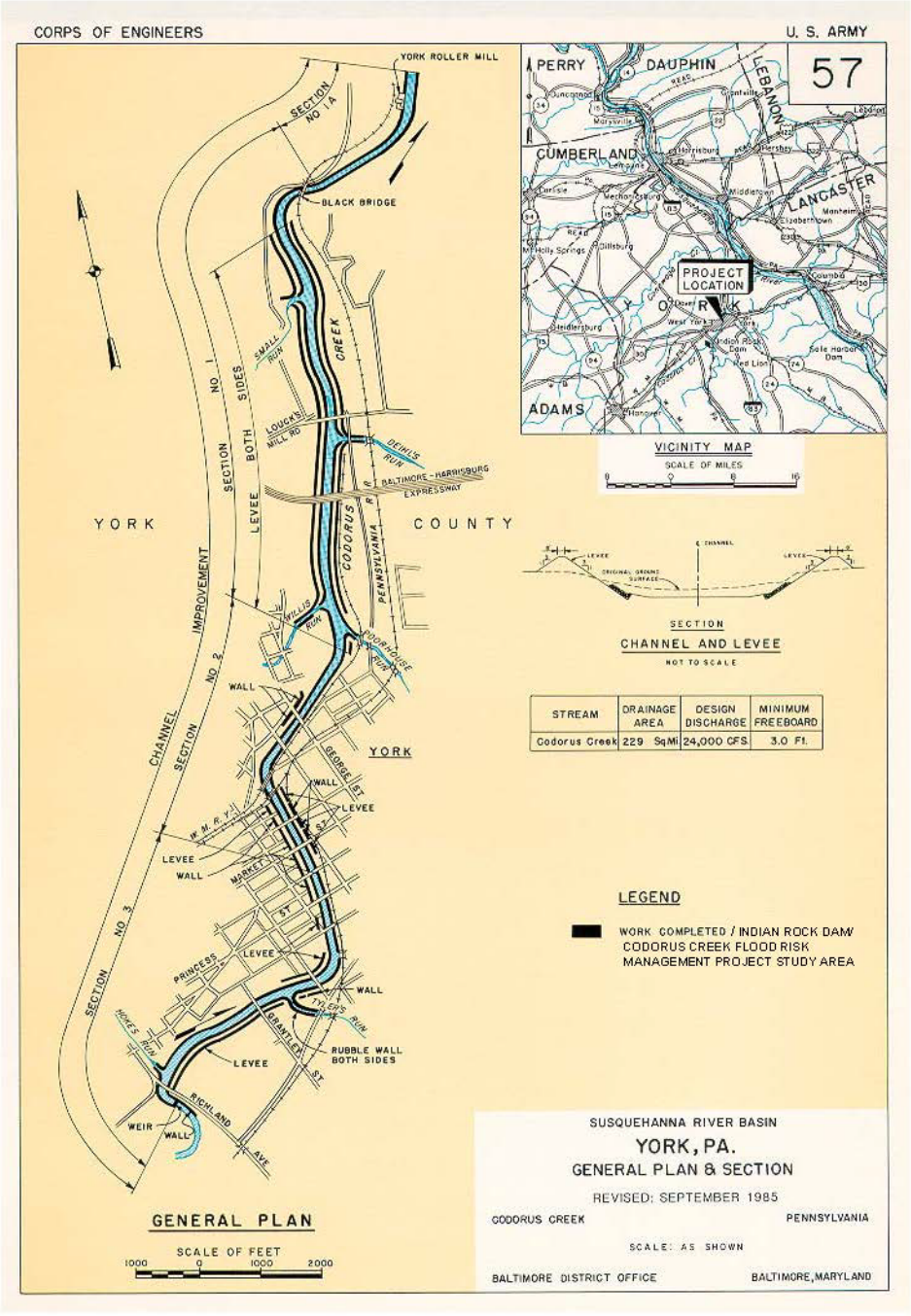
FINAL ENVIRONMENTAL ASSESSMENT

INDIAN ROCK DAM / CODORUS CREEK FLOOD RISK MANAGEMENT REHABILITATION PROJECT
York County, Pennsylvania



March 2019
U.S. Army Corps of Engineers
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1.0 INTRODUCTION

The Indian Rock Dam/Codorus Creek Flood Risk Management (FRM) System Project provides flood damage reduction to the City of York, Pennsylvania and downstream communities. The project consists of two components: Indian Rock Dam and the Codorus Creek FRM levee system. These projects were authorized by the Flood Control Act of 1936, constructed in the late 1930s, and became operational in the 1940s. The focus of this document is the Codorus Creek FRM system component. However, a brief description of the Indian Rock Dam component is included in Section 1.1 for informational purposes.

USACE has a Levee Safety Program in place to (1) reduce risk and increase public safety through an informed public, (2) develop clear national levee safety policy and standards, and (3) maintain sustainable flood risk management systems that meet public safety needs. General inspections occur annually for federal projects, and periodic comprehensive inspections occur every five years. As part of this program, a periodic inspection of the Codorus Creek FRM levee system occurred in 2015. The inspection resulted in findings of structural deficiencies along the levee system (York North: Appendix 1.1; York South: Appendix 1.2). Upon finding the deficiencies, USACE prepared a budget package that included proposed repair and rehabilitation measures to address the deficiencies and restore the levee system to its authorized structural capacity and flood management design. USACE submitted the budget package to Congress in 2017, and in 2018, USACE was authorized funding for the project rehabilitation and repair work tasks.

Given that the Codorus Creek FRM project was authorized in the 1930s and became operational in the 1940s, the construction of the project occurred prior to implementation of the National Environmental Policy Act (NEPA). Therefore, USACE has prepared this Environmental Assessment (EA) in accordance with the NEPA of 1969, as amended, and in accordance with 33 Code of Federal Regulations (CFR) Part 230. The EA includes evaluation of the potential environmental and socioeconomic effects as a result of performing the proposed work tasks identified during the periodic inspection as being necessary to restore the levee system to the authorized as-built design capacity and to ensure the integrity of the levee system. Also integrated into Section 6.0 of this EA are evaluations of proposed future activities along the levee system, to include additional repair and rehabilitation work tasks, activities that involve promoting improved environmental and safety issues, and potential actions of the local stakeholders.

1.1 Project Location, Setting, History, and Existing Conditions

The Indian Rock Dam and Codorus Creek FRM projects were constructed by USACE, with portions of the levee system also being constructed by the Works Progress Administration. The cost of construction was approximately $5 million ($57,202,283 in 2018 dollars). USACE has sole ownership and responsibility for the operation and maintenance of the project. Over the project life, the dam and levee system have

prevented an estimated $55 million in flood damages since their construction and have provided York and downstream communities with protection from flood hazards.

Codorus Creek FRM Levee System

The Codorus Creek FRM levee project consists of eight hydraulically independent levee systems: York Northeast, York Northwest, York East Loucks Mill, York West Willis Run, York East Downtown, York West Downtown, York Southeast, and York Southwest (Figure 1). The incorporated area within the City of York covers a little more than 5 square miles, and lies on both banks of Codorus Creek, which flows through York and is 10 miles upstream of the confluence with the Susquehanna River. The levee system passes through West Manchester Township, Spring Garden Township, Springettsbury Township, North York Borough, and York City, all located in York County, Pennsylvania (refer to Appendices 1.1, 1.2, 1.6, 1.7, and 1.8 for location information).

Although USACE owns, operates, and maintains the Codorus Creek FRM levee system, USACE does not own the lands. USACE only possesses a channel improvement easement. There are 54 outgrants at the Codorus Creek levee system, and all outgrants are Consent to Structures, which approve the use as not inhibiting the easement rights of the Government. Outgrants are instruments that authorize federal agencies, state or local governments, private organizations, or individuals to use Army (military or civil) controlled real property and administer those interests in real property. The easement setbacks along the levee system vary, with some segments consisting of a USACE setback of up to approximately 30 feet and other segments where USACE setback ends directly on the outside edge of the levee (i.e., floodwalls), approximately 5 feet. The southern segments run through the City of York and are surrounded by industrial, commercial, institutional/educational, and residential development. The northern segments run through less developed lands, with some of the adjacent lands being densely vegetated.

The levee system runs adjacent to 4.8 miles of Codorus Creek along both banks; therefore, when considering both banks, the levee provides protection to 10 miles of creek bank (4.8 miles on each bank). The construction consisted of approximately 23,000 feet of channel improvement, including channel widening and deepening, construction of floodwalls and earthen banks, protection of channel bank slopes, and removal of a mill dam that increased channel capacity to 24,000 cubic feet per second (cfs). In general, the new alignment closely followed the old channel. Concrete floodwalls were erected in localities where restricted clearances prevented the construction of earthen levees. The total length of the constructed floodwalls is approximately 7,600 feet. Floodwall segments include construction by hand laid stone, and at some locations include concrete caps. The levee system, in general, has side slopes of one foot vertical to three foot horizontal on both the creek and the land sides, and a top width of approximately 8 feet. The average height of the levee from the channel bed to the top of the levee is 25 feet. The average depth of the creek within the levee system limits is 3 feet. There is a bascule dam located within the Codorus Creek levee limits, which is owned, operated, and maintained by the City of York. The water

depth behind the bascule dam, when in a raised position, is approximately 6 feet. At present time, the bascule dam is not functioning properly and is permanently in the raised position.

There are two small bridges crossing Tyler's Run, one located near the location of the confluence of Tyler's Run and Codorus Creek, and another where the Penn Street Floodwall ends. No design documentation has been identified that indicates the specific construction or age of the bridges, although York College claims to own the structures. The bridges are of steel I-Beam type on each exterior span side with lateral bracing support by welded steel girders. Contained within the girder shapes are concrete platforms. It appears a portion of the masonry wall on both banks was removed for placement of the bridges.

There are numerous silt, sand, and gravel deposits/shoals within the creek throughout the project, some of which are vegetated with grasses and shrubs. Locations of existing shoals include above and below Richland Avenue, between Grantley Street and Penn Street, above and below Poorhouse Run, and above Route 30. Limited dredging of shoal deposits at various locations occurs periodically, with the last dredging activity performed in 2015 at a shoal deposit near where the levee channel meets Tyler's Run. Typically, deposition removal actions are performed by USACE every 2 to 3 years, rotating between areas, so dredging may occur between 5 to 10 years at various locations. There are multiple roadway crossings throughout the levee system, some are owned and operated by local authorities, and others by the Pennsylvania Department of Transportation (PennDOT). Additionally, there are three rail line crossings of the levee system.

There are two areas along the levee system where structures, not owned or operated by USACE, are present within the USACE easement. One structure is located at the existing floodwall near Penn Street, adjacent to York College of Pennsylvania. This structure is a building associated with a former paper mill facility, under current ownership of York College. A portion of the structure sits on top of the Penn Street floodwall. It is important to note that this portion of the building was an addition to the original paper mill that was constructed after the federal flood management project. Additionally, the building is leaning slightly toward the levee channel and is beginning to separate from the adjacent/original structure. The second structure is the Hotel Codorus located near where the levee channel flows beneath the Market Street Bridge. This structure overhangs the levee channel slightly. There are also bulges, areas that project outward overhanging the river, within the floodwall at this general location.

Living and dead trees are located sporadically along the length of the levee system, some of which may affect the integrity of the levee due to roots intruding into the levee banks and floodwalls, as well as overhanging limbs. There are 270 USACE identified drainage conduits at sporadic locations running through the levee system. Of these, 170 drainage conduits were inspected by USACE in 2015 using remote cameras. The remaining 100 drainage conduits were collapsed or filled with sediment; therefore, inspection by camera was not possible at the time. USACE owns some of the drainage

conduits in this system; however, it is unclear of the ownership for all of the conduits. There are also multiple signs and fences, not installed by USACE, located at various locations along the levee system.

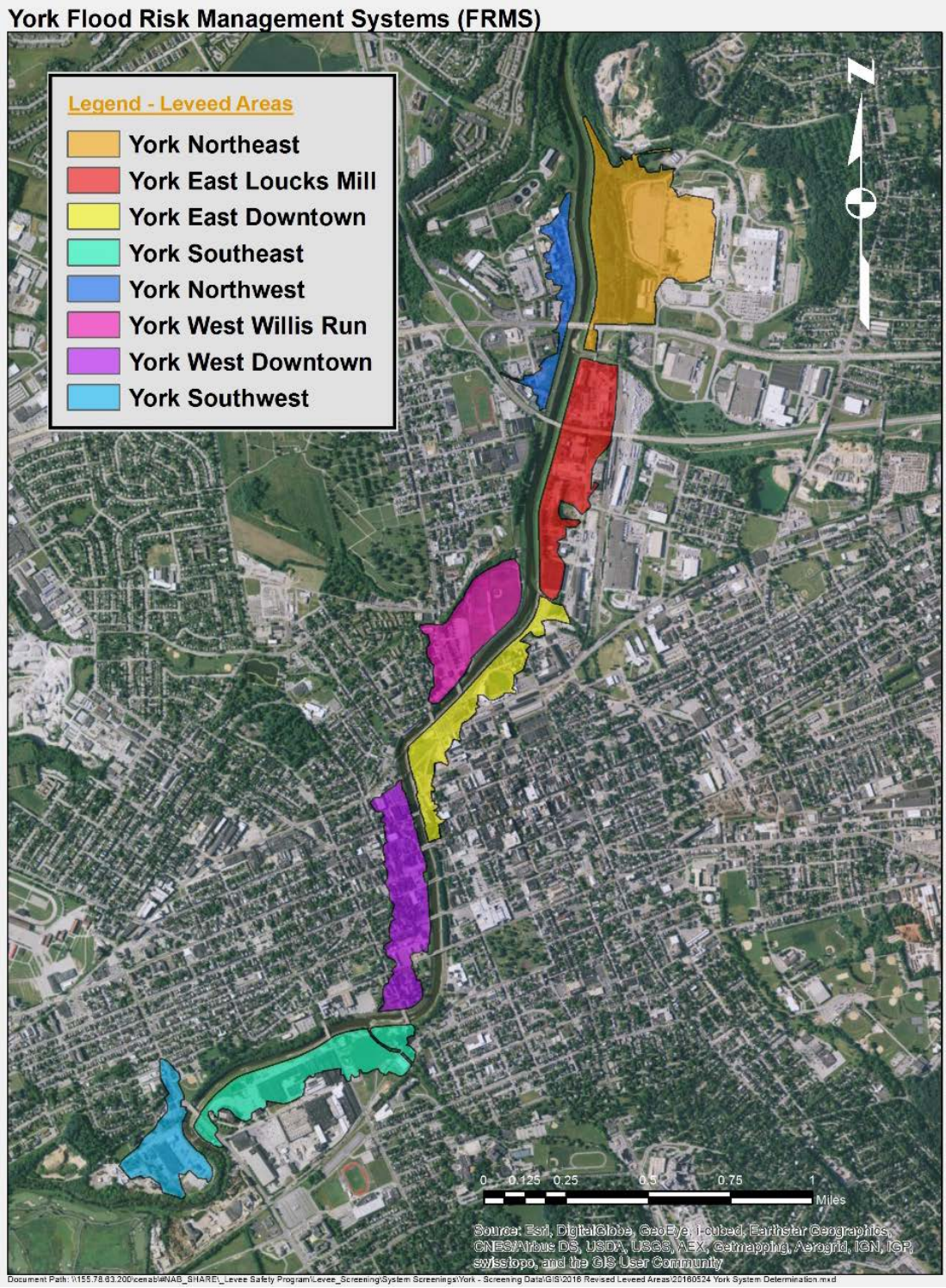
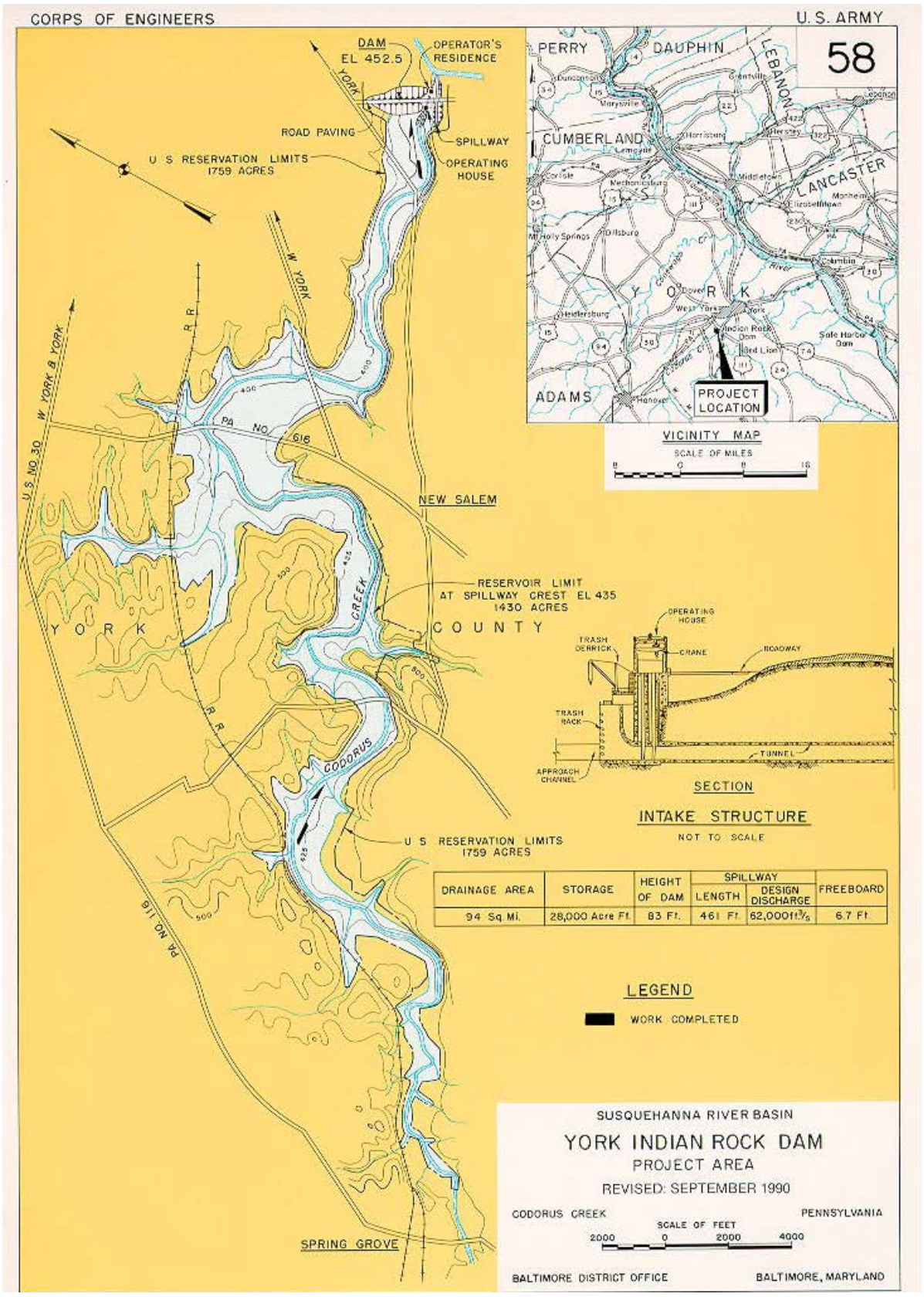


Figure 1. Codorus Creek FRM System

Indian Rock Dam

As stated, the focus of this EA is the Codorus Creek FRM levee system component. However, given that the levee system works jointly with Indian Rock Dam to reduce flood risks, a brief description of the Indian Rock Dam component is included for reference. The Indian Rock Dam is an earth and rock structure, approximately 1,000 feet long, rising 83 feet above the streambed, with a side-channel spillway and gated outlet conduit in the right abutment (Figure 2). The dam is located approximately 3 miles upstream from York (see Appendix 1.5). The reservoir area is typically dry, meaning that during normal circumstances, there is no pool of water present behind the dam. In the event of a storm, gates can be closed, and water flowing down Codorus Creek can be held behind Indian Rock Dam to reduce flooding downstream. The reservoir has a storage capacity of 28,000 acre-feet at spillway crest and controls a drainage area of approximately 94 square miles, equivalent to 41 percent of the watershed upstream from York. The federal government owns the Indian Rock Dam fee simple, and there are 43 outgrants, most of which are easements. However, one such outgrant is a license to the Pennsylvania Game Commission (PGC) for wildlife management on most of the project and another is a lease to the Fraternal Order of Police for a shooting range at the far end of the dam. It should be noted that the Indian Rock Dam project is being evaluated by USACE separately, for the development of a Master Plan, and associated NEPA document. It is anticipated that the evaluation would be completed, with documents available for public review and comment, in 2019.



DRAINAGE AREA	STORAGE	HEIGHT OF DAM	SPILLWAY		FREEBOARD
			LENGTH	DESIGN DISCHARGE	
94 Sq Mi.	28,000 Acre Ft.	83 Ft.	461 Ft.	62,000ft.³/s	6.7 Ft.

Figure 2. Indian Rock Dam

1.2 Purpose Of and Need For The Action

The Codorus Creek FRM levee system was authorized under the Flood Control Act of 1936 to provide flood management to the City of York and downstream communities. The levee system has been in operation since the 1940s. During the USACE 2015 periodic inspection of the levee system, deficiencies were identified that need to be addressed. The purpose of this proposed action is to rehabilitate and repair the Codorus Creek FRM levee system and restore the overall reliability of the Indian Rock Dam/Codorus Creek FRM projects. The proposed work tasks are intended to restore the levee system to its originally-authorized design flood management capacity and integrity. Absent repairs and rehabilitation of the Codorus Creek FRM levee system, the levee system would continue to deteriorate.

Based on the age of the Codorus Creek FRM system, the condition of the levee is projected to continue to deteriorate. A bulge, located in the West Downtown Levee proximal to levee station 199+00 on the riverside by West Market Street, has been documented since 2015. This deficiency is noted as “the bulge” throughout the document to refer to the segment of masonry wall with the most significant deterioration in the West Market Street floodwall. There is buckling of the masonry section of the West Downtown Levee with visible voids and mortar translocation. Strain gages were installed in 2016 to track void developments. The bulge failed in February 2018, when a blowout occurred creating a six by six by two foot hole. Emergency repairs consisted of placing translated masonry stones with mortar to stabilize the concrete wall overlaying the masonry. At present, the bulge appears stable with no observable translocation. On July 26, 2018, heavy rains resulted in failure of a different section of the masonry wall along the right bank (east bank) of the Codorus Creek floodwall adjacent to the Philadelphia Street Bridge in Downtown York. This approximately twenty foot segment of masonry wall collapsed into the stream resulting in an unsupported segment of concrete floodwall. Emergency repairs consist of removal of the concrete floodwall and filling with concrete, new masonry, and replacement of the concrete floodwall. These repairs were completed in August of 2018.

Immediately downstream and upstream of the bulge, mortar is missing with observable voiding and the development of additional buckling. The building located at 233 West Market Street is partially supported by the floodwall. The primary concern is risk of failure of the floodwall with the collapse of the corresponding protected higher landside ground. Buildings located on or near to the floodwall such as the City of York Pump Station and 233 West Market Street would be severely damaged. Furthermore, collapsed floodwall material would decrease the Codorus Creek channel capacity, increasing the potential for flooding by raising the water surface elevation and increasing velocities. Similar conditions are applicable to areas located downstream and upstream of the bulge.

The floodwall near Penn Street also shows significant deterioration that compromises the structural integrity of the system. The entire floodwall segment from Tyler’s Run to the Penn Street Bridge was found structurally deficient in the 2015 periodic inspection.

This floodwall segment is experiencing collapse of masonry, floodwall tilting and movement, and severe cracking, spalling, and efflorescence throughout the floodwall. The floodwall is also being undermined by erosion from Station 229+80 to Station 228+80. A segment of channel embankment by the upstream floodwall tie-in has also experienced widespread erosion and will need to be stabilized.

