

*1. Administrative Details*

**Proposal Name: MAWC Youghiogheny River Dam**

**by Agency: Municipal Authority of Westmoreland County**

**Locations: PA**

**Date Submitted: 08/21/2018**

**Confirmation Number: 3db7cf4d-fedb-4da7-be62-ed8795fb7201**

*Supporting Documents*

<b>File Name</b>	<b>Date Uploaded</b>
20180820165948253.pdf	08/20/2018
Indian Creek WTP Dam Inspection Report.pdf	08/20/2018
-ags-4757a9dba5cc4d6aba13f63db6009ee4.pdf	08/20/2018

*2. Provide the name of the primary sponsor and all non-Federal interests that have contributed or are expected to contribute toward the non-Federal share of the proposed feasibility study or modification.*

Sponsor	Letter of Support
Municipal Authority of Westmoreland County(Primary)	MAWC supports this project through its 5 year capital plan.

*3. State if this proposal is for a feasibility study, a modification to an authorized USACE feasibility study or a modification to an authorized USACE project. If it is a proposal for a modification, provide the authorized water resources development feasibility study or project name.*

Feasibility Study

***4. Clearly articulate the specific project purpose(s) of the proposed study or modification. Demonstrate that the proposal is related to USACE mission and authorities and specifically address why additional or new authorization is needed.***

This project will rehabilitate an existing reinforced concrete low head dam. The dam currently provides the pool for MAWC's intake structure at its Indian Creek Water Treatment Plant, and also the intake for the North Fayette Municipal Authority. Thousands of consumers rely on the potable water produced at these facilities. The project will include significant concrete work. The dam is experiencing significant undercutting along the apron on the down stream side of the overflow section as well as in the left and right abutments.

5. To the extent practicable, provide an estimate of the total cost, and the Federal and non-Federal share of those costs, of the proposed study and, separately, an estimate of the cost of construction or modification.

	Federal	Non-Federal	Total
Study	\$0	\$0	\$0
Construction	\$898,800	\$385,200	\$1,284,000

Explanation (if necessary)

***6. To the extent practicable, describe the anticipated monetary and nonmonetary benefits of the proposal including benefits to the protection of human life and property; improvement to transportation; the national economy; the environment; or the national security interests of the United States.***

As noted, the dam provides the pool of water for the intake of the MAWC water treatment plant as well as the North Fayette Municipal Authority treatment plant. These facilities provide potable water to tens of thousands of customers, including residential, commercial and industrial customers. The Indian Creek facility also provides bulk sales to a portion of the PA American system, Belle Vernon and Tenaska Westmoreland electric generating station with contracted reservation amounts. Any impact to this source would have a negative impact economically. This source also provides a health and safety benefit. The source water serving these systems provides for sanitary conditions necessary for human health and also fire protection for the local communities.

*7. Does local support exist? If 'Yes', describe the local support for the proposal.*

Yes

### **Local Support Description**

MAWC supports the project.

*8. Does the primary sponsor named in (2.) above have the financial ability to provide for the required cost share?*

Yes

# Primary Sponsor Letter of Support

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Greensburg, PA 15601

[www.mawc.org](http://www.mawc.org)  
[mawc@mawc.org](mailto:mawc@mawc.org)

"Regional Water  Wastewater Service"

August 20, 2018

United States Army Corps of Engineers

Re: Proposals for Report to Congress on Future Water Resources Development

To Whom it May Concern:

The Municipal Authority of Westmoreland County (MAWC) supports the Youghiogheny River Dam Project and has the financial ability to cover its share of the project. The dam provides the pool for MAWC's Indian Creek Water Treatment Plant intake to provide potable water to thousands of customers.

Sincerely,

Michael F. Kukura  
Resident Manager

# Additional Proposal Information

(This is as uploaded, a blank page will show if nothing was submitted)

## Indian Creek WTP Dam Inspection Report.pdf

# Inspection and Evaluation Report

*for the*  
**Youghiogheny River Dam**

*for the*  
**Indian Creek Water Treatment Plant**  
Connellsville, Westmoreland County, PA

*submitted to*  
**Municipal Authority of Westmoreland County**  
Greensburg, PA

November 2017 ©



**Municipal Authority of Westmoreland County  
Indian Creek Water Treatment Plant  
Youghiogheny River Dam  
Inspection and Evaluation Report**

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# **Municipal Authority of Westmoreland County Indian Creek Water Treatment Plant Youghiogheny River Dam Inspection and Evaluation Report**

## **BACKGROUND**

CDI Infrastructure LLC dba L.R. Kimball was contracted by the Municipal Authority of Westmoreland County to perform an inspection and provide an evaluation report of the condition of the run of river Youghiogheny River Dam that creates a pool for the raw water intakes of the Indian Creek Water Treatment Plant. The dam was built in the early 1900's by the West Penn Railways Company. The Indian Creek Water Treatment Plant was construction at this location to utilize the existing run of river Youghiogheny River Dam for the raw water supply.

