US Army Corps of Engineers ®

JOHNSON COUNTY, KENTUCKY SECTION 202 PROJECT

DOCUMENTATION SUPPORTING REVISIONS TO THE RECOMMENDED PLAN

ALTERNATIVE #2R

DRAFT

ENGINEERING DOCUMENTATION REPORT WITH INTEGRATED SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

JUNE 2022

U.S. ARMY CORPS OF ENGINEERS

LOUISVILLE DISTRICT

EXECUTIVE SUMMARY

This Draft Engineering Documentation Report (EDR) for the proposed flood risk management improvements for the City of Paintsville and Johnson County, Kentucky documents design revisions to the approved and authorized April 23, 2021 Detailed Project Report (DPR) Recommended Plan. This EDR includes an integrated Supplemental Environmental Assessment (SEA) describing changes to impacts based on an updated Revised Plan. The DPR and this EDR were prepared under authority granted by Section 202 of the Energy & Water Development Appropriation Act, 1981, P.L. 96-367, tit II, § 202 (1981) (Section 202), and related laws, to study, design and construct the most cost effective "flood control measures" to provide "…a level of protection against flooding at least sufficient to prevent any future losses …from the likelihood of flooding such as occurred in April 1977…" in the Levisa Fork basin. Appropriate funds for a portion of this project are available under the Supplemental Appropriation to the Bipartisan Budget Act of 2018, P.L. 115-123, Div. B, Subdiv. 1 tit. IV (2018) (formally known as the "Further Additional Supplemental Appropriations for Disaster Relief Requirements Act, 2018" and hereinafter referred to as the "Bipartisan Budget Act 2018").

The purpose of the Johnson County Section 202 Project is to implement flood risk management measures to protect residence and properties within the floodplain of the Levisa Fork and its tributaries within Johnson County, Kentucky, which would be impacted by a reoccurrence of the April 1977 flood. In the absence of flood risk management measures for the project area, residents would be subject to future floods and damages that have occurred in the previous years as well as potential life loss.

In preparing the 2021 DPR/EA, the Project Delivery Team (PDT) considered the engineering, economic, environmental, and social aspects relative to the identified flood risks to the City of Paintsville and Johnson County, Kentucky, in developing the Recommended Plan which consists of two separable elements: an alternative focused within the city limits of Paintsville (Alternative 2R); and a non-structural alternative focused on the entire county excluding city limits (Alternative 4R). A Project Partnership Agreement (PPA) was executed on 12 May 2021 to implement Alternative 2R with funding made available from the Bipartisan Budget Act. The PPA is a binding document between the Government and the Non-Federal Sponsor, the Johnson County Fiscal Court.

Through the U.S. Army Corps of Engineers (USACE) process, including analysis and reviews (i.e., District Quality Control, Agency Technical Review and Value Engineering) several developments occurred that showed opportunities to provide more effective and efficient flood risk management for the project area. The initial Value Engineering (VE) study conducted on the Recommended Plan, Policy Compliance and Legal Review, and completion of the Hydraulics & Hydrology (H&H) analysis for the study all provided additional information and recommendations that would optimize project features and assure project effectiveness. The new Recommended Plan will here-in-after be called the Revised Plan.

The Revised Plan is made up of four floodwall segments providing flood risk reduction to the community and downtown area of Paintsville, KY. The majority of the project includes construction of floodwalls along Paint Creek, a tributary to the Levisa Fork. The Revised Plan has been developed to provide a high level of flood risk management, alignment design to minimize impacts to residential and commercial structures, and have minimal impact on the natural or human environment. The main changes from the 2021 DPR/EA Recommended Plan are the removal of a main floodwall along the Levisa Fork and a project shift to have small floodwalls and levees aligning Paint Creek. The Revised Plan floodwall's current alignment runs along previously disturbed areas mostly in commercial parking lots and along residential roads. The Revised Plan reduces project cost, offers greater level of flood risk management, and produces certifiable

floodwalls. Under the Revised Plan, revisions to the floodplain would result in a greater number of structures no longer being in the floodplain. Also, the Revised Plan results in improved project maintenance and operability. The Revised Plan does not recommend any changes to Alternative 4R or the update to the current emergency flood management system as proposed in the DPR. This EDR focuses on the changes to the Alternative 2R component of the Recommended Plan.

A SEA has been integrated into this Draft EDR to describe the existing environmental conditions at the project (affected environment), providing a baseline for measuring expected changes that could result from the Revised Plan. The purpose of the incorporated SEA is to document the analysis of potential environmental impacts of the proposed action and other reasonable alternatives and to support a determination of whether the proposed action would significantly affect the quality of the human environment (which would require an Environmental Impact Statement). The SEA also provides an opportunity for public involvement in the agency decision-making process.

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1 INTRODUCTION

In April 2021 the Louisville District completed a Detailed Project Report (DPR) and Environmental Assessment (EA) which included overall feasibility, evaluation of alternatives, and determining impacts for the Johnson County Section 202 Project. On April 23, 2021 the project was approved by the Director of Civil Works signing the Director's Report. Through the analysis and review process for the 2021 DPR/EA developments occurred that showed opportunities to provide more effective and efficient flood risk management for the project area. The initial Value Engineering (VE) review conducted on the study, Policy Compliance and Legal Review, and completion of the Hydraulic & Hydrology (H&H) analysis for the study all provided additional information and recommendations that would optimize project features and assure project effectiveness.

This Engineering Documentation Report and Integrated Supplemental Environmental Assessment (EDR/SEA) serves to document the design improvements to the Recommended Plan that occurred from the developments mentioned above, and assess the impacts of these revisions. This report updates project cost and economic benefits, as well as updates environmental considerations pursuant to the National Environmental Policy Act (NEPA). This report will be an addendum to the 2021 DPR/EA. The new Recommended Plan will here-in-after be called the Revised Plan.

The purpose of this EDR/SEA is to identify the purpose and need of the proposed action and alternatives considered, including the no action alternative. Potential impacts to the natural and human environment from implementation of the Revised Plan and other reasonable alternatives were considered to determine whether the environmental effects of the action have the potential to be significant, which would require the preparation of an Environmental Impact Statement (EIS). This EDR will be approved at the District Command level. The District Commander will also sign a Finding of No Significant Impact (FONSI) if it is determined, based on the analysis presented herein, that there are no significant impacts to the natural and human environment projected to occur upon implementation of the proposed Revised Plan. Previous documents are incorporated throughout by reference.

2 PURPOSE AND NEED

The purpose of the Johnson County Section 202 Project is to implement flood risk management measures to provide flood risk reduction to residences and properties within the floodplain of the Levisa Fork and its tributaries within Johnson County, Kentucky, which would be impacted by a reoccurrence of the April 1977 flood. Section 202 defines the specific need to "afford" the project area "…a level of protection against flooding at least sufficient to prevent any future losses to these communities from the likelihood of flooding such as occurred in April 1977…" In the absence of flood risk management measures for the project area, residents would be subject to future floods and damages similar to what has occurred in previous flood events as well as potential life loss.

The Project Delivery Team (PDT) is moving forward with engineering and design work as the DPR was approved and the District has authorization and funding for this project. Through prior reviews, additional analyses, and VE studies conducted for the project, recommendations were developed to deliver the required level of protection while limiting impacts to the environment and reducing overall project cost. This EDR includes the recommended revisions to the previously authorized Recommended Plan, a supplemental Environmental Assessment (SEA), an economic update, and a cost update for the total project cost.

This SEA is being prepared by the USACE to re-assess potential effects to the human and natural environment from the 2021 DPR/EA and based on the findings on impacts from the Revised Plan and alternatives, determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact (FONSI). This SEA concisely documents environmental considerations and assists in determining whether significant impacts may be associated with the proposal pursuant to 40 C.F.R. § 1508.9(a).

3 SCOPE

This EDR is an extension of the completed 2021 DPR/EA for the Section 202 Project in Johnson County, Kentucky. The scope of the EDR is to document design changes to the 2021 DPR/EA Recommended Plan and provide an update to the EA to document any changes in impacts to the environment. A structural-focused plan was formulated and supplemented with revisions outlined in this report. This EDR documents the Revised Plan that focuses on the same area in the City of Paintsville. Revisions to the Structural Recommended Alternative 2R Plan do not change the formulated plan, however, are significant enough to warrant the need to document the changes within this EDR and SEA for accurate accounting of the project's formulation and design. The revisions detailed in this report do not change the general scope of the Recommended Plan as listed below. The EDR is written in compliance with ER 1110-2-1150. The EDR and SEA will be completed as one integrated document.

The revisions to the Recommended Plan as well as the justification for the revisions have been verified and reviewed in detail by an independent expert team through a secondary VE study that occurred in June 2021 in City of Paintsville. The final VE study is included in this report as Appendix A. Throughout the report the Engineering Plan that resulted from revisions to Alternative 2R Structural Plan is referred to as Alternative 2R-Revised or Revised Plan.

Portions of the DPR discuss Alternative 4R which is a separable non-structural Recommended Plan for the remainder of Johnson County. This EDR does not recommend changes to Alternative 4R.

4 AUTHORIZATION

This analysis was conducted under authority granted by Section 202 of the Energy & Water Development Appropriation Act, 1981, P.L. 96-367, tit II, § 202 (1981) (Section 202), and related laws, to study, design and construct the most cost effective "flood control measures" to provide "….a level of protection against flooding at least sufficient to prevent any future losses….from the likelihood of flooding such as occurred in April 1977..." in the Levisa Fork basin.

The Bipartisan Budget Act of 2018 (PL 115-123) allotted funding to the U.S. Army Corps of Engineers (USACE), $118 million was made available for this project to include study, design, and construction, and relieved the local sponsor's obligation to match Federal funds with local dollars (see the 2021 DPR Study & Project Authority for further details and additional guidance for the project).

5 PROJECT PARTNERSHIP AGREEMENT

The USACE and the Non-Federal Sponsor (NFS) (the Johnson County Fiscal Court) executed a Project Partnership Agreement (PPA) (Appendix C) on May 12, 2021. The USACE is currently working to draft an amendment to the PPA to include updates from the Revised Plan detailed in this EDR. The USACE and NFS will need to execute the amendment to the PPA once the EDR is finalized.

6 PREVIOUS INVESTIGATIONS

Reconnaissance level work was performed by the USACE Huntington District (LRH) in 2003. This effort included a Light Detection and Ranging (LiDAR) survey for the City of Paintsville and Johnson County. Additionally, a first-floor survey for structures within the The City of Paintsville City Limit was conducted. Bridge modeling along with hydraulics and hydrology (H&H) design was started during this time.

In October of 2018, USACE Louisville District (LRL) began the feasibility study, with an integrated EA, as described in the DPR. This report was approved by USACE Headquarters in April of 2021 and represented completion of the feasibility study in accordance with the Planning Guidance Notebook ER 1105-2-100. The Engineering Technical Appendix was completed in accordance with ER 1110-2-1150.

Furthermore, the study included topographical surveys, geotechnical subsurface investigations and concluded with Alternative 2R being identified as part of the Recommended Plan.

Throughout the project, two Value Engineering Studies were conducted. Value Engineering (VE) is an organized study of functions to satisfy the users' needs with a quality product at the lowest life-cycle cost. VE identifies critical project functions and evaluates how those functions are proposed to be met. Alternative ways are considered to achieve the equivalent function while increasing the value and the benefit ratio of the project. In the end, it is anticipated that the project will have a reduction in cost; however, increased value is the focus of the process, rather than simply reducing cost. The project was studied using the Corps of Engineers standard VE methodology. The VE study provides the opportunity for a solicited unbiased review of project assumptions and design. The first VE study was conducted in March 2020 and provided a review of the alternatives provided in the 2021 DPR/EA. Through the findings of the first VE study, vertical team reviews, and additional analysis, a second VE study was recommended and conducted in June 2021.