1.3 Proposed Rehabilitation Work

The fiscal 2018 President's Budget includes $15.9 million for operation, maintenance, repair, rehabilitation, or replacement of the aging Codorus Creek FRM system. The proposed rehabilitation actions include four primary work tasks that USACE identified in the 2015 Periodic Inspection as the highest priorities, and that are proposed to occur in the near future (within 5 years). These work tasks are:

(1) Floodwall replacement near Penn Street Bridge
(2) Floodwall (bulge) repairs near Market Street Bridge
(3) Riprap installation near South Richland Avenue Bridge
(4) Drainage conduit maintenance

Future rehabilitation and maintenance work tasks that are not covered by this EA would be included in an operations and management (O&M) plan for prioritizing USACE O&M work for the levee and channel project. Those work tasks are currently planned to occur within 5 to 10 years, but are reliant upon USACE receiving additional federal funding to perform these actions. If funding becomes available for future work, USACE would evaluate the potential effects of carrying out these tasks, in accordance with NEPA requirements. The cumulative impacts of these work tasks are evaluated in Section 6.0 of this EA. The proposed future work tasks may include:

(1) Repair of masonry floodwalls;
(2) Removal of shoaling and vegetation from the channel;
(3) Repair or replacement of riprap throughout the levee system;
(4) Rehabilitation of Loucks Mill levee at the downstream tie-in to the railroad embankment;
(5) Monitoring of the floodwall near the bascule dam downtown, and repair of the floodwall, if needed;
(6) Rehabilitation of the southeast levee between Grantley Road and Tyler's run;
(7) Rehabilitation of the Willis Run levee and floodwall;
(8) Abandonment of the conduit that runs parallel to the levee at the upstream end of the west downtown levee;
(9) Removal of rubble from the west downtown levee that was generated during or near the time of the demolition of public housing;
(10) Addition of Codorus Creek access points for boating; and
(11) Evaluation and potential removal of the dam near South Richland Avenue.

1.4 Environmental Assessment Scope of Action

This EA has been prepared in accordance with NEPA, the Council on Environmental Quality's (CEQ) regulations published at 40 CFR Part 1500, Engineer Regulation 200-2-2 Procedures for Implementing NEPA, and Section 404 of the Federal Water Pollution Control Act of 1972 (Clean Water Act), as amended. The EA scope encompasses the Codorus Creek FRM levee system component of the Indian Rock Dam/Codorus Creek FRM System Project. The area of review encompasses the approximate 4.8 miles of the Codorus Creek FRM levee system, to the outer boundaries of the existing USACE easement for the levee system, and three areas where Rights of Entry (ROE) would be required for construction access and staging, consisting of approximately 190 acres. The information within this EA includes descriptions of the purpose and need of the proposed action, details of the proposed action and design, alternatives analyses, and existing site conditions, and an assessment of the potential effects to the human and natural environment if the preferred alternative for the work tasks would be performed. If the potential impacts are determined not to be significant, a Finding of No Significant Impact (FONSI) will be made. If the potential impacts are determined to be significant, a Notice of Intent (NOI) will be published, leading to the preparation of an EIS.

1.5 Changes from Draft Environmental Assessment

The following notable changes have occurred since the publication of the Draft EA in August 2018:

1) The proposed action no longer includes the removal of the two existing bridges across Tyler's Run.
2) The proposed work task to repair riprap near the South Richland Avenue Bridge may require the installation of a temporary rock causeway to facilitate access by heavy equipment from the opposite bank.
3) Changes have been made to the sections on air quality, socioeconomics and environmental justice in response to comments received from US Environmental Protection Agency (USEPA) during the public notice period.
4) Major additions have been made to the sections on water quality and aquatic resources as a result of internal review.

This is not an exhaustive list, and does not reflect the numerous editorial changes that have been made to this document.

1.6 Authority

The project was authorized by the Flood Control Act of June 22, 1936, as amended by the Flood Control Act of June 28, 1938, and is described in House Document No. 702, 77th Congress, second session. The project contributes to achieving protection and restoration goals established by Executive Order 13508 to protect habitat and water quality within the Chesapeake Bay watershed. The project is currently operational.

2.0 ALTERNATIVES ANALYSIS

This section includes the evaluation of alternatives, the preferred alternative selected for implementation of the rehabilitation work tasks, and the reasoning behind the selection.

2.1 Alternatives Considered

2.1.1 Alternative 1: No Action Alternative

Under the No Action alternative, USACE would take no action and would not perform any work tasks to repair and rehabilitate the Codorus Creek FRM system. As such, under this alternative, there would be no direct impacts to waters of the U.S., federal and State threatened and endangered species, cultural resources, etc. USACE would still continue operation and maintenance activities authorized by the Codorus Creek FRM project to include emergency repairs.

2.1.2 Alternative 2: Rehabilitation/Repair of Codorus Creek FRM project

Alternative 2 includes four work tasks presented below as alternatives 2A through 2D. These four work tasks have been identified by USACE in the 2015 periodic inspection as being necessary for rehabilitating the Codorus Creek FRM levee system. Alternatives 2A through 2D are proposed to occur in the near future (refer to Appendices 1.1, 1.2, and 1.3 for locations and additional information).

2.A Floodwall Replacement near Penn Street Bridge

Alternative 2A includes the replacement of the floodwall located near the Penn Street Bridge. This alternative would require a ROE for access and construction activities. The extent of the work would be replacement of approximately 600 linear feet of the existing floodwall, extending from the south abutment of the Penn Street Bridge to the confluence of Tyler's Run and Codorus Creek. The floodwall would be replaced within the approximate same footprint, and to approximately similar dimensions of the existing floodwall. Riprap would be replaced and additional riprap added, where necessary, at the base of the new floodwall for protection. The construction zones would be protected, and exposed soils would be stabilized with silt fences and other erosion and sedimentation control barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. This may include the installation of coffer dams and in-water pump around devices, if necessary to effectively protect the site. Excavated materials and bridge and floodwall debris would be contained and transported to approved upland disposal sites. The replacement of the floodwall would also require the demolition and removal of an abandoned building (shown in the Photograph 1 below), which was previously associated with a paper mill, and is now under the ownership of York College. Coordination with York College would occur to ensure that the construction activities associated with the replacement of the floodwall would not interfere with York College's use of the adjacent structures and for a construction access and staging area within the ROE.

Photograph 1. Floodwall Replacement near Penn St. Bridge (Alternative 2.A)

2.B Floodwall Repairs near Market Street Bridge

Alternative 2B involves repairing existing unstable bulges along the floodwall near the Market Street Bridge. This alternative would require a ROE for access and construction activities. The work is expected to involve patching the deteriorated areas by replacing stones in the holes and securing the stones with concrete and/or grout. The work zone would be protected and stabilized using sediment and erosion control measures such as silt fences and other barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. This may include the installation of coffer dams and in-water pump around devices, if necessary to effectively protect the site. The floodwall at this location is surrounded by businesses, including one business that partially overhangs the floodwall. Coordination with the adjacent property owners would occur to ensure that the construction activities associated with the replacement of the floodwall would not interfere with their business activities and to obtain a construction access and staging area within the ROE.

Photograph 2. Floodwall Repairs near Market St. Bridge (Alternative 2.B)

2.C Riprap Installation near South Richland Avenue Bridge

Alternative 2C involves stabilization of approximately 690 linear feet of floodwall near the South Richland Avenue Bridge. This alternative includes (1) stabilization of existing riprap along an approximately 500 foot length of channel bank starting from the South Richland Avenue Bridge to 500 feet upstream along the east bank of Codorus Creek to where the existing riprap ends and (2) installation of new riprap along an approximately 190 linear foot length of eroded channel bank located immediately upstream of the existing riprap (proposed for stabilization as part of this task) and riverside of the existing floodwall. Stabilization of existing riprap is anticipated to restore the levee riverbank dimensions to original design and is expected to include reestablishing the slope and placement of stone or other bank stabilization product (i.e., riprap, gabion, etc.). The installation of new riprap is anticipated to extend approximately 10 feet channelward with an area of approximately 1,880 square feet (0.04 acres) inside the channel to tie-in the riprap toe to the bottom of the channel. The new riprap would be placed in a 24 inch layer consisting of 18 inch diameter riprap with an additional 6 inches of small bedding stone, which is comparable to existing material on adjacent riprap.

This work may involve placement of fill material behind the installed riprap along the bank or other bank stabilization material to ensure the enduring stability of the slope. This alternative would require a ROE for access and construction activities. If site access cannot be achieved from the right streambank, then this work may require the installation of a 15-foot-wide, temporary stone causeway within and across Codorus Creek, to facilitate access by construction equipment that must be staged from the opposite bank. The work zone would be protected and stabilized using sediment and erosion control measures such as silt fences and other barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. This may include the installation of cofferdams and in-water pump around devices, if necessary to effectively protect the site. Coordination with the adjacent property owners would occur to ensure that the construction activities associated with the bank stabilization would not interfere with their business activities and for a construction access and staging area within the ROE.

Photograph 3. Riprap Installation near S. Richland Ave. Bridge (Alternative 2.C)

2.D Drainage Conduit Maintenance

Alternative 2D involves the cleaning, inspection, repair, replacement, and potential abandonment of existing drainage conduits that run through the levee system. There are 270 conduits in the levee system that have been identified by USACE. Out of these 270 conduits, only 170 have been inspected by USACE by using a camera (Appendix 1.3). The remaining 100 conduits were unable to be inspected at the time due to the conduits being collapsed or filled with sediment. This work involves (1) inspecting the remaining 100 conduits, and (2) repairing conduits that are identified as having structural integrity. If conduits are identified as unrepairable, then these conduits will be proposed for replacement or abandonment. Unrepairable conduits will be assessed based on whether they still provide drainage benefits to the system and whether they are associated with the integrity of the levee system to determine if replacement or abandonment is a more practical solution. Another goal of this alternative is to identify ownership of the conduits that were not installed by and are not under the ownership of USACE.

Photograph 4. Examples of Drainage Conduit Maintenance (Alternative 2.D)

2.1.3 Alternative 3: Replacement of Floodwall near the Penn Street Bridge with an Earthen Levee, plus Work Tasks 2.B through 2.D

Alternative 3 consists of a modification of Alternative 2: 2.A. would be modified to replace the existing floodwall with an earthen levee as detailed below, and 2.B. through 2.D. would remain as described in Alternative 2. The approximate 600 linear foot floodwall near the Penn Street Bridge would be replaced with an earthen levee. This would require the need for additional permanent easement area due to the existing USACE easement ending directly on the backside (landward side) of the levee and the need for a larger tract of land to construct the earthen levee. This alternative would also require a ROE for access and construction activities. USACE would need to coordinate with York College to secure additional permanent easement area and ROE. This alternative would require major excavation work of the uplands behind the existing floodwall to gain sufficient land area to construct the earthen levee to the appropriate dimensions. Riprap would be replaced and additional riprap added, where necessary, at the base of the new floodwall for protection. The construction zone would be protected, and exposed soils would be stabilized with silt fences and other erosion and sedimentation control barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. This may include the installation of coffer dams and in-water pump around devices, if necessary to effectively protect the site. Excavated materials and floodwall debris would be contained and transported to an approved upland disposal site. Coordination with York College would occur to

ensure that the construction activities associated with the replacement of the floodwall would not interfere with York College's use of the adjacent structures, to secure a permanent easement to cover the proposed levee footprint, and for a construction access and staging area within the ROE.

2.1.4 Alternative 4: Replacement of Floodwall near the Penn Street Bridge with a New Floodwall with Addition of a Floodplain, plus Work Tasks 2.B through 2.D

Alternative 4 includes a modification of Alternative 2: 2.A. would be modified to replace the existing floodwall with a new floodwall setback from the river to allow for a wider floodplain at this location, and 2.B. through 2.D. would remain as described in Alternative 2. The approximate 600 linear foot floodwall near the Penn Street Bridge would be replaced with a new floodwall; however, additional floodplain would be incorporated into the levee system at this location. This would require the need for additional permanent easement area due to the existing USACE easement ending directly on the backside (landward side) of the levee and the need for a larger tract of land to construct the floodplain and modified floodwall. This alternative would also require a ROE for access and construction activities. USACE would coordinate with the York College to secure additional permanent easement area and ROE. This alternative would require significant excavation work of the uplands behind the existing floodwall to gain sufficient land area to construct a floodplain and construct the new floodwall. This alternative would also require the construction of additional length of floodwall to incorporate the floodplain into the design. Riprap would be replaced and additional riprap added, where necessary, at the base of the new floodwall for protection. The construction zone would be protected, and exposed soils would be stabilized with silt fences and other erosion and sedimentation control barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. This may include the installation of coffer dams and in-water pump around devices, if necessary to effectively protect the site. Excavated materials and floodwall debris would be contained and transported to an approved upland disposal site.

2.2 Alternatives Evaluation

2.2.1 Alternative 1: No Action

Under the No Action alternative, no new work within the levee system would occur. No additional land easements or ROEs would be needed. USACE would still continue operation and maintenance activities authorized by the Codorus Creek FRM project to include emergency repairs. Given the existing structural instability of the floodwall near the Penn Street Bridge location, it is expected that the floodwall would continue to deteriorate and eventually fail resulting in costlier emergency repairs. The structure that is sitting at the top of the levee at this location is also expected to continue to lean toward the creek and ultimately fall into the channel resulting in large economic losses to the property owner. Additionally, the bulges along the Market Street Bridge floodwall would continue to expand, thereby compromising the structural integrity of the floodwall. The levee bank

near the South Richland Avenue Bridge would continue to erode, resulting in additional sedimentation in the channel. The conduits that run through the levee system would remain clogged or collapsed, resulting in a decrease in system performance for reducing interior flooding in the levee system. The levee system could also be structurally compromised due to seepage within the levee being directed through alternate flow paths in the levee.

There would be no direct effects on cultural resources by implementing the No Action alternative. However, given the likelihood that the FRM system features along Codorus Creek could fail without repair or stabilization, cultural resources may be indirectly adversely impacted by flooding in historic structures protected by the levee system. Additionally, federal and State threatened and endangered species, other wildlife, and aquatic species would not be directly affected under a No Action alternative; indirect adverse effects, including habitat impairment, to species may occur due to the continued degradation of the channel resulting from concrete, rock, debris, etc., falling into the creek. There would also be continued and possibly increased sedimentation of the waterway from the eroding levee banks.

The levee system would be compromised if the identified rehabilitation and repair work tasks to return the levee system to its authorized capacity would not be undertaken. Based on the above information, the No Action alternative would result in potential adverse environmental consequences to the creek and associated vegetation and wildlife due to concrete, stones, debris, and sediments continuing to enter into the creek. Additionally, the No Action alternative would not provide the necessary life and safety protection that the flood management project was designed to provide, and would continue to pose a public safety concern due to its current condition. The public would also be at higher risk for economic losses from flood-related property damages. Given that the purpose of the FRM system is to provide flood management, and that the purpose of the proposed project is to rehabilitate, repair, and restore the levee system, the No Action alternative would not meet the project purpose. Therefore, the No Action alternative is not a feasible alternative.

2.2.2 Alternative 2: Rehabilitation/Repair of Codorus Creek FRM project

Following are evaluations of the work tasks listed under Sections 2.1.2. These include work tasks 2.A. through 2.D. These have been identified by USACE as being necessary for the Codorus Creek FRM project.

2.A Floodwall Replacement near Penn Street Bridge

This alternative would require USACE to secure a ROE to replace the floodwall. Excavation of uplands behind the existing floodwall would be minor due to the proposed floodwall being constructed within the approximate footprint of the existing floodwall. The removal of the existing floodwall and structure would eliminate the potential of concrete and other debris, and potentially the entire floodwall and structure, from falling into the Codorus Creek channel. Removal would, thereby, also eliminate a potential

safety hazard to the public. Installation of riprap would provide protection of the new floodwall. The construction zone would be protected and contained, and exposed soils would be stabilized with silt fences and other erosion and sedimentation control barriers. This would minimize the potential for sediments and other construction generated materials entering into the aquatic environment. Construction materials would be staged in uplands within the ROE areas. The work would be expected to occur from uplands, with potentially some work being necessary to be performed within the channel. If this would be necessary, cofferdams, in-water pump around techniques, and/or other best management practices would be utilized. Upon completion of construction, all disturbed upland areas would be restored to pre-construction conditions. Excavated materials and floodwall debris would be contained and transported to an approved upland facility. The duration of the construction work would be minimal and is expected to be completed within approximately two years from commencement.

Based on the above information, this alternative would result in improvements to Codorus Creek, as the floodwall replacement would eliminate the occurrence of concrete and other structural materials from entering into the creek. Additionally, this alternative would provide the necessary life and safety protection that the flood management project was designed to provide by restoring the floodwall integrity. The public would also gain an economic advantage through reduced potential of property damage from flooding. Given the purpose of the levee system being for flood management and control, and that the project purpose is to rehabilitate, repair, and restore the Codorus Creek FRM system to its authorized capacity and integrity, this alternative meets the project purpose. Therefore, this alternative is feasible.

2.B Floodwall Repairs near Market Street Bridge

For this alternative, a ROE would be necessary to access the site and for staging of materials and equipment. The work would be expected to be performed by hand and from the uplands. The work zone would be protected through the use of best management practices to contain all construction materials within the limits of disturbance. The duration of the repair work would be minimal and would be expected to take a few weeks from commencement. Repairing the bulges would eliminate the occurrences of concrete, hand laid stone, and other construction debris from falling into the creek. Based on the above information, this alternative would result in beneficial environmental consequences to Codorus Creek and associated vegetation and wildlife, as the bulge repairs would eliminate the occurrence of concrete, stone, and other debris from entering into the creek. Additionally, this alternative would provide the necessary life and safety protection that the flood management project was designed to provide by restoring the floodwall integrity. The public would also gain an economic advantage through reduced potential of property damage from flooding. Given the purpose of the levee system being for flood management, and that the project purpose is to rehabilitate, repair, and restore the Codorus Creek FRM levee system to its authorized capacity and integrity, this alternative meets the project purpose. Therefore, this alternative is feasible.

2.C Riprap Installation near South Richland Avenue Bridge

This alternative would involve the need for USACE to secure a ROE for construction access and staging of materials. The work would restore the integrity of the levee banks by reestablishing the slope and protecting the banks with stabilization products (i.e., riprap, gabion, etc.). Work would occur from uplands and within the waters. The work zone would be protected and stabilized using sediment and erosion control measures such as silt fences and other barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. Machinery may be utilized within the creek. If the use of machinery would be necessary within the waterway, this would be in the dry and/or during low flow whenever possible. This work may require the installation of a temporary stone causeway within and across Codorus Creek, to facilitate access by construction equipment that must be staged from the opposite bank. The causeway, if constructed, would require approximately 5,722 square feet of temporary fill within the creek channel (i.e. below the top of the embankment). The surface of the causeway would be just above normal water surface elevation and below that of the existing weir, less than 200 feet upstream from the causeway crossing site. The causeway may include culverts to further reduce impoundment during low flows. The causeway would be constructed of riprap, overlain by coarse stone, and would be designed to withstand overtopping flows. Additionally, in-water construction zones would be protected through the use of cofferdams, pump-around techniques, and/or other containment and control best management practices. In-water containment structures would be of the minimal dimensions necessary and would not significantly alter the flow of the creek during construction. The duration of construction activities for this alternative would be minimal and would be expected to last less than one year. Stabilization of the bank would reduce the potential for erosion and sedimentation of the creek, thereby improving water quality. Based on the above information, this alternative would result in beneficial environmental consequences to waters of the U.S., due to the reduction in erosion and sedimentation of the creek and improved local water quality. Additionally, this alternative would provide the necessary life and safety protection that the flood management project was designed to provide by restoring the integrity of the channel bank. The public would also gain an economic advantage through reduced potential of property damage from flooding. Given the purpose of the levee system being for flood management, and that the project purpose is to rehabilitate, repair, and restore the Codorus Creek FRM system to its authorized capacity and integrity, this alternative meets the project purpose. Therefore, this alternative is feasible.

2.D Drainage Conduit Maintenance

The work associated with this alternative would occur from uplands and within the waters. The sediments within the pipes would be jetted toward the creek. In-water containment and collection controls/devices would be utilized to minimize the potential of the sediments entering into the creek. This may consist of installation of cofferdams, in-water pump around techniques, machinery within the creek to collect the materials,

and/or other methods that would minimize impacts to the waters. If the use of machinery would be necessary within the waterway, this would be in the dry and/or during low flow whenever possible. The work zone would be protected and stabilized using sediment and erosion control measures such as silt fences and other barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. The duration of construction activities for this alternative would be minimal and would be expected to last a few months from commencement. Once the conduits are cleaned, repaired, replaced and/or abandoned, the integrity of the levee system would be restored, as upland drainage would occur efficiently and via direct paths as opposed to the current conditions of sporadic locations throughout the levee system (i.e., where the drainage finds paths). Based on the above information, this alternative would result in beneficial environmental consequences to waters of the U.S., due to the reduction of indirect upland drainage that contributes to erosion of the levee system. Additionally, this alternative would provide the necessary life and safety protection that the flood management project was designed to provide by restoring the levee bank integrity. The public would also gain an economic advantage through reduced potential of property damage from flooding. Given the purpose of the levee system being for flood management, and that the project purpose is to rehabilitate, repair, and restore the Codorus Creek FRM system to its authorized capacity and integrity, this alternative meets the project purpose. Therefore, this alternative is feasible.

2.2.3 Alternative 3: Replacement of Floodwall near the Penn Street Bridge with an Earthen Levee, plus Work Tasks 2.B. through 2.D

This alternative includes a modification of Alternative 2: 2.A. would be modified to replace the existing floodwall with an earthen levee, and 2.B. through 2.D. would remain as previously described in Alternative 2. Therefore, the only work task being evaluated in this section is the altered design of the replacement of the floodwall.

This alternative would require USACE to secure a ROE for access and construction activities. This work task would also require the need for additional permanent easement area due to the existing USACE easement ending directly on the landward side of the floodwall. Construction of an earthen levee would require a larger land area than the footprint of the existing floodwall. York College is the current owner of the property where the easement would be needed, and USACE would need to acquire additional funding to secure a much larger permanent easement, as the current budget does not allow for this larger expenditure. Requesting additional funds would require additional time, and the deficiencies of the floodwall would continue in the interim. This alternative would also require major excavation work of the uplands behind the existing floodwall to gain sufficient land area to construct the earthen levee to the appropriate dimensions. Installation of riprap would provide protection of the new floodwall. The work zone would be protected and stabilized using sediment and erosion control measures such as silt fences and other barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. Machinery may be utilized within the creek. If the use of machinery would be necessary within the

waterway, this would be in the dry and/or during low flow whenever possible. Additionally, in-water construction zones would be protected through the use of cofferdams, pump-around techniques, and/or other containment and control best management practices. In-water containment structures would be the minimal dimensions necessary and would not significantly alter the flow of the creek during construction. Excavated materials and floodwall debris would be contained and transported to an approved upland facility. The amount of excavated material would be somewhat large due to the large excavation need to construct the earthen levee. The duration of construction activities for this alternative would be minimal and would be expected to last approximately one year from commencement. Upon completion of construction, the earthen levee would need to be routinely mowed and monitored for intrusion of wildlife, trees, etc.

Based on the above information, this alternative would result in improvements to Codorus Creek, as the floodwall replacement would eliminate the occurrence of concrete and other structural materials from entering into the creek. Costs would be expected to be high given the need to acquire a large tract of land as easement area. Major excavation work would also be costly, not only for the excavation activity but also for the transport and disposal of the materials. Given that the purpose of the levee system is for flood management, and that the project purpose is to rehabilitate, repair, and restore the Codorus Creek FRM project to its authorized capacity and integrity, the replacement of the existing floodwall with an earthen levee would provide benefits to life and safety and would meet the project purpose. However, due to the need for additional federal funding to secure a much larger permanent easement, and the added time required to request funding, which would result in no floodwall replacement until a later timeframe, this alternative is not considered to be feasible. Further evaluation did not occur due the need for the replacement of the floodwall at the current time.

2.2.4 Alternative 4: Replacement of Floodwall near the Penn Street Bridge with a New Floodwall with Addition of a Floodplain, plus Work Tasks 2.B. through 2.D

This alternative includes a modification of Alternative 2: 2.A. would be modified to replace the existing floodwall with a new floodwall setback from the river to allow for a wider floodplain at this location, and 2.B. through 2.D. would remain as described in Alternative 2. Therefore, the only work task being evaluated in this section is the altered design of the replacement of the floodwall.

