh, McKeesport & Youghiogheny Railroad on the left bank are favorable for any future development of water-rail transfer facilities. The existing

terminals may be considered modern. They have abundant reserve capacity and are adapted for loading to barges as well as their present use.

14. *Prospective additional commerce.*—When coal can be moved more advantageously on this reach, the sand and gravel interests now operating terminals contemplate expanding their business to include this commodity. With a minimum controlling depth of about 10 feet, the McKeesport Tin Plate Co. will be able to receive steel by water from the steel companies located on the Monongahela. This company uses annually about 200,000 tons of sheet bars. Additional depth being provided, this company also contemplates shipping tin plate to lower Ohio and Mississippi River points by barge.

15. *Commercial resources.*—McKeesport is an important iron and steel manufacturing city in the Pittsburgh district. Its population was 46,781 in 1920. In the same year, Port Vue had a population of 2,538. The banking capital of McKeesport as of December 31, 1924, was \$1,672,200 with total bank assets of \$27,569,699. The principal industries of McKeesport are as follows:

Industries ¹	Number of employees	Product
National Tube Co.:		
National Works.....	9,000	Wrought pipe.
Christy Park Works.....	12,000	Cold-rolled steel.
McKeesport Tin Plate Co.....	12,500	Tin plate.
American Sheet & Tin Plate Co.....	2,000	Steel sheets.
Firth Sterling Steel Co.....	500	Tool steel.
Columbiana Foundry Co.....	300	Radiators and castings.
Fort Pitt Steel Casting Co.....	300	Steel castings.
Peters Packing Co.....	1200	Meat, packed.
Acme Supply Co.....	50	Wooden ware.

¹ Location: Youghioghenny.

In 1923 the six leading industries had an average monthly output of 510,000 tons. In 1922 the total valuation of the products of these same industries was approximately \$119,088,000.

16. *Future extension.*—Should it become desirable in the future to extend the navigable channel farther up the river the present improvement will serve a larger purpose. The McKeesport industrial zone continues up the right bank of the Youghioghenny and Christy Park Works of the National Tube Co. is located but a short distance above Fifteenth Street. The improvement now under consideration, while limited to the river below Fifteenth Street, would be capable of accommodating a greatly increased commerce in the event of future upstream extension of the improvement.

17. *Water power.*—Head and volume of flow in proper combination are essential for water-power development. The nature of the proposed improvement precludes any development of head, hence there is no prospect of any advantageous coordination of water-power development with the desired navigation improvement.

18. *Flood protection.*—Flood protection is ordinarily promoted by the improvement of a stream hydraulically, the construction of dikes, the filling of inundated areas to a higher elevation, and by the regulation of stream flow, or by a combination of these methods. The area under consideration is subject to floods primarily, however, by back-

water from the Monongahela River. Low-lying banks have been already filled and are being filled to a much higher elevation, regardless of the navigation improvements in the vicinity. This filling is now proceeding along natural lines and is nearly to the proper elevation. The material excavated from the Youghiogheny can very likely be disposed of much more readily and at a less cost by dumping near by in deep holes in the Monongahela River at a proper location. Regulation of the flood flow of the Youghiogheny appears to be entirely out of the question in combination with this improvement.

The Youghiogheny River is productive of floods independently of and not necessarily always coincidental with those of the Monongahela River. Except in a very few instances, bottom lands subject to overflow, where they exist, are unusually narrow. These in many cases also are above the flood plane. Storage reservoirs would appear to offer the only practicable method of flood control. However, there are no ready possibilities of flood regulation in the Youghiogheny Valley by means of storage reservoirs. The main valleys and those of the more important tributaries where natural sites for storage reservoirs exist have long since been preempted by trunk-line railroads of which the Baltimore & Ohio, Pittsburgh, McKeesport & Youghiogheny (New York Central), Western Maryland, and Pennsylvania Railroads are the principals. These valleys are also well populated and large areas are underlain with valuable coal seams which will doubtless be operated for many years in the famous Connellsville coke region and elsewhere.