7 STUDY AREA

The watershed of the Levisa Fork of the Big Sandy River is located in the coalfields of Eastern Kentucky amid the foothills of the Appalachian Mountains in the Cumberland Plateau. As part of the Big Sandy River Basin, the study area lies within the Mountain and Creek Bottom Area, which is characterized by high, sharp-crested ridges with little level upland area and narrow stream valleys. Levisa Fork flows through the southeastern portion of Johnson County, Kentucky. The Paint Creek tributary has its confluence with the Levisa Fork in Johnson County, approximately 62.7 miles above the Levisa Fork confluence with the Big Sandy River at Louisa, Kentucky. The study area spans from upstream of the Greasy Creek confluence to just downstream of Auzier, Kentucky from Levisa Fork river mile 32 to 47 respectfully. This also includes portions of Paint Creek spanning from the confluence with the Levisa Fork to downstream of Paintsville Lake.

The focused project area for this EDR/SEA is the limits of the City of Paintsville, Kentucky. The City of Paintsville is the largest community in Johnson County with a population of 4,312 (U.S. Census Bureau 2020) and contains critical infrastructure for the region. The watershed surrounding the City is typical of Appalachia. Steep hills and mountains direct urban development within stream valleys and floodplains. Because of the steep terrain, flash floods during heavy rain events result from having all rainfall transformed into runoff. The project area as shown in Figure 1 consists the Paintsville City Limits.

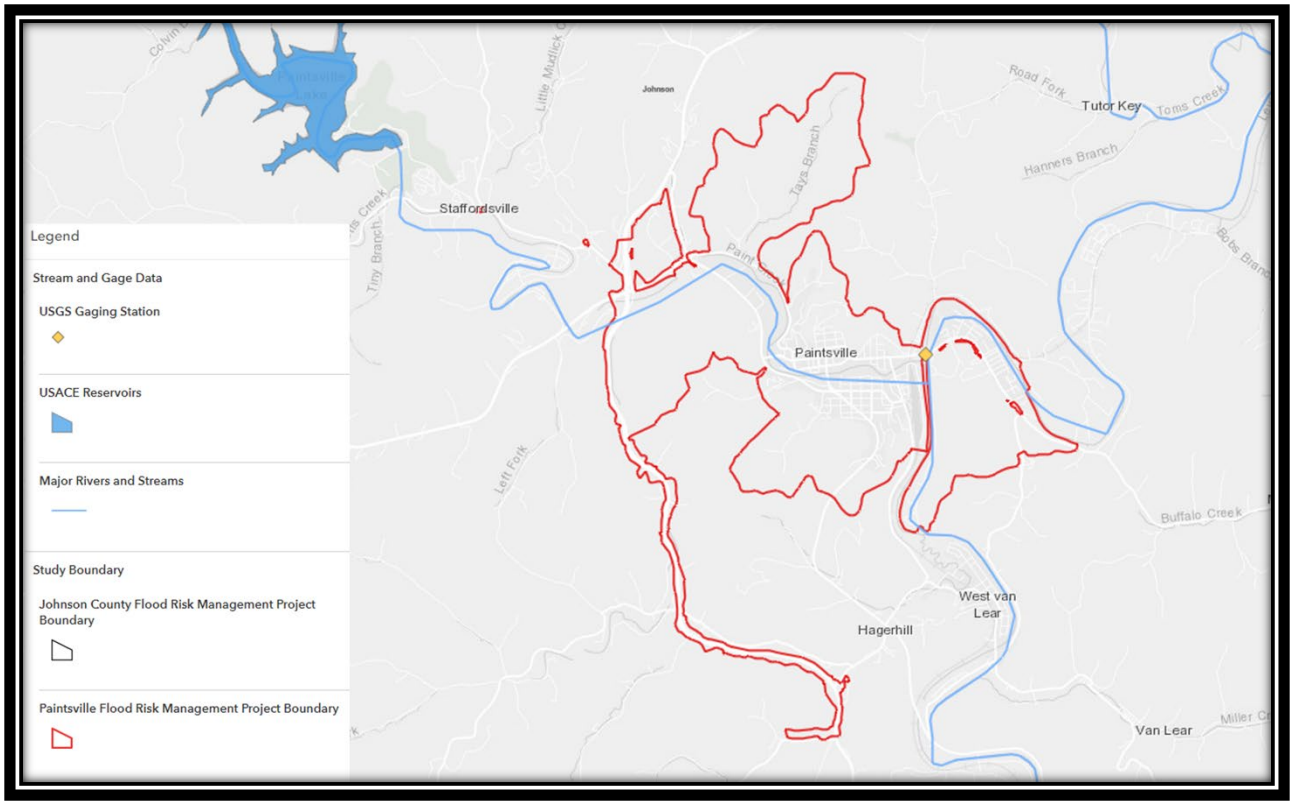

Figure 1: Project Area

8 DESCRIPTION OF THE RECOMMENDED PLAN

The 2021 Johnson County DPR/EA Recommended Plan includes the following elements: the construction of a series of floodwalls and levees, the development of a county-wide flood warning and emergency evacuation plan (FWEEP); and a non-structural plan to flood-proof residential and nonresidential structures within the project area that will remain in the floodway or floodplain after the construction of the above-mentioned series of floodwalls and levees. The structural elements were developed as Alternative 2R and the non-structural plan falls under Alternative 4R.

The focus of the Recommend Plan was to prevent the backwater flows from the Levisa Fork from entering the City of Paintsville and to be statistically 95% confident that the project would reduce flood risks that would be expected to have a 1% chance of occurring any given year. This design stage is called the 1% Annual Exceedance Probability (AEP) with 95% confidence and is equal to the stage 614.1 feet NAVD88.

The average or 50% confidence 1% AEP is equal to the stage 611.0 feet NAVD88. The average 1% AEP is referred to without qualifier while the 95% AEP will be labeled as such throughout the report. In addition to managing backwater flooding, the project also considered the incoming flows from Paint Creek and its tributaries, looking at an elevation that would minimize flood-related risks and damages. Alternative 2R included a main floodwall alignment located along the Levisa Fork, gravity drainage structure on Paint Creek, interior floodwall/levees providing protection to residences and structures in the City, the King's Addition levee, gravity outlets, and interceptor sewers with pressurized pipes. The interior floodwalls and levees would be designed near the 1% AEP interior ponding elevation. Interceptor sewers and pressurized pipes would be used to address the hillside run-off by establishing these project features to catch the run-off and allow a controlled transfer of that inflow through the project alignment into Paint Creek. In addition to the levees, floodwalls, gravity structures, and interceptor sewers, the structural element of Alternative 2R also included four road closures and local drainage facilities. Several non-structural measures included in Alternative 2R utilize flood proofing structures, acquisitions, and installation of a FWEEP. Voluntary buyouts and voluntary dry flood-proofing are included in the project for homes and businesses with finished first floors that are projected to remain below the 1% AEP stage ponding area or floodway after the completion of the project. Current estimates assume approximately 9 structures that would be eligible for the nonstructural measures. Under the Recommended Plan, an additional 80 structures would have major reductions in flood risk, but not enough reduction to be considered out of the FEMA Floodplain.

The main floodwall would intersect the flow of water from Paint Creek. In normal operation the gravity drainage structure would allow flows from Paint Creek to pass through the main floodwall into the Levisa Fork. This structure is designed to pass very large flows including the 500-year event on Paint Creek without slowing down the flow or inducing damages to residents upstream. In the event of a high flood stage on Levisa Fork, three 25 feet x 25 feet Tainter gates would be closed to prevent backwater flooding in the City of Paintsville. Paint Creek flows at this point would be stored behind the closed gates for the duration of the flood event. During the study, a coincident frequency analysis was performed to generate acceptable combinations of flood water storage and pump station capacity. Figure 2 shows the major recommended measures.

Due to the short duration of high flood stage events on the Levisa Fork, water would only require storage for 1-5 days. The levees and floodwalls parallel to Paint Creek are interior levees and floodwalls and would be designed and constructed with the same guidance and regulation provided for standard levees and floodwalls.

Detailed engineering and analysis were performed on the Recommended Plan in order to sufficiently develop a complete project schedule and cost estimate and concept design. For more information on the Alternative 2R Recommended Plan, refer to the 2021 DPR/EA and the Engineering Technical Appendix to the DPR.

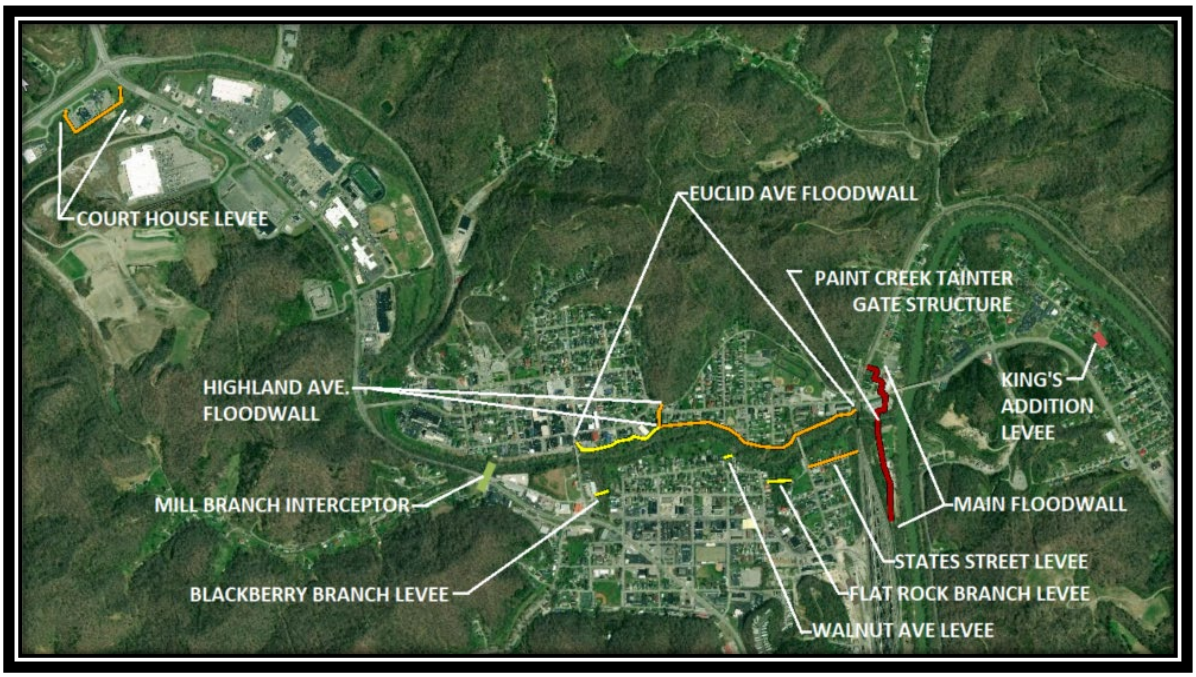

Figure 2: DPR Alternative 2R Recommended Plan Project Features

9 PROPOSED RECOMMENDED PLAN REVISIONS

9.1 REASON FOR PROPOSED CHANGES

The Alternative 2R Recommended Plan has had three major developments. These developments created an opportunity for the PDT to revisit and improve upon the project. The Revised Plan is more effective and efficient at flood risk management for the residents of Paintsville, KY. The proposed revisions are projected to significantly reduce the construction cost, the O&M cost, the difficulty and duration of the construction, as well as provide a system that increases the number of structures that will benefit from a FEMA-Certified flood risk management structure.