The Youghiogheny River Dam is a reinforced concrete low head dam. It does not have an existing Dam Permit from the PA Department of Environmental Protection (PADEP), Dam Safety Section (DS), although the PADEP DS maintains a file on the structure (PADEP File No. D26-057) and performs periodic inspections. The dam is approximately 418 feet in length across the Youghiogheny River from abutment to abutment based upon the 1980 underwater inspection report performed by Atlantic Diving Company, Inc. The main overflow section of the dam is approximately 310 feet in width and the non-overflow section of the dam is approximately 108 feet in width. The dam is noted to be approximately 8 feet in height at the overflow section from the crest to the apron toe. Only approximately 4 feet of the upstream side of the dam is exposed due to siltation.

Based on the 2017 underwater inspection, the dam sits on bedrock. The bedrock rises from the dam left abutment toward the right abutment looking downstream. Based on the geotechnical borings performed for the intake structure in 1970, the bedrock in this area is reported to be a gray sandstone.

## **INSPECTIONS**

Visual inspections of the dam were performed by George Wright, PE and Cameron R. Mock, PE on August 24, 2017, and by David G. Minnear PE and Cameron R. Mock, PE on October 26, 2017. Observations, photographs, sketches and measurements were obtained during these site visits. An underwater inspection was also performed by Specialty Underwater Services on September 21, 2017 of the upstream and downstream toe of the dam. Video documentation was performed of this underwater inspection. Photos were copied from the video and included in Appendices C, D & E. The underwater inspection was performed under the direction of Cameron R. Mock, PE.

## FINDINGS

The following discussion provides an overview of the condition of the dam. For clarity, the “overflow area” refers to the main overflow area of the dam, the approximate 310 feet section from the left abutment looking downstream of the dam. The “non-overflow area” is the remainder of the dam, approximately 108 feet from the right abutment, looking downstream.

The following are the findings of the inspection by area:

***Upstream Side of Dam*** - The concrete is in fair condition, with several minor undercut areas, small spalling areas, a few exposed reinforcement bars near the silt line, and depressions in the concrete from wood penetrations. See photographs in Appendix C. In the non-overflow section, there is significant spalling near the crest with exposed reinforcement bars. The spalling has resulted in the lowering of the crest of the dam in those location allowing overflows. See photographs in Appendix B.

***Downstream Side of Dam – Overflow Section*** - The downstream toe of the overflow section apron is undercut along the majority of the approximate 310' length. See photographs in Appendix D. The undercutting in some areas extends approximately 4 feet horizontal under the apron with a depth of 2 to 3 feet. The dam appears to be built on bedrock that was visible to the diver in many locations. Spalling and exposed reinforcement bars were noted along the downstream limit of the apron. Spalling is seen at construction joints at the downstream limit of the apron. The concrete of the apron is in fair condition with some minor erosion of concrete between the aggregate. See photographs in Appendix D.

***Downstream Side of Dam – Non-overflow Section*** – Extensive spalling and erosion of the crest and downstream slope has occurred resulting in a significant amount of reinforcement bars being exposed, along with a loss of dam cross section. See photographs in Appendix B. The dam access location (hump) has extensive spalling and allows overflow of water to flow on either side due to deterioration.

***Right Abutment*** – Surface spalling exists on the existing concrete walls and structure. Grouted riprap at the railroad culvert discharge is undercut, causing voids under the riprap. The upstream abutment wall has erosion creating an undercutting void. See photographs in Appendix B

***Left Abutment Wall*** - Surface spalling exists on the left abutment wall at the waterline and to a height of 3.5' above the normal pool. See the first photograph in Appendix E. The wall downstream of the dam has minor spalling and undercutting of the wall foundation. See photographs in Appendix E.

## RECOMMENDATIONS

The following are the recommended improvements to the dam

1. *Overflow Section* - Dewater sections of the overflow section of the dam and repair spalling as needed on the upstream and downstream side of the dam and downstream apron. Fill the undercut voids with reinforced concrete, doweled into the existing concrete and bedrock. See preliminary sketch of the recommended repair on Exhibit 1.
2. *Non-overflow section* - Dewater the non-overflow section of the dam, repair the spalling and restore the cross section of the dam. Fill undercut voids with reinforced concrete, doweled into the existing concrete and bedrock. Remove the remaining top slab of the dam access location (hump), fill the upstream underwater channel, and entire void with reinforced concrete extending to the height of the right abutment.
3. *Right Abutment* - Repair the spalling and undercutting of the concrete wall upstream of the dam. Repair spalling concrete on the wall and foundation. Grout the undercut grouted riprap at the end of the right abutment wall and the outlet of the railroad culvert discharging into the grouted riprap.