Floods of sufficient height to inundate the lower portions of railroads and towns and villages do not occur except at intervals of several years. Frequently also they are occasioned by local ice gorges, in which case their effect also is localized. In most cases where small areas of low bottom lands exist they are as yet generally unimproved and flood losses on these are, as a rule, negligible. If and when they become necessary for use they will probably, as many have already been treated, be filled up by railroad companies with waste mill refuse for which dumping grounds somewhere at a convenient haul from the Pittsburgh industrial region must be found. Being a comparatively precipitous mountain stream, except near the mouth, the flood run-off and consequent duration is extremely short, generally lasting not more than 24 to 48 hours, until the water is again within the bank lines of the stream. Accordingly the flood loss even at these wide intervals is not very large and affects certain physical properties only.

Hydroelectric developments are being considered on the upper Youghiogheny, one controlling about 63 square miles having already been constructed on Deep Creek, a tributary in the State of Maryland. There is also a small reservoir for water-supply purposes, principally of the Pennsylvania Railroad, on Indian Creek. These projects possess some storage value available and slightly affecting flood conditions, but the total of such capacity will be relatively small. While, therefore, on the main stream and its major tributaries storage reservoirs may not be considered, it is believed that control by this means of all of the smaller headwater tributaries would not suffice to materially affect the flood conditions. Moreover the cost of maintaining and operating reservoirs for flood-prevention purposes as affecting the lower and more important part of the Youghiogheny Valley would

undoubtedly be quite large and would greatly exceed the loss resulting from the occasional injurious floods.

The proposed improvement does not, therefore, involve any vital question of land reclamation or flood protection which should require cooperation by local interests.

19. *Local cooperation.*—Local cooperation in the improvement of the Youghiogheny in this reach may be properly limited to the aid to navigation which will result from the construction and maintenance of terminal facilities by present and prospective users of the river. The number and diversity of the interests involved is large, and any allocation of benefits and corresponding assessments would be impracticable. The benefits will extend to the commerce on the Monongahela River and Allegheny River and quite possibly the Ohio River, due to the efficiency of loading and the prospective additional commerce.

20. *Recommendation.*—Since a complete, accurate survey of the Youghiogheny River from its mouth to West Newton, a distance of $19\frac{1}{2}$ miles, was made in 1910, of which carefully prepared maps, including available soundings showing the depths of water at low-water level of pool No. 2, Monongahela River, are on file in this office, no survey is considered necessary. I am of the opinion that the Youghiogheny River from its mouth to Fifteenth Street, McKeesport, as an important adjunct to the Monongahela River and prospectively the Ohio River, and in view of the substantial commerce already existing and its prospective increase, is worthy of improvement.

E. L. DALEY,
Major, Corps of Engineers,
District Engineer.

SYLLABUS

The division engineer concurs in the view that this reach of the river is worthy of improvement, but, as in his opinion the benefits will be local rather than general, he recommends the formulation of a project that will provide for local cooperation.

[First indorsement]

OFFICE DIVISION ENGINEER, CENTRAL DIVISION,
July 24, 1925.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. The reach of the Youghiogheny River under consideration is reported to have a controlling depth of 7 feet and mean depth of 8 feet, created partly by back water from Dam No. 2, Monongahela River, and partly by dredging at the expense of private interests. In its present condition, it serves as a terminal or harbor for unloading sand and gravel dredged in the Monongahela River and for unloading at the works of the McKeesport Tin Plate Co. coal brought down the Monongahela. No water-borne commerce originates on the Youghiogheny.

2. The low-lying area adjacent to this reach is limited in amount and the use now made of it is such that the prospect of additional industrial development is slight. To increase the depth as proposed would inure to the benefit of the present users and result in some economy, but, in the opinion of the division engineer, the benefits would be local rather than general in character.

3. The division engineer concurs in the opinion of the district engineer that the locality is worthy of improvement. In formulating a project, it is recommended that special consideration be given to the question of local cooperation, as it is believed that a substantial part of the first cost should be borne by the users who will be specially benefited.

C. W. KUTZ,
*Colonel, Corps of Engineers,
 Division Engineer.*

[Third indorsement]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., September 9, 1925.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. For the reasons stated herein, the board recommends a survey to determine the extent and advisability of the improvement. In view of the fact that the last survey was in 1910, the district engineer should satisfy himself that no material changes in the channel have since occurred.