As per USACE policy a VE study was conducted on the 2021 DPR/EA findings, assumptions, and developments that had occurred up to March 2020, when the initial VE study was conducted. The first significant development was the findings of the initial VE study. Through the VE study process numerous ideas were developed that could provide effectiveness and efficiency to the design, development, construction, and life cycle benefits of the project. The VE study identified 43 value-improvement ideas during the creative phase of the study. After being evaluated, 16 of these ideas were consolidated into 14 cost-saving proposals that could reduce project costs by as much as $22.7 million. Three ideas became added cost-quality improvement proposals that would add $2.8 million to the cost of the project, and 15 ideas became design comments.

The second development was realized in the process of completing the vertical reviews with Division and Headquarters for the DPR. During the Policy Compliance and Legal Review (PCLR), leadership in the H&H Community of Practice, Great Lakes and Ohio River Division Office (LRD), and USACE Headquarters clarified that the project should only utilize the engineering analysis completed in accordance

with Bulletin 17C for channel flow and stage annual exceedance probability determinations. This method of calculating these parameters was different from what the PDT understood during the early stages of the project formulation.

The third major development came from the conclusion of the full H&H analysis for the 2021 DPR/EA. The results provided additional data that disproved the previous hydraulic assumptions for interior storage during a flood event. During large flood events in the Levisa Fork watershed, the proposed control structure at the mouth of Paint Creek would be less effective at reducing the interior ponding than originally estimated when Paintsville Lake Dam operates according to the Water Control Manual (WCM). Louisville District H&H technical experts have been briefed and concurred with the findings. The team also had an independent expert review the H&H assumptions that lead to this change and this review confirmed the team's findings.

The Recommended Plan was revised into the Revised Plan during these developments in a way to better serve the community of Paintsville, as evaluated and described in this EDR. These developments provided the PDT an opportunity to evaluate and optimize the alternative to provide flood risk reduction to the City of Paintsville in a more efficient and effective way.

9.2 Description of Revised Plan

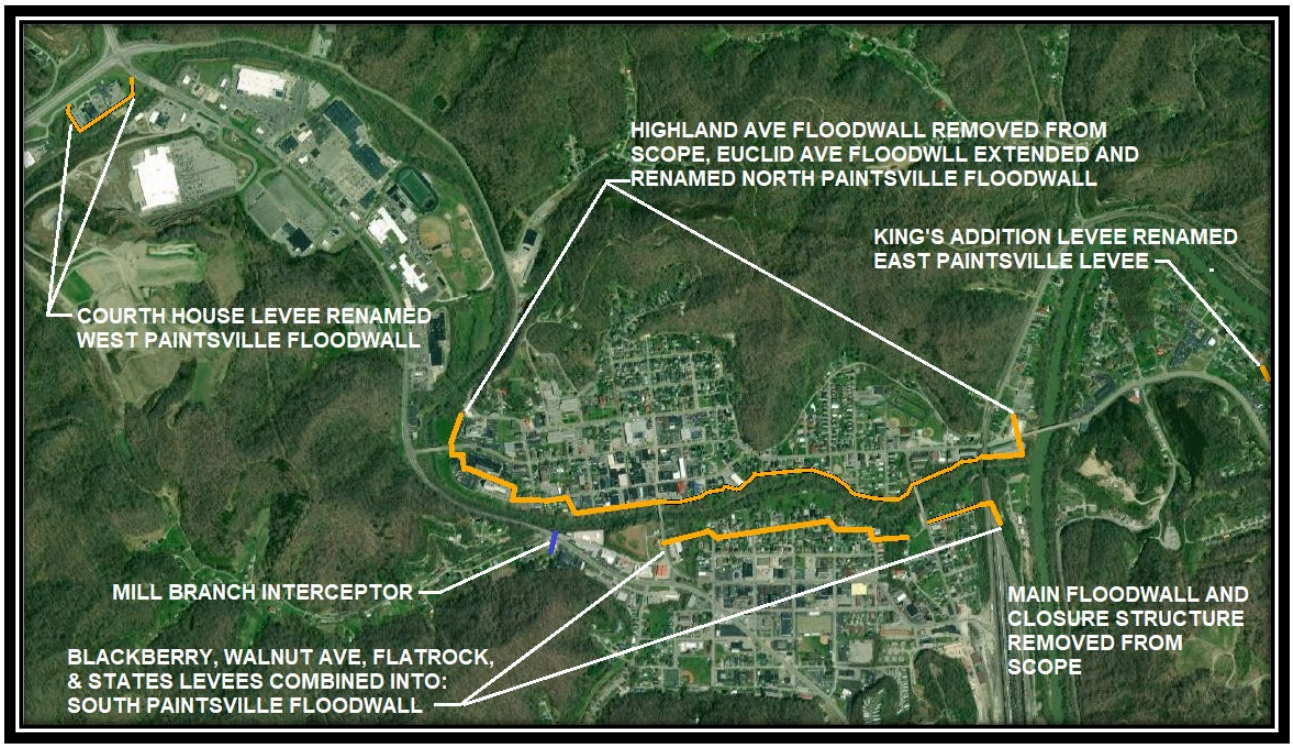

Figure 3: Revised Plan Project Features

The Revised Plan is made up of four floodwall segments as seen above in Figure 3, providing flood risk reduction to the community and downtown area of Paintsville, KY. The majority of the project includes construction of floodwalls along Paint Creek. The Revised Plan has been developed to provide an improved level of flood risk management, alignment design to minimize impacts to residential and commercial structures, and have minimal impact on the natural or human environment.

9.2.1 West Paintsville Floodwall

The West Floodwall (Figure 4) will require approximately four acres of land along this alignment and will provide reduced flood risk to the county courthouse and prison. The Revised Plan includes a 10-foot floodwall around these structures, higher on the bank to minimize environmental impacts while also avoiding impacts to the courthouse parking lot and building access. This reach will require bank stabilization due to recent widespread bank failures in this area. A filter blanket and rip rap will stabilize the region and reduce the chances of future slope failures and erosion pollution in Paint Creek. This change includes the type of barrier being built and will be built to elevation 614.1 feet. Also, this floodwall will provide better opportunity for compliance with the new EM 1110-2-2902 for utilities located between the floodwall alignment and the structures compared to the original Alternative 2R. Removing the main floodwall and closure structure only required 0.9 feet of increased height on all the proposed interior floodwalls that were designed for certification.

Figure 4: West Paintsville Floodwall

9.2.2 East Paintsville Levee

The East Paintsville Levee (Figure 5) will require approximately 1 acre of land and will entail an earthen levee constructed across an unnamed drainage in the King's Addition subdivision, located east of downtown Paintsville. The East Paintsville Levee did not change from the Recommended Plan.

Figure 5: East Paintsville Levee

9.2.3 The North Paintsville Floodwall

The North Paintsville Floodwall (Figure 6) generally follows the north bank of Paint Creek from the confluence with Levisa Fork to the high ground tie in location near the Paintsville Regional Hospital. The top elevation will be 614.1 feet.

The project stationing begins at the upstream tie-in-point near the hospital. The alignment utilizes floodwall for the entire length. The height of the floodwall varies with the nearby grade. From the start of the alignment (Sta. 2000+00) to the point of the alignment identified in the Recommended Plan near the college street bridge (Sta. 2034+00,) the floodwall height is mostly less than four feet tall. There are some areas where the alignment crosses low areas and requires a taller floodwall section, specifically around Sta. 2003+00 – 2005+00.

As the alignment progresses downstream it follows a very similar alignment to the Euclid Avenue floodwall from the Recommended Plan with only a slight increase in elevation. The minimum top-of-wall elevation from Sta. 2034+00 to Sta. 2045+00 increased from 612 feet in the Recommended Plan to 614.1 feet for the Revised Plan. The majority of this section is approximately ten feet tall; however, in sections around Sta. 2039+00, 2041+00, and 2044+50, a 10-foot-tall T-wall is used in conjunction with a levee, producing a taller net system.

From Sta. 2045+00 to Sta. 2052+00, floodwall that is typically less than 4 feet tall is utilized, increasing in height by ten inches from the Recommended Plan.

From Sta. 2052+00 to Sta. 2074+00 the alignment remains very similar to the Recommended Plan with a 10-inch increase in height: from Sta. 2052+00 to Sta. 2067. The Revised Plan height is ten feet tall for most of the alignment, then from Sta. 2067+00 to Sta. 2074 is approximately 15 feet tall.

From Sta. 2074+00 to Sta. 2083+00, the north alignment follows the Recommended Plan alignment of the main wall within this area, terminating at a shorter length. Because this portion is replacing the main wall but with a reduction in height, it shortens the tie in location, eliminates one of the road closures, and reduces the height of a second road closure.

Figure 6: North Paintsville Floodwall

9.2.4 The South Paintsville Floodwall

The South Paintsville Floodwall (Figure 7) generally follows the south bank of Paint Creek from the high ground tie in location near College Avenue Bridge to the confluence with Levisa Fork near the CSX Rail line.

The stationing begins on the west side of Broadway and immediately crosses the street between an apartment and commercial building, and the floodwall would be approximately 5-6 feet tall in this section. East of these buildings the alignment crosses Blackberry Branch. When crossing Blackberry Branch the system will briefly be approximately 30 feet tall while crossing the deepest channel portion. This section at Blackberry Branch will utilize a levee and sheet pile I-wall combo. The creek embankment in this area will be regraded to minimize additional fill required for levee construction. As the alignment approaches Walnut Avenue the stickup height will be in the range of 2-4 feet tall. A portion of Walnut Avenue will be elevated to limit the visual effect and the height of driveway closures. Approximately nineteen structures will remain between the proposed floodwall and Paint Creek once the project is complete. These structures will either (1) not be in the floodplain upon completion of the FEMA letter of map revision or (2) will be offered

voluntary flood risk reduction measures that will reduce their risk of flooding up to one foot above the FEMA 1% floodplain. All residents in this zone will retain egress throughout the duration of a flood until the roads themselves are inundated. Even when all road and driveway closures are installed residents will have the ability to drive up and over the floodwall in a designated area. The floodwall alignment will follow Walnut Avenue for its entirety on the southern side of the road until the alignment reaches Flat Rock Branch. At this point a levee and sheet pile I-wall combination will be used again. Flat Rock Branch is approximately 30 feet deep at the existing ditch line. Immediately after Flat Rock Branch the alignment terminates into high ground near Pine Street. The South alignment picks back up on the northeast side of State Street and Depot Road. The alignment in this area will consist of a levee that follows State Street until intersecting with the CSX Railroad. The alignment will intersect the railroad with a sheet pile cutoff installed below the tracks. The alignment terminates at high ground near the CSX Rail lines.

The overtopping elevation of the floodwall will be elevation 614.1 feet. Overtopping will be prevented at the tall levee sections by overbuilding those sections by an additional foot of height. The District performed an overtopping evaluation in accordance with Technical Letter No. 1110-2-299 (TL 299) for the proposed Flood Risk Management (FRM) project for the City of Paintsville, Kentucky (Revised Plan). The PDT compared the consequences that would result from a flood event that overtopped the proposed FRM project with the consequences that would result from the same flood event but without the project. Based on the comparison, the District has concluded that overtopping of the FRM project would not likely result in any sudden or unique catastrophic consequences directly resulting from the overtopping event.

Figure 7: South Paintsville Floodwall and Mill Branch Interceptor

9.2.5 Other Project Features

Mill Branch Interceptor is shown on Figure 3 and Figure 7 above and will be included in the South Paintsville Floodwall alignment. This work has not changed from Alternative 2R Recommended Plan detailed in the 2021 DPR/EA.