This alternative would require USACE to secure a ROE for access and construction activities. This work task would also require the need for additional permanent easement area due to the existing USACE easement, as the land area needed to construct a floodplain adjacent to the creek and new floodwall would be larger than the footprint of the existing floodwall. York College is the current owner of the property where the easement would be needed, and USACE would need to acquire additional funding to secure a much larger permanent easement, as the current budget does not allow for this larger expenditure. Requesting additional funds would require additional

time, and the deficiencies of the floodwall would continue in the interim. This alternative would also require major excavation work of the uplands behind the existing floodwall to gain sufficient land area to construct the floodplain. Installation of riprap would provide protection of the new floodwall. The work zone would be protected and stabilized using sediment and erosion control measures such as silt fences and other barriers, which would reduce the potential for sedimentation and minimize the entry of soil into the aquatic environment. Machinery may be utilized within the creek. If the use of machinery would be necessary within the waterway, this would be in the dry and/or during low flow whenever possible. Additionally, in-water construction zones would be protected through the use of cofferdams, pump-around techniques, and/or other containment and control best management practices. In-water containment structures would be the minimal dimensions necessary and would not significantly alter the flow of the creek during construction. Excavated materials and floodwall debris would be contained and transported to an approved upland facility. The amount of excavated material would be somewhat large due to the large excavation need to construct the floodplain. The duration of construction activities for this alternative would be minimal and would be expected to last approximately one year from commencement. Upon completion of construction, the floodplain would require routine maintenance given that the addition of floodplain would be a low point as compared to the adjacent levee banks and would collect debris during high water events.

Based on the above information, this alternative would result in improvements to Codorus Creek, as the floodwall replacement would eliminate the occurrence of concrete and other structural materials from entering into the creek. There would also be improvements to floodplain habitat by extending the width of the floodplain at this location. Costs would be expected to be high given the need to acquire a large tract of land as easement area. Major excavation work would also be costly, not only for the excavation activity but also for the transport and disposal of the materials. Additionally, the new floodwall design would be more extensive to accommodate a floodplain adjacent to the creek, further increasing costs. Given that the purpose of the levee system is for flood management, and that the project purpose is to rehabilitate, repair, and restore the Codorus Creek FRM levee system to its authorized capacity and integrity, the replacement of the existing floodwall with a new floodwall and floodplain would provide benefits to life and safety and would meet the project purpose. However, due to the need for additional funding to secure a much larger permanent easement, and the added time required to request funding, which would result in no floodwall replacement until a later timeframe, this alternative is not considered to be feasible. Further evaluation did not occur due the need for the replacement of the floodwall at the current time.

2.3 Alternatives Carried Forward

The following evaluation criteria were used to assess the alternatives presented in this EA: life and safety of the public, environmental impact, costs, economic efficiency, and implementation time. The USACE considered the above alternatives and has determined that Alternatives 3 and 4 are not feasible to be carried forward within this

EA. Alternatives 3 and 4 would result in additional real estate acquisitions that would drastically increase the rehabilitation costs and increase the length of time for design, construction, and budgeting to implement these proposed alternatives. The immediate need for rehabilitation in the project and the availability of limited congressional funds for repairs and rehabilitation further constrained evaluation of Alternatives 3 and 4. The alternatives carried forward and evaluated in Section 4.0 include Alternative 1: No Action, and Alternative 2: Rehabilitation/Repair of Codorus Creek FRM project, as identified above. Alternative 2 is considered to be the preferred alternative because it meets the rehabilitation needs of the FRM project while also reducing risk to the public, having lower costs, and a shorter implementation timeline since there are limited real estate challenged to this proposed alternative. Therefore, Alternative 2 is identified as the Proposed Action from this point forward.

3.0 AFFECTED ENVIRONMENT

This section describes the existing conditions of the natural and human environments within the Codorus Creek FRM project area of review. Except where otherwise specified herein (i.e. Section 3.8.1), the project area reviewed consists of an approximate length of 4.8 miles of Codorus Creek, measured down through the approximate center line of the creek, with a 500 foot wide buffer.

3.1 Land Use and Land Cover

According to the City of York Zoning Map, the land use within the Codorus Creek FRM project area of review includes water features, roads, and rail lines (Appendix 1.4) (City of York, 2018). The water features consist of Codorus Creek and segments of its confluence with multiple tributaries, to include Hoke's Run, Tyler's Run, Poorhouse Run, Willis Run, Deihl's Run (Mill Creek), and Small Run (Appendix 1.5). Additionally, there are transportation land use classifications consisting of roads and rail lines that cross the levee system. The adjacent land uses include residential, mixed use, institutional, commercial, industrial, and open space. North York Borough bounds the city's north side, while West York Borough bounds the southwest side of the city. The city is bordered by Manchester, Springettsbury, Spring Garden, and West Manchester townships on its north, east, south, and west sides, respectively. Further review of the City of York Zoning Map indicates that lands along the east and south bank (right bank looking downstream) of Codorus Creek in and adjacent to the levee system are zoned predominantly as either "central business district" or "employment center district" from West Princess Street downstream. A small parcel of land from West Princess Street to West College Avenue is zoned "urban mixed residential commercial." Land along Codorus Creek between West College Avenue and South Penn Street on the right bank is zoned as open space.

3.2 Geology and Topography

The City of York lies within the physiographic provinces of the Piedmont Uplands and Piedmont Lowlands (Appendices 1.6 and 1.7). The Piedmont Upland physiographic

province is characterized by broad, rounded to flat-topped hills and shallow valleys. The underlying rock type consists mainly of schist, gneiss, and quartzite; some saprolite. The geologic structure is identified as extremely complexly folded and faulted. The topography of this province consists of low to moderate local relief (Appendix 1.6). The approximate elevations of the Piedmont Upland physiographic province range between approximately 100 feet to 1,200 feet. The drainage pattern is dendritic, which refers to a system where streams branch in multiple directions and angles, resembling the branching of trees. This pattern is produced as a consequence where a stream receives several tributaries that, in turn, are fed by smaller tributaries (Speleogenesis Scientific Network, 2018). The characteristics of Piedmont lowlands include broad, moderately dissected, karst valleys separated by broad, low hills (Appendix 1.6). The underlying rock type consists dominantly of limestone and dolomite, with some phyllitic shale and sandstone, as well. The geologic structure is described as complexly folded and faulted (Appendices 1.6 and 1.7). The topography is low, and the approximate elevations range between approximately 60 to 700 feet. The drainage pattern is dendritic and karst. Karst is described as a pattern consisting of hydrologic features that develop due to the dissolution of soluble bedrock, resulting in sinkholes, losing streams, and springs (United States Geological Survey, 2018).

3.3 Soils

Review of the web-based Natural Resources Conservation Service (NRCS) mapping program (United States Department of Agriculture, 2018) identified that the primary map unit symbol within the area of review is water (W) (Appendix 1.8). Additional map unit symbols that are identified, either within or directly adjacent to the levee system area of review, include Chester silt loam, 3 to 8 percent slopes (CeB); Lindside silt loam (Lw); Edgemont channery loam, 3 to 8 percent slopes (EdC); Edgemont channery loam, 25 to 70 percent slopes, very stony (EeF); Mt. Airy and Manor soils, 25 to 35 percent slopes, (MOE); Glenelg channery silt loam, 15 to 25 percent slopes (GbD); and Urban land (Uc) (Appendix 1.8). No areas of soils classified by the U.S. Department of Agriculture (USDA) as prime farmland soils are identified as occurring within the area of review. Fill material is present overlaying the project site at various locations as a result of historic disturbance, demolition of structures, discharges of trash, and debris. The fill material includes gravel, silts, sands, brick, concrete debris, etc.

3.4 Hydrology

3.4.1 Surface Waters

The primary surface water located within the Codorus Creek FRM project area of review is Codorus Creek. Approximately 4.8 miles of the creek are within the levee boundaries, and the creek is classified as a nontidal freshwater tributary with perennial flow. Table 1 represents the identified statistics of daily discharge based on a 56 year record. Within the limits of the FRM levee system, approximately 22,969 feet of the creek have been modified through channel improvement, including channel widening and deepening, construction of floodwalls and earthen banks, protection of channel

bank slopes, and removal of a mill dam. The creek banks consist of maintained/mowed grassy banks; multiple groundhog burrows along the grassy banks; concrete and hand laid stone floodwalls with caps in some locations; 270 identified drainage conduits running through the levee system; riprap of assorted sizes; rubble riprap from adjacent structural demolition; evident deterioration of the floodwalls; and erosion of the levee banks at various locations. There are multiple bridges crossing Codorus Creek within the levee limits, as well as two small bridge crossings of Tyler's Run (near its confluence with Codorus Creek).

The width of Codorus Creek within the levee system varies, from a base width of approximately 80 feet to approximately 200 feet. The average depth is approximately three feet. A bascule dam is present within the creek near downtown York. The dam is owned, operated, and maintained by the City of York. The water depth behind the bascule dam, when in a raised position, is approximately six feet. The dam is currently not operating properly and is permanently in the raised position.

The substrate of the surface waters consists primarily of silt and sand, as well as gravel and sediment deposits/shoals throughout the project. The current locations where sediment deposits/shoals are present include above and below South Richland Avenue, between Grantley Street and Penn Street, above and below Poorhouse Run, and above Route 30.

Multiple tributaries connect to Codorus Creek within the limits of the levee system, to include Hoke's Run, Tyler's Run, Poorhouse Run, Willis Run, Deihl's Run (Mill Creek), and Small Run, all of which are nontidal freshwater tributaries (Appendix 1.5). Codorus Creek flows southwest to northeast, is a tributary to the Susquehanna River (confluence near Saginaw, Pennsylvania), and is within the Lower Susquehanna Watershed (HUC 02050306). Streams of this region are characterized by a comparatively quick rise and a peak flow of short duration, which mitigates the dangers from seepage, sand boils, etc. The distance from the southern limits of the levee system to its confluence with the Susquehanna River is approximately 12.7 river miles, and approximately 9 miles as the bird flies. According to United States Geological Survey (USGS) data at Station 0157550 near York, Pennsylvania, the drainage of Codorus Creek is approximately 222 square miles (United States Geological Survey, 2018).

Table 1: Daily Discharge*, Cubic Feet per Second

Min (1969)	25th percen-tile	Median	Most Recent Instantaneous Value May 6	Mean	75th percen-tile	Max (1989)
52.0	134	203	234	349	363	3030

***** Mean of Daily Mean Values for Each Day for 57 Years of Record: Oct. 1, 1939 through Sep. 30, 1996

To determine whether any environmentally sensitive (high quality) stream habitats or natural trout streams occur in the area, the Pennsylvania Natural Heritage Program, online Pennsylvania Natural Diversity Inventory (PNDI) web tool was utilized (https://conservationexplorer.dcnr.pa.gov/). The PNDI mapping identifies no wilderness trout streams, Class A streams, nor streams supporting natural trout reproduction occurring in the project area of review (Appendix 1.9). No Chapter 93 special protection streams (e.g., high quality waters and exceptional value waters) are mapped to occur in the area of review, and within the limits of the levee system, Codorus Creek is not identified as an existing use classification. Within the limits of the levee system, Chapter 93 identifies Codorus Creek to be designated as a stream that supports warm water fishes and migratory fishes.

The USEPA Watershed Resources Registry website (Pennsylvania Version) indicates that the area of review encroaches upon Municipal Separate Storm Sewer Systems (Phase II MS4s) that discharge to Codorus Creek, including those of the City of York and the Townships of Manchester, West Manchester, Springettsbury, and Spring Garden (Watershed Resources Registry, 2018). According to the Pennsylvania Department of Environmental Protection (PADEP), Bureau of Point and Non-Point Source Management, Frequently Asked Questions webpage, an MS4 is a conveyance or system of conveyances that is: a. Owned by a state, city, town, village, or other public entity that discharges to waters of the Commonwealth; b. Designed or used to collect or convey storm water (including storm drains, pipes, ditches, etc.); c. Not a combined sewer; and d. Not part of a Publicly Owned Treatment Works (sewage treatment plant) (Pennsylvania Department of Environmental Protection, 2018).

3.4.2 Wild and Scenic Rivers

The Wild and Scenic Rivers Act, P. L. 90-542, (as amended) (16 U.S.C. 1271-1287) states: "It is hereby declared to be the policy of the United States that certain selected rivers of the Nation, which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The U.S. Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes."

The National Park Services (NPS) National Wild and Scenic Rivers System website lists designated rivers by state (National Park Service, 2018). Additional information concerning the rivers entering the Chesapeake Bay is contained on the Chesapeake Bay Foundation's Web site. A review of the NPS Wild and Scenic Rivers System website indicates that the there are no federally designated wild and scenic river reaches within the watershed.

Issued in 1997, Executive Order number 13061 for the American Heritage Rivers Initiative, was issued to protect and restore rivers and their adjacent communities. The American Heritage Rivers initiative has three objectives: natural resource and environmental protection, economic revitalization, and historic and cultural preservation. EO 13061 orders that "Executive agencies, to the extent permitted by law and consistent with their missions and resources, shall coordinate Federal plans, functions, programs, and resources to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage." No American Heritage Rivers are found in the study area.

3.4.3 Navigation

Codorus Creek was historically used for commercial navigation. In 1833, Codorus Navigation Works completed construction of approximately 11-miles of canal and slackwater within Codorus Creek that provided navigability for canal boats measuring up to approximately 70 foot long. This enabled canal boats to navigate between downtown York and the Susquehanna River (Smith, 2018). Currently, navigation for commercial vessels does not occur within the project area of review, nor within the vicinity. Despite having no present function in navigation, Codorus Creek remains regulated under Section 10 of the Rivers and Harbors Act of 1899. There are two dams located within the Codorus Creek FRM system—the bascule dam owned and operated by the City of York, and the USACE owned and operated South Richland Avenue Dam--which further obstruct navigation. The waters within the limits of the levee system are utilized for recreational boating, such as kayaking and canoeing.

3.4.4 Water Quality

Under 25 Pa. Code § 93.3o., the mainstem of Codorus Creek from Oil Creek to confluence with the Susquehanna River is designated for aquatic life use, specifically the maintenance and propagation of warm water fishes ("WWF") and migratory fishes ("MF"). According to Integrated Water Quality Monitoring and Assessment Report data from PADEP's Water Quality Network web mapping application, Codorus Creek within the vicinity of the project area is impaired for multiple causes, including: unknown toxicity, flow variability, excessive algal growth, siltation and other habitat alterations. The sources of these impairments are attributed to land uses within the watershed, and include urban runoff, storm sewer discharges and channelization of the creek.

3.5 Floodplains

Issued in 1977, Executive Order number 11988 requires the Federal government to take into consideration the effects that its actions would have on floodplains. The Commonwealth of Pennsylvania has established guidelines to encourage planning and development in floodplains that are consistent with sound land use practices. Additionally, as identified on the Federal Emergency Management Agency (FEMA) mapping (Appendix 1.11), the proposed project area is located within Zone AE. Zone

AE is defined as areas that have a 1 percent probability of flooding every year, which is also referred to as the 100-year floodplain. Additionally, Zone AE identifies areas where predicted flood water elevations above mean sea level have been established. The National Flood Insurance Program (NFIP) considers properties that are located within areas identified as Zone AE to be at high risk of flooding. The proposed work tasks work would occur within the existing boundaries of the Codorus Creek FRM project, which consists of floodwalls, earthen levee banks, Codorus Creek waters, etc. Additionally, ROEs at three locations for construction access would be necessary to perform the work. The existing infrastructure within the proposed ROEs consist primarily of parking lots, maintained grassy areas, and businesses. Given the constrained area between the waters and outer boundaries of the levee easement, available floodplain habitat for wildlife and aquatic organisms is minimal.

3.6 Biological Resources

3.6.1 Terrestrial Resources

The majority of the Codorus Creek FRM project consists of waters; therefore, the terrestrial resources present within the area of review are minimal. These include vegetated (grassy)/mowed earthen levee banks; gravel and sediment deposits/shoals, some of which are vegetated with herbaceous and shrub species; riprap stabilization along the levee banks; etc. The vegetation and living organisms present within the levee system running through the City of York are common to urban communities. Vegetation includes perennial grasses, weeds, shrub, and tree species.

Wildlife species that may utilize the terrestrial resources throughout the length of the project area would include mice, rats, rabbits, raccoons, groundhogs, deer, etc. Avian species frequent the area of review, to include migratory, federal, and State threatened and endangered species. The northern segment of the levee system is surrounded by less developed lands; therefore, more diverse and abundant wildlife species may utilize available terrestrial resources more frequently than within the City of York segment. Construction of the work tasks would also require the use of ROEs. The existing infrastructure within the proposed ROEs consists primarily of parking lots and maintained grassy areas. Terrestrial resources within these areas are limited given the proximity to the developed lands within the City of York and steep levee banks.

3.6.2 Wetlands

USACE generated a report for the proposed project area to evaluate the potential impacts to wetlands using the Information, Planning, and Conservation (IPaC) website (https://ecos.fws.gov/ipac/) (Appendix 2.1). The project area reviewed consists of an approximate length of 4.8 miles of Codorus Creek, measured down through the approximate center line of the creek, with a 500 foot width buffer. The IPaC report included a NWI map, which identified Codorus Creek as a riverine wetland (R2UBH). Review of the Pennsylvania National Wetlands Inventory (PANWI) Land Analysis mapping tool (http://maps.psiee.psu.edu/PANWI_LandAnalysis/index2.html) also

identified Codorus Creek within the project area of review as a Riverine wetland (R2UBH) (Appendix 1.12). However, this aquatic feature exhibits the characteristics of a stream, which include a bed, bank, and regular and reoccurring flow. Therefore, this feature is more appropriately identified as a perennial stream and not wetlands. The PNDI report and NWI map do not identify any other wetland polygons as being present within the levee system area of review. The PANWI indicates that a freshwater pond (PUBH) is present outside of the project area of review near the Norfolk Southern rail line at the northern portion of the area of review. No work is proposed to occur near this location. Review of the NRCS soils survey indicated that the soils within the area of review are not hydric (Appendix 1.8), and/or contain only minor amounts of hydric inclusions (<12%).

3.6.3 Aquatic Resources

In a letter dated April 18, 2018, the Pennsylvania Fish and Boat Commission (PFBC) stated that an August 2008 PFBC survey showed that Codorus Creek, within the project area, supports limited populations of warm water fish species including yellow bullhead, rock bass, redbreast sunfish, bluegill, walleye, smallmouth bass and largemouth bass. None of these species are considered rare, threatened or endangered. In a letter dated May 17, 2018, PFBC stated that "An element occurrence of a rare, candidate, threatened or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern." The species of concern was not identified.

3.7 Threatened and Endangered Species

USACE used multiple tools to identify the potential presence of threatened and endangered species, and their critical habitat within the project area. Review of the resource list generated through the IPaC website (https://ecos.fws.gov/ipac/) on February 27, 2018 identified two federally listed threatened species and one endangered species as occurring within the project area of review (Appendix 2.1). The federally listed species include the threatened Northern long-eared bat (*Myotis septentrionalis*), threatened bog turtle (*Clemmys muhlenbergii*), and endangered Indiana bat (*Myotis sodalis*). No critical habitat for any federally listed threatened or endangered species was identified within the project area of review, which includes the 500-foot buffer. Additionally, the report included two migratory birds and one wetland feature. The wetland feature encompasses the entire length of Codorus Creek. However, the feature is more appropriately classified as a perennial stream, as it possesses bed and bank features. The wetland feature is discussed in more detail in Section 3.6.2. The migratory bird species include the bald eagle (*Haliaeetus leucocephalus*) and wood thrush (*Hylocichla mustelina*). Another IPaC report was generated on December 19, 2018, which found no new or different species occurrences from the earlier report.

Additionally, USACE utilized the PNDI report provided by the US Fish and Wildlife Service (USFWS), dated March 22, 2018, and generated a new PNDI report on April 27, 2018 (Appendix 1.10). Following are the search results consistent for both PNDI reports:

Pennsylvania Game Commission (PGC): The following state listed species were identified by the PGC as having potential impacts from the project:

Table 2: Pennsylvania Game Commission PNDI Search Results

Scientific Name	Common Name	Current State Status
Ardea alba	Great Egret	Endangered
Ardea herodias	Great Blue Heron	Special Concern Species
Nyctanassa violacea	Yellow-crowned Night-heron	Endangered
Nycticorax nycticorax	Black-crowned Night-heron	Endangered

Pennsylvania Department of Conservation and Natural Resources (PA DCNR): No Impact is anticipated to state-listed threatened and endangered species and/or special concern species and resources.

Pennsylvania Fish and Boat Commission (PFBC): The following state-listed species were identified by the PFBC as having potential impacts from the project:

Table 3: Pennsylvania Fish and Boat Commission PNDI Search Results

Scientific Name	Common Name	Current Status
*Crangonyx dearolfi***	Pennsylvania Cave Amphipod	Special Concern Species*
*Caecidotea pricei***	Price's Cave Isopod	Special Concern Species*

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

PFBC information also includes that Codorus Creek supports limited populations of warm water fish species including yellow bullhead, rock bass, redbreast sunfish, bluegill, walleye, smallmouth bass, and largemouth bass.

United States Fish and Wildlife Service (USFWS): The PNDI report identified that a bald eagle nest occurs in the vicinity of Codorus Creek. Additionally, the PNDI report

included the following USFWS avoidance measure: “Due to the proximity of this project to a bald eagle nest, it is possible that project activities may disturb bald eagles, which is a form of "take" under the Bald and Golden Eagle Protection Act and may require a permit. The Service has prepared a project screening form to help you determine which specific measures may be necessary to avoid disturbing bald eagles and their nests, based on the type and scope of your proposed project or activity, and its distance from a bald eagle nest.” The avoidance measure also includes the following statement: “If you agree to implement the above Avoidance Measure, no further coordination with this agency regarding threatened and endangered species and/or special concern species and resources is required.” The project screening form process would be followed to identify specific avoidance measures.

According to the USFWS Pennsylvania Bald Eagle Nest Locations and Buffer Zones website (https://www.fws.gov/northeast/pafo/bald_eagle_map.html), a bald eagle nesting location was identified north of Arsenal Road during the Pennsylvania Bald Eagle Nesting Sites 2015, 2016, and 2017 Updates. The project proposes maintenance of drainage conduits, and there are drainage conduits located within the 330, 660, and 1,000 foot buffer zone breaks from a bald eagle nest (Figure 3).

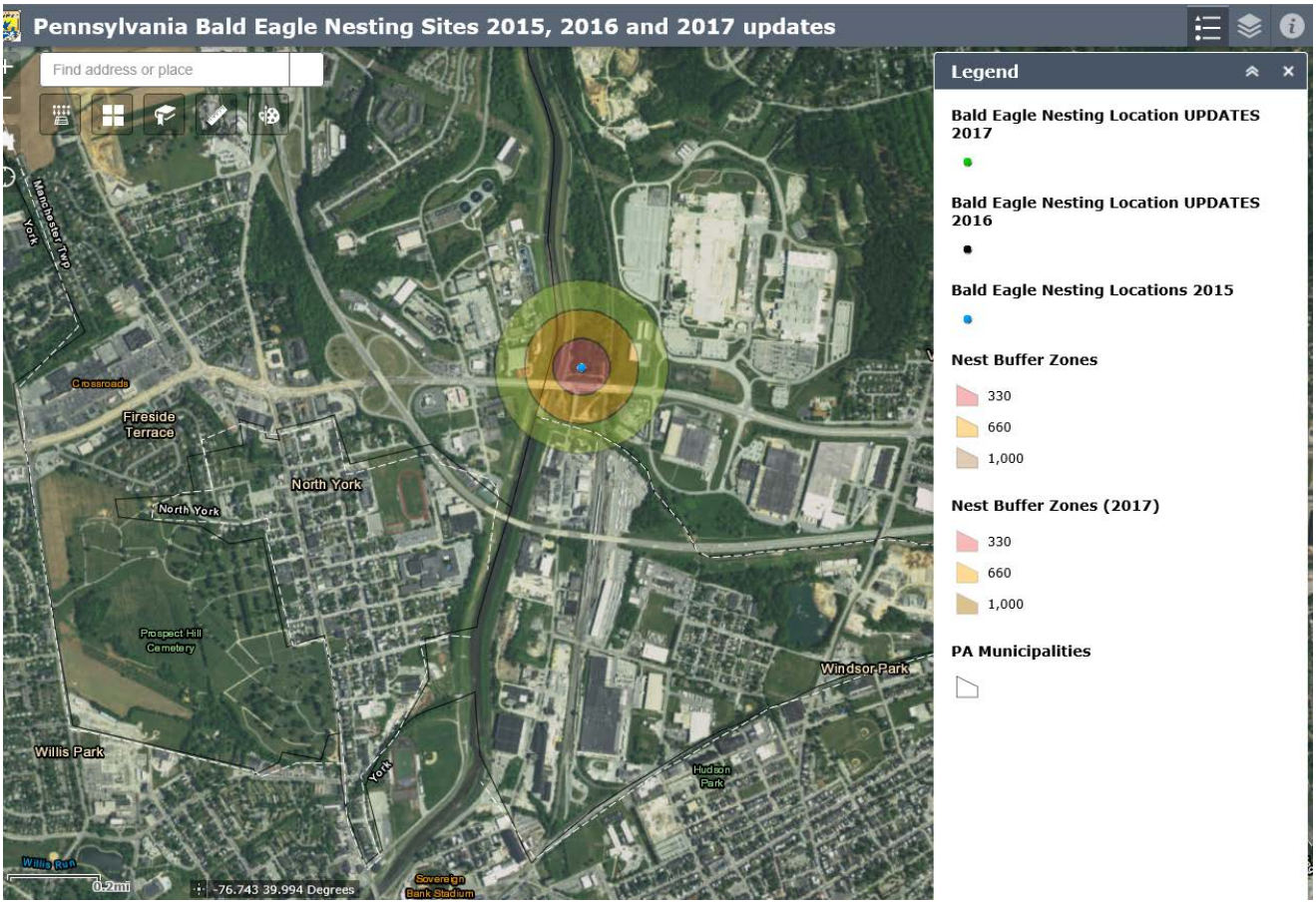


Figure 3. USFWS Bald Eagle Nesting Sites 2015, 2016, 2017 Updates

Additionally, regarding State listed species, according to information provided by the City of York, State listed species have been identified as frequenting shoals located within the limits of the Codorus Creek FRM project limits. The species mentioned include the great egret, black crowned night heron, and intermittent appearances of yellow crowned night herons. City of York staff have commented that these species do not appear to rely upon the shoals as habitat.