2. The survey should include an investigation of the draft of vessels commonly using pool No. 2, Monongahela River, and the Youghio gheny River with a view to determining the channel depth most desirable for the latter. Estimates should be submitted of the cost of providing channels 8, 9, and 10 feet deep.

3. In view of the local benefits which would result from the proposed improvement, consideration should be given to the question of local cooperation.

For the board:

EDGAR JADWIN,
*Brigadier General, Corps of Engineers,
 Senior Member of the Board.*

SURVEY OF THE YOUGHIOGHENY RIVER, PA.

SYLLABUS

The district engineer states that the lower Youghio gheny River is an important adjunct of the Monongahela River and recommends that the United States dredge a channel 200 feet wide in the Youghio gheny from its mouth to Fifteenth Street, McKeesport, Pa., a distance of 6,530 feet, to a depth of 9 feet below the low-water level as governed by Dam No. 2, Monongahela River. The improvement is estimated to cost \$35,000 and the annual cost of maintenance is estimated to be \$2,000. The district engineer recommends that the initial appropriation for this improvement, if prosecuted, be provided in the amount of \$35,000.

WAR DEPARTMENT,
 UNITED STATES ENGINEER OFFICE,
Pittsburgh, Pa., November 28, 1925

Subject: Survey of the Youghio gheny River, Pa.
 To: The Chief of Engineers, United States Army.
 (Through the Division Engineer.)

1. Following is a report of a survey of the Youghio gheny River, Pa., made pursuant to the river and harbor act approved March 3, 1925, and in compliance with instructions from the Chief of Engineers under date of September 26, 1925.

2. *Existing conditions.*—The locality under consideration is described in detail in the report of preliminary examination and is shown on the Pittsburgh quadrangle (scale, 1 inch = approximately 1 mile, and 20-foot contour interval) of the United States Geological Survey. A survey of the locality was made in November, 1925, checking soundings previously taken, the results of which are shown on accompanying drawings.¹ Hydrographic data are referred to the normal pool level of Dam No. 2, Monongahela River, and the shore lines and general features are from a previous survey by this office, the triangulation system having been established in 1910 under the existing project for improving the Youghiogheny River up to West Newton, Pa., by the construction of locks and dams. The river bed is composed of silt, sand, and gravel, the latter predominating. Existing depths of 10 feet and over are still in the gravel formation. A photograph of the locality at Fifteenth Street, McKeesport, Pa., is also herewith.¹

3. *Interests involved.*—Three general classes of interests, both local and interstate, are involved—(1) sand and gravel, (2) coal, and (3) steel—the first two at present and the latter in prospect. The locality is a prospective customer of all such commercial interests which are engaged in river trade on the Monongahela and connected canalized rivers, and in the event of further improvement and development of the locality there are indications that commerce will move outbound as well as inbound. Inbound movement now predominates. A detailed description of the interests involved, terminal facilities, and prospects of the locality is contained in the report of preliminary examination.

4. *Commerce.*—There is not yet available any later data which might be added to the traffic statement contained in the report on preliminary examination. The tonnage for 1925 is expected to equal that of 1924. With no improvement of the locality there is prospect that the volume of commerce will decrease due to the annual impairment of the available channel by silting.

5. *Improvement desired.*—It is desired to improve the existing navigable state by making available a suitable channel with a minimum depth of 9 feet below low water as controlled by Dam No. 2, Monongahela River. The existing controlling depth in the Youghiogheny below Fifteenth Street Bridge, McKeesport, Pa., is about 7 feet. Navigation interests advocate a channel 200 feet wide. The maximum width available between shore lines is 330 feet. The size of the standard Monongahela River locks is 56 by 360 feet in the clear and these dimensions have influenced the development of a desirable size for barges, which barge builders have standardized to a large extent. A typical barge may be described as being of steel construction, 175 feet long by 26 feet wide and 11 feet deep, with dead-weight carrying capacity of 1,000 tons at a draft of $8\frac{3}{4}$ feet and 800 tons at a draft of $7\frac{1}{2}$ feet. Another larger size of barge is in existence, this type being 200 feet by 26 feet by 9 feet, with dead-weight carrying capacity of 950 tons at a draft of 8 feet. The 175-foot type predominates, hundreds being in use locally, particularly on the Monongahela River. Some wooden barges of smaller dimensions are also in service. A channel width of 200 feet is about the minimum which will allow