9.2.6 Borrow Area

The borrow area identified within the DPR is still anticipated to be used for borrow material. See Figure 8 that shows the previously identified borrow area and the additional area. The PDT team identified additional land for borrow material to ensure the necessary amount and quality of borrow material can be extracted from the land for project use. The proposed borrow area and disposal site identified to support the project is located on the west side of Paintsville on vacant property at the northwest corner of the intersection of US 460 and KY 321. The property has been previously utilized as a borrow/excess site for Non-Federal projects and has sufficient access from Hidden Valley Road. The site is located approximately three miles

from the project area. A temporary work area easement will be required to accommodate use of the site for borrow and spoil.

The proposed borrow area has been previously disturbed and been used for excess fill placement in the past for other projects. The area is partially forested, with a large portion of the land being previously cleared for material gathering and the potential future development. The remaining uncleared area contains a mixture of hardwoods with some pines, cedars, and standing dead trees. The site is privately owned, and the area will continue to be utilized for borrow, disposal, and potentially for future development. Once project construction is completed, the areas would be replanted in native grasses and forbs and hardwood trees to revert back to previously existing habitat.

The borrow area was identified to provide material to use within the levee sections of the project as well as other needs of the project. The area identified for borrow material is approximately 14 acres. Current estimates anticipate the projects need for 7.25 acres of borrow material. The additional acres have been identified for contingency.

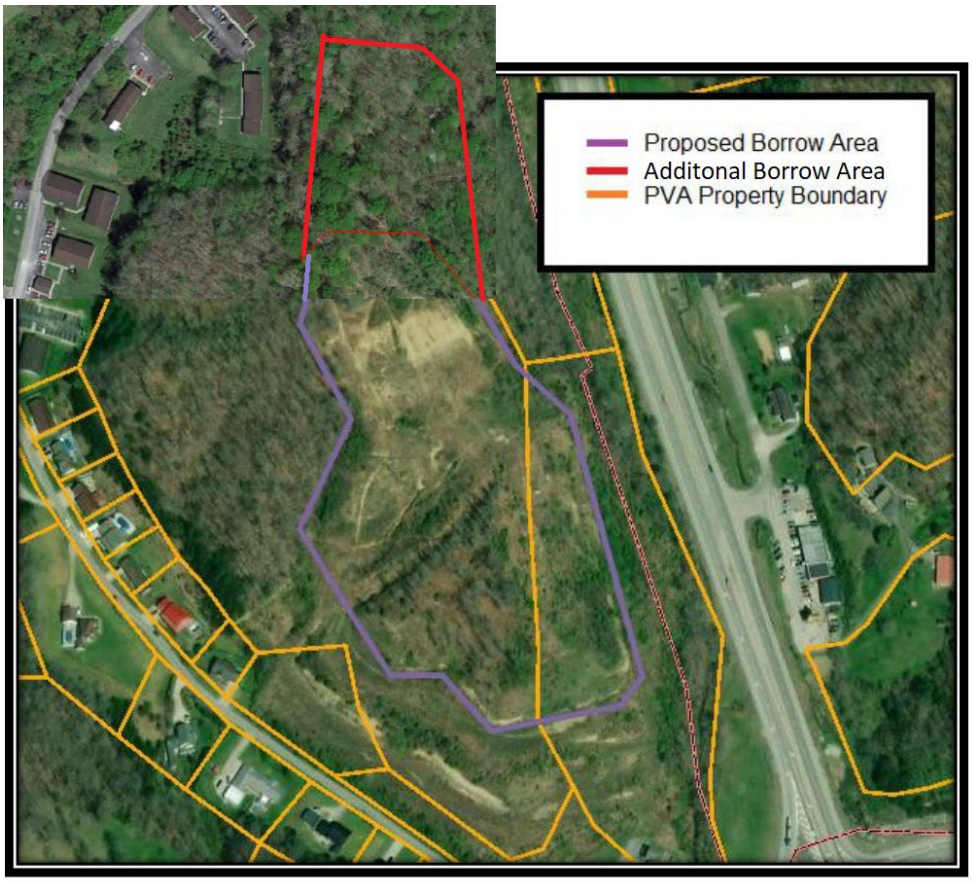

Figure 8: Borrow Area

9.2.7 Operation, Maintenance, Repair, Replace, & Rehabilitation (OMRR&R)

During the DPR the Team recognized the risk of having a project that the NFS cannot afford. This was taken into account while the Revised Plan was developed. The current OMRR&R estimate is based on similar systems in the LRL network of riverine flood risk management projects. Within the Recommended

Plan the largest cost driver for the City's OMRR&R would have been the closure structure. With the main floodwall and closure structure eliminated this will be a cost savings for the NFS.

Table 1: Estimate of OMRR&R Cost Comparison

Alternative	Recommended Alternative 2R	Revised Plan
Levee Maintenance	$76,800	$77,100
Flood Wall	$0	$0
Floodwall closure gates	$4,000	$9,000
Gatewells and flap gates	$100	$100
Tainter gate	$41,340	N/A
Total Annual Cost	$122,240	$86,200

Table 1 compares a breakdown of the estimated annual OMRR&R costs. The breakdown assumes that the NFS would utilize their current maintenance staff and leverage the various talents and skills already on payroll, and one additional full time staff member. The costs for repair, replacement, and major rehab are assumed to be contracted out and performed by others and paid for by the City.

9.3 Risk Informed Design Process

As the USACE continues to merge risk informed decision making with the continuously evolving practice of water resource planning, the Johnson County Section 202 Project has utilized risk informed decision making through the entirety of this project to ensure an effective solution to water resource issues within the City of Paintsville. USACE identified areas that could be improved upon to allow for implementation of a more efficient flood risk management system. The District Commander determined documentation of these changes within an EDR is sufficient and appropriate. This EDR follows guidance in ER 1110-2-1150. The EDR does not include changes in project formulation or other information requiring "a Washington level decision". The EDR contains engineering design refinements, project description as revised, cost estimate and economic updates, and SEA. The project has not been reformulated which would require a General Re-evaluation Report or larger document for reformulation. The team has revised the currently approved Recommended Plan and is updating that plan accordingly.

10 Affected Environment and Impacts

10.1 Alternatives Considered

A full array of alternatives were evaluated in the 2021 DPR/EA. This section will focus on the Revised Plan and its alternatives. The Recommended Plan of the 2021 DPR/EA is Alternative 2R (structural measures) + Alternative 4R (non-structural measures). Since the non-structural measures are not revised from the 2021 DPR/EA they will not be addressed here.

Three other alternatives were developed but did not meet the project objectives and were screened out from further consideration:

> Recommended Plan with Reduced Main Floodwall Height (RMFH): This alternative lowers the main floodwall height to the minimum allowable level of protection for the study authorization. This plan would save a nominal amount of construction dollars when compared to the

recommended plan but would not reduce flood risk or operation and maintenance costs. The Recommended Plan provides a higher design stage on the main floodwall than the engineering analysis requires and was not revised during the study because the reduction in the elevation of the main wall would be insignificant, and while the authorization does not require the additional height, it also does not restrict it. Post authorization of the study, this alternative of RMFH is still undesirable. Therefore, this alternative was screened out as a stand alone alternative, but was further considered in conjunction with changes to the interior walls as described in the following alternative.

Recommended Plan with Reduced Main Floodwall Height and Extended Interior Floodwalls (RMFH&EIFW): This alternative was developed during the 2020 VE Study. The increase in interior floodwall heights would incur additional costs that would exceed the authorized funding limits. The authorized funding limit of $118 million is not a hard cap limit and was not used as a screening criterion; however, it was discussed as a target goal to remain below to ensure project success. Even after exceeding the target budget this could be considered a viable alternative, however it is dropped from further consideration due to a lack of cost effectiveness.

Recommended Plan with Elimination of the Main Floodwall (EMF)**:** This alternative removes the main floodwall with no other changes to the project. This alternative was screened out because it would leave the interior floodwalls with insufficient alignment and heights to achieve project goals. Therefore, this alternative was screened from further consideration, but was further considered in conjunction with changes to the interior walls as desceibed below as the Revised Plan, which is the proposed action for this SEA.

The development and evaluation of the Recommended Plan with RMFH, EMF, and RMFH&EIFW alternatives are included in the 2020 VE Study Recommendations and are not further discussed in this SEA.

The following alternatives were considered through the design process and are further evaluated in this SEA:

- **Alternative 2R (Recommended Plan).** This is the Recommended Plan of the 2021 DPR/EA.
- **Alternative 3R.** This alternative from the 2021 DPR/EA is a variation from the Recommended Plan.
- **Alternative 2R-Revised (Revised Plan).** The "Revised Plan" is the proposed action for this EDR and SEA and is described briefly below and in further detail in Section 9.
- **No Federal Action.** This alternative serves as a baseline from which to evaluate the impacts of the action alternatives.

The 2021 DPR/EA Alternatives 2R and 3R both include a floodwall and gravity gate structure near the confluence of the Paint Creek and Levisa Fork, and in downtown Paintsville, interior floodwalls, levees, closures, interceptor sewers, pressurized pipes along Paint Creek, and a county wide FWEEP.

Alternatives 2R and 3R are so similar that the impacts discussed in this SEA for the Recommended Plan of the DPR apply to both alternatives except where specifically noted. The primary difference between Alternatives 2R and 3R is that the main floodwall along Levisa Fork runs east of the CSX rail yard for Alternative 2R and west of the rail yard for Alternative 3R. Alternative 2R was selected because it would impact fewer residential properties by construction acquisitions, would reduce flood risk for more structures, and would allow Route 40 to remain open longer than under 3R during a flood event.

The changes from the 2021 DPR/EA Recommended Plan to the Revised Plan proposed in this document are described in detail in Section 9 above and are summarized below (refer to figures in Section 9).

1. Main Floodwall and Closure Structure (eliminated from Revised Plan). This feature of the Recommended Plan is eliminated in the Revised Plan. The Main Floodwall would have included a closure structure across Paint Creek, near the mouth, with gates, which would close to block backwater during high flood stages on Levisa Fork from entering Paint Creek. In compensation for not blocking the backflow from Levisa Fork, the floodwalls along Paint Creek are increased about 5,300 feet in length and 0.9 feet in height, providing a lower cost and better-functioning project overall (see #4 and #5 below).

2. West Paintsville Floodwall (formerly Courthouse Levee). Formerly proposed as a levee around the courthouse, the plan has been revised to a floodwall for the Revised Plan. Additionally, there will be some required bank protection below the floodwall because of recent bank erosion that otherwise presents a threat to the floodwall. The Revised Plan at the Courthouse location (floodwall and bank protection) is within the same footprint initially envisioned for the levee in the Recommended Plan.

3. East Paintsville Levee (formerly King's Addition Levee; no change). This levee remains the same as in the Recommended Plan, with only a change in name.

4. North Paintsville Floodwall (includes formerly named Euclid Avenue Floodwall). With the elimination of the main floodwall and closure structure along Levisa Fork (#1 above), the floodwall along the north side of Paint Creek is extended and increased in height by 0.9 feet, and the Highland Avenue tie-back floodwall is eliminated. The Euclid Avenue Floodwall is extended approximately 84% in length, from 4,500 feet to 8,300 feet (Table 2 below) and renamed the North Paintsville Floodwall for the Revised Plan. This includes an eastward extension to the mouth of Paint Creek, including a tie back along Levisa Fork, and a westward extension to approximately 600 feet upstream of James S. Trimble Boulevard along the west side of the Paintsville Regional Hospital property. Much of the extended floodwall is less than two feet in height with a large portion being completely underground to block potential subsurface flow. The extended floodwalls do not impact habitat as they are all in developed areas such as alleys, parking lots, and mowed lawns.

In the area of the north bank on Paint Creek that included floodwall under the Recommended Plan, most of the alignment has been moved away from the riverbank and in some cases the floodwall will be constructed on top of levee segments (floodwall-on-levee) to avoid excessively high floodwalls. Even with the change to floodwall-on-levee, which has a broader footprint, impacts to the riverbank are reduced because the alignment has been moved away from the riverbank.