3.8 Cultural, Historical, and Archaeological Resources

Cultural resources are locations of human activity, use, or occupation. They can be defined by expressions of human culture and history in the physical environment, such as prehistoric or historic archaeological sites, buildings, structures, objects, districts, sacred sites, among others. Cultural resources may also include natural features, plants, and animals that are deemed important or significant to a cultural group or community. In explaining the proposed actions' effects on cultural resources, this section provides an overall cultural context for the project area and discusses cultural resources identification efforts to date.

It is important to note that historic properties, as defined by 36 CFR 800, the implementing regulations of Section 106 of the National Historic Preservation Act (NHPA) of 1966, are cultural resources that are eligible for inclusion in the National Register of Historic Places (NRHP). Historic properties may be districts, sites, buildings, structures, artifacts, ruins, objects, works of art, natural features important in human history at the national, state, or local level, or properties of traditional religious and cultural importance.

Section 106 of the NHPA requires consultation with the State Historic Preservation Office (SHPO) for proposed actions that may affect historic properties. The Pennsylvania Historical and Museum Commission (PHMC) is designated as the SHPO for Pennsylvania. Consultation with PHMC, the Advisory Council on Historic Preservation, and Native American Tribes was undertaken to identify cultural resources that may be impacted by the proposed project. A consultation letter was submitted to PHMC in May of 2018. Consultation was finalized in November of 2018, with PHMC concluding that no historic buildings, structures, districts, and/or objects will be affected by the proposed project and that no further consultation was required.

3.8.1 Affected Environment

The Codorus Creek project area is 4.8 miles in length, consisting of earthen levees, floodwalls, a stop-log closure structure, and numerous drainage conduits. For this analysis, the area of potential effect (APE) includes those areas where direct construction impacts are proposed, as well as, areas within which the undertaking may directly or indirectly cause alterations in the character or use of historic properties, including visual effects. Given this, the APE would include work performed on the floodwalls adjacent to Codorus Creek and Tyler's run, staging areas, and any other

areas of potential ground disturbance. The viewsheds of any nearby historic properties would also be included in the APE. The APE is entirely contained within the 500 foot wide buffer along Codorus Creek defined as the study area in Section 3.0.

3.8.2 Cultural Contexts

Prehistoric cultural periods in south-central Pennsylvania have typically been separated into four periods including Paleo-Indian (ca. 15,000 – 8000 BC), Archaic (8000 BC – 1000 BC), Woodland (1000 BC – AD 1500), and Proto-Historic (AD 1500 – AD 1750).

The Paleo-Indian Period is characterized by a hunting and gathering subsistence pattern, where people were organized into small nomadic bands that traveled frequently in search of food and other resources. Short term base camps would have been created at a variety of locations, including along terraces or hilltops and rock shelters. It is thought that these base camps would have been revisited on a periodic basis. Smaller temporary camps would have also been established while scouting or as kill sites. Paleo-Indian sites, commonly associated with fluted Clovis projectile points, are uncommon in this region of Pennsylvania (Hay 1988, Cheek 1991).

The Archaic Period is typically divided into the Early (8000 BC – 6000 BC), Middle (6000 BC – 4000 BC), and Late (4000 BC – 1000 BC) Archaic Periods based on changes to subsistence patterns and technological variation through time. For example, an environment more favorable to human habitation was created as ice sheets gradually retreated and the climate became warmer. This resulted in the increased exploitation of game animals, fish, shellfish, seed plants, and nut-bearing tree species, among others. Also evident is the increased regional variation in artifact types and styles, reflecting adaptation to local environmental conditions and seasonality in resource exploitation (Hay 1988, Cheek 1991).

Early Archaic lithic artifacts include various styles of stemmed and notched projectile points that are found over a broad area of the Eastern Woodlands. Sites of Middle Archaic affiliation are less recognizable than those of the earlier period because of unclear typological definitions. The Middle Archaic period is frequently associated with warm and humid conditions. The Late Archaic period is characterized by higher population density and greater site differentiation. Sites are increasingly oriented to river valleys, a change related to the stabilization of alluvial environments at this time. Several Late Archaic traditions are represented in Pennsylvania by a variety of projectile point styles, including Broadspear types like Perikomen, Susquehanna, and Lehigh, as well as small-stemmed and/or narrow bladed forms, including Normanskill, Lamoka, and Orient. Other typical Late Archaic artifacts found in the region include soapstone vessels and pipes, groundstone gorgets, chipped-stone celts, and grooved axes. The most common site types associated with the Archaic period are seasonally occupied base camps and resource procurement stations (Hay 1988, Cheek 1991).

The Woodland period is also divided into Early (1000 BC – 200 AD), Middle (200 AD – 1000 AD), and Late (1000 AD – 1500 AD) periods. The major diagnostic traits of the

Woodland period include larger populations, an increased complexity of social organizations, a settlement pattern characterized by increased sedentism, and a subsistence pattern that included horticulture. This period is also associated with the production of ceramics vessels, which, along with subterranean storage pits, facilitated the accumulation of seasonally abundant foods. A generalized pattern of seasonal hunting and gathering persisted from the Late Archaic into the Early and Middle Woodland. As horticulture assumed greater importance during the Late Woodland, seasonal population movements gave way to more sedentary village life. In Pennsylvania, Early Woodland diagnostics include Meadowood and Adena point types. Early pottery vessels were typically tempered with crushed rock and had thick walls that often displayed cord-marking on both interior and exterior surfaces. The Middle Woodland period is characterized by an increasing reliance food production, which supported semi-permanent hamlets in riverine settings. Diagnostic artifacts from the Middle Woodland include Fox Creek and Jack's Reef point types and limestone-tempered pottery with a variety of cord-markings and incised decorations. The Late Woodland is characterized by the introduction of the bow and arrow and associated triangular arrow points (Hay 1988, Cheek 1991).

By the 16th century, during the Proto-Historic, the Susquehannock Indians had moved into the area and had gradually replaced the earlier Woodland cultures in central Pennsylvania. The Susquehannocks were an Iroquoian group that typically built large stockade villages near major rivers in central Pennsylvania. The Susquehannocks controlled the fur trade in Pennsylvania during the early 17th century. They dominated the region by 1660 after conducting a series of conflicts with adjacent tribal groups. Proto-Historic artifacts include shell-tempered pottery, triangular projectile points, and items of European manufacture (Hay 1988, Cheek 1991).

In 1681, William Penn founded the Pennsylvania colony to establish a safe haven for persecuted religious minorities. At the time, the majority of lands were controlled by the Susquehannock, Shawnee, and Delaware Indians. Penn forbade intrusion into Indian Territory until the lands had been legally purchased. This policy slowed the rate of development on the frontier but was often disregarded by settlers. In 1736 the provincial government negotiated a treaty with the Iroquois that extended the boundaries of Lancaster County indefinitely west, and effectively ceded all lands west of the Susquehanna to the Penns. The lands comprising present-day York County were included in this treaty (Gibson 1886; USACE 2007).

The town of York was laid out in 1741, however, York County was formed in 1749 when settlers petitioned for the creation of a new county. As population increased west of the Susquehanna, the distance to the main governing body, Lancaster Court, grew increasingly distant. After two petitions in 1747 and 1748, land from Lancaster County was separated to form York County in 1749 (Gibson 1886).

York County was a focal point for early industry, especially regarding iron works. It was known even before its founding that York County possessed plenty of iron ore for extraction. During the mid-18th century and early 19th century, numerous industrial sites,

such as the Spring Forge and Bloomary, Mary Ann Furnace, Hellam Iron Works, Castle Fin Forge, and the York Foundry, Furnace, and Forge operated within county lines. Hellam Iron Works, for example, is most remembered for its casting of cannons and cannon balls for use during the Revolutionary War (Gibson 1886).

Throughout the rest of the 18th and in the 19th century, York County was involved in major bouts of warfare. During the French and Indian Wars, a series of attacks by the French and their Native American allies prompted leaders from York County, and other neighboring counties, to form companies and grant commissions in 1756. In 1758, York County militia aided in the capture of Fort Duquesne in present-day Pittsburgh. At the onset of the Revolutionary War, York County provided military support by forming militias and dividing the county into five battalions. Later on in 1777 and into 1778, the town of York was to serve as a meeting location for the Continental Congress. During the Civil War, the governor's call for volunteer soldiers in York was met with no hesitation as Gibson states that the companies "responded unanimously to the call, and obeyed with alacrity the order of the governor" (Gibson 1886: 166). However, this enthusiasm did not prevent the Confederate army from entering the town in 1863.

Historically, the City of York grows in significance through an assortment of architecturally significant residential, commercial, industrial, and public buildings constructed between the late 18th and mid-20th centuries. Historic districts throughout the town are represented by these various categories of buildings and themes. As is mentioned in Section 3.8.3, three historic districts are within the proposed project boundaries: York Historic District, York Historic District West Addition, and the Fairmount Historic District. Each district derives its importance from historically significant events associated with York or significant architectural elements that have remained intact. The York Historic District and its West Addition, for example, are crucial for conveying the significance of the original Colonial town plan, meeting of the Continental Congress, growth during the industrious 19th century, and continued development into a commercial center during the mid-20th century (Roman and Arnold 2001). Similarly, the Fairmount Historic District is significant for its association of York suburban community development and is an excellent example of intact Victorian-era housing (Raid 1999).

3.8.3 Cultural Resources Identification Efforts

PHMC's Cultural Resources Geographic Information System (CRGIS) was utilized to identify previously mapped archaeological and architectural resources and cultural resource surveys conducted within 0.5 miles of the project area (CRGIS 2018). Tables 4 and 5 list the results of the CRGIS search. Based on the CRGIS results, portions of the project are within the York Historic District, York Historic District West Addition, and the Fairmount Historic District. Although numerous architectural resources are listed in Table 5, only two, the Philip J. King House and the Hotel Codorus could potentially be impacted by the proposed project. One of the previous relevant cultural resource surveys was located with the project's APE; however, no archaeological resources have

been identified that would be impacted by the proposed project. Further details on impacts to cultural resources are discussed in Section 4.8.

Table 4: Previous Relevant Cultural Resource Surveys

Survey Title	Within APE?	Description and Results
Kinsey 1984 – Phase I Archaeological Survey Investigations, Codorus Creek Interceptor, York Co., PA	Yes	Kinsey 1984 surveyed a four-mile-long (1.0 acres) tract of land along the west side of Codorus Creek as part of a sewer project. He recommended that one multi-component prehistoric site, 36Yo59, either be avoided or evaluated for NRHP eligibility. Site 36Yo59 is not within the APE of the USACE Codorus Creek Project.
Geidel 1991 – Phase I and II Archaeological Investigations of Regent's Glen Spring Garden Twp, York County, PA	No	Geidel 1991 surveyed 256 acres prior to construction of a golf course. Background research identified four prehistoric sites and the survey identified three additional historic sites within the project area. One of the prehistoric sites, 36Yo118, was recommended for and underwent Phase II testing, but was determined ineligible for the NRHP.
Basalik 2003 – Broad Street Greenway Project, City of York, York Co., PA, Phase Ia Archaeological Survey Report	No	Basalik 2003 surveyed 1.4 acres for a proposed greenway project. No archaeological resources were documented and no additional investigations were recommended.
Dinsmore 2012 – Harley Davidson Pleasureville 115 kV Transmission	No	Dinsmore 2012 surveyed 8.9 acres for a proposed transmission line. No archaeological resources were documented and no additional investigations were recommended.
Basalik 2014 – Phase I Archaeological Survey, Trileaf Corporation Site #612237 (Hartley), York City, York County, Pennsylvania	No	Basalik 2014 surveyed 0.1 acres for the proposed installation of a stealth treepole. No archaeological resources were documented and no additional investigations were recommended.
Coppock and Tucker 2018 – North George Street Improvements, SR 0181, Section 017 Manchester Township, York County	No	Coppock and Tucker 2018 surveyed 14.1 acres for proposed improvements along North George Street. No archaeological resources were documented and no additional investigations were recommended.

Table 5: Previously Identified Cultural Resources within 0.5 Miles

Resource Status	Districts	Architectural Resources	Archaeological Resources
NRHP Listed	3	14	1
NRHP Eligible	2	9	-
Contributing Resource	-	310	-
Insufficient Information to Evaluate	1	1148	7

3.9 Air Quality

Six criteria pollutants are evaluated by the USEPA under the auspices of the Clean Air Act to determine outdoor air quality in an area. These pollutants can injure health, harm the environment and cause property damage. The USEPA calls these pollutants criteria air pollutants because the agency has developed science-based guidelines as the basis for setting permissible levels. There are National Ambient Air Quality Standards (NAAQS) for each of the criteria pollutants that apply to the concentration of a pollutant in outdoor air. If the air quality in a geographic area meets or has lower concentration of the pollutant than the national standard, it is called an attainment area; areas that don't meet the national standard are called nonattainment areas, and the air is more polluted than acceptable.

Areas (by state) that fail to meet the NAAQS for a criteria pollutant are required to develop a state implementation plan (SIP) to improve air quality. A SIP outlines the measures that the state would take to improve air quality, and include emission inventories, air quality projections, and control measures designed to reduce emissions. Once a nonattainment area meets the standards and additional re-designation requirements in the Clean Air Act, the USEPA would designate the area as a maintenance area.

Two criteria air pollutants have been of particular concern in York County. These are ground-level ozone, and very fine particulate matter (PM-2.5). Ground-level ozone is created by sunlight-driven chemical reactions between oxides of nitrogen and volatile organic compounds that themselves derive from emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents. PM-2.5 forms in the atmosphere as a result of complex reactions of other pollutants emitted from power plants, industries and automobiles. Particulate matter is also emitted directly from sources such as construction sites, unpaved roads, and smokestacks.

According to the USEPA Green Book Nonattainment Pollutant Report, York County had been designated a nonattainment County for multiple years for ozone and PM-25. York County has subsequently been re-designated to a maintenance area (Appendix 1.13) (EPA, 2018d; n.d.).

3.10 Hazardous Materials and Solid Waste

Concerns over soil contamination focus on health risks from direct contact with the contaminated soil and vapors from contaminants, as well as escape of contaminants into the environment. Soil contamination is typically caused by industrial activity, agricultural chemicals, or improper disposal of waste.

USACE used the USEPA EnviroMapper website to identify potential hazardous materials and solid waste sources within or near the project area (EPA, 2018c). This website provides information regarding U.S. EPA-regulated hazardous waste, toxic and air releases, and water discharges, as well as impaired surface waters. Facilities generating pollutants (such as gas stations and municipal public works departments), as well as contaminated sites (such as superfund and brownfields) are included. According to the website, there are no properties that are listed on the Toxic Release Inventory; generators, transporters, treaters, storers, or disposers of hazardous waste; or Brownfield sites located within the levee system area of review. The website does indicate the presence of mentioned sites outside the area of review and within the City of York limits. Additionally, review of the USEPA Superfund National Priorities List (NPL) website indicates that there are no active NPL superfund sites mapped within the limits of, or in near proximity to, the levee system area of review (EPA, 2018e). There is one non-active site located approximately 2,000 feet south of Codorus Creek along Grantley Road. There are also several archived superfund sites within the County. One of these lies along Market Street, approximately 1,250 feet east of Codorus Creek. The City of York has six brownfield sites located within approximately 1,000 feet of Codorus Creek from Philadelphia Street downstream to the city's eastern boundary.

The area adjacent to the floodwall near the Penn Street Bridge was previously the property of the early 20th century Schmidt-Ault Paper, with a history of cardboard manufacturing. The property and structures are currently under the ownership of York College. USACE performed a groundwater evaluation in 2011 and soils evaluation in 2012. The evaluation consisted of four soil borings drilled to 25-feet below ground surface or bedrock, whichever was shallower, two test pits; two existing monitoring wells, and one surface water sample. The findings of the soil samples indicated that the samples tested below the PADEP Act 2 non-residential direct contact surface soil standard 1000 mg/kg, except for an isolated occurrence, with a lead concentration of 2800 mg/kg. The findings of the groundwater survey indicated that groundwater was encountered at a depth of 15.3 to 19.5 feet below ground surface, and the groundwater samples were below the PADEP Act 2 MSC for non-use aquifers; and the surface water samples were below the PADEP surface water quality standards of contamination.

3.11 Climate

According to the U.S. Climate Data website, during a typical year, York's highest temperature months are generally July and August, with averages of 87 degrees in July and 85 degrees in August (U.S. Climate Data, 2018). The lowest temperature months are January and February, with the average of 39 degrees in January and 43 degrees in

February. Average annual rainfall precipitation is approximately 42.91 inches. Average snowfall is approximately 25 inches. The County of York Hazard Mitigation Plan identifies at least 10 tropical depressions, tropical storms, or hurricanes that have resulted in major disaster or disaster emergency declarations in the county since 1954 (York County, 2013). Additionally, the county has historically been affected by winter storms that result in flooding and icejam related flooding in vulnerable areas throughout the county.

3.12 Parks and Recreation

There are multiple parks within the City of York, some of which are within and adjacent to the FRM project area of review. Within the City of York, between Grantley Road and South Richland Avenue, Brantz Park lies on the north bank (left bank looking downstream) of Codorus Creek. Brantz Park is forested along Codorus Creek, but is otherwise lawn with shade trees and contains a baseball field just upstream of South Richland Avenue. York County Parks, with support from the State of Pennsylvania, owns and operates the 21 mile long “Heritage Rail Trail County Park” which extends from John Rudy County Park north of York City (in East Manchester Township) south to the Pennsylvania/Maryland state line, at New Freedom, Pennsylvania. The trail connects to Maryland's 20-mile long Torrey C. Brown Trail. The waters within the project area of review are utilized for public water related recreation, such as fishing, kayaking, and canoeing.

3.13 Aesthetics

The Codorus Creek FRM project area of review includes the levee, which consists of Codorus Creek, floodwalls, earthen levee/dikes, drainage pipes, riprap, shoals within the channel, City of York operated bascule dam, USACE constructed and maintained Richland Avenue dam, connecting tributaries, two structures, and roadway and rail line crossings. Living and dead trees are present within and adjacent to the levee system, some of which overhang the creek. There are also fences and signs within the area of review, some of which were not installed by USACE. There is light being emitted along segments of the levee system from adjacent properties. Currently, there are visual signs of deterioration at various locations along the levee system. These include the deterioration of the floodwall near the Penn Street Bridge, bulges and other unstable portions of the floodwall near the Market Street Bridge, clogged and collapsed drainage pipes throughout the levee system, and bank erosion near Richland Avenue. Additionally, shoaling with vegetation is present at various locations throughout the creek. The levee project is surrounded by residential, commercial, educational/institutional, and industrial development; transportation crossings; community parks; trails; open space; and forested tracts.

3.14 Noise

The City of York is a busy urban setting with notable noise, as is common in similar settings. There are commercial and industrial businesses, residences, community parks,

educational institution facilities, roadways, rail lines, bridges, and trails within and adjacent to the Codorus Creek FRM project area of review. The major sources of noise in the affected area are anthropogenic, produced by vehicular and railway traffic that utilize the bridge crossings and adjacent roadways. This would also include emergency vehicles and noises produced at the local fire station. Other sources of noise would include those produced by the general public during daily activities, which would be minimal. Natural sounds produced by strong wind and precipitation, as well as from the water flow within the creek, can mask noises produced by anthropogenic sources when human activities are minimal.

3.15 Transportation and Traffic

There are multiple transportation corridors running through and adjacent to the project area of review. Interstate 83 provides north/south regional surface transportation for vehicles and partially encircles the City of York along the city's southern, eastern, and northern sides. US Route 30 provides a regional east/west vehicle surface transportation route, passing through the northern part of the city. Business 83 (George Street) passes north/south through the City of York, crossing Codorus Creek in the northern part of the city. Other numbered roads passing through the City of York include Market Street (462) passing roughly east/west and Route 74 (Queen Street to Carlisle Avenue). There are multiple road bridges crossing Codorus Creek in the City of York, from upstream (south) to downstream (north) these are South Richland Avenue, Grantley Road, South Penn Street, West College Avenue, West Princess Street, West King Street, Market Street, West Philadelphia Street, Beaver Street, and North George Street (83).

The closest public airport to the City of York is Harrisburg International Airport, which is located approximately 15 miles away and provides commercial air travel. A private airport, Gilbert Airport (73PA), is located approximately 3 miles southwest of the City of York. This airport does not offer commercial flights. Another privately-owned airport, York Airport (THV), is located approximately seven miles west-southwest of downtown York. Although privately-owned, York airport is open to the public.

Norfolk Southern Railway tracks extend southward from Harrisburg to York City along the east side of Codorus Creek. Local line haul / switching and terminal railroad tracks extend from the City of York southwest to Hanover, Pennsylvania, utilizing two bridges crossing Codorus Creek between Beaver Street and Philadelphia Street.

3.16 Health and Safety

The incorporated area within the City of York covers a little more than 5 square miles, and lies on both banks of Codorus Creek, which flows through York and is 10 miles upstream of the confluence with the Susquehanna River. The Indian Rock Dam and Codorus Creek FRM levee projects were authorized by the Flood Control Act of 1936. These projects work jointly to help reduce flood risks to people and property in York, as well as communities downstream. It is estimated that the dam and levee system have

prevented more than $55 million in flood damages since their construction and have provided York and downstream communities with protection from flood hazards. Given the identified deficiencies of the Codorus Creek FRM project, the ability of the levee system to maintain flood capacity and control during storm events may become compromised.

In recognition of mounting scientific information demonstrating that America's children suffer disproportionately from environmental health and safety risks, President Clinton issued Executive Order number 13045 on April 21, 1997, "Protection of Children from Environmental Health Risks and Safety Risks." Under this Executive Order, each Federal Agency "shall (a) make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities and standards address disproportionate risks to children that result from environmental health risks or safety risks." Children are identified as individuals under 18 years old. According to the 2016 U.S. Census, approximately 28.6 percent of the population within the City of York were under the age of 18. Consideration of the environmental health risks to children is included in Section 4.0 of this EA.

3.17 Population and Socioeconomics

According to the 2016 U.S. Census, the population reported within the City of York was 43,859, and 443,744 within York County. The median household income within the City of York was $30,068 and $59,853 in York County (United States Census, 2016). Additional demographic information for the City and County are presented below.