¹ Not printed.

the free movement and maneuvering of a tow boat and tow in the Youghiogheny. A minimum depth of 9 feet will provide a small bottom clearance which is desirable for the channel, which will be subject to some deposits of silt. The proposed controlling depth of 9 feet will permit of the general loading of the standard 175-foot barges to practically their full capacity, or about 325 tons per barge more than the loading now permissible in the Youghiogheny. This, at the same time, increases the efficiency of loading on the Monongahela River for the commerce which is common to both rivers.

6. *Plan of improvement.*—It is proposed to dredge a channel 200 feet wide in the approximate location shown on the maps¹ accompanying. The excavation involved is as follows:

Controlling depth, normal pool elevation below Dam 2, Monongahela River:	
8 feet.....	Cubic yards, place measurement.. 50,000
9 feet.....	do..... 90,000

The proposed depth of 9 feet is better adapted to the full carrying capacity of the modern standard 175-foot steel barge described heretofore and is most economical to navigation interests. At all times there is a depth of water over the crest of Dam No. 2, Monongahela River. This depth will provide clearance under fully loaded barges. The Youghiogheny is silt bearing during freshets and deposits are to be expected, which may be permitted to accumulate until the controlling depth reaches 8 feet, whereupon removal can be effected to the 9-foot depth at a minimum cost and periodically about every seven years. The dredging involved for the improvement can be accomplished in about three months time by a dipper dredge and the material excavated can be disposed of to advantage in deep holes in the Monongahela River at proper location. The improvement would be completed most advantageously in one continuous operation in a favorable season.

7. *Cost of improvement.*—The cost of dredging and maintaining the proposed channel is estimated to be as follows:

Controlling depth	Channel improvement			Maintenance, approximate cost, average annual
	Excavation (cubic yards)	Cost per cubic yard including disposal	Total cost rounded	
8 feet.....	50,000	\$0.40	\$20,000	\$2,000
9 feet.....	90,000	.40	35,000	2,000

The annual cost of maintenance will be approximately the same for each controlling depth.

8. *Justification of Improvement.*—The lower Youghiogheny River is considered an important adjunct of the Monongahela River. Since it is subject to the pool influence of Dam No. 2, Monongahela River, and is concerned with haul on the Monongahela, the locality is advantageous for the development of terminals both river and river

¹Not printed.

to rail. A substantial traffic has already been developed at existing Youghiogheny terminals even with the unfavorable controlling depth available. This traffic is also common to the Monongahela, thereby contributing to the savings on that river on the commodities involved. The net through-haul savings on the Youghiogheny River commerce, terminal differentials considered, are estimated, as of 1924, to amount to 65 cents per net ton on coal, 30 cents per net ton on sand and gravel, and 45 cents per net ton on iron and steel, had the latter moved. The net transportation savings may be allocated to the Youghiogheny and the Monongahela. Assuming for simplicity that the existing Youghiogheny traffic originates entirely on the Monongahela, an allocation on a straight basis of length of haul and annual charges on the respective waterways involved, becomes as follows:

Item	Youghiogheny	Lower Monongahela
1. Cost of 9-foot improvement, per mile.....	\$30,000.00	\$101,000.00
2. Operation and maintenance, per mile.....	2,000.00	10,000.00
3. Interest at 4 per cent on investment, per mile.....	1,200.00	4,040.00
4. Total (2 and 3).....	3,200.00	14,040.00
Ratio, cost (approximate).....	.25	1.00
5. Average haul:		
Coal..... miles.....	1	42
Sand and gravel.....do.....	1	14
Iron and steel (prospective).....do.....	1	14
6. Savings accruing:		
Coal.....cents per ton.....	0.4	64.6
Sand and gravel.....do.....	.5	29.5
Iron and steel (prospective).....do.....	.8	44.2

Under this straight-cost allocation the total direct savings accruing to the Youghiogheny River will amount to approximately \$1,250 annually on the present tonnage. Annual charges are estimated as follows: Interest on investment, \$1,200; maintenance, \$2,000; amortization of cost in 50 years, \$600; total, \$3,800. Prospective commerce should increase the savings to a point where they will balance the annual charges without reference to the indirect savings created and allocated to the Monongahela River. An equitable arbitrary participation by the Youghiogheny in the joint haul net savings on present commerce considered would more than balance the annual charges.