It is the opinion of this firm that these improvements need to be addressed in the next year to restore the dam to good condition. Of primary concern is the downstream undercutting of the overflow section apron. As the undercutting continues to progress, there could be a loss of portions of the apron which could impact the integrity of the overflow cross section. There was undercutting noted in the 1980 underwater inspection report of the downstream toe of the apron. We have not found any record that this condition was repaired. The 2017 underwater inspection documents that this eroding condition has progressed and needs to be addressed.

Construction drawings and specifications will need to be prepared to address the proposed construction and to facilitate bidding of the construction work. The construction drawings and specifications will need to be submitted to the PADEP DS for their review and comment. Our understanding is that the proposed action will not require a dam safety permit, but work can be performed based on a Letter of Authorization. Construction Plans will need to be submitted to the PADEP DS to obtain the Letter of Authorization. A Chapter 105 permit will be required to address the work to be performed in the stream; including coffer dams, access, water diversion, and work area dewatering to allow the phased construction to occur. A Chapter 102 submission will be required to address sediment and erosion controls during the construction. Coordination with the Corp of Engineers related to releases from the Youghiogheny Dam will assist to control river flows

during construction. It is anticipated that construction will need to be performed in the late summer and fall during lower river flows. The pool created by the dam at the water treatment plant intakes will need to be maintained for the uninterrupted operation of the water treatment plant.

## ESTIMATES

We have prepared a budget estimate of the cost to address the deterioration and undercutting of the dam. The estimate is based upon our inspection observations and review of available information. Preparation of construction drawings and specifications will provide additional detail and result in an improved budget estimate. Due to the submerged condition of the structure and overflowing water, actual limits of construction will not be able to be determined until portions of the dam are dewatered and detailed observations can be performed immediately prior to construction. The construction contract will be bid using a unit price contract to allow adjustments to work limits based on the observed conditions during construction.

<b>MUNICIPAL AUTHORITY OF WESTMORELAND COUNTY</b>					
<b>INDIAN CREEK WATER TREATMENT PLANT - DAM</b>					
<b>BUDGET ESTIMATE OF CONSTRUCTION COST</b>					
November 13, 2017					
<b>Item No.</b>	<b>Item Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Total Price</b>
1	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
2	Reinforced Concrete Repair	70	CY	\$ 1,500.00	\$ 105,000.00
3	Reinforced Concrete Under Cut Repair	220	CY	\$ 1,200.00	\$ 264,000.00
4	Spall Repair <3" depth	1,200	SF	\$ 100.00	\$ 120,000.00
5	Spall Repair 3 to < 6 " depth	1,050	SF	\$ 200.00	\$ 210,000.00
6	River Water Diversion	1	LS	\$ 175,000.00	\$ 175,000.00
7	Grouting for Riprap	30	CY	\$ 400.00	\$ 12,000.00
8	Erosion and Sedimentation Control Plan	1	LS	\$ 20,000.00	\$ 20,000.00
<b>TOTAL =</b>					<b>\$ 946,000.00</b>
Contingencies =					\$ 141,900.00
<b>TOTAL CONSTRUCTION COST =</b>					<b>\$ 1,087,900.00</b>
	Engineering & Construction Inspection Services				\$ 195,822.00
<b>TOTAL PROJECT COST</b>					<b>\$ 1,283,722.00</b>



# APPENDIX A

## Appendix A



Dam overview from right abutment



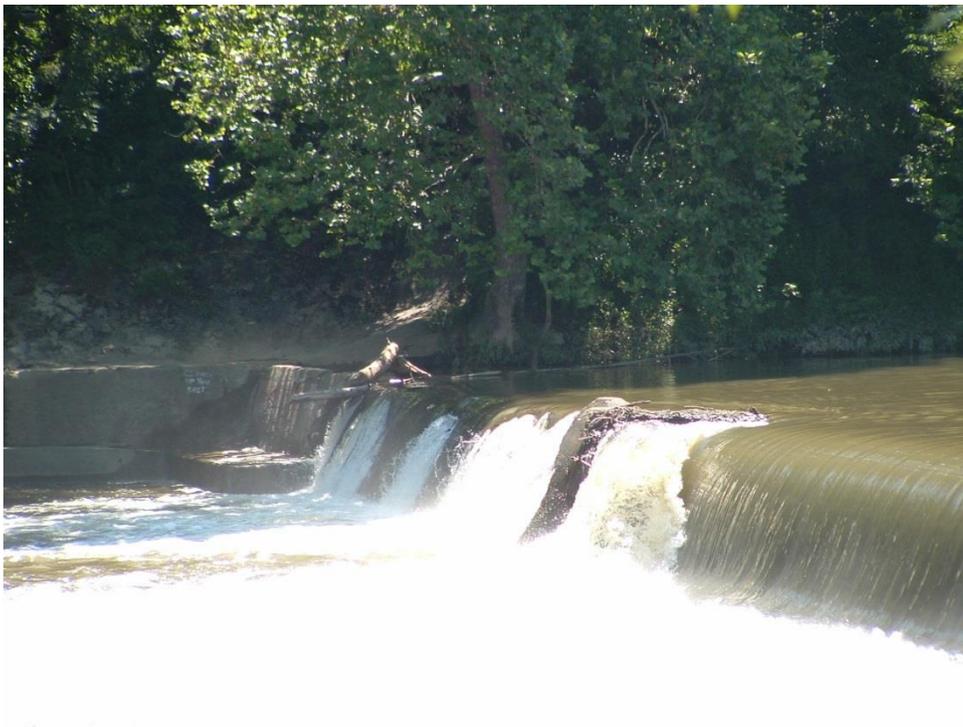
Dam overview from downstream of right abutment