Table 4: Demographics for City of York and York County

Category	Percentage in City of York	Percentage in York County
Under age 5	7.8	5.7
Under age 18	28.6	22.2
Age 65 and up	9.1	16.6
Males	49.0	49.4
Females	51.0	50.6
Nonwhite	41.4	10.6
Age 25 and up with high school education (or higher)	78.4	88.5

There are several colleges and universities within and nearby the City of York, including the York College of Pennsylvania and Pennsylvania State University York Campus. Industries located within and adjacent to the City of York include printing and packaging; refrigeration, cooling and heating; electronics and controls; snack and food

manufacturers and distributers; construction and building supply products; industrial and military; chemical and pharmaceutical; medical supply manufacturers and distributors; transportation and trucking; information technology; architectural firms; restaurants, and others.

The workforce of York is primarily composed of private wage and salary workers (89.6 percent) (United States Census, 2016). The City of York has been historically dominated by manufacturing industries that have seen significant declines in the preceding decades. Industries with notable concentrations of workers include manufacturing (19.2 percent), educational services and health care (21 percent), and retail trade (12 percent). Unemployment rates have varied over the years and as of February 2018, the unemployment rate is identified as being approximately 8.4 percent, which is higher than the State and national averages (4.6 percent and 4.1 percent).

3.18 Environmental Justice

On February 11, 1994, Executive Order 12898 was issued. EO 12898 requires, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The EO directs each Federal Agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations," including tribal populations.

As defined by the "Environmental Justice: Guidance Under the NEPA" (CEQ, 1997), "minority" includes persons who identify themselves as Asian or Pacific Islander, Native American or Alaskan Native, black (not of Hispanic origin) or Hispanic. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations are identified using the Census Bureau's statistical poverty threshold, which is based on income and family size. The Census Bureau defines a "poverty area" as a Census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level (Census Bureau, 1995).

The USEPA Environmental Justice Screening and Mapping Tool (EJ Screen) (EPA 2018b) provides information on age, income, minority status, and other topics by US Census block groups for the period 2012-2016, which was used to characterize the population in the project vicinity. Text below provides a narrative summary prepared from the EJ Screen.

The Federal Department of Health and Human Services provides guidelines on poverty income levels below which people qualify for federal subsidies and aid. EJ Screen maps the City of York to contain a greater percentage of the population below the poverty level than do municipalities around the city perimeter. EJ Screen maps block group areas of York City along Codorus Creek to have greater than 25 percent of the

population below the poverty level. Conversely, the portions of the FRM project in municipalities to the north and south of York City do not lie within block groups having high percentages of the population below the poverty level. Thus, the vicinity of the FRM project within the City of York lies within a poverty area, whereas the portions of the project in municipalities to the north and south do not.

Public housing was established to provide decent and safe rental housing for eligible low-income families, the elderly, and persons with disabilities. EJ Screen depicts the City of York having public housing in multiple areas, with concentrations of units occurring in two areas where the project provides FRM benefits ("leveed areas"). (Public housing units also occur elsewhere in the city outside of the leveed areas.) Multiple public housing units are mapped to occur along Parkway Boulevard in the vicinity of its George Street intersection on the left bank of Codorus Creek, with those units fronting George Street lying in the "York West Willis Run Leveed Area" (Refer to Appendix 1.1 and 1.2). EJ Screen maps multiple public housing units also occurring on the left bank of Codorus Creek along Grantley and College Avenues (immediately downstream of Tyler's run), as well as King Street, within the "York West Downtown" leveed area. EJ Screen depicts no public housing occurring in the municipalities south or north of the City of York in the FRM project vicinity (although public housing fronting George Street in the City of York is in close proximity to North York Borough). EJ Screen also depicts multi-family subsidized housing units located with the City of York, however none of these units are mapped by EJ Screen within the leveed areas (See Figure 4).

EJ Screen data indicate that the population of the City of York is comprised of approximately 61 percent minority (other than White) persons. That is generally higher than surrounding municipalities, and higher than the state and region as a whole, and constitutes a minority-dominated population. Areas outside of York City, within the project vicinity, generally have lower proportions of minority population. Although portions of the project area are minority-dominated, the proposed action would not disproportionately harm any such group. The proposed actions rehabilitate and repair deteriorated components of the project, thereby ensuring that it continues to provide flood risk management benefits to nearby communities, including minority-dominated communities.

EJ Screen data indicate that the percentages of the population within the City of York that are children (below the ages of 5 or 18) and elderly (over 64) are comparable to the percentages in those groups in adjacent municipalities. Neither the City of York nor the FRM project vicinity (including municipalities to the north and south) constitute an area having a high percentage of children or senior citizens.

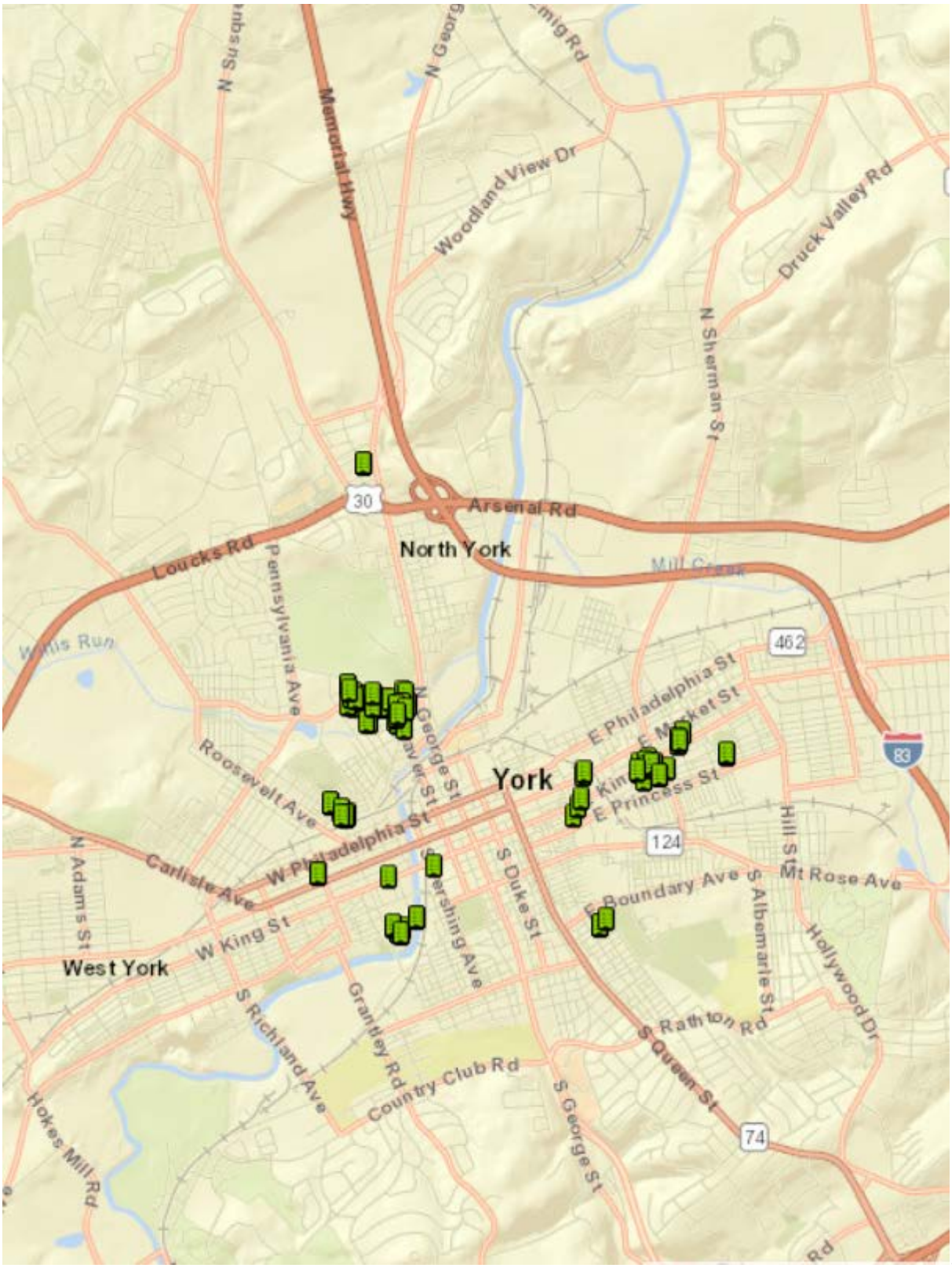


Figure 4. Public Housing in York City Vicinity, per USEPA EJ Screen, Nov 2018

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The impacts of the proposed project are presented in the following sections. For reference when considering construction impacts, the in-water work would occur over the course of approximately 24 months for the floodwall replacement project near the Penn Street Bridge, less than a year for the bank stabilization work near South Richland Avenue, 6 months for the drainage conduit maintenance work, and a few weeks for the bulge repairs near Market Street Bridge.

4.1 Land Use

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work tasks would occur. There would be no temporary or permanent changes to land use and land cover. However, the Codorus Creek levee system would continue to degrade. If this would occur, the integrity of the levee system would be compromised, which may ultimately result in adverse effects to land use and land cover if the community is not adequately protected from potential flood hazards.

Alternative 2: Proposed Action

Under the proposed action, the repair and rehabilitation activities identified in Section 2.1.2 would occur to restore the levee system to its authorized FRM system capacity, standards, and integrity. The land uses would not change, as the repair and rehabilitation work tasks would occur to the levee system. Although ROEs would be necessary, the work within these areas would be temporary, and no land use changes would be required. Additionally, the transportation land uses (i.e., roads and rail lines) would not be changed, as the work would occur within the levee system only and does not propose to affect these land use features, neither permanently nor temporarily. Adjacent land uses may change over time as a result of the City of York and other stakeholders proposing open space, recreation facilities, development, etc., along the levee system, some of which may require review by USACE under Section 408. Section 408 refers to the following: Congress required that any use or alteration of a Civil Works project by another party is subject to the approval of USACE to ensure that Civil Works projects continue to provide their intended benefits to the public. This requirement was established in Section 14 of the Rivers and Harbors Act of 1899, which has since been amended several times and is codified at 33 USC 408 (Section 408). Section 408 provides that USACE may grant permission for another party to alter a Civil Works project upon a determination that the alteration proposed would not be injurious to the public interest and would not impair the usefulness of the Civil Works project. Based on the above information, the performance of the work tasks identified in 2.1.2 would not alter existing land uses within the Codorus Creek FRM project area of review.

4.2 Geology and Topography

Alternative 1: No Action Alternative

Under the No Action Alternative and no rehabilitation work tasks would occur. Although the levee system would continue to degrade, it is not expected that this would result in changes to geology and topography.

Alternative 2: Proposed Action

Performance of the Codorus Creek FRM project work tasks identified in Section 2.1.2 would have little to no impact to the underlying geologic formations in both the short and long term. The project work tasks are intended to restore the levee system to its authorized flood management capacity and design, which involves rehabilitation and repair activities where deterioration and deficiencies along the levee system have been identified. The work would be within the existing footprint of the levee system and would not significantly alter the topography. Only minor modifications in topography are proposed to stabilize the banks of Codorus Creek near South Richland Avenue, which will reduce the steepness of the terrain and reduce erosion at the site. Additionally, project work tasks would prevent continued deterioration and improve the integrity of the levee system. Given the proposed work tasks to restore the Codorus Creek FRM project, and permanent activities outside of the existing footprint are not proposed (only temporary construction access and staging activities outside of the levee system would occur), the project would not adversely affect the geology or topography of the area.

4.3 Soils

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation of the Codorus Creek FRM project would occur. Although under this alternative, soils would not be directly affected, the continued degradation and compromised integrity of the levee system would result in levee bank de-stabilization. This would alter soils along the levee banks and adjacent to the levee system through erosion. Soils would enter into Codorus Creek and ultimately to receiving waters.

Alternative 2: Proposed Action

Some of the project work tasks would cause a minor long-term change to existing soils, such as the replacement of the floodwall near the Penn Street Bridge, the levee stabilization activities near the South Richland Avenue Bridge, and the work associated with the drainage pipes. These activities would require disturbance to soils, to include excavation and discharge of fill. Soil disturbance activities would occur within USACE levee system footprint, as well as within the ROEs for construction, access, etc. The effect would be minor given that the work would restore the levee system to its authorized flood management capacity. Additionally, the soils have been disturbed

previously as a result of the construction of the levee and adjacent infrastructure. Indirect effects to soils, such as increased erosion potential and soil movement during construction activities, would occur. However, the effects would be minimal and temporary, as the project would include implementation of erosion control best management practices during construction and stabilization post construction. This would include a sediment and erosion control plan being developed to reduce the potential indirect impacts to aquatic resources downstream by reducing sediment loss from the construction site. Additionally, there would be long-term, beneficial effects to the soil stability along the levee system at locations where it has been identified that stabilization is necessary. These locations would be stabilized through sloping of the banks, placement of riprap or other stabilization product, etc., thereby reducing the potential for soils to erode from the banks and enter into the waterway. Based on these factors, there would be minor and short term, direct effects to soils.

4.4 Hydrology

4.4.1 Surface Waters

Alternative 1: No Action Alternative

Under the No Action Alternative, there would be no rehabilitation activities to the Codorus Creek FRM project. Although direct effects to surface waters would not occur under this alternative, the levee system would continue to deteriorate, which would result in floodwall debris and eroded sediments entering into the creek. Therefore, under the No Action Alternative, surface waters would be indirectly adversely affected.

Alternative 2: Proposed Action

Codorus Creek, within the footprint of the levee system, has been modified as a result of the construction of the levee, and the project work tasks would restore the levee system to its authorized flood management capacity and standards. There would be temporary and permanent impacts to waters of the U.S. as a result of some of the work tasks. The floodwall replacement near the Penn Street Bridge would be performed within its approximate same footprint. The riprap placement would result in permanent impacts to approximately 0.3 acre of the Codorus Creek riverbank at this location; however, much of the area currently contains riprap. The levee bank stabilization work task near the South Richland Avenue Bridge would address the existing erosion issue. The current conditions of the eroding bank result in upland soils entering into the waterway, increasing sedimentation of the creek. Stabilization of the slope would reduce the occurrence of erosion, thereby improving the water quality through reduction of sedimentation. The installation of riprap or other bank stabilization features at this location would result in permanent impacts to approximately 0.13 acre of surface waters, and would also provide some structural habitat complexity, which may provide incidental benefit for aquatic organisms. The work task involving the bulge repairs would have no permanent adverse effect on waters of the U.S., as the bulges are currently located above the ordinary high water mark of the creek.

Some temporary adverse effects may result from the installation of a cofferdam or other measures, if necessary, to reduce the potential for sedimentation or pollutant discharges during repairs. The repair of the bulges would restore the integrity of the floodwalls and eliminate the potential for the hand laid stones from falling into the creek.

The drainage conduits located within the levee system would be inspected to determine their integrity, and jetted, where feasible, to clean out existing sediments if integrity remains. The contractor would be required to contain the sediments as they are discharged from the pipes to minimize the potential that sediments would enter into the creek. Materials from this project must be disposed at an approved upland location. The Codorus Creek FRM project repairs will not adversely affect stormwater management, although repair and rehabilitation of drainage conduits may provide some localized stormwater management benefits within the vicinity of the levees by facilitating drainage.

Although construction activities would be performed from outside of the creek boundaries, from the top of the levee banks, and would avoid work in waters, wherever possible, there would still be short-term adverse effects to surface water. Some work tasks (e.g., floodwall replacement, riprap bank stabilization, and conduit maintenance) would require in-water containment structures to protect the project work zones. Repair of the riprap embankment near South Richland Avenue may require that construction equipment work within Codorus Creek to access the repair site. When practicable, this work would be done during periods of low flow, or in the dry. If access cannot be obtained from the right stream bank, it may be necessary to construct a temporary causeway across Codorus Creek to facilitate equipment access to the repair site. If a causeway is used, it would be constructed of riprap overlain with coarse stone, and will be designed to withstand normal stream flows and allow fish passage. The causeway would be removed as soon as practicable, following completion of construction of this work task.

Short-term adverse effects would occur during construction associated with the use of best management practices to contain the work zone, use of machinery within waters disturbing substrate, etc. For example, installation of sheet piles for cofferdams would result in temporary containment of waters that would displace aquatic organisms, machinery within waters would result in temporary suspended particulates, etc. However, the effects would be minimal given that larger, more mobile aquatic organisms would utilize adjacent waters, macroinvertebrates would repopulate any stream sections once all construction activities ended, and the use of turbidity barriers would reduce transport of suspended particulates. There would be minor short-term effects due to temporary construction activities, turbidity and installation of turbidity control measures. There would be minor long-term adverse effects to surface waters due to the installation of additional riprap near the South Richland Avenue Bridge, and at the toe of the Penn Street floodwall. There would be long-term beneficial effects as a result of the rehabilitation activities due to the stabilization of eroding banks and the prevention of sedimentation.

4.4.2 Wild and Scenic Rivers

This project is not located in a Wild or Scenic River or an American Heritage River. Therefore, there would be no effect to these resources.

4.4.3 Navigation

Alternative 1: No Action Alternative

Under the No Action Alternative, the Codorus Creek FRM project rehabilitation activities would not occur. Therefore, there would be no direct effects on navigation. However, without rehabilitation actions, the levee system would continue to deteriorate, resulting in floodwall debris and sediments entering into the creek. Therefore, navigation would be indirectly adversely affected.

Alternative 2: Proposed Action

The waters within the project area of review are not utilized for commercial navigation. The waters are utilized for recreational boating, such as kayaking and canoeing. Impacts to recreation are discussed in 4.12. During construction of some work tasks where in-water containment features may be necessary, areas of the waters would not be accessible for recreational navigation activities. Additionally, upon completing construction of the work tasks, the water area conditions for recreational navigation would be similar to pre-construction conditions. Based on the above factors, the project work tasks would result in minor and temporary adverse effects to navigation during construction. Navigation would be restored similar to pre-construction conditions upon completion of construction and removal of the temporary containment features.

4.4.4 Water Quality

The proposed work task activities and construction techniques would comply with the applicable state water quality standards and any conditions that were identified by the State agency (i.e. PADEP). USACE would finalize coordination with PADEP to ensure project compliance with Section 401 CWA Water Quality Certification requirements prior to commencement of work on the project. The selected contractor will be required to use appropriate best management practices (BMPs) to avoid unauthorized discharges of pollutants. The contractor will be required to obtain and comply with all applicable state and local permits, including those for erosion and sediment control, stormwater management and waterway obstruction and encroachment.

There are no properties that are listed on the Toxic Release Inventory; generators, transporters, treaters, storers, or disposers of hazardous waste; or Brownfield sites located within the levee system area of review. The area adjacent to the floodwall near the Penn Street Bridge was previously the property of a paper mill with a history of cardboard manufacturing. USACE performed a groundwater evaluation in 2011 and soils evaluation in 2012. The findings of the groundwater survey indicated that

groundwater was below the PADEP Act 2 MSC for non-use aquifers, and that the surface water had no exceedance of the PADEP surface water quality standards.

Repairs will likely cause minor turbidity in the immediate vicinity of the proposed action area. Potential adverse impacts to water quality from turbidity are expected to be localized, minor and temporary. BMPs to minimize adverse impacts to water quality would be determined prior to construction. All materials to be used for construction activities would be clean and free of pollutants. Excavation of material will not release hazardous, toxic, or radioactive substances that would adversely impact water quality. No long-term impacts to water quality would occur as a result of the proposed action.

4.5 Floodplains

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, floodplains would not be directly affected. However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. This may, in turn, result in indirect effects to the adjacent floodplain if the levee project does not adequately provide the intended flood management.

Alternative 2: Proposed Action

The Codorus Creek FRM project area of review is within the 100 year floodplain of Codorus Creek. The proposed work tasks work would occur within the existing boundaries of the Codorus Creek FRM project, which consists of floodwalls, earthen levee banks, Codorus Creek waters, etc. Additionally, the existing infrastructure within the proposed ROEs consist primarily of parking lots, maintained grassy areas, and businesses. The reconditioned levee system integrity would provide the necessary flood management within the local and downstream communities. Given that the main purpose of the proposed work tasks is to rehabilitate, repair, and restore the levee system to its authorized flood management capacity and standards, the performance of the work tasks would result in maintaining the existing floodplains in their existing state. Natural floodplain function would not be improved or restored. Additionally, wildlife and aquatic species that utilize floodplain habitat would not be affected, as available habitat is limited within the area of review.

4.6 Biological Resources

4.6.1 Terrestrial Resources

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, terrestrial resources would not be directly affected. However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. Indirect impacts to terrestrial resources may occur as a result if levee banks and floodwalls do not provide sufficient protection of the adjacent lands.

Alternative 2: Proposed Action

The proposed project work tasks would occur within the existing boundaries of the levee system, with three proposed ROE areas directly adjacent to the levee boundaries. Given that the land uses within the area of review are primarily waters, and the limited undeveloped land area between the waters and outer boundaries of the levee system, terrestrial resource areas are limited. The proposed work tasks would result in temporary disturbances in the ROE areas, as well as within areas where best management practices would be utilized for construction. Much of the work would occur from existing parking lots, maintained upland areas, etc. Removal of large trees is not anticipated except where such trees may be intruding upon the levee, and removal is necessary to maintain the function of the levee. If any trees of significance (more than a few inches in diameter at breast height) are proposed for removal, the contractor will discuss with USACE prior to removal. The bulge repair would require temporary access; however, given the locations of the bulge deficiencies to the adjacent development, it is not expected that construction activities would result in adverse impacts to terrestrial resources. The conduit work task would not be expected to alter the existing terrestrial resources, as the work would occur internally through the levee system. If repair and/or replacement of conduits would be required, this may result in temporary impacts to terrestrial resources. Wildlife may utilize the terrestrial areas for feeding, and would avoid the construction zones during work activities. However, given the urban environment adjacent to where several of the work tasks are proposed, it is expected that the project areas would be utilized on a more transient basis, and project activities would not adversely affect wildlife. Species would be expected to return to the project sites post-construction. Disturbance to terrestrial areas, which includes maintained grassy areas, may occur within approximately 7 or more acres but would be temporary and not all occur at the same time. Based on the above information, it is expected that the proposed work tasks would result in temporary and short term adverse effects to terrestrial resources. No long term effects are anticipated.

4.6.2 Wetlands

There are no wetlands identified as being present within the project area of review that would be impacted by the performance of the proposed work tasks. Therefore, there would be no effects to wetlands under the No Action Alternative or the Proposed Action Alternative.

4.6.3 Aquatic Resources

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, aquatic resources would not be directly affected. However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. Indirect impacts to aquatic resources may occur as a result of turbidity, sedimentation and infill due to levee and floodwall sloughing or collapse.

Alternative 2: Proposed Action

Some unavoidable, adverse effects would occur to aquatic resources present within the footprint of the work areas, as a result of fill and excavation activities due to smothering and removal of existing organisms. Some work tasks, particularly the repair of the riprap embankment near Richland Avenue, may require the use of heavy machinery and construction of a temporary causeway within the Creek, which would adversely affect aquatic resources within the immediate area by compaction of substrate, smothering, and temporary restriction of movement. Some of the proposed work tasks, however would occur within their approximate existing footprints, and some activities would occur solely above the limits of the ordinary high water mark, and would therefore cause only minimal adverse effects. The in-water work would occur over the course of approximately 24 months for the floodwall replacement project near the Penn Street Bridge, less than a year for the bank stabilization work near South Richland Avenue, 6 months for the drainage conduit maintenance work, and a few weeks for the bulge repairs near Market Street Bridge. Repopulation of species within the disturbed areas once construction is completed is expected to occur as organisms recolonize within the impact locations. The proposed actions are anticipated to have effects on generalized functional groups within the aquatic ecosystem, as follows:

(1) Plankton - Impacts from turbidity generated during construction are anticipated to be minor and localized to the immediate construction area. No long-term adverse effects are expected.

(2) Benthos – Unavoidable adverse impacts would occur to any benthos living in the footprint of the proposed in-water discharge locations as a result of discharges of fill smothering existing benthos and excavation removing benthos. Heavy machinery working in the Creek may be necessary. This would directly

impact benthos due to compaction and smothering. Repopulation of the disturbed areas to pre-project levels is expected to occur as species repopulate within the work zones. Therefore, the adverse effects to benthos would be minimal and short-term. No long-term adverse effects are expected to occur.

(3) Nekton – It is expected that adverse effects on nekton would occur during construction due to the implementation of the in-water best management practice construction measures. The presence of in-water barriers would result in actively swimming aquatic organisms being blocked from entering into the work zones, thereby, altering their path. There would be sufficient area of waters outside of the work zones where aquatic organisms could travel. Therefore, it is expected that the adverse effects on nekton would be minor and short-term. No long-term adverse effects are expected.