5. South Paintsville Floodwall (formerly four separate levee segments). Proposed protection on the south side of Paint Creek under the Recommended Plan was comprised of four levee segments of varying length: Blackberry Branch, Walnut Avenue, Flat Rock Branch, and State Street Levees. The Walnut Avenue Levee segment was eliminated, and the Blackberry and Flat Rock Branch levees remain, with the addition of floodwalls on their crests. Additionally, a low floodwall is added along Walnut Avenue connecting between Blackberry and Flat Rock Branches. The Blackberry Branch levee location is moved closer to the mouth of the branch (just downstream of Walnut Avenue versus Washington Avenue in the Recommended Plan). This resulted in a lengthening of that levee. Also, a short floodwall

is added to extend protection across College Avenue. The State Street Levee remains largely as it was in the Recommended Plan (and does not include a floodwall on top), but since the Main Floodwall is eliminated, a floodwall is added along the east side of the railyard for about 600 feet. This protection along the south side is collectively named the South Paintsville Floodwall for the Revised Plan. The total length of protection increases by approximately 338% (Table 2 below) with the Revised Plan; however, most of the increase is floodwall located in developed areas such as streets and mowed lawn and consists of relatively low wall.

6. Mill Branch Interceptor (no change). This feature is unchanged from the Recommended Plan.

In summary, the Main Floodwall is eliminated for the Revised Plan, the North Paintsville Floodwall is extended, and the south segments are partially combined and lengthened for an overall increase in the line of flood protection project-wide of approximately 146%, or an increase of about 4,500 feet overall. Table 2 shows approximate lengths for the three action alternatives. With minor exceptions, all the added lengths of flood protection are floodwall located in developed areas of alleys, parking lots, and lawn. Much of the added length is also relatively low wall and in some locations is actually below grade for seepage cutoff where the existing grade meets the height requirement for protection.

Table 2: Approximate Lengths of Flood Protection Alternatives

Total Length of Flood Protection in Feet (approx.)	Revised Plan	Recommended Plan	3R Plan
Main (along Levisa Fork)	0	2400	4600
North Side of Paint Creek	8300	4500	4500
South Side of Paint Creek	4400	1300	1300
East (King's Addition)	200	200	200
West (Courthouse)	1400	1400	1400
Totals	14300	9800	12000

With the elimination of the Main Floodwall and realignment farther from the creek on the north side, the net effect is a reduction in overall impacts to fish and wildlife habitat. While the Revised Plan has a large increase in the line of flood protection along Paint Creek, most of the added protection is within developed areas consisting of paved area or mowed lawn. In some locations impacts have been reduced by realigning the protection farther from the riverbank.

Table 3 shows the approximate habitat impacts for the three action alternatives. A major reduction in impacts is achieved in the Revised Plan with the elimination of the Main Floodwall (of both 2R and 3R plans), which included a closure structure across Paint Creek to prevent backwater flooding from entering the City of Paintsville from Levisa Fork. As a result, open water impacts drop to zero acres for the Revised Plan. Between the elimination of the Main Floodwall and the reduction in impacts along Paint Creek by reduced footprint and realignments, the impacts to wooded habitat also is reduced.

Table 3: Approximate Acreage of Impacts for each Alternative

Cover Type	IMPACTS IN ACRES				
	Revised Plan	**Recommended**	**3R Plan**	**Revised minus Recommended**	**Revised minus 3R**
Wooded (trees/shrubs)	12.72	13.72	14.51	-1.00	-1.79
Wetlands	0.00	0.00	0.00	0.00	0.00
Open Water	0.00	0.58	1.50	-0.58	-1.50

10.2 Project Components Not Warranting Further Environmental Evaluation

The West Paintsville Floodwall (#2 above), previously referred to as the Courthouse Levee, is adequately addressed in the 2021 DPR/EA. The design has been revised from levee to floodwall, reducing the footprint and habitat impacts. However, riprap is necessary along the riverbank to address recent severe bank erosion and prevent undermining of the new floodwall. As this riprap will be placed in the same location that the former levee design also required riprap, there is no change to the project footprint at this site. Project impacts are reduced insofar as some of the lower bank vegetation was removed by erosion since the 2021 DPR/EA was completed, and the erosion protection stone will help minimize future erosion of soil material into the waterway. As there is no change to the East Paintsville Levee (#3 above) and Mill Branch Interceptor (#6 above), the environmental effects of these two project components also are adequately addressed in the 2021 DPR/EA. However, for purposes of comparison, the East Paintsville Levee and West Paintsville Floodwalls will be included wherever project total acres of impacts are discussed. The Mill Branch Interceptor is included in those calculations as part of the South Paintsville Floodwall.

10.3 Changes to be Evaluated in this Supplemental EA

The focus of this SEA will be on the elimination of the Main Floodwall (#1 above) and on the North and South Paint Creek Floodwalls (#s 4 & 5 above). As a result of eliminating the Main Floodwall and its closure structure, the North and South Floodwalls have been lengthened and increased approximately 9 inches in top elevation in the proposed Revised Plan. The changes for the Revised Plan reduce the overall habitat impacts of the project for the following reasons:

1. Elimination of the Main Floodwall and its massive tainter gates structure across Paint Creek,
2. Location of new protection reaches in developed areas (parking lots, alleys, lawn, etc.),
3. Realigning away from the riverbank where floodwall is changed to floodwall on top of levee.

The only locations where habitat impacts increase is the levee on the south side at Blackberry Branch, which is moved approximately 275 feet northward (closer to Paint Creek) to accommodate the higher level of protection needed with the elimination of the Main Floodwall from along Levisa Fork.

10.4 ENVIRONMENTAL CONSEQUENCES OF THE REVISED PLAN

This section examines the environmental consequences of design revisions to the North and South Paintsville Floodwalls under the Revised Plan, against the Recommended Plan, the 3R Plan, and the No Action Alternative. As the 2021 DPR/EA (Section 3) described the affected environment, that discussion will not be repeated here except where necessary to describe the environmental impacts of the alternatives under discussion.

All potentially relevant resource areas were initially considered for analysis in this SEA. Some resource topics are not discussed, or the discussion is limited in scope, due to the lack of anticipated effect from the Proposed Action on the resource or because that resource is not located withing the Project.

This Section presents the adverse and beneficial environmental effects of the Proposed Action and the alternatives including the No Action Alternative. The section is organized by resource topic, with the effects of alternatives discussed under each resource topic. Impacts are quantified whenever possible. Qualitative descriptions of impacts are explained by accompanying text where used.

Qualitative definitions/descriptions of impacts as used in this section of the SEA include:

Degree:

- No Effect, or Negligible – a resource would not be affected, or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor – effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate – effects on a resource would be readily detectable, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Significant – effects on a resource would be obvious and would have substantial consequences. The resource would be severely impaired so that it is no longer functional in the Project area. Mitigation measures to offset the adverse effects would be extensive, and success of the mitigation measures would not be guaranteed.

Duration:

- Short term – temporary effects caused by the construction and/or implementation of a selected alternative.
- Long term – caused by an alternative and remain after the action has been completed and/or after it is in full and complete operation.

10.4.1 Floodplains

The revised post-project floodplain will be different than current conditions, but in either case, the Recommended Plan, or the Revised Plan, will not induce flood damages. Further, the Revised Plan removes more of the developed area from the floodplain than would occur under the Recommended Plan or the 3R Plan. The evaluation of floodplain effects was conducted for the entire Revised Plan and would reduce the extent of the floodplain in the protected areas without inducing damages in other areas. Overall, the project has moderate positive long-term effects on floodplains by removing developed areas from the floodplain, which reduces debris infiltration into the waterway during floods. The Revised Plan also provides for

certifiable floodwalls throughout, whereas under the Recommended and 3R Plans, part of the North Floodwall and the South Levees, were not certifiable, that is, did not provide the level of protection required to remove areas from the Federally delineated floodplain.

10.4.2 Climate

Potential effects on climate are associated with emissions from construction equipment during project construction. These effects are de minimis and would occur under any of the action alternatives. The additional floodwall construction along Paint Creek of the Revised Plan does not increase effects because the Main Floodwall and closure structure construction is eliminated from the Revised Plan. The Recommended and 3R Plans have the Main Floodwall and closure structure but do not have the additional walls along Paint Creek. Effects on climate of any of the action alternatives is negligible. The No Action Alternative would have not impact on the local and/or global climate either.

10.4.3 Soil and Geology

For the Recommended Plan and Alternative 3R the project would not yield any direct or indirect adverse effects to soils and geology within the project area. Any effects would be negligible, see Section 5.3 in the 2021 DPR/EA for further details. Soils and geology impacts from the added wall segments on the north and south sides of Paint Creek under the Revised Plan are negligible because these areas are developed and already have impacted soils from prior construction activities. The No Action Alternative would have no impact on soil or geology in the project area.

10.4.4 Surface Waters, Fish and Aquatic Habitat

Surface waters and aquatic resources include streams, rivers, lakes, reservoirs, and wetlands. As there are no lakes, reservoirs, or wetlands in the project area of potential effects, this discussion focuses on Paint Creek, its tributaries within the project footprint, and potential downstream effects to Levisa Fork.

Surface waters and aquatic resources are impacted by the closure structure of the Main Floodwall (Recommended and 3R Plans). Some of the work may involve small areas of erosion protection below the Ordinary High Water Mark, such as at drain outlets that extend to the water's edge or select areas that require protection below the floodwall. As any fill placed below the OHWM is regulated under Section 404 of the Clean Water Act (CWA), an evaluation of the effects of placing fill in the waters of the United States has been completed for the Revised Plan pursuant to Section 404(b)(1) of the CWA (see evaluation in Appendix E).

Surface water inputs from groundwater would not be adversely affected by the Revised Plan compared to the Recommended and 3R Plans. The disturbed nature of the soils (from past development) in the areas where new wall segments are being added already would be a limiting factor for groundwater. Likely most input to the creek from the area of new wall on the north is from surface runoff. The added wall sections will include drainage structures to allow surface water to continue to pass through to the creek. New

floodwall on the south follows Walnut Avenue which is set back several hundred feet from the creek and so groundwater effects of this new wall would be localized and insignificant.

Paint Creek is the only stream identified as trout waters within Johnson County and is stocked by the Kentucky Department of Fish and Wildlife Resources (KDFWR). Other fish species found in Paint Creek include largemouth bass, smallmouth bass, channel catfish, walleye, and redbreast sunfish.

MAIN FLOODWALL: The Main Floodwall is a feature of the Recommended Plan and of the 3R Plan. Much of the Main Floodwall in both plans would be constructed in developed areas with negligible habitat impacts. The segment of the Main Floodwall that has the greatest impact is where it crosses Paint Creek. As the purpose of the Main Floodwall is to block floodwaters from Levisa Fork from entering the City of Paintsville, it requires a closure structure across the mouth of Paint Creek. As virtually all the impacts of this feature are at the closure structure on Paint Creek, the following discussion will focus on the closure structure.

REVISED PLAN: No impacts to surface waters and aquatic resources as the Main Floodwall is not a component of the Revised Plan. There would be negligible impacts on fish and fish habitat. Vegetation along the south bank, which provides substantial shading for fish, would remain as is as the floodwall on the south side is far from the riverbank. Vegetation being removed from the north side of Paint Creek does not currently provide shading to the creek and therefore would not negatively impact fish.