Dam overview from downstream of left abutment



Dam right abutment from downstream of left abutment – severe spalling and exposed rebar



Dam right abutment from downstream of left abutment – severe spalling and exposed rebar



Dam right abutment from downstream – severe spalling and exposed rebar



Dam overflow section from downstream from right abutment

# APPENDIX B

## Appendix B



Dam right abutment & non-overflow section – severe spalling and exposed rebar



Non-overflow section from downstream – severe spalling and erosion



Non-overflow section from left abutment – spalling, section loss and exposed rebar



Non-overflow section – spalling, section loss and exposed rebar



Right abutment for upstream – spalling and undercutting



Right abutment upstream bank stabilization deterioration



Right abutment from downstream - spalling



Dam right abutment from downstream – spalling and rebar exposed



Dam right abutment from downstream – spalling and exposed rebar



Dam right abutment from downstream – spalling



Dam right abutment and non-overflow section from downstream – severe spalling and exposed rebar



Dam non-overflow section extensive spalling and exposed rebar – enlargement



Dam non-overflow section from downstream – severe spalling and exposed rebar – enlargement



Dam non-overflow section from downstream – severe spalling and exposed rebar – enlargement



Dam non-overflow section from downstream – severe spalling and exposed rebar – enlargement



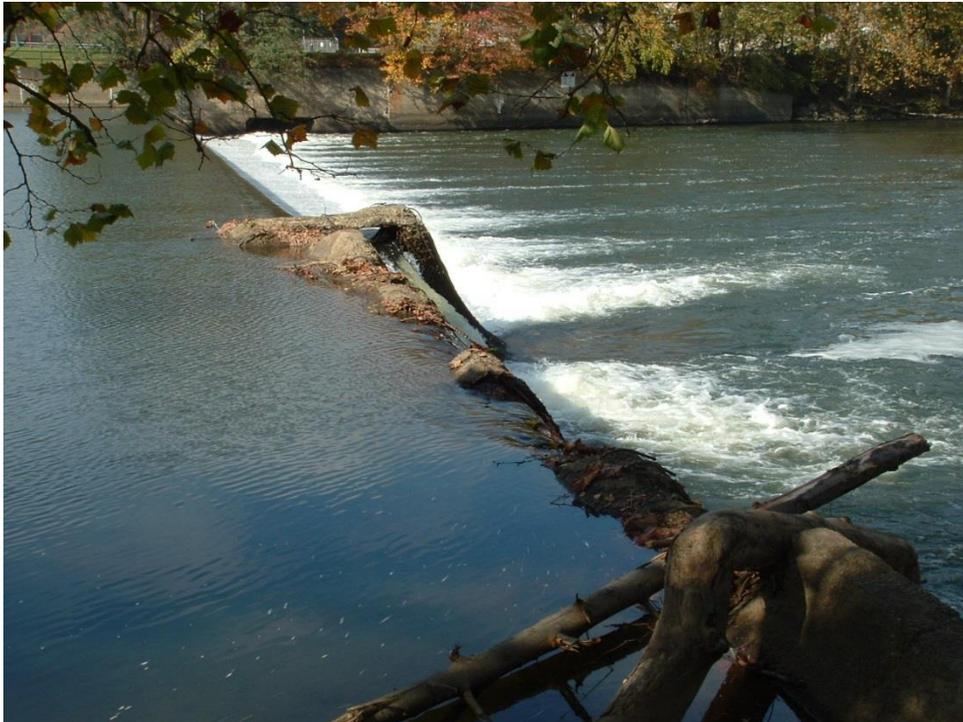
Dam access port (hump) from downstream - severe spalling and exposed rebar – enlargement



Dam access port (hump) from downstream



Dam access port (hump) from upstream



Non-overflow section from upstream – severe spalling and section loss



Non-overflow section from upstream – severe spalling, section loss and exposed rebar