(4) Aquatic Food Web – No change to the aquatic food web is expected as a result of the proposed project work tasks. Best management practices would be implemented and adhered to during construction, and the work zones would be stabilized post construction to minimize erosion and sedimentation of the waters.

USACE received comments from the PFBC regarding fish habitat. The PFBC recommends that USACE evaluate opportunities to incorporate “fish friendly” habitat structures into the levee system design. The PFBC offered to assist USACE with this endeavor. Given that the purpose of the levee system is for flood management, the proposed project is to rehabilitate and repair the levee system deficiencies, and the authorized federal funding is for the restoration of the levee system to its authorized flood management parameters, USACE is limited in regard to deviations of the existing levee design. However, for future modifications or enhancements of the FRM levee system, USACE would coordinate with the PFBC to evaluate potential “fish friendly” habitat if it is feasible and would not jeopardize the integrity of the levee system.

4.7 Threatened and Endangered Species

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, it is not expected that there would be effects to threatened and endangered species.

Alternative 2: Proposed Action

According to information generated on the IPaC and PNDI reports, there is potential for federal and state listed species, as well as USFWS migratory birds of conservation concern, to be within or near the limits of the project area of review, as described in Section 3.7. Although three species federally-listed under the Endangered Species Act are known to occur in the vicinity of the project, they are unlikely to be present within the

area of review due to the absence of suitable habitats. No critical habitats are present within the project area of review.

Regarding state listed species, according to information provided by the City of York, state listed species have been identified as frequenting shoals located within the limits of the Codorus Creek FRM levee system limits. City of York staff have commented that these species do not appear to rely upon the shoals as habitat. The current work tasks does not include dredging of shoals; therefore, there would be no effect to state listed species using the shoals.

Coordination with the PFBC, PGC, and the USFWS is included in Appendix 2.3. The PFBC and PGC have both provided "no impact" statements to state listed threatened, endangered, and species of special concern from the proposed action. The USFWS provided an Avoidance Measure for the bald eagle due to the report indicating that the project is within proximity of a bald eagle nest. USACE would adhere to the Avoidance Measure prior to commencement of project work tasks. No other recommendations or construction conditions were provided by the USFWS and coordination and consultation have been completed in compliance with the Fish and Wildlife Coordination Act and Section 7 of the Endangered Species Act. Refer to Section 5.3 for information regarding USACE consultation and coordination with federal and State resource agencies. Based on the above information, the project may affect, but would not adversely affect threatened and endangered species in the study area.

4.8 Cultural, Historical, and Archaeological Resources

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM system. This would include no removal of the structure located adjacent to the Penn Street floodwall. However, if the floodwall would fail at this location, the structure may become undermined and fall into the creek. Consultation was finalized in November of 2018, with PHMC concluding that no historic buildings, structures, districts, and/or objects will be affected by the proposed project and that no further consultation was required. Therefore, the no action alternative would have no effect upon historical resources.

Alternative 2: Proposed Action

Following are the expected effects to cultural resources as a result of replacing the floodwall near the Penn Street Bridge, bulge repair and floodwall stabilization near the Market Street Bridge, riprap/bank stabilization near the South Richland Bridge and elsewhere along the levee, and the drainage conduit inspections.

Replace Floodwall near Penn Street Bridge

The existing concrete floodwall along Codorus Creek near Penn Street is deteriorating and suffering from structural erosion. At the eastern terminus of the floodwall is a portion of the abandoned early 20th century Schmidt-Ault paper mill that is sitting on top of the floodwall. In order for the wall to be replaced, a portion of the encroaching paper mill would need to be demolished, however, the mill has been determined not to be eligible or potentially eligible for the NRHP. Just south of the Schmidt-Ault paper mill sits the Philip J. King House, which has been determined to be eligible for listing on the NRHP, but the preferred alternative would not have an impact on this building. Also proposed are minor repairs, consisting of concrete and/or grout application to the masonry wall where it intersects with the concrete floodwall at Tyler's run. USACE has consulted with the SHPO and Tribes regarding potential effects to cultural resources. Consultation was finalized in November of 2018, with PHMC concluding that no historic buildings, structures, districts, and/or objects will be affected by the proposed project and that no further consultation was required. Full compliance with Section 106 of the NHPA has been achieved.

Repair/Stabilize Floodwall near Market Street Bridge

The masonry wall immediately downstream of the Market Street Bridge is in need of repair and stabilization. The masonry wall has suffered from degradation, such as a bulge moving outward toward Codorus Creek, and it has been impacted by a previous USACE project dating to the 1970s (concrete capstone). The masonry wall is located within the York Historic District and is attached to the 19th century Hotel Codorus to the north. The Hotel Codorus is also a contributing resource to the York Historic District. Repair and stabilization of the masonry wall is not expected to adversely impact either the Hotel Codorus or the York Historic District. The proposed action would not have an adverse effect on cultural resources, but would have a beneficial effect by extending the service life of the masonry wall supporting a portion of The Hotel Codorus.

Install Riprap

Upstream of the existing levee on Codorus Creek, riprap would be installed to hinder excessive bank destabilization. Displaced riprap would also be replaced near the bridge at Penn Street, the location of which is within the York Historic District West Addition. Riprap currently exists along the project area, so installation or replacement of riprap material would not be a visual intrusion to the cultural landscape. Furthermore, placement of riprap and associated staging areas would occur in previously disturbed areas. The proposed action would not have an effect on cultural resources.

Repair Drainage Conduits

The existing drainage conduits are located along the length of the project area, and consist of storm drains and relief culverts. Some of the drainage conduits are within historic districts, such as the York Historic District, York Historic District West Addition,

and the Fairmount Historic District, but inspecting and repairing them is not anticipated to require any ground disturbance. If ground disturbance is deemed necessary, it would be limited to previously-disturbed areas. The proposed action would not have an effect on cultural resources.

4.9 Air Quality

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, there would be no increase in use of construction vehicles. Therefore, the No Action Alternative would have no effect on air quality.

Alternative 2: Proposed Action

The project work tasks would require the use of heavy machinery. This may result in emissions of vehicle fumes within the vicinity. However, given the federal emission standards for vehicles and engines, and related fuel sulfur standards, the level of emissions would be minor and short term (i.e., during construction activities). Additionally, the proposed project activities would occur within an area that has been re-designated from a nonattainment area to a maintenance area for USEPA criteria pollutant levels. Addition of vehicle fumes during construction would be short term and would not significantly alter the existing air quality. Upon completion of construction of each work task, air quality conditions would return to pre-construction conditions. Therefore, the proposed work tasks would have a minor and short term adverse effect on air quality. No long term effects are anticipated. In response to the publication of the draft EA for public comment, the USEPA commented, requesting that USACE consider ways to minimize the expected short-term temporary impacts to air quality during construction, such as mitigating vehicle fumes with low-emission vehicles, and reducing idling times, as well as potential dust control measures. USACE will coordinate with contractors to ensure that construction vehicles meet applicable federal air emission standards and mitigate dust and fumes where practicable.

4.10 Hazardous Materials and Solid Waste

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM system. Under this alternative, no construction activities would occur that would disturb soils behind the Penn Street Floodwall. However, given the expectation that the levee system would continue to deteriorate, there is the potential that the floodwall would not provide the appropriate flood management and containment of upland soils, and soils behind the Penn Street floodwall may enter into the creek. No monitoring of soils would occur under this alternative. Therefore, it would be unclear if contaminated soils would enter into the creek.

Alternative 2: Proposed Action

There are no properties that are listed on the Toxic Release Inventory; no generators, transporters, treaters, storers, or disposers of hazardous waste exist in the area; nor have any Brownfield sites been identified as being located within the levee system area of review. However, the area adjacent to the floodwall near the Penn Street Bridge was previously the property of a paper company, with a history of cardboard manufacturing. The property and structures are currently under the ownership of York College. An Environmental Investigation Report for soil and groundwater conditions at the Penn Street floodwall site was completed by USACE in October of 2017. The findings of the soil sample results were below the PADEP Act 2 non-residential surface soil criteria, except for an isolated occurrence with a lead concentration of 2800 mg/kg. The findings of the groundwater survey indicated that groundwater was encountered at a depth of 15.3 to 19.5 feet below ground surface, and the groundwater samples were below the PADEP Act 2 MSC for non-use aquifers. The surface water had no exceedance of the PADEP surface water quality standards.

Given that the replacement of floodwall near the Penn Street Bridge location would involve removal of material from behind the wall for construction, the mentioned soils would be disturbed. Additionally, sediments would be jetted from the drainage conduits for the work task associated with cleaning the conduits located within the levee system. Appropriate remediation and worker safety measures would be implemented to ensure protection of the construction zone and to avoid contamination of the waterway and adjacent lands. This would include all required conditions enforced by federal, State, and local agencies. Testing and monitoring of soils near the Penn Street floodwall would occur prior to and during construction to ensure that no release of toxic material into waters would occur. All excavated floodwall materials, and sediments discharged from the conduits, would be collected, contained, and disposed of at approved upland locations. Materials excavated from the Penn Street floodwall site will undergo soil testing, and, if necessary, be disposed of at a facility that meets the requirements of acceptance of contaminated materials. Management actions would be taken to prevent construction activities from resulting in an increase of, or effect on, hazardous materials and toxic wastes.

Given the above factors, it is not expected that releases of hazardous materials and solid waste would be occur for the floodwall replacement work task. Additionally it is not expected that the proposed work tasks involving the bulge repairs, bank stabilization, or conduit maintenance would result in an increase of, or effect on, hazardous materials and toxic wastes. By implementing the appropriate construction best management practices, worker safety, adherence to required conditions, and remediation measures for the floodwall replacement and conduit work tasks, it is expected that the proposed project work tasks would not result in adverse effects to the environment in regard to hazardous material and toxic wastes.

4.11 Climate

The project would have no effect on climate or climate change as a result of construction of the work tasks along and within the levee system under the No Action Alternative or the Proposed Action Alternative.

4.12 Parks and Recreation

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, parks and recreation would not be directly affected. However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. This may, in turn, result in indirect effects to the parks and recreation if the floodwall debris and sediments from erosion continue to enter into the creek, as this would affect the quality of the recreational experience through reduced navigation from obstructions (e.g., floodwall debris) and sediment laden waters.

Alternative 2: Proposed Action

There are existing parks, water access areas, and trails that are located within and adjacent to the levee system. Additionally, the City of York anticipates construction of additional parks and recreation areas where feasible for public use, adjacent to the levee. Water access points to Codorus Creek may be installed for the public. However, these are not included as part of the funded work tasks, and the City would be required to coordinate this action with the USACE in regard to Section 408 and with all regulatory authorities if Section 404 and other permits are required for this action. Additional trail segments may also be added by the Trail Authority. The proposed repairs and rehabilitation work task activities may adversely affect parks and recreation during construction, as there would be areas that would be off limits to the public for safety purposes. Construction of some work tasks may require water access and implementation of temporary erosion and sediment control measures that would restrict access to Codorus Creek for recreational boaters. Upon completion of construction activities, the areas where recreation occurs would return similar to pre-construction conditions, as the areas would no longer be unavailable for public use. Based on the above factors, the project work tasks would result in minor and short term adverse effects but would provide a long-term improvement to the existing conditions of parks and recreation.

4.13 Aesthetics

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, aesthetics would not be directly affected.

However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. Therefore, the floodwall debris would be expected to continue to fall into the creek, as bulges along the floodwalls would continue to appear, and erosion of the earthen banks would continue. Continued deterioration of the Penn Street floodwall may cause at least a portion of the Schmidt-Ault paper mill structure resting atop the wall to collapse, which may adversely affect aesthetics. Therefore, the No Action Alternative would result in adverse indirect effects to aesthetics.

Alternative 2: Proposed Action

The levee system is currently showing signs of deficiencies along segments that are in need of rehabilitation, repair, or replacement. The existing conditions at these locations are that of deteriorating floodwalls, bulges within the floodwalls, eroding stream banks, etc. The project would result in the replacement of the floodwall near the Penn Street Bridge within its approximate footprint and dimensions. Riprap would be added, where necessary, at the base of the floodwall. However, riprap currently exists within this location. The effects to aesthetics would be minimal as a result of these activities. In order for the Penn Street floodwall to be replaced, a portion of the encroaching paper mill would need to be demolished, although this would be done in a controlled manner and the site cleaned up by the contractor, thus minimizing any long-term effects to aesthetics associated with this demolition. The project would also result in repair of the bulges within the floodwalls near Market Street Bridge, and stabilization of the eroding stream bank near the South Richland Avenue Bridge. These work tasks would eliminate the existing appearance of bulging stone walls and eroding levee banks and would result in improved aesthetics. The work tasks involving conduit cleaning, repair, replacement, or abandonment would be less visible in regard to aesthetics, other than during the work activities, as these features are located within the levee structure. Aesthetics would be adversely affected by all work tasks during construction. However this would be limited to the duration of each work task. Based on the above factors, the project work tasks are expected to result in minor short term adverse effects, and long-term benefits to the aesthetics within the levee system.

4.14 Noise

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, no addition of construction vehicles would be introduced into the area of review. Additionally, no construction actions, such as demolition of the structure at the Penn Street Floodwall, would occur. Continued deterioration of the levee system is not expected to result in added noise. Given the above factors, noise would not be affected under the No Action Alternative.

Alternative 2: Proposed Action

The proposed work tasks would add noise within the vicinity of the construction zones. Some work tasks would emit higher levels of noise than others. For example, the work for the Penn Street Floodwall replacement would require the use of heavy machinery, and the work would involve demolition of an existing structure and floodwall. The duration for this work is anticipated to cover approximately two years. The riprap bank stabilization work task near the South Richland Avenue Bridge would also require the use of heavy machinery for re-sloping of the bank and placement of riprap. This work is anticipated to cover less than a year. The bulge repair work task is not expected to result in a significant amount of added noise, as this would likely be performed manually. The conduit maintenance work task would involve machinery to jet the pipes and to collect the materials. Installation of cofferdams, if utilized for project activities, would also result in added noise for installation. Heavy machinery would be necessary for installation and removal, adding further noise within the vicinity of the construction zones.

The floodwall replacement work task is located directly adjacent to an abandoned structure owned by the City of York. Additionally, there are York campus facilities, industrial structures, and residences located within the general vicinity of this work task, including several public housing facilities (see Figure 3). The public housing units closest to the project and most likely to be affected are those in the vicinity of the Penn Street floodwall tasks. The riprap bank stabilization at the South Richland Avenue Bridge is directly adjacent to a dental office and athletic club. Additionally, industrial facilities and residences are located at a more distant location from where this work would occur. Individuals who are employed by, visit, and reside within the vicinity of these work tasks would be adversely affected by noise from construction activities. The work for the floodwall replacement is anticipated to cover approximately two years from commencement, and the bank stabilization work task would cover approximately less than a year from commencement. Work would occur during daytime hours. Given the existence of bridges near these locations, there is currently a significant amount of noise; however, construction activities noise would differ from traffic.

The area where the bulge repair is proposed to occur is directly adjacent to businesses. As stated, the noise level generated from this activity would be minimal and short term. The conduit maintenance activities would occur at sporadic locations along the levee system and would be adjacent to various types of infrastructure, to include residential, commercial, and educational. These would tasks are not expected to generate a significant amount of noise from jetting, and activities would be short term in duration.

Based on the above findings, the proposed work tasks would result in short-term adverse effects in regard to noise levels. This would be limited to the duration of construction activities. Contractors would be cognizant of work hours and adhere to noise related ordinances, if applicable. The adverse effects would occur to individuals who reside, work, frequent, and pass near the vicinity of the construction zones. No long-term adverse effects would occur.

4.15 Transportation and Traffic

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, no addition of construction or worker vehicles would be introduced into the area of review. Continued deterioration of the levee system is not expected to result in added traffic, unless emergency repairs would be needed at a frequent rate. Given the above factors, transportation and traffic would not be affected under the No Action Alternative.

Alternative 2: Proposed Action

Transportation and traffic would increase as a result of the proposed work tasks due to the addition of heavy machinery and workers. The machinery would be expected to be stationed at the project site for the duration of each project work task. However, workers would commute daily to the sites, resulting in increased traffic. This would occur at specific times (e.g., beginning, lunch, and end of workday). Some work tasks may require more workers than others, such as the floodwall replacement work task, due to the complexity of and multiple elements to the project work task. Therefore, traffic near the Penn Street Bridge would be slightly higher than other work tasks that require fewer workers. The work tasks are not expected to require road closures or major traffic interruptions. Traffic may be interrupted when workers bring large equipment and construction materials to and from to the project sites, such as the Penn Street Floodwall and South Richland Avenue Bridge sites. However, traffic would resume once machinery and materials are placed at or removed from the sites. Based on this information, it is not expected that transportation and traffic would be significantly adversely affected by the proposed work tasks. Short-term and temporary adverse impacts would occur, however. A traffic plan would be developed in coordination with the City of York and municipalities to the north and south within the FRM project footprint to minimize adverse effects of construction traffic.

4.16 Health and Safety

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, health and safety would not be directly affected. However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. If this occurs, the flood management of the community would be affected, thereby potentially adversely affecting health and safety.

Alternative 2: Proposed Action

As identified on the FEMA mapping, the proposed project area is located within Zone AE, which is defined as areas that have a 1 percent probability of flooding every year.

The NFIP considers properties that are located within areas identified as Zone AE to be at high risk of flooding. There have been deficiencies identified along the levee system, and if the deficiencies are not addressed, further degradation of the system would occur. As stated previously, the dam and levee system have prevented more than $55 million in estimated flood damages since their construction and have provided York and downstream communities with protection from flood hazards. The implementation and construction of the proposed work tasks would rehabilitate and restore the integrity of the levee system; thereby, providing the flood management benefits that the levee system was designed and constructed to perform.

Additionally, the construction areas would be contained and off limits to all unauthorized individuals. Furthermore, replacing the deteriorating floodwall near the Penn Street Bridge, and repairing the bulges near the Market Street Bridge and other locations, would eliminate the occurrences of concrete, hand laid stone, and other construction debris from falling into the creek. Stabilization of the levee bank would prevent further erosion and sedimentation of the waterway, as well as re-establish the integrity of the levee. Maintenance of the drainage conduits would further support the integrity of the levee system. Access to the project site would be restricted during construction, so as to ensure the safety of children and others.

According to the 2016 U.S. Census, approximately 28.6 percent of the population within the City of York were under the age of 18. Given that residential communities are located within the vicinity of the proposed work tasks, children would be subjected to air and noise pollution produced from construction activities. There are also two schools located within 1000 feet but are not adjacent to the proposed work tasks at the Penn Street floodwall, located near the McKinley School, and the Market Street floodwall, located near William Penn Senior High School. Construction impacts from noise and air pollution would be temporary and not significant for proposed work tasks. This is partly due to the absence of residential areas or schools adjacent to proposed construction work. Contractors would be required to adhere to air and noise pollution regulations and ordinances and implement appropriate safety measures to prevent trespass or injury by minors and members of the public in the project areas. The work tasks would ultimately promote the health and safety of children, and the community at-large, by reducing flood risk resulting from the current deteriorated condition of the flood management system. Therefore, children are unlikely to be affected disproportionately from environmental health or safety risks caused by the proposed work.

Based on the above information, the performance of the project activities would result in long-term, direct beneficial effects to health and safety.

4.17 Population and Socioeconomics

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, population and socioeconomics would not

be directly affected. However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. The consequence of this may cause some residents to decide to relocate if they do not feel confident in the flood management provided by the levee system. Therefore, the No Action Alternative would indirectly adversely affect population and economics of the local community.

Alternative 2: Proposed Action

The proposed work is expected to benefit all persons that live within the City of York, downstream, and adjacent communities, as the levee system would be rehabilitated and restored to its authorized capacity and integrity. The protection of the population from flood hazards would provide a long-term economic benefit to the population.

4.18 Environmental Justice

Alternative 1: No Action Alternative

Under the No Action Alternative, no rehabilitation work would occur to the Codorus Creek FRM project. Under this alternative, Environmental Justice conditions would not be directly affected by construction activities. However, the levee system would continue to deteriorate, which would result in the levee integrity being compromised. This would result in adverse indirect effects to flood-vulnerable homes and businesses within the leveed areas that would have increased flood risk when flood events occur. Indirect adverse economic impacts would extend beyond the flooded areas to the City of York, downstream, and adjacent communities.

Alternative 2: Proposed Action

While there are residential communities located within the general vicinity of the proposed work tasks, the work task locations are primarily located adjacent to businesses, educational infrastructure, and industrial facilities. Lands that would require ROEs for construction access are owned by York College or local businesses. No additional permanent land leases would be necessary for the work, although easements may need to be increased in area. Because low-income residential areas do lie within and in close proximity to the existing FRM project in the City of York, construction work to improve project features in those areas would cause temporary disproportionate air quality, aesthetic, noise, and traffic impacts to those residents. Over the long-term though, the proposed work is expected to disproportionately benefit low-income residents within the leveed areas, as well as benefit all persons of minority or low-income status that live within the City of York, downstream, and adjacent communities. USACE and the City of York will develop a communication plan to keep residents informed of project activities

5.0 PUBLIC AND AGENCY COORDINATION

5.1 Public Notice Announcing Establishment of EA

A public notice announcing the preparation of an EA for the rehabilitation of the Codorus Creek FRM project was posted to the USACE website on March 12, 2018 (Appendix 3.1). Additionally, the public notice was sent to federal, State, and local agencies, requesting written comments concerning interests within each agency's area of responsibility, and to adjacent property owners, post offices, local newspapers, public libraries, and elected officials. The notice included language requesting that the public provide information that may affect the implementation of future maintenance work within the project and that would assist USACE with the preparation of the EA. A copy of the public notice was also sent to Tribes that have been identified as potentially having interest in projects within Pennsylvania. USACE requested that comments be provided within 30 days of the date of the notice.

USACE received comments from the Pennsylvania Department of Transportation (PennDOT), federal and State resource agencies, and the public during the EA initiation comment period. A summary of PennDOT and public comments and USACE responses is provided below. Resource agency comments and coordination are covered under Section 5.3, below.

5.1.1 PennDOT Comments

In an e-mail, dated April 4, 2018, the PennDOT, District 8-0, provided comments to USACE, which included a map (Appendix 2.2) indicating the locations of proposed PennDOT projects in relation to the Codorus Creek FRM levee system. The comments stated that PennDOT, Engineering District 8-0 in conjunction with the Federal Highway Administration (FHWA), is undertaking environmental and engineering studies to reconstruct and widen Interstate 83 Section 70 between Exits 19 and 22 in York County, Pennsylvania. Interstate 83 crosses Codorus Creek between Exit 19 and Exit 21 just north of the City of York. The Codorus Creek crossing is an 8-span pre-stressed adjacent box/I-beam bridge spanning the Codorus Creek and the levee system. The existing 4-lane bridge would be replaced and widened to accommodate 6 lanes of traffic but would remain on the same general alignment with a minor shift to the north. The existing abutment and pier locations may also be shifted due to constructability. The new bridge, piers and abutments are not anticipated to have an impact on the hydrology of Codorus Creek. As the highway and bridge designs progress, it is anticipated that coordination with USACE related to Section 408 approval, as well as Section 404 permitting in regard to this FRM project would be necessary. Members of USACE Baltimore District regulatory branch as well as Indian Rock Dam representatives and Section 408 coordinators would participate in meetings and field views of the project area. Additionally, PennDOT is considering a partnership with the PGC and USACE to provide habitat enhancement within the Indian Rock Dam Flood management Project area. However, this area is outside the above mentioned FRM System project limits.

USACE Response: USACE informed PennDOT of the then upcoming April 10, 2018 Stakeholder Meeting and invited PennDOT to participate. A representative attended the meeting and provided input regarding the anticipated PennDOT projects. USACE informed PennDOT that coordination would continue throughout the evaluation, design, and anticipated schedules for the proposed work tasks to ensure that USACE actions would not interfere with the schedule of PennDOT transportation projects.

5.1.2 Public Comments

A. In an e-mail, dated April 9, 2018, one commenter inquired how the project may affect his adjacent property. USACE reviewed the map the commenter provided, compared to the locations of the identified proposed rehabilitation, repair, and other potential work tasks, and found that the proposed project activities would not affect the commenter's property.