RECOMMENDED PLAN: Under this plan the closure structure is located approximately 200 feet upstream of Levisa Fork on Paint Creek, between the railroad bridge and Levisa Fork. The closure structure extends across the creek with three 25- by 25-foot Tainter gates in a concrete gate structure with concrete approach sills extending upstream and downstream. This alternative requires stripping both banks to construct the gate structure which will impact the creek for a distance of about 360 feet along the creek and would eliminate approximately 0.82 acre of wooded habitat along the creek banks and 0.58 acre of open water creek habitat. While the structure occupies an area of the creek bed and banks, it would have been designed to not alter the substrate elevation and therefore allow migration of aquatic species. Stream depths, inundation, and velocities would be similar with or without the structure. Therefore, very little changes in hydraulic stream characteristics would be expected, though the unnatural concrete bottom of the structure could disrupt movements of some aquatic organisms.

Moderate impacts would occur to surface waters, fish and aquatic resources from the closure structure occupying river bottom. Because of the degraded condition of Paint Creek downstream from the dam to Levisa Fork, a distance of about eight miles, impacts of the closure structure are not considered significant. Also, fish would still be able to pass through the structure as it would be constructed to maintain normal flow characteristics and would only be closed during larger flood events.

3R PLAN: As with the Recommended Plan, this plan would result in moderate impacts to surface waters, fish, and aquatic resources. Under this plan the closure structure is located approximately 600 feet upstream of Levisa Fork on Paint Creek, extending between the Depot Road bridge and the railroad bridge, a distance of approximately 735 feet. A similar structure would be constructed as in the Recommended Plan, but because of the location farther upstream, where the banks are not as steep, the structure impacts a greater area of open water. Direct impacts would occur to approximately 2.0 acres of wooded habitat along the creek banks and 1.5 acres of open water creek habitat. Similar to the Recommended Plan, the closure would be designed to minimize disruption of flows, and therefore would have minimal impact to fish passage, but may disrupt some aquatic organisms' movements.

NO ACTION: No impacts on surface waters, fish, and aquatic resources. Same as Revised Plan.

NORTH PAINTSVILLE FLOODWALL:

REVISED PLAN: To account for the elimination of the Main Floodwall, the North Paintsville Floodwall had to be extended considerably in length (Table 2 above) to provide protection farther upstream and to tie back the downstream end to high ground along Levisa Fork. This tie back segment, similar to the wall portion of the Main Floodwall, is in upland developed area and would not impact surface waters or aquatic habitat. Likewise, the upstream extension is primarily floodwall, with a few minor segments of wall on levee, and would be constructed almost entirely in developed areas such as alleys, parking lots, and lawns. Table 4 shows no increase in direct impacts to wooded habitat from the Revised Plan over that of the Recommended Plan. While some of the floodwall proposed in the Recommended Plan was revised to wall on levee for the Revised Plan (cost saving measure), impacts on surface waters and aquatic habitat are minor and did not increase over that of the Recommended Plan because the alignments are moved landward.

RECOMMENDED PLAN: As described above, the North Paintsville Floodwall component of the Recommended Plan has approximately the same total impacts to surface waters and aquatic habitat as in the Revised Plan (See Section 5 of the 2021 DPR/EA).

3R PLAN: Under the 3R Plan there are no surface water and aquatic resources impacts from the North Floodwall. This is because the closure structure is located farther upstream and therefore those impacts for the North Floodwall under the Recommended (2R) Plan are captured under the Main Floodwall closure structure: i.e., much of the North Floodwall had to be incorporated into the Main Floodwall to connect the closure structure into the Main Floodwall.

NO ACTION: No direct impacts to surface water and aquatic resources.

SOUTH PAINTSVILLE FLOODWALL:

REVISED PLAN: To account for the elimination of the Main Floodwall, the South Floodwall, which consisted of four separate levee segments under the Recommended and 3R Plans, had to have added lengths of protection and a tie back wall on the downstream end along Levisa Fork. Of the four levees of the Recommended Plan on the south side, the Blackberry and Flat Rock Branch Levees, located at either end of Walnut Avenue, are connected by a floodwall along Walnut Avenue. This eliminates the need for the Walnut Avenue levee, which was located below Walnut Avenue. The increased height required from eliminating the Main Floodwall is accommodated in the wall segments that run across the tops of the Flat Rock and Blackberry Branch levees. The State Street Levee is simply increased in height with no wall on top.

Since a greater level of flood protection is required along Paint Creek with the removal of the Main Floodwall, the Blackberry Branch levee was moved closer to Paint Creek (roughly one block from Washington Street to Walnut Avenue) to accommodate connection to higher ground with a 200-foot-long floodwall extending west to across College Street.

Moving the Blackberry Branch Levee approximately 200 feet closer to Paint Creek does not increase .impacts to paint Creek as the length of culvert to carry the creek through the levee is approximately the same under the Recommended Plan and the new levee location of the Revised Plan. Surface waters and aquatic resources are moderately impacted under the Revised Plan by the levee on both Blackberry and Flat Rock Branches by the need to carry these creeks through the levees with culverts.

High ground between the Flat Rock Branch and State Street does not require any structures, so the State Street Levee remains separate from the main South Floodwall. A short tie-back wall is included on the east side of the rail yard to high ground.

RECOMMENDED PLAN: The South Paintsville Floodwall component of the Recommended Plan has moderate impacts on Blackberry and Flat Rock Branches, effectively the same as with the Revised Plan but with the impact about 200 feet farther upstream on Blackberry Branch.

3R PLAN: Same as with the Recommended Plan.

NO ACTION: No impacts to aquatic habitat.

All action alternatives include culverts under flood protection structures to convey flow from intermittent streams into Paint Creek. These culverts would include closures such as flap gates to prevent back flow during flood events and may have minor impact on surface waters and aquatic resources where they extend below the OHWM.

SUMMARY OF IMPACTS: Implementation of the Revised Plan, as currently proposed, will substantially reduce impacts on surface waters, fish, and aquatic resources as compared to the Recommended Plan, in that it does not include the Tainter gate closure structure across Paint Creek. Therefore, project disturbance of the creek will be minimized. Impacts to open water are reduced from 0.58 acre in the Recommended Plan to 0.0 acres in the Revised Plan. The 3R plan actually increases open water impacts to 1.5 acres. For the Revised Plan, there are minor habitat impacts at Blackberry Branch but, as compared to the Recommended Plan, less overall impacts due to the elimination of the Main Floodwall closure structure. Surface waters, fish, and aquatic resources will not be significantly impacted by the proposed Revised Plan. Additionally, all three plans would reduce sediment, debris, and pollutants in runoff from developed areas and roads that no longer are subject to flooding with the completed flood risk management project in place. Reduced sediment, debris, and pollutants in runoff from developed areas and roads that no longer are subject to flooding under any of the action alternatives would not be realized under the No Action Plan. Therefore, the No Action alternative does not realize these minor, positive long-term benefits to water quality and aquatic habitat that are attributable to protecting areas from flooding.

10.4.5 Terrestrial Vegetation and Wildlife Habitat

This section discusses wildlife habitat, which is mostly wooded with trees and shrubs and some small openings. Acres of wooded wildlife habitat is shown in Table 4 for each alternative and for each project segment. Note that the East Levee and West Wall project segments are included in the table for comparison of project totals, though these two segments are not the subject of this environmental evaluation for reasons given above (Section 10.2). The quality of this wooded wildlife habitat is pretty uniformly consistent across the project area for all alternatives, with no special habitats in the project alternatives' areas of impact.

The borrow area is located across the highway north of the courthouse. The site has been used for excess fill placement from a highway project and other sources. While an expansion to the borrow area is shown in Figure 8 (Section 8 above) vs. Figure 22 of the DPR/EA, there is no significant change to the borrow

requirements from the Recommended Plan to the Revised Plan. The expansion shown in Figure 8 makes up for elimination of a second borrow site at the east end of Carter Lane that had been considered, but would have involved removal of both wooded habitat and several homes and outbuildings. Figure 8 shows a total of approximately 14.5 acres identified for project use. It is anticipated that the project only requires approximately 7.25 acres of borrow material. The larger area was identified to account for any contingency soil that may be needed. Unless contingency conditions prevail, only half the estimated borrow area acreage would be used for implementation of the Revised Plan. Most of the borrow area has been previously disturbed. There is a portion of the identified borrow acreages that still contain wooded areas. Borrow activities would start by utilizing the disturbed, open areas for gathering material. Tree removal will be avoided or minimized within the identified borrow area. The potential tree removal for borrow activities and other project actions as been coordinated under Section 7 with the U.S. Fish and Wildlife Service (USFWS). The USFWS concurred with the USACE determination in a letter dated May 31, 2022.

While the No Action Alternative does not have any impacts induced by the project, it should be noted that, since the public review of the 2021 DPR/EA, severe erosion has eliminated the lower bank vegetation at the courthouse (West Floodwall segment). Future storm events could destroy additional riverside vegetation. Where the project construction includes bank protection measures, such as riprap, some protection would be afforded those segments of riverbank, representing a reduction of habitat loss from storms.

Table 4: Total Terrestrial Wooded Wildlife Habitat Impacts

Project Segment	IMPACTS IN ACRES		
	Revised Plan	Recommended Plan	3R Plan
Main Floodwall	0	1.22	2.12
North Paintsville Floodwall	2.54	2.54	2.02
South Paintsville Floodwall	1.74	1.52	1.93
East Levee	0.4	0.4	0.4
West Floodwall	0.79	0.79	0.79
Borrow Site	7.25	7.25	7.25
Project Total	12.72	13.72	14.51

MAIN FLOODWALL:

The Main Floodwall as it extends to the north from Paint Creek follows roughly the same path in both the Recommended and 3R Plans and avoids vegetation impacts because it is in developed industrial areas of parking lots, storage yards and buildings. Therefore, the following discussion focuses on the Main Floodwall as it extends south from Paint Creek. This segment of the main Floodwall, because of the variation in the location of the closure structure between the Recommended Plan and the 3R Plan, varies in location to either side of the railyard.

REVISED PLAN: No terrestrial vegetation or wildlife habitat impacts as the Main Floodwall is not a part of the Revised Plan. The Revised Plan eliminates the vegetation impacts from Main Floodwall and its closure structure.

RECOMMENDED PLAN: The Main Floodwall in this plan impacts approximately 1.22 acres of terrestrial habitat, including approximately 0.82 acre of habitat along the banks of Paint Creek at the closure structure. The impacts along the creek are moderate.

3R PLAN: The Main Floodwall in this plan impacts approximately 2.12 acres of terrestrial habitat, including approximately 2.0 acres of habitat along the banks of Paint Creek at the closure structure.. Impacts along the banks of Paint Creek are greater than with the Recommended Plan because the more upstream location of the closure structure required a larger footprint on the creek and banks.

NO ACTION: No impacts to terrestrial vegetation or wildlife habitat other than from natural erosional processes along the creek banks.

NORTH FLOODWALL:

REVISED PLAN: Wildlife habitat impacts are approximately 2.54 acres under the Revised Plan. There is no significant change in terrestrial vegetation for the North Floodwall compared with the Recommended Plan, even with the revision of some of the Floodwall areas of the Recommended Plan to levee and wall-on-levee, largely because there is a narrow band of upland vegetation that is mostly removed under any of the plans. So, when the line of protection was moved farther from the riverbank, it put the back sides of levees well into developed areas, and therefore, did not further encroach on the riverbank beyond what would occur under the Recommended Plan. As can be seen in Table 4 above, there is no change in the estimated amount of upland habitat impacted between the Revised and Recommended Plans.

RECOMMENDED PLAN: Impacts are the same as with the Revised Plan. See above discussion of Revised Plan for more details. See 2021 DPR/EA section 5.5.2 Terrestrial and Aquatic Vegetation for additional information regarding impacts from the Recommended Plan.

3R PLAN: Upland habitat impacts are essentially the same as the Recommended Plan. However, the acres impacted is smaller for the North Floodwall under the 3R Plan, because the closure structure and adjacent Main Wall replaces the North Floodwall in that reach, and so the impacts in that area attributed to the North Wall in the Revised and Recommended Plans are attributed to the Main Wall in the 3R Plan.