9. *Cooperation.*—Cooperation, if available and practical, may be of two classes—public and private—and equitable assessment of cost under any plan of cooperation should be according to the benefits derived. The benefits in the case of the proposed Youghiogheny improvement are positive, but do not permit of allocation readily nor definitely among the communities or interests benefitted. The cost of transportation by water, of the existing commodities involved, is absorbed in the prices of the commodities f. o. b. Youghiogheny terminals. The dealer and customer, or both, may participate in the savings. Moreover, the dealers do not continue the same, the trade being competitive. Public interests, other than McKeesport, are involved, which increases the difficulty of allocating public benefits. In view of the relatively small amount involved for the improvement, the practicability of equitable and successful cooperation in the cost

of the channel improvement is questioned. Participation by the interests involved should be limited to the maintenance of proper depth from the channel to the terminals.

10. *Conclusions.*—In the opinion of the district engineer, the proposed improvement of the Youghiogheny from its mouth to Fifteenth Street, McKeesport, Pa., is practicable, since it involves no unusual problems of construction and maintenance. The improvement is justified, since the annual savings created will be in excess of the annual charges on the improvement. The direct savings alone which will accrue on a straight cost basis to the Youghiogheny when its commerce is developed to the point which the proposed improvement will permit should balance the annual charges without reference to the indirect savings created. Cooperation in the proposed improvement is deemed impracticable due to the diversity of public and private interests, the latter of which, of themselves, are subject to change. I recommend that the United States provide and maintain a channel 200 feet wide in the Youghiogheny from its mouth to Fifteenth Street, McKeesport, Pa., approximately as shown on the accompanying maps¹ of the vicinity, the channel to be 9 feet in depth below the normal pool elevation of Dam No. 2, Monongahela River. I further recommend that the initial appropriation for this improvement if prosecuted be made in the amount of \$35,000 to permit of its completion in one continuous operation.

E. L. DALEY,
Major, Corps of Engineers,
District Engineer.

SYLLABUS

The division engineer concurs in the view that this reach of the river is worthy of improvement, but in view of special benefits recommends local cooperation to the extent of 50 per cent of the first cost, the United States to assume the entire cost of maintenance. This is equivalent to payment by local interests of approximately 20 per cent of the estimated annual cost.

[First indorsement]

OFFICE DIVISION ENGINEER, CENTRAL DIVISION,
Cincinnati, Ohio, December 23, 1925.

The CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. The reach of the Youghiogheny River under consideration, about 1 mile in length, is comparable to a siding on a main-line railroad. It now serves primarily as a terminal or harbor for the delivery of coal, sand, and gravel transported on the Monongahela River. If improved, as proposed, this will still be its primary use. The local character of the benefits is shown by the fact that in 1919, 73,980 cubic yards of material were dredged from this reach by a private corporation (Annual Report, Chief of Engineers, 1919, p. 3087).

2. In view of the special benefits, the division engineer is of the opinion that part of the first cost should be borne by the special beneficiaries. While it is difficult to differentiate between special benefits and general benefits, it is suggested that 20 per cent of the estimated annual cost of securing and maintaining the improvement be borne by local interests. This result will be secured if half of the

¹ Not printed.

first cost is paid by local beneficiaries and the entire cost of maintenance is assumed by the United States. At a 4 per cent interest rate this would be equivalent to the payment by local interests of an annual charge of \$700 and the payment by the United States of \$2,700.

3. Assuming cooperation to the extent suggested above, the project is believed to be worthy of adoption by the United States. The depth proposed by the district engineer is that authorized for the Monongahela. To provide a lesser depth would not be worth while and a greater depth would serve no useful purpose.

C. W. KUTZ,
Colonel, Corps of Engineers,
Division Engineer.



[The following text is extremely faint and largely illegible, appearing to be bleed-through from the reverse side of the page. It contains technical details and possibly a signature.]