USACE Response: In an e-mail, dated April 11, 2018, USACE provided a response to the commenter stating that the proposed project activities are not expected to affect the adjacent property.

B. In an e-mail, dated March 19, 2018, one commenter provided information and recommendations to USACE for the evaluation of the proposed project activities. The commenter also requested to be included on upcoming public correspondence/notifications for this work, and if there a public hearing would be scheduled. Following are the comments provided:

1. Commenter identified that the extent of this system is greater than that depicted in the map, which was included with the public notice. The commenter included that it would be useful to extend the EA's scope to describe options including the improvement of flood storage behind Indian Rock Dam and the tributaries that feed into it. Many, if not all of these streams and the Codorus Creek are highly impaired by legacy sediments from mill pond deposition. York County historically has had some of the highest densities of mill dams within the region, and all of these streams are highly impaired. Removal of these sediments would improve Codorus watershed flood storage and attenuate peak flows, serving similar function as the improvements within York. Habitat restoration and reduction of suspended sediments, TMDL nutrients, and lessened dredging / maintenance of the channel may be positive long-term impacts of doing that type of work. A restored watershed may have similar flood management values as this project's levees and channelization, with greater uplift of stream functions and values.

2. The commenter also included that consideration of in-channel habitat is essential to the EA. The implementation of the original project had tremendous implications to the habitat of these reaches of the Codorus Creek, which presently is a highly impaired warm water fishery, but historically has been a trout fishery, and remains so particularly in East and West branches of the system. It also hosts several T&E species within the watershed. Channel restoration work should be focused not entirely upon flood storage

and conveyance, but additionally on the restoration of historic functions and values of the system. There have been multiple attempts to improve the habitat of Codorus Creek as well as provide additional community recreation / outreach types of functions and values to this system, and they should not be neglected as part of the EA analysis.

3. Additionally, the commenter included that being a significant contributor to the Chesapeake watershed, and with close proximity to the bay, TMDL functions and values of the proposed projects should be included for analysis, and how this plan fits with the Codorus Watershed Improvement Plan and other watershed-wide efforts, including the in-development York County stormwater authority work.

4. York could benefit tremendously by incorporating recreational elements to this work, including river access, trails, tree plantings, and urban redevelopment along this project corridor. These economic elements should be considered in the study.

USACE Responses: In an e-mail, dated March 19, 2018, USACE provided an initial response to the commenter, thanking the commenter for providing the comments that would assist USACE with review of the project activities, and that USACE would provide information regarding public announcements. Following is USACE evaluation and assessment of the comments:

1. The fiscal 2018 President's Budget includes $15.9 million for operation and maintenance of the aging Codorus Creek Flood Risk Management. The funding would need to be utilized for the rehabilitation and repairs to address the deficiencies associated with the Codorus Creek FRM System and to restore the levee to its authorized capacity and integrity. Additionally, USACE is commencing an evaluation of the Indian Rock Dam component under separate action. This would occur through the establishment of a Master Plan Revision and EA associated with the Master Plan Revision. The Master Plan Revision EA would consider effects of the Dam on the Codorus Creek FRM project. These documents are anticipated to be available for initial public review in Spring of 2019. Regarding removal of sediments, removal of shoals within the limits of the levee system is proposed as a potential work task. Regarding habitat restoration, the requirements of USACE are to restore the levee system to its authorized capacity and integrity. USACE would evaluate opportunities to provide real habitat improvements that would not compromise the integrity or capacity of the levee system.

2. Regarding the consideration of in-channel habitat, the allocated funding that has been provided to USACE is for the purpose of rehabilitating and repairing the identified deficiencies within the levee system. However, as included in the above response, stabilization of the eroding bank near the South Richland Avenue Bridge would improve water quality and provide some structural habitat for aquatic organisms. Also, if the South Richland Avenue dam would be removed, habitat would be improved, to include the opportunity for fish migration. Given that the levee system was constructed for the purpose of flood management, the required actions to be taken by USACE are to ensure the capacity and integrity of the levee system so that the

community continues to be provided flood management. However, where feasible, and as funding would allow, USACE would continue to evaluate the potential of improving in-channel habitat for aquatic organisms.

3. Regarding the comment associated with TMDL functions and values within Codorus Creek, the proposed project improvements would reduce sediment loads and floodwall stones/concrete from entering into the creek. The proposed approximate in-kind floodwall replacement near the Penn Street Bridge would address the current occurrence of concrete pieces from separating from the existing floodwall, as well as the leaning structure atop the floodwall, from falling into the creek, and eliminate the potential collapse of these structures into the creek. Additionally, multiple conduits that run through the levee system are not currently functioning, and cleaning, repair, replacement, and abandonment of unnecessary conduits, would ensure the integrity of the levee system and reduce potential erosion of the levee banks. Also, the bulge repairs would eliminate the occurrence of stones and upland soils behind the wall from falling into creek. By carrying out the necessary work tasks to address the identified deficiencies, and the potential future work activities, the overall integrity of the levee system would be restored, thereby, improving the existing sediment and debris loads within the Codorus Creek levee system.

4. Regarding the comment that York could benefit tremendously by incorporating recreational elements to this work, including river access, trails, tree plantings, and urban redevelopment along this project corridor, USACE is coordinating with the City of York, trail authority, and other local stakeholders to identify the local interests and provide synergy between USACE work tasks and community's existing, proposed, and anticipated projects. These include the Community's trail projects, recreational parks, creek access, etc.

C. In e-mail, dated April 30, 2018, one commenter provided comments that included information associated with the City of York's Master Plan, which encompass portions of the Codorus Creek Waterfront from Richland Avenue to Hamilton Avenue. The commenter continues that the Master Plan includes community and environmental amenities that would support the MS4 permit, the City's economic development, and the social community. The Commenter asks if USACE has reviewed the plans to consider how the improvements that the USACE would make would ensure this project is a sustainable one (i.e., Capital Stocks, goods and services, well-being measures, and health equity that this project would affect). The Commenter includes that sustainable projects are those that meet social, environmental and fiscal needs at the same time. Unsustainable projects are those that meet only one or two needs, not all needs. The commenter requests that USACE consider reviewing the Master Plans that have been completed in the last four years by the city of York, which have been funded by DCED, DEP, DCNR and other public and private entities.

USACE Response: In an e-mail, dated May 1, 2018, USACE provided an initial response to thank the commenter for the interest in the proposed project activities and recommendation that USACE review the Master Plans prepared by the City of York.

Additionally, the response included that USACE has been coordinating with the City of York to identify their existing and anticipated projects, and coordination would continue, and that USACE would look into the City of York Master Plans.

5.2 Stakeholder Meeting

On April 10, 2018, USACE held a meeting with interested or potentially affected stakeholders. The local government agencies, economic development agencies, businesses that are located directly adjacent to proposed work tasks, trail authority representatives, PennDOT, PADEP, and others were in attendance. The meeting included a brief discussion of the history of the Codorus Creek FRM system, information regarding the USACE levee inspection program, identified deficiencies and proposed work tasks to address the deficiencies, and anticipated future work activities. The meeting also included information provided by the stakeholders associated with their existing, planned, and anticipated projects located adjacent to the levee system, as well as any deficiencies that they are aware of that USACE did not identify. A discussion of Section 408 was also provided by USACE. This included a request that the stakeholders coordinate with USACE early in their project evaluation process, as the projects would require USACE Section 408 review if the stakeholder projects would have the potential to impact a Civil Works project (e.g., federal levee).

5.3 Agency Coordination

USACE provided a copy of the public notice to the following Federal resource agencies: NRCS, USFWS, USEPA, USGS, and FEMA. Additionally, USACE provided a copy of the public notice to the following State resource agencies: PADEP, Pennsylvania Natural Heritage Program, PA DCNR, PHMC, PFBC, PGC, and Pennsylvania Emergency Management Agency.

In addition to providing the copy of the public notice, USACE consulted more directly with the USFWS, USEPA, PHMC, Pennsylvania Natural Heritage Program, PFBC, PGC, and PA DCNR. Refer to Appendix 2.3 for USACE and resource agency letters and correspondence.

5.3.1 USFWS

USACE sent a letter, dated March 8, 2018, to the USFWS regarding Section 7 of the Endangered Species Act and Fish and Wildlife Coordination Act. The letter included a brief description of the proposed project activities associated with the Codorus Creek FRM levee project, a copy of the IPaC report, and a project location map, and a request for their review and comment. The USFWS provided comments via e-mail, dated March 22, 2018, which included the attachment of a PNDI report generated by the USFWS. The comments included that there is an avoidance measure identified on the PNDI report from the USFWS due to the proximity of proposed project activities to a bald eagle nest. As discussed under Section 3.7 of this document, there are drainage conduits located within the 330, 660, and 1,000 foot buffer zone breaks from a bald

eagle nest. According to the USFWS Bald Eagle Project Screening Form, maintenance activities require a time of year avoidance measure of no work between January 1 to July 1 (the breeding season), and that all activities that may disturb bald eagles would be avoided within 660 feet. USACE shall adhere to the USFWS avoidance measures.

5.3.2 EPA

In response to the public notice request for information that may affect the implementation of future maintenance work within the project, the USEPA provided recommendations via e-mail, dated April 20, 2018. The USEPA included that the comments are general in nature due to the limited information available at this time. USEPA requested that they be kept informed as the project progresses. USEPA comments included that the EA should include a detailed description of the purpose and need; environmental analysis; wetlands and aquatic resources; stormwater management; biological and terrestrial resources; community impacts and air quality; hazardous materials, solid waste, and pollution prevention; environmental justice; cumulative and indirect impacts; and potential cumulative resource impacts of the Indian Rock Dam/Codorus Creek FRM and the North York Interstate 83 Widening Project proposed by the Federal Highway Administration (FHWA) and the Pennsylvania Department of Transportation (PennDOT).

USACE Response: USACE evaluated the recommendations of the EPA, which are consistent with the information that is to be incorporated in the EA in accordance with NEPA requirements. USACE included evaluations of the above topics throughout the body of the EA. Additionally, the Indian Rock Dam project Master Plan is to be revised in FY 2019, which would include the preparation of an EA.

5.3.3 PHMC

USACE sent a consultation letter, dated 7 May 2018, to PHMC regarding Section 106 of the NHPA. The letter included determinations of effects the project may have on historic properties. Similarly to what has been described in this environmental assessment, the letter stated that no adverse effects are anticipated for the proposed conduit inspections, riprap placement, or bulge repair near the Market Street Bridge. However, regarding the replacement of the floodwall near Penn Street, an adverse effect would have taken place if the Schmidt-Ault Paper Mill had been determined eligible for the NRHP. This would have required further consultation with PHMC to seek methods of avoidance, minimization, or mitigation of adverse effects to the resource. PHMC responded to USACE via letter, dated November 28, 2018, confirming that the paper mill was not eligible for the NRHP, that no other historic buildings, structures, districts, or objects will be affected by the proposed project, and that consultation is complete.

5.3.4 PFBC

USACE provided a copy of the public notice to the PFBC on March 12, 2018. Additionally, on April 27, 2018, USACE generated a PNDI report (Appendix 1.9). The

results indicated a potential impact to resources under the purview of the PFBC and that further review was required. On April 27, 2018, USACE uploaded the required information to the PNDI website. Refer to Table 3 in Section 3.7.

In correspondence dated April 18, 2018, the PFBC provided comments, in response to their review of the public notice. The comments included that the proposed project is located within Section 7 of Codorus Creek, which begins at the confluence with South Branch Codorus Creek and continues to the mouth at the Susquehanna River. A survey by the PFBC Area 6 Fisheries Manager was last conducted within the proposed project area on August 14, 2008. Results from the survey show that Codorus Creek supports limited population of warm water fish species including yellow bullhead, rock bass, redbreast sunfish, bluegill, walleye, smallmouth bass, and largemouth bass. The PFBC comments continue that in accordance with their mission, the PFBC recommends that USACE evaluate opportunities to improve fish habitat within the FRM zone and assess the feasibility of providing access to the waterway. Additionally, the PFBC includes that it is their understanding that bedload deposition within the existing channel has been a recurring concern within the FRM project and that routine maintenance dredging is required. The PFBC Habitat Division has been involved in similar projects in Pennsylvania and is willing to discuss “fish friendly” habitat structures that could also aid with bedload movement through the FRM zone. By incorporating proven habitat structures into the proposed project design, the opportunity exists to not only improve the fishery for the local community but also reduce future maintenance costs.

PFBC also provided comments in a letter dated May 17, 2018 regarding the PNDI report. PFBC includes that an element occurrence of a rare, candidate, threatened, or endangered species under PFBC jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

USACE Evaluation of Comments: The purpose of the construction of the Codorus Creek FRM levee system is to provide flood management of the local and downstream community. The fiscal 2018 President’s Budget includes $15.9 million for operation and maintenance of the aging Codorus Creek FRM system. USACE proposes to utilize the funds as directed and proposes to rehabilitate and repair deficiencies that have been identified by USACE during the periodic inspection. USACE concurs that the integration of fish habitat structures would be beneficial to the aquatic habitat. However, USACE is limited in regard to variations of the existing flood management project design and parameters, as well as current funding. If future federal funding would be authorized for the Operation and Maintenance of the Codorus Creek FRM system, USACE would coordinate with the PFBC to evaluate potential options that would be consistent with the levee system design and capacity and also provide habitat for aquatic organisms, where feasible to do so. Additionally, future work may include the potential removal of the South Richland Avenue Dam and the shoals located within Codorus Creek, both of which may be beneficial to the aquatic habitat of the creek. USACE notified PFBC of this evaluation via letter, dated November 21, 2018, which is included in Appendix 2.3.

5.3.5 PA DCNR

On March 26, 2018, the PA DCNR provided comments to USACE via e-mail, in response to receipt of the March 12, 2018 public notice. The comments included that the PA DCNR needed additional information to provide comments or concerns and requested that USACE complete a PNDI.

USACE responded to the PA DCNR via e-mail on March 26, 2018 and provided the PNDI report, dated March 22, 2018, which was generated by the USFWS.

The PA DCNR did not provide further comments.

5.3.6 PGC

USACE provided a copy of the public notice to the PGC on March 12, 2018. Additionally, on April 27, 2018, USACE generated a PNDI report. The results indicated a potential impact to resources under the purview of the PGC and that further review was required. On April 27, 2018, USACE uploaded the required information to the PNDI website. Refer to Table 2in Section 3.7.

PGC provided comments, dated June 5, 2018, stating that they screened this project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only, and no impact is anticipated.

5.3.7 PADEP

USACE provided a copy of the public notice to the PADEP on March 8, 2018. USACE also contacted PADEP regarding the status of the Section 401 Water Quality Certification (WQC), via email on December 3, 2018 and via subsequent communication via telephone and emails. USACE has determined that the proposed action is consistent with the terms and conditions of Nationwide Permit 31 (Maintenance of Existing Flood Control Facilities), for which WQC has already been granted. USACE will finalize coordination with PADEP to ensure project compliance with Section 401 CWA Water Quality Certification requirements prior to commencement of work on the project. Coordination with PADEP is documented in Appendix 2.3.

6.0 CUMULATIVE AND SECONDARY IMPACT ANALYSIS

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of NEPA of 1969, as amended (42 U.S.C. 4321 et seq.), define cumulative effects as:

> [t]he impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7).

6.1 Geographic and Temporal Scope

The geographic scope of the cumulative impact analysis for this proposed project is within the Lower Susquehanna Watershed (HUC 02050306). The geographic scope consists of areas that have been significantly developed and disturbed as a result of commercial, industrial, and residential development; farming; roadways; etc. Development and poor land use planning has occurred, as well as production of byproducts of industrial waste. Additionally, the watershed still contains large tracts of undeveloped land. The temporal scope for this cumulative impact analysis is 210 years (1830 through 2040). This scope is selected to include the construction of the Codorus Navigation Works canal, which was completed in 1833, and to encompass the timeframe for completion of the additional, future rehabilitation work tasks identified in the recent project inspections that are to be considered within the Codorus Creek Comprehensive Plan (approximately 20 years into the future).

6.2 Direct and Indirect Cumulative Impact Analysis

The lands and waters within the area of review and vicinity of the Codorus Creek FRM levee system have been altered by various activities following settlement along the creek in the 1700s and canal construction in early 1800s. In 1833, Codorus Navigation Works completed construction of approximately 11-miles of canal and slackwater within Codorus Creek. Subsequent to the canal construction, the Codorus Creek FRM project was constructed in the 1930s and became operational in the 1940s. The work activities involved channel widening and deepening, flood walls, levees, protection of bank slopes, and removal of a mill dam. Commercial, residential, educational, and industrial development exists adjacent to the creek. As such, impacts to aquatic resources would have likely occurred as a result of construction activities. Much of the development occurred prior to regulations, such as Section 404 of the Clean Water Act of 1972. Any development that would have occurred post the implementation of the Clean Water Act would have been required to meet the terms and conditions of avoidance, minimization, and mitigation of impacts to aquatic resources.

Actions by federal and non-federal entities that are (1) in the reasonably foreseeable future or can be reasonably forecasted, (2) planned, or (3) on-going within the vicinity of the Codorus Creek FRM levee system are summarized below with a brief description of potential impacts.

USACE: The current proposed work tasks to rehabilitate the Codorus Creek FRM levee system would result in permanent and temporary impacts to waters of the United States. The purpose of performing the work tasks is to restore the levee system to its authorized conditions and capacity. Temporary impacts would be the result of the use of best management practices to contain construction generated materials within the construction work zones. Permanent impacts would be the result of the addition of riprap and materials for bank stabilization. The permanent fill would provide the necessary rehabilitation of the levee system; thereby, resulting in improved floodwater protection for the community and downstream locations.

The proposed future work tasks that are dependent on federal funding have been identified as a result of periodic inspection. Some of the work tasks would require work in waters of the United States, such as removal of shoaling and vegetation from the Creek, repair and replacement of riprap throughout the levee system, removal of rubble from the west downtown levee, and removal of the South Richland Avenue dam, if the USACE determines that this dam is not necessary for the integrity of the levee system. Dredging of the shoals would likely occur from the banks using a long arm excavator, and all dredged materials would be disposed of at an approved upland location, such as the County landfill or other upland disposal site suitable for such materials. Replacement and addition of riprap at varied locations along the levee system would be performed to install the appropriate size of riprap for proper bank stabilization and would be the minimal necessary. Removal of the rubble would occur from uplands; however, in-water containment structures and re-sloping and stabilization of the levee banks at this location would be necessary. If the USACE determines that the removal of the dam near the South Richland Avenue Bridge would not interfere with the integrity of the levee system, removal may occur. This would likely occur from uplands. However, waters would be disturbed as dam materials are lifted out of the creek. The area would be protected to minimize adverse effects to waters outside of the construction footprint. Upon removal, the banks would be restored, and the channel depth would be consistent with the adjacent parameters. Removal would provide for unobstructed fish passage and recreational navigation. The remaining proposed future USACE work tasks may also result in minor and/or temporary impacts to waters of the United States, ecological resources, and the human environment. However, the ultimate results of carrying out these tasks would be improvements to the existing levee system, which, in turn, would provide benefits to the watershed.

PennDOT: As included in Section 5.1.1.1, on April 4, 2018, the PennDOT provided information to USACE regarding the transportation projects within the vicinity of the Codorus Creek FRM levee system project. The PennDOT, Engineering District 8-0 in conjunction with the Federal Highway Administration (FHWA), is undertaking environmental and engineering studies to reconstruct and widen Interstate 83 Section 70 between Exits 19 and 22 in York County, Pennsylvania. Interstate 83 crosses Codorus Creek between Exit 19 and Exit 21 just north of the City of York, and the bridge is an 8-span pre-stressed adjacent box/I-beam bridge spanning the Codorus Creek and the levee system. The existing 4-lane bridge would be replaced and widened to accommodate 6 lanes of traffic but would remain on the same general alignment with a minor shift to the north. The existing abutment and pier locations may also be shifted due to constructability. The new bridge, piers and abutments are not anticipated to have an impact on the hydrology of Codorus Creek. Given that the proposed bridge replacement would occur within the same general alignment, and that the Department would be required to design their project to meet the terms and conditions of Section 404 of the Clean Water Act, as well as other federal, state, and local requirements, to include Section 401 (Water Quality Certification), the bridge work is not expected to contribute to impacts to resources within the vicinity of the levee system, or the watershed.

Local Stakeholder Projects:

As identified during the April 10, 2018 Stakeholder Meeting, there are multiple projects that are currently occurring, proposed, and anticipated to occur within the vicinity of the Codorus Creek FRM levee system project. Following are the actions that were discussed during the Stakeholder Meeting:

(1) FY 2018 Rail Trail Extension from Arsenal Road to George Street on west side of Creek: Rail Trail extension through the Rail Trail Authority of York, from Knoxville Road, which is an existing parking lot to George Street.
(2) FY 2019 Rail Trail Extension from Philadelphia to George Streets.
(3) Community Recreational Opportunities: Two bends along Codorus Creek that have been identified in multiple studies performed by the stakeholders as being areas that could be benched back at the points of the stream and put in recreation areas. These areas are both owned by the City of York.
(4) New Development: An area has been identified for approximately 15 years as an opportune area for development, and the City is working with developers to make this happen.
(5) North York Park Connection with Rail Trail: There is a park at the top of the hill that would be a connection to the linear trail, which is proposed.
(6) Future Codorus Creek water trail access.
(7) Tyler's run Improvements/Access Trail: The potential to provide access for college students to the creek.
(8) Codorus Greenway: USACE access road is at this location, and the City of York would like to have mutual use of the access road. Potential portage around the bascule dam would have to occur within the flood management project. Area on the top of the parking lots would be a greenway.
(9) Armory Redevelopment/Access Road: Proposed new educational center at this location, and the City of York would like to utilize USACE access roads.
(10) Monitoring Wells at WWTP: The City of York would need to install some monitoring wells close to the levee.
(11) Educational/high-water mark signage (opportunities across project) to provide information for the public.

In September 2018, York County also received funding from the State of Pennsylvania to initiate a "Codorus Creek Beautification Initiative." This project envisions extensive improvements along the Codorus Creek FRM Project within downtown York, with the goals of increase pedestrian access and greenways along the creek channel in the City of York and Spring Garden Township. While still in the early conceptual design phase, this project would likely include improvements to the riparian corridor along the creek, enhancements to instream habitats, floodplain connectivity, riparian wetlands and other physical, biological and aesthetic features. A conceptual sketch of these corridor improvements is shown in Appendix 1.14.

Some of the above projects are large scale, such as new development. However, others are minimal in nature and would be expected to require a small footprint, such as

creek access points. Direct impacts to aquatic resources may be necessary to perform some of the above actions. However, all projects would be required to adhere to federal, State, and local regulations, thereby ensuring that avoidance, minimization, and mitigation of unavoidable impacted aquatic resources would occur. Indirect impacts may occur as a result of construction activities. However, projects would be required to adhere to best management practices, such as containing and protecting the work zones to minimize the occurrence of construction activities resulting in materials entering into the waterway. Additionally, there are no wetlands that were identified as being within close proximity to the work zones that would be affected indirectly by the project activities. Multiple proposed work tasks would result in a reduction of materials from entering into Codorus Creek through the rehabilitation activities. The replacement of the Penn Street Floodwall would alleviate the occurrence of continued deterioration of the floodwall and floodwall debris (e.g., concrete) from falling into Codorus Creek. If debris fragments are small, they would be carried downstream with normal stream currents. Additionally, larger fragments would be transported downstream as a result of high flows and rapid currents following storm events. This is also the case for the bulge repair work task near the Market Street Bridge, as stones continue to loosen and break away from the floodwall and fall into the creek. The bank stabilization work task near the South Richland Avenue Bridge would also assist with a reduction of sedimentation of receiving waters, as the present conditions consist of an eroding levee bank, resulting in upland soils entering into the creek. By performing the identified repairs and rehabilitation work tasks, the indirect effects to downstream waters would be beneficial through a reduction of sedimentation and debris being transported to receiving waters. The current regulations also require that only minimal impacts to aquatic resources be authorized, and mitigation would be required to fully offset unavoidable impacts. Additionally, aquatic resources would be clearly identified in the field to ensure the authorized limits of disturbance are visible to contractors.