NO ACTION: No impacts would occur to terrestrial vegetation and wildlife habitat other than natural erosional processes along the creek banks.

SOUTH FLOODWALL:

REVISED PLAN: Wildlife habitat impacts are approximately 1.74 acres under the Revised Plan. This is greater than the impacts from the Recommended Plan because the Revised Plan has a higher level of protection (needed because of the removal of the Main Floodwall from this alternative), and so required a larger footprint to the Blackberry Branch Levee, which accounts for the increased impacts.

RECOMMENDED PLAN: This plan would impact approximately 1.52 acres of wildlife habitat. Total impact is 0.22 acres less than for the Revised Plan, largely due to the smaller footprint of the Blackberry Branch Levee (see discussion under Revised Plan, immediately above).

3R PLAN: This plan has a greater impact of 1.93 acres. This is largely due to the 3R plan having the closure structure farther upstream, which results in more vegetation being cleared along the closure structure on the south side of Paint Creek where the levee is set back roughly 200 feet. Note that this is not the case on the north bank, where the floodwall of the Recommended Plan would have removed most of the bank vegetation regardless of including the closure structure of the 3R Plan.

NO ACTION: Has no impacts to terrestrial vegetation and wildlife habitat other than natural erosional processes along the creek banks.

As noted previously, storms occasionally erode segments of riverbank and associated vegetation. Some of these potential erosion areas may be provided protection under the action alternatives. Additionally, the significance of minor habitat loss along the creek in Paintsville is limited by the fact that Paint Creek already has been highly affected by the development of the City of Paintsville. As such, the City of Paintsville is more conducive to generalist species that have become accustomed to urban activity and can be found using riparian corridors along Paint Creek and other tributaries in the built-up areas. More wildlife diversity can be found in outlying areas that are minimally developed.

The main difference among the alternatives is the much greater impacts to riverbank wooded habitat with the closure structure of the Recommended and 3R Plans. In this regard, the Revised Plan provides important reductions in impacts to wildlife habitat. Given the wooded nature of the areas surrounding Paintsville and the limited extent of impacts along Paint Creek from the project, overall project impacts are minor, especially with the elimination of the Main Floodwall closure structure.

SUMMARY OF IMPACTS

In total, estimated wildlife habitat impacts are 14.51 acres for the 3R Plan, 13.72 acres for the Recommended Plan, and 12.72 acres in the Revised Plan. Most of the reduced impacts are due to elimination of the closure structure and its associated impacts to wooded wildlife habitat along the banks of Paint Creek. It should be noted that for each alternative approximately 7.25 acres of those total impacts are from the borrow site, which is an upland site located away from Paint Creek, between roadways and housing, and so is expected to be of lesser value in general than the habitat that is along Paint Creek. Deducting the borrow amounts from the totals yields approximately 7.26 acres for the 3R Plan, 6.47 acres for the Recommended Plan, and 5.47 acres for the Revised Plan. In either case the Revised Plan represents an overall wildlife habitat impact reduction of greater than 20% for the Revised Plan versus the Recommended Plan. The bulk of the reduction in wildlife habitat impacts comes from elimination of the Main Floodwall closure structure which would otherwise impact Paint Creek by spanning the entire creek with a massive concrete structure covering the natural bottom and eliminating wooded habitat on both banks. The remaining areas of habitat impact are generally equal in habitat values and so do not result in a significant difference beyond acreage of impacted area. In summary, the Revised Plan reduces the impacts of the project on wildlife habitat with minor changes in the area of potential effects that are moderate in impact.

10.4.6 Threatened and Endangered Species

Federally listed species potentially present in the project area were determined through the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) website. The species list,

generated on April 19, 2022 (Appendix E), indicates the following species, listed as threatened or endangered (T&E) under the Federal Endangered Species Act (ESA), may occur in the project location or may be affected by the project:

Big Sandy crayfish, *Cambarus callainus* (threatened)

Gray bat, *Myotis grisescens* (endangered)

Indiana bat, *Myotis sodalist* (endangered).

Northern long-eared bat, *Myotis septentrionalis* (threatened)

No designated critical habitats are indicated for the project area. One candidate species is included on the list, the Monarch butterfly, *Danaus plexippus*. Candidate species are not afforded any protection under the ESA unless and until they gain a status of threatened or endangered. The project, under any of the alternatives, is not expected to impact Monarch butterflies because most of the affected area is wooded and would preclude the presence of milkweed, certain species of which are essential to the growth of monarch caterpillars as they only feed on milkweed.

Potential habitat for the above listed species is discussed below relative to each project segment followed by determinations pursuant to Section 7 of the ESA on a project wide basis for the Revised Plan. Refer to Table 4 in the previous section.

MAIN FLOODWALL:

REVISED PLAN: No impacts as the Main Floodwall is not part of the Revised Plan.

RECOMMENDED PLAN: Removal of approximately 1.22 acres of potential bat habitat and 0.58 acre of potential crayfish habitat.

3R PLAN: Removal of approximately 2.12 acres of potential bat habitat and 1.5 acres of potential crayfish habitat.

NO ACTION: No project impacts on T&E species.

NORTH FLOODWALL:

REVISED PLAN: Removal of approximately 2.54 acres of potential bat habitat. No direct impacts on potential crayfish habitat. Indirect effects on crayfish habitat are negligible with required construction erosion and sedimentation controls.

RECOMMENDED PLAN: Removal of approximately 2.54 acres of potential bat habitat. No direct impacts on potential crayfish habitat. Indirect effects on crayfish habitat are negligible with required construction erosion and sedimentation controls.

3R PLAN: Removal of approximately 2.02 acres of potential bat habitat. No direct impacts on potential crayfish habitat. Indirect effects on crayfish habitat are negligible with required construction erosion and sedimentation controls.

NO ACTION: No project impacts on T&E species.

SOUTH FLOODWALL:

REVISED PLAN: Removal of approximately 1.74 acres of potential bat habitat. No direct impacts on potential crayfish habitat. Indirect effects on crayfish habitat are negligible with required construction erosion and sedimentation controls.

RECOMMENDED PLAN: Removal of approximately 1.52 acres of potential bat habitat. No direct impacts on potential crayfish habitat. Indirect effects on crayfish habitat are negligible with required construction erosion and sedimentation controls.

3R PLAN: Removal of approximately 1.93 acres of potential bat habitat. No direct impacts on potential crayfish habitat. Indirect effects on crayfish habitat are negligible with required construction erosion and sedimentation controls.

NO ACTION: No project impacts on T&E species.

The action alternatives all require material from the borrow area, which collectively for the entire project impacts up to 7.25 acres of potential bat habitat at a former stockpile site from highway construction. Impacts to bats would consist of the removal of potential roost trees among the wooded areas, but these removals being in the off season would not directly impact bats and the following years the only impact is that bats would look elsewhere for roost trees, of which there should be plenty in the vicinity. The borrow area is likely less desirable to bats because it is not next to a waterway. In summary, the total impacts on potential bat habitat project wide for each alternative, including the West Floodwall and East Levee and the borrow site, are 12.72 acres for the Revised Plan, 13.72 acres for the Recommended Plan, and 14.51 for the 3R Plan. These impacts are negligible considering that there are no known bat maternity roost trees or hibernacula in the area of project effects for any of the alternatives, that there are over 800 acres of wooded potential bat habitat within a one-mile radius of the project site, and that the entire county and surrounding areas are mostly wooded. The following discussion addressed the Federal determinations in compliance with Section 7 of the ESA.

No impacts are anticipated on the Big Sandy crayfish. Under the Recommended Plan with its closure structure across Paint Creek, the USFWS, in a letter dated May 8, 2020 (Appendix E), noted that, “because of the lack of species records in the project vicinity and the sedimentation and unnatural water temperatures in the reach of Paint Creek in the project area, we believe that Big Sandy Crayfish are unlikely to occur there.” On that basis, they concurred with the USACE may affect-but not likely to adversely affect determination for the Big Sandy crayfish. The USACE determines that with the removal of the Main Floodwall and closure structure from Paint Creek, that the project, under the Revised Plan, is not likely to adversely affect the Big Sandy crayfish.

The USFWS, in May 2020, also concurred with the USACE “may affect but not likely to adversely affect” determination for the Gray bat, noting that, “because of the relatively small scale of the permanent impacts, the temporary nature of the impacts during construction, and the use of BMPs to limit impacts to downstream resources, we believe that any impacts to Gray bat foraging habitat and resources would be insignificant.” The USACE determination for the Revised Plan remains “not likely to adversely affect” for the Gray bat.

Bat site assessments conducted by USACE biologists in September 2019 revealed that potential summer roost habitat for the Indiana bat and the Northern long-eared bat (NLEB) exists in areas impacted by the project construction and the soil borrow area. Clearing activities would likely remove some amount of summer roosting habitat. Tree removals may be conducted in the off season (between Oct 15 and March

31) to minimize impacts to these bat species. The bat habitat assessment site visit report is included in Volume 3 of the 2021 DPR/EA.

Because USACE has determined the Revised Plan is likely to adversely affect the Indiana bat and NLEB, USACE would address potential effects to the two bat species (Indiana and NLEB) from forested habitat removal under the U.S. Fish and Wildlife Service Kentucky Field Office's 2015 Biological Opinion: Kentucky Field Office's Participation in Conservation Memoranda of Agreement for the Indiana Bat and/or Northern Long-eared Bat (BO).[1] This would involve implementing a conservation measure of paying into the Imperiled Bat Conservation Fund (IBCF) to offset those effects in accordance with the Kentucky Field Office's 2016 Revised Conservation Strategy for Forest-Dwelling Bats.[2] The payment to the IBCF is further discussed in the section on Mitigation later in this document.

The Federal listed threatened and endangered species for the project areas in 2020, as indicated in the USFWS' IPAC webtool consulted at that time, also included the snuffbox mussel. As the snuffbox mussel is not on the current species list, and as it was a no effect determination in 2020, no further review of snuffbox mussel will be conducted at this time.

Under the Revised Plan, elimination of the closure structure on Paint Creek does not change the determinations on aquatic species; however, it does strengthen the "not likely to adversely affect" determinations by eliminating a large area of in-water and riverbank impacts. By reducing overall impacts to terrestrial vegetation and wildlife habitat (as described in the previous section) the Revised Plan would allow for reduced overall impacts to bats.

Effects under the No Action Alternative are limited to natural processes such as erosion taking trees out along riverbanks and dead snags eventually rotting and falling to the ground. This impacts bat habitat. While this impacts potential bat roost trees, other trees that die or are damaged by wind or lightning would provide new habitat.

The USFWS notes that "under 50 CFR 402.12(e) of the regulations implementing Section 7 of the ESA, the accuracy of this species list should be verified after 90 days." Any future changes to the listings for the project area prior to project construction would be addressed in further consultation with USFWS.

The USACE has conducted consultation with the USFWS regarding the Revised Plan and Federal determinations under Section 7 of the Endangered Species Act. The current USACE Section 7 determinations as described here are valid and in compliance with the ESA. The USACE received concurrance with the determination from USFWS in a letter dated May 31, 2022. Full compliance for the project will be completed upon payment of the appropriate fee into the IBCF.

As noted in the 2021 DPR/EA, state-listed species, if present, would only be temporarily displaced during construction. Therefore, no significant effects are expected to state-listed species under any of the alternatives.

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[1] https://www.fws.gov/media/kentucky-field-offices-participation-conservation-memoranda-agreement-indiana-bat-andor

[2] https://www.fws.gov/sites/default/files/documents/Revised-Conservation-Strategy-for-Forest-Dwelling-Bats-June-2016.pdf

10.4.7 Traffic

Temporary road closures may be necessary during construction. Appropriate detours would be planned and marked to direct traffic around the detour locations. Construction traffic would follow truck routes to and from the project vicinity for hauling, but some movement beyond truck routes would be necessary to access project work sites. Haul roads may be constructed as needed in areas that are to be cleared for the project. All temporary construction features would be removed and the sites restored after project completion. Any damage to surface streets would be repaired. Traffic impacts for any action alternative are short-term and negligible to moderate and would be similar to temporary traffic impacts from routine roadwork. The No Action Alternative would have no impact to traffic within the project area.

10.4.8 Noise

Noise impacts of the new extended wall segments would be minor and temporary. The extended wall segment of the North Floodwall runs along industrial and commercial development with some pockets of houses. The segment of floodwall on the south side, along Walnut Avenue, is in a residential area, but follows the street. Construction noise would be similar to that of sewer repair or reconstruction, or road reconstruction, and would not present significant noise effects to those residences. These effects are negligible to moderate, and short-term for any of the action alternatives. The No Action Alternative would have no impact to noise within the project area.

10.4.9 Air Quality

During construction, heavy equipment would cause minor, temporary air quality impacts, however all equipment is required to comply with Federal vehicle emission standards, and dust control measures would be implemented. Temporary equipment emissions from this project would be minimal in terms of the National Ambient Air Quality Standards and as such, a general conformity analysis was not required (40 CFR § 93.153). The elimination of the Main Floodwall along Levisa Fork and the elimination of the closure structure across Paint Creek represent a large reduction in construction related air emissions, which would be roughly equal to or greater than the added construction air quality impacts from the additional lengths of floodwall under the Revised Plan. Air quality effects are short-term and negligible for any of the action alternatives. The No Action Alternative would have no impacts to air quality.

10.4.10 Sedimentation

Sedimentation and erosion would not be notably changed by the Revised Plan as compared to the impacts from the Recommended Plan and Alternative 3R addressed in the 2021 DPR/EA and will be controlled through Best Management Practices that will be included in the project specifications in accordance with applicable Federal and state regulations and permitting requirements. The No Action Alternative would have no impacts to sedimentation, current sedimentation loads along with erosion would continue.

10.4.11 Recreational and Aesthetic Resources

The only designated recreational site in the project area that would be impacted by any of the project alternatives is the Levisa Fork Boat Ramp, which is located on Levisa Fork, immediately upstream of and along the upper bank of Paint Creek.

MAIN FLOODWALL:

> REVISED PLAN: No effect as the Main Floodwall is not a part of this plan. Under the Revised Plan, impacts to fishermen and boaters on the creek would not occur as there would be no closure structure to obstruct their movements into and out of Paint Creek by boat, or by foot along the shore.

RECOMMENDED PLAN: Under the Recommended Plan, a closure structure would be built across Paint Creek near its confluence with Levisa Fork (between the railroad bridge and the creek mouth). Wading fisherman and boaters using Paint Creek may be inconvenienced by the structure or negatively impacted by the change of aesthetics from the concrete structure. Larger boats may not be able to pass the structure. Negative aesthetic impacts would also occur to people boating on Levisa Fork. From land, the viewshed would be limited by vegetation and topography, and the Recommended Plan would have only minor effects from limited vantagepoints, and otherwise the effects would be negligible. The boat ramp would likely be impacted, and have to be relocated and/or reconstructed, since it is in the only practicable location that the creek can be routed to bypass the construction site for the closure structure, the opposite bank being too narrow and steep.

3R PLAN: Impacts similar to that of the Recommended Plan. The greater length of river occupied by the closure structure under the 3R Plan (between the railroad bridge and the roadway bridge farther upstream) might make passage upstream more difficult than under the Recommended Plan. The location of the structure farther upstream would leave the mouth area of Paint Creek natural. Locating the closure structure farther upstream, past the railroad bridge, reduces the aesthetic impacts by somewhat hiding it from view from across Levisa Fork. Since the closure structure is farther upstream in this alternative, the Levisa Fork boat ramp would not be impacted.

NO ACTION: No effects on recreation or aesthetics.

NORTH FLOODWALL:

REVISED PLAN: A large extension of floodwall upstream from College Street would present additional aesthetic impacts, but much of this area is commercial, institutional, and/or industrial , with some pockets of houses. Much of this Floodwall is relatively low in elevation. Therefore the impacts would range from minor to moderate. The wall also would make access to the riverbank more difficult; however, the wall is fairly low in some reaches and would not hinder passage for most pedestrians.

The revision from Floodwall (Recommended Plan) to floodwall on levee (Revised Plan) from East Street (about 300 feet east of College Street) to Bridge Street is in an area that is largely residential. This would provide improved aesthetics from the grassy levee slope and the reduced height wall on top would be less obtrusive in the viewshed. Views of the river would be blocked by the wall on levee. As an added aesthetic feature, the walls are likely to be constructed to mimic a stone wall by using special forms when the concrete is poured. Areas with wall-on-levee would have less impact on riverbank access from these houses.

RECOMMENDED PLAN: The floodwall between East Street and Bridge Street would be more restrictive to pedestrian riverbank access, and is less aesthetically pleasing than the wall on levee of the Revised Plan for this area. Views of the river are blocked from the houses by the wall. Again, the wall is likely to have a sculpted look to mimic a natural stone wall.

3R PLAN: Very similar to the Recommended Plan.

NO ACTION: No effects on recreation or aesthetics.

SOUTH FLOODWALL:

REVISED PLAN: The only change from the Recommended and 3R Plans for the Revised Plan is a low wall along Walnut Avenue and extending about 200 feet past Blackberry Branch. This wall is low and along a residential street and not likely to present more than minor aesthetic impact. It also is

along Walnut Avenue, far from the creekbank, and does not hinder access to the creek. Several levee segments are present but would not present much of a hindrance to recreation and would not have much aesthetic impact.

RECOMMENDED PLAN: Similar to the Revised Plan but without the wall and just the levees.

3R PLAN: Similar to the Revised Plan but without the wall and just the levees.

NO ACTION: No impacts on aesthetics or recreation.

Under each of the action alternatives, floodwalls placed in various locations upstream of the closure structure may also negatively affect aesthetics for boaters and fisherman. However, the floodwalls would be located on the outer edges of the riparian habitat, outside of the stream channel. Fishing and boating would still be able to occur after construction is complete. Therefore, these effects are minor. While the Revised Plan has a much greater length of Paint Creek protected by floodwall, the added wall sections are in upland developed areas and would not directly impact recreational activities on the creek other than as described above; however, there may be some limitations to accessing the creek.

An existing boat ramp, if impacted, may be relocated nearby to allow continued access. Floodwalls, floodwall on levee, and levees would change the current aesthetics to limit views of the river in some areas. The proposed areas for wall and wall on levee are in an urban setting and therefore, the concrete structures and grassed levees would blend in with the area. These effects are considered minor to moderate.

SUMMARY OF IMPACTS: The walls and wall on levee will restrict views of the river and make access to the river more difficult, but do not result in significant impacts. Under the Revised Plan there is more wall on levee than the Recommended Plan, which is both more aesthetically pleasing and more easily traversed for riverbank access. Recreational features are limited to a boat ramp which will not be impacted, nor will boaters be impacted, under the Revised Plan. Under the Recommended and 3R Plans, these resources would have been impacted by the closure structure.

10.4.12 Cultural Resources

While the 2021 DPR/EA was being prepared and coordinated, the USACE evaluated the project's preliminary Area of Potential Effects (APE) for the potential presence of cultural resources. The USACE also started the consultation process with the State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation (ACHP), Tribal Nations, and consulting parties and executed a Programmatic Agreement (PA) that outlines a phased approach to identify historic properties and the mitigation stipulations needed to resolve any adverse effects to historic properties and/or archaeological sites that have either been recommended eligible for the listing to the National Register of Historic Place (NRHP) or are already listed in the NRHP. The executed PA is included in Volume 3 of the 2021 DPR/EA.

10.4.13 Hazardous, Toxic, Radioactive Waste

The purpose of the Hazardous, Toxic, & Radiological Waste (HTRW) investigations are to determine the potential impacts related to the presence, handling, storage, transportation, and disposal of hazardous, toxic, and radioactive waste materials on properties within the implementation areas. Phase I HTRW Environmental Site Assessments (ESAs) investigations are nonintrusive evaluations, including record searches, deed searches, Environmental Database Reports, as well as a site investigation to determine the potential presences of HTRW or other potential environmental issues with the potential to affect the property, and interviews. Phase II HTRW investigations are performed on properties identified for

additional investigations during the Phase I investigation. Phase II investigations include intrusive sampling techniques and laboratory analysis to confirm the presence of HTRW. Any HTRW concerns identified during the Phase II investigation must be addressed by avoidance or remediation prior to implementation of construction activities.

Phase I HTRW investigations are being conducted by USACE in the project area along with a one-mile buffer zone surrounding the implementation area. Initial site reconnaissance including database and record searches have been conducted for the full project area. Initial work for the Phase I assessments classified properties as high, medium, low for the potential to have HTRW concerns. Several previous service stations, auto dealerships, and auto repair shops were identified within the project/buffer area. Site investigations along with current property owner interviews are being conducted to find additional information regarding the property use. However, based on knowledge of the property history, age of potential contaminants, and coordination with the Kentucky Department for Environmental Protection, it is likely these properties no longer present HTRW concerns for the project.

Further detailed investigations to complete the Phase I process are ongoing, but based on current information gathered to date, none of the alternatives are anticipated to create or contribute to HTRW impacts to the environment.

Upon completion of the Phase I investigations, the District will work with the NFS to have any Phase II investigations conducted as necessary. Any necessary HTRW investigations or cleanup beyond Phase I ESAs will be the responsibility of the NFS. The PPA contains additional information regarding the NFS's responsibility. If any results of the Phase II investigations confirm that HTRW contamination is present, responsibility for further investigation and remediation of all hazardous substances regulated under CERCLA is that of the NFS and/or landowner, at their expense. Contaminated properties subject to remediation of HTRW substances must be remediated prior to any project construction related activities. If investigations identify any contaminated tracts of land, consideration may be given to levee alignment alternations during Pre-Construction Engineering and Design (PED) to avoid HTRW concerns. This approach will ensure that any identified contamination is avoided or remediated appropriately, and that workers and citizens within the project area do not encounter any risks associated with HTRW during project implementation.

10.4.14 Socioeconomics

Socioeconomic impacts would generally remain the same as that described in the 2021 DPR/EA (Sections 3.9 and 5.10) for the Recommended Plan and Alternative 3R, but some increased benefits would occur as a result of the greater area removed from the floodplain under the Revised Plan. Added floodwall sections may hinder access to the riverbank on the north side, but this is largely a commercial/industrial area and there are no recreational features to access along the riverbank. On the south side the wall is low and driveways would remain open, so access would be widely available along the entire length of Walnut Avenue. Access within the City and across Paint Creek would remain the same under all the alternatives, via the roadway crossings, except during floods when the crossings would be closed, but with the no action alternative, these crossings would be dangerous to impassible due to floodwaters. The floodwalls and road closures provide an added measure of safety by preventing vehicles from trying to cross a bridge or road that may have water flowing over it.

10.4.15 Cumulative Effects

With re-evaluation under the Revised Plan it has been determined that there are no other past, present, or reasonably foreseeable actions in the project area beyond what was identified in Section 5.12 of the 2021

DPR/EA. The analysis of cumulative impacts of the alternatives evaluated in the 2021 DPR/EA is equally applicable to the Revised Plan. Impacts to resources from the Revised Plan are comparable to, or reduced from the impacts of the Recommended Plan evaluated in the 2021 DPR/EA. Thus, there