Given the above factors, USACE has determined that the work tasks proposed for the Codorus Creek FRM project, in conjunction with the past, present, and projects that are anticipated to occur within the foreseeable future (refer to Appendices 1.1, 1.2 and 1.14), are not expected to result in adverse cumulative direct or indirect impacts within the vicinity of the levee system or in the watershed. The site is a previously disturbed area that is primarily surrounded by development. Deterioration of segments along the levee system have been identified, which is contributing to the sediment load and debris within the creek. Implementation of the project work tasks would have a positive effect on the environment, as it would stabilize the levee bank, reduce the potential for future sedimentation of the creek, and promote the integrity and capacity of the FRM project, thereby resulting in benefits to the human and natural environment.

6.3 Compensatory Mitigation

In 2008, USEPA and USACE jointly promulgated regulations revising and clarifying requirements regarding compensatory mitigation. According to these regulations, compensatory mitigation means the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of

wetlands, streams and other aquatic resources for the purposes of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved. Under the regulations, there are three mechanisms for providing compensatory mitigation (listed in order of preference as established by the regulations): mitigation banks**,** in-lieu fee programs**,** and permittee-responsible mitigation (EPA 2018a).

The proposed Codorus Creek FRM project work tasks do not propose to impact wetlands. Additionally, the proposed work tasks are not expected to result in the loss of waters of the U.S. The work would restore the existing levee system to its authorized flood management capacity and design. The work included replacement of the existing floodwall near the Penn Street Bridge with a new floodwall within its approximate same footprint. Riprap would be replaced along the levee system where needed to ensure the protection of the levee banks. Much of the work would occur in and from uplands. Temporary impacts would occur but areas would be restored upon completion of construction. Indirect impacts are not expected due to the use of best management practices to protect and contain the work zone. This would minimize the potential for construction generated materials from entering into the waters. Additionally, the rehabilitation and restoration work would address the existing conditions of concrete, stone, debris, etc., as well as erosional materials entering into the waters. Based on this information, compensatory mitigation would not be required for the work tasks proposed for the rehabilitation and repair of the Codorus Creek FRM project.

7.0 PROJECT IMPLEMENTATION

7.1 Real Estate

Although USACE owns, operates, and maintains the Codorus Creek FRM project, USACE does not own the lands that the levee system lies on in fee simple. USACE only possesses a perpetual Channel Improvement easement at this location. There are 54 outgrants at the Codorus Creek levee system. All outgrants are Consent to Structures, which approve the use as not inhibiting the easement rights of the Government. The easement setback along the levee system varies, with some segments consisting of a USACE setback of up to approximately 30 feet and other segments where USACE setback ends directly on the landward edge of the levee/floodwalls. The existing USACE ownership is not sufficient in area to perform the proposed construction, and subsequent operation and maintenance. Authorization from Headquarters, USACE, to acquire additional real estate for the project is required. A Real Estate Design Memorandum (REDM) is the document used for this authorization. The REDM was submitted to HQUSACE in July 2018. Real estate easement acquisitions would be required for 6 commercial parcels with 4 owners, and 1 publicly-owned parcel to perform the project work tasks. These are at the location of the proposed floodwall replacement near the Penn Street Bridge, the bulge repair location at the near the Market Street Bridge, and the levee bank stabilization near the South Richland Avenue Bridge. It could be possible to get Rights of Entry for Construction (ROEC) from the property owners to allow site access for construction in advance of finalizing the real estate acquisitions to meet the compressed construction schedule.

USACE Real Estate Division would work with the property owners where the ROEC's would be needed. Work would not commence until USACE has completed acquisitions, or at a minimum, received the ROEC's authorizing entrance onto the properties.

7.2 Engineering and Cost Estimate

As described in previous sections the project consists of multiple efforts executed at different locations to address deficiencies. The total project cost to remediate the deficiencies described in this EA is $17.4 million, as estimated by the Baltimore District.

7.2.1 Market Street Floodwall Repair

The recommended plan involves stabilizing the floodwall on the West Codorus Creek Bank. Expected work includes the removal of sediment from the levee toe and installation of means for ensuring long term floodwall stability and flood resistance. A permanent solution to the bulging/buckling of this segment of wall would reduce the need for emergency repairs that are generally costlier than permanent rehabilitation of the floodwall. An emergency temporary repair of the floodwall failure at the bulge was implemented in early 2018 for $14,000.

7.2.2 Floodwall Replacement near Penn Street Bridge

The recommended plan consists of removing the existing floodwall from levee stations 234+00 to 228+00 on the East Codorus Creek Bank and replacing with a new concrete floodwall. The floodwall dimensions would ensure the same level of protection. Partial demolition of the abandoned Schmidt-Ault paper mill would be required to allow for the removal and new construction of the floodwall. Beginning at levee station 229+00 to 228+00, a 100 feet long and 15 feet wide area shall be removed. Included with this demolition are implementation of measures to ensure structural stability of the abandoned mill as prevention of exterior deterioration vectors into the facility. Minor repairs such as placement of grout along Tyler's run would be included in this task. Riprap will be replaced and added, where necessary, at the base of the new floodwall for stabilization.

7.2.3 Riprap Replacement

In the levee station interval of 274+00 to 269+13.61 on the East Bank, riprap would be placed on barren areas to return the slope to design conditions. The new riprap would be placed in a 24 inch layer consisting of 18 inch diameter riprap with an additional 6 inches of small bedding stone, which is comparable to existing material on adjacent riprap. Unwanted flora such as tree stumps would be removed and created holes replaced with embankment material of the same kind.

7.2.4 Drainage Conduit Maintenance

This task consists of two (2) phases, where Phase I consists of visual inspection and ownership determination of 94 pipes previously not inspected. Phase II implements the recommendations of the FY2016 Pipe Survey and Phase I Reports that range from repairs, to abandonment and replacement, and no-action. The FY2016 Pipe Survey Report identified 35 as minimally acceptable (MA) and 155 as unacceptable (U). Applying this rating distribution, noting the statistical oversimplification, to the Phase I Pipe Quantity, 10 are rated as MA and 54 as U. Further, simplifying assumptions, of the U rated Pipes, 50 percent shall be abandoned and the other half repaired in the form of slip lining for a length of 20 feet. The MA rated pipes are assumed to require minimum repairs of spot type or installation of flap gates; thus, rated at 25 percent of the non-weighted averaged U Remediation Implementation Cost.

7.3 Energy Needs

USACE evaluated the expected impact that the project would on energy needs, food and fiber production, and mineral needs. The project would increase the energy consumption during construction due to the need to utilize machinery, lights, etc. However, upon completion of construction of the proposed work tasks, energy consumption would return to pre-construction conditions, as no work tasks propose the addition of devices that would require energy to function. Therefore, there would be a minor and short term effect on energy needs during the construction activities for the proposed work tasks. Future energy needs would be similar, and would be minor and short term. Performance of the project work tasks also would not contribute to cumulative effects on energy needs.

7.4 Mineral Needs

Activities associated with the proposed levee system rehabilitation and repairs would increase the demand for aggregate, sand, and stone, to construct a new floodwall and stabilize the levee banks. Activities would also increase the demand for other building materials, such as steel, aluminum, and copper, which are made from mineral ores, primarily for temporary and permanent construction needs (e.g., best management practices). Once construction of the individual work tasks is completed, there may be additional mineral needs for maintenance activities. However, this is expected to be minimal. Given that some materials may be utilized from onsite sources, such as existing riprap, it is expected that the effects to mineral needs would be negligible. Based on the above information, it is expected the effect to mineral needs would occur during present time and in the future; however, the effect would be minimal. Performance of the project work tasks also would not contribute to adverse cumulative effects on mineral needs.

7.5 Food and Fiber Production

No crops or farms would be affected by the proposed project work tasks. However, by performing the rehabilitation and repair work tasks to the levee system, crops and farms within the vicinity and downstream of the levee system would be protected from flooding. Therefore, the proposed project would provide a minor beneficial effect on food and fiber production during the present time and in the future. Performance of the project work tasks would not contribute to adverse cumulative effects on food and fiber production.

8.0 CONCLUSION

This EA evaluates the potential effects associated with the proposed Codorus Creek FRM project rehabilitation located through the City of York, within York County, Pennsylvania. The purpose of this proposed action is to rehabilitate and repair the Codorus Creek FRM levee system and improve the overall reliability of the Indian Rock Dam/Codorus Creek FRM project. The proposed work tasks are associated with the Codorus Creek FRM levee system component of the overall project and are intended to restore the levee system back to its originally-authorized design flood management capacity and integrity. Absent repairs and rehabilitation of the Codorus Creek FRM levee system, the existing conditions of the levee would continue to deteriorate. Proposed rehabilitation work tasks include: replacement of approximately 600 linear feet of the levee wall near the Penn Street Bridge and replacement and addition of riprap at the base of the new floodwall; bulge repairs near the Market Street Bridge; levee bank stabilization along approximately 690 linear feet near the South Richland Avenue Bridge, which includes approximately 190 linear feet of new riprap installation; drainage conduit maintenance along the length of the levee system.

Many of the proposed impacts would be short-term and temporary in nature, such as construction activities, which include upland disturbance, demolition, installation of in-water containment structures and best management procedures, increases in noise and light, and addition of vehicle emissions as a result of use of construction machinery. These impacts would occur only during construction of the work tasks, and disturbed areas would be restored to pre-construction conditions post construction activities. Upon project completion, the work activities posed project activities would provide for stabilized levee banks, thereby reducing erosion and deterioration of the existing system. The project would require ROE to perform construction activities. These would be temporary. Some proposed work tasks would result in the addition of fill material into waters of the U.S., such as the levee bank stabilization work near the Richland Avenue Bridge. However, the work would result in restoring an eroding bank and would result in beneficial effects to resources. The additional proposed future work items would also promote the capacity, stabilization, and integrity of the levee system.

Based on the evaluations within this EA, the proposed actions are not expected to result in adverse long-term effects to any resources. Minor and short-term effects are expected to occur to soils, surface waters, recreational navigation, terrestrial resources,

air quality, water quality, parks and recreation, and aesthetics. The proposed actions may affect, but are not likely to adversely affect threatened and endangered species. Beneficial effects would occur to surface waters, aesthetics, health and safety, population and socioeconomics, and environmental justice. No effects would occur to Wild and Scenic rivers, floodplains, wetlands, cultural resources, hazardous materials and solid waste, or climate. Given that the evaluation within this EA and that the proposed actions would rehabilitate and restore the existing Codorus Creek FRM project to its authorized capacity, design, and integrity; and that that any adverse effects would be minimal and temporary; it is not expected that the preparation of an EIS for the proposed actions would be necessary. As such, a FONSI has been prepared.

Table 7: Summary of Impacts for Preferred Alternative

EA Section	Environmental Factors Considered		Expected Outcome(s) w/o Project ("No Action")	Impact with Preferred Alternative	Benefits with Preferred Alternative
4.1	Land Use		No impact. Future land use changes may require S. 408 review, but this would be the case with or without the project.	Temporary ROE may limit land uses within access areas during construction. Future land use changes may require S. 408 review, but this would be the case with or without the project.	Project would protect land-uses by mitigating risks of flooding, structural failure, etc. Project may prompt land use changes (e.g. to create green space, etc.)
4.2	Geology and Topography		No effect	Minor topographic changes to regrade and stabilize banks near S. Richland Ave.	No benefit
4.3	Soils		No effect	Project will cause minor soil disturbances at immediate vicinity of work sites to repair or replace FRM elements	No benefit
4.4	Hydrology	Surface Waters	Continued deterioration of FRM structures will lead to debris and sediments entering the creek, which may affect flow, sedimentation and flood conveyance	Use of temporary fill (e.g. causeway) and erosion and sediment BMPs (e.g. cofferdams) will cause minor, temporary impacts to flows and instream sediment movement during construction.	Repair and stabilization of the floodwalls, drainage systems and other actions would reduce the potential for collapse and infilling within Codorus Creek
		Wild & Scenic Rivers	N/A - No Wild & Scenic River present	N/A - No Wild & Scenic River present	N/A
		Navigation	Noncommercial, recreational paddle navigation only. Continued deterioration of structures may lead to deposition of rubble, debris and sediments that impede navigation	Work would cause temporary disruption to recreational paddlers during construction.	Repair and replacement of failing structures will prevent further deterioration and maintain open, navigable channels to their design dimensions.
		Water Quality	Continued deterioration of FRM structures will lead to debris and sediments entering the creek, which may impact water quality	Even with appropriate use of erosion and sediment BMPs, construction may temporarily result in localized WQ degradation.	Once completed, repair and stabilization of the floodwalls, drainage systems and other actions would reduce the potential for turbid runoff into Codorus Creek.

EA Section	Environmental Factors Considered		Expected Outcome(s) w/o Project ("No Action")	Impact with Preferred Alternative	Benefits with Preferred Alternative
4.5	Floodplains		Continued deterioration of structures may lead to failures that would result in impacts to the floodplain and structures therein.	The proposed actions would occur within, but have negligible and temporary impact on, the floodplain.	The reconditioned levee system integrity would provide the necessary flood control and protection within the local and downstream communities.
4.6	Biological Resources	Terrestrial Resources	No effect	Most work to occur from paved or maintained upland areas with minimal habitat value. "Bulge" repair would require temporary access; but it is not expected to result in adverse impacts to terrestrial resources.	Negligible benefit
		Aquatic Resources	Continued deterioration of FRM structures will lead to debris and sediments entering the creek, which may impact habitat and water quality for fish and invertebrates	Will require the placement of temporary fill and structures to perform work that will directly impact or displace aquatic organisms, may result in minor instream turbidity and sedimentation during rehabilitation work.	Repair and replacement of failing structures will prevent further deterioration and prevent long-term degradation of water quality and habitat quality for aquatic life.
		Wetlands	N/A - No wetlands present (surface waters only)	N/A - No wetlands present	N/A
4.7	Threatened and Endangered Species		No effect	Minimal impact likely to transient, listed bird species, which may be disturbed during construction	Negligible benefit
4.8	Cultural, Historical and Archaeological Resources		Continued deterioration of Penn St. floodwall would jeopardize potentially-eligible historic paper mill. Failure of Market St. floodwall may threaten attached Hotel Codorus, which contributes to York Historic District.	Possible impacts of Penn St. Bridge floodwall replacement to potentially-eligible structure unclear at this time, but may require measures to mitigate effects. No adverse impacts for Market St. floodwall repair, riprap installation or drainage conduit repair.	Penn St. Bridge floodwall replacement would protect potentially-eligible structures for decades. Market St. floodwall repair would protect Hotel Codorus. No effect to resource for riprap installation or drainage conduit repairs.

EA Section	Environmental Factors Considered	Expected Outcome(s) w/o Project ("No Action")	Impact with Preferred Alternative	Benefits with Preferred Alternative
4.9	Air Quality	No effect	Temporary construction would have no adverse impact within 8-hour ozone maintenance area; project would have no permanent impacts.	No benefit
4.10	Hazardous Materials and Solid Waste	No action could result in uncontrolled and unexpected release at an unknown point in the future.	Oct. 2017 Environmental Investigation found only one isolated exceedance of PADEP standards (for lead). Use of appropriate BMPs, and measures for remediation and worker safety for the floodwall replacement and conduit work tasks will minimize risk of adverse effects to the environment in regard to hazardous material and toxic wastes.	Repair and stabilization of floodwalls would prevent potential inadvertent future releases of soils and any associated contaminants, due to failure of existing structures.
4.11	Climate	No effect	No significant impact	No benefit
4.12	Parks & Rec	Floodwall debris and sediments from erosion continue to enter into the creek, as this would affect the quality of the recreational experience through reduced navigation from obstructions (e.g., floodwall debris) and sediment laden waters.	The proposed repairs and rehabilitation activities may adversely affect parks and recreation, including recreational paddlers, as there would be areas that would be off limits to the public for safety purposes during construction.	Upon completion of construction activities, the areas where recreation occurs would return similar to pre-construction conditions, and access would be restored; project would provide a long-term improvement to the existing conditions of parks and recreation.
4.13	Aesthetics	Adverse aesthetic impacts would continue to occur due to levee system deterioration, floodwall debris falling into creek, bulging along the floodwalls, and erosion of the earthen banks.	Aesthetics would temporarily be impacted during construction activity.	Repairs at Penn St. & Market St. would improve aesthetics by restoring bulging stone walls and eroding levee banks and would result in improved aesthetics. Other aspects of the project would have negligible aesthetic benefits.

EA Section	Environmental Factors Considered	Expected Outcome(s) w/o Project ("No Action")	Impact with Preferred Alternative	Benefits with Preferred Alternative
4.14	Noise	No effect	Penn St. floodwall replacement, bank stabilization and riprap placement may cause short-term, adverse noise effects to individuals who reside, work, frequent, and pass near the vicinity of the construction zones. Contractors would adhere to applicable noise ordinances. No long-term adverse effects would occur.	No benefit
4.15	Transportation and Traffic	Deterioration of structures could eventually lead to failure that would impair traffic.	Construction activity and worker commutes would add to local traffic for the duration of the applicable work tasks.	No benefit
4.16	Health & Safety	Continued deterioration of structures may lead to failure or reduction of flood protection, which could severely impact health and safety.	No adverse impact. Appropriate safety measures will be taken to delineate construction activities and prevent safety hazards to the public.	Restoration of FRM structures and systems would increase the levels of flood protection and protect health and safety for decades.
4.17	Population and Socioeconomics	Current condition limits utility of existing properties threatened by poor condition of existing FRM structures.	No adverse impact.	The protection of the population from flood hazards would provide a long-term economic benefit to the population, including reducing economic risk of flooding.
4.18	Environmental Justice	Continued deterioration of structures may lead to failure or reduction of flood protection, which could cause adverse, indirect impacts to persons within York, and nearby and downstream communities, which may include economically-disadvantaged communities.	No disproportionately high or adverse impacts to minority or low-income populations would result from the proposed action.	The proposed work is expected to benefit all persons that live within the City of York, downstream, and adjacent communities.

9.0 COMPLIANCE OF THE PROPOSED ACTION WITH ENVIRONMENTAL PROTECTION STATUTES AND OTHER ENVIRONMENTAL REQUIREMENTS

In addition to the environmental impacts discussed in Section 4 of this EA, a review of the proposed action has been made with regard to potentially relevant Federal statutes and regulations. Table 8 presents a summary of the proposed action's current compliance status.

The project would include construction in waters under federal jurisdiction that were historically navigable. Because USACE would construct the project, no USACE permits under the Rivers and Harbors Act or Clean Water Act would be necessary. USACE has reviewed the proposed work and determined that it is consistent with what USACE could authorize under these acts and is consistent with the terms and conditions of Nationwide Permit 31 (Maintenance of Existing Flood Control Facilities), a general permit issued under Section 404(e) of the Clean Water Act. An evaluation of the proposed project on Waters of the United States was performed pursuant to the guidelines promulgated by the Administrator, USEPA, under authority of Section 404 of the Clean Water Act. A report of that evaluation can be found in Appendix 4.

USACE will coordinate with PADEP and determine whether PA approvals are necessary for in-water construction, discharge of fill into waters, and bank stabilization rehabilitation and improvement. Project construction work will be in compliance with PA water quality standards. USACE coordination with PADEP to ensure compliance is ongoing. USACE would obtain any required approvals prior to construction.

No Clean Air Act conformity analysis is necessary. Temporary construction activities with minor and temporary emissions are generally accounted for in the PA State Implementation Plan.

USACE coordinated with the USFWS during preparation of this EA to ensure compliance with the Endangered Species and Fish and Wildlife Coordination Acts. Records of this coordination are provided in Appendix 4.

Table 8: Environmental Compliance Summary

Federal Statutes	Compliance Level[1]	Basis for Compliance	Relevant Sections
Anadromous Fish Conservation Act	N/A	Creek has designated use for supporting migratory fish, but none identified in PNDI or IPaC reports or during agency coordination.	3.4.1, 3.7, 5.1.1.2; App. 2.0
Archeological and Historic Preservation Act	Full	No significant archaeological or historical resources present.	4.8.2, 5.3.3
Clean Air Act	Full	PADEP coordination did not indicate need to estimate air pollutant emissions. USEPA recommended air quality impact minimization measures be utilized during construction.	4.9.2
Clean Water Act	Full	Project is consistent with NWP 31. Required analysis under s. 404(b)(1) included in Appendix 4. USACE would obtain s. 401 WQC from PADEP prior to construction, if required.	4.6.2
Coastal Barrier Resources Act	N/A	No designated resources in vicinity.	N/A
Coastal Zone Management Act	N/A	Not in PA coastal zone.	N/A
Comprehensive Environmental Response, Compensation and Liability Act	Full	No superfund sites in impact area.	4.10
Endangered Species Act	Full	USACE determined that project may affect but not likely to adversely affect endangered species.	4.7; App. 2.0
Estuary Protection Act	N/A	No estuarine habitat present in vicinity of project.	N/A
Federal Water Project Recreation Act	Full	Trails, fish habitat improvement, instream recreation considered in plan formulation	4.1.2
Fish and Wildlife Coordination Act	Full	USACE coordinated with USFWS during plan formulation	5.3.1; App. 2.0
Land and Water Conservation Fund Act	Full	No such funds considered or sought.	7.1
Marine Mammal Protection Act	N/A	No marine mammal habitat present.	N/A
National Historic Preservation Act	Full	Coordination with SHPO confirmed no cultural/historic resources of concern present.	4.8.2, 5.3.3; App. 2.0
National Environmental Policy Act	Full	This EA has been completed and a FONSI signed.	4.0 – 4.18; App. 2.0
Resource Conservation and Recovery Act	Full	BMPs to be followed during construction to mitigate potential effects.	4.10
Rivers and Harbors Act	Full	No long-term impacts to navigation, and is consistent with NWP 31.	4.4.3, 4.12
Watershed Protection and Flood Prevention Act	Full	No active involvement with USDA or USDI. However, USDA and USDI-NPS coordinated with.	App. 2.0
Wild and Scenic Rivers Act	N/A	No Wild and Scenic Rivers present.	4.4.2

Executive Orders, Memoranda, etc.	Compliance Level[1]	Basis for Compliance	Relevant Sections
Protection and Enhancement of Environmental Quality (E.O. 11514)	Full	Rehabilitation and maintenance actions do not conflict with E.O.	N/A
Protection and Enhancement of Cultural Environment (E.O. 11593)	Full	No federally-owned, listed properties present; USACE coordinated with PA SHPO	4.8–4.8.2.4, 5.3.3; App. 2.0
Exotic Organisms (E.O. 11987)	Full	Action will not introduce or disseminate exotic organisms	N/A
Floodplain Management (E.O. 11988)	Full	USACE considered FRM preparedness and resilience	2, 4
Protection of Wetlands (E.O. 11990)	Full	No wetlands present	4.6.2
Relating to Protection and Enhancement of Environmental Quality (E.O. 11991)	Full	This Environmental Assessment has been prepared in full compliance with NEPA	1.0
Environmental Justice in Minority and Low-Income Populations (E.O. 12898)	Full	Temporary minor impacts (air quality, noise, traffic) during construction. USACE will develop plan for coordination with residential communities as per USEPA comment	App. 2.0
Protection of Children from Health Risks & Safety Risks (E. O. 13045)	N/A	Action does not involve promulgation of any rule subject to this E.O.	N/A
Invasive Species (E.O. 13112)	Full	Rehabilitation and maintenance actions do not conflict with E.O.	N/A
Migratory Birds (E.O. 13186)	Full	Consultation was completed with state and federal wildlife agencies.	4.6,5.3.1, 5.3.5
Chesapeake Bay Protection and Restoration (E.O. 13508)	Full	Action will not adversely affect land uses and does not conflict with E.O.	1.6
Energy Independence and Economic Growth (E.O. 13783)	Full	Rehabilitation and maintenance actions do not conflict with E.O.	4.9, 7.3
Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure (E.O. 13807)	N/A	Rehabilitation actions do not constitute a “major infrastructure project”	N/A
Prime and Unique Farmlands (CEQ Memorandum, 11 Aug. 1980)	Full	No prime farmland soils present, no farming occurring	3.3, 7.5

[1] *Full Compliance (Full):* Having met all requirements of the statute, E.O. or other environmental requirements for the current stage of planning.
Partial Compliance (Partial): Not having met some of the requirements that normally are met in the current stage of planning.
Non-Compliance (NC): Violation of a requirement of the statute, E.O. or other environmental requirement.
Not Applicable (N/A): No requirements for the statute, E.O. or other environmental requirement for the current stage of planning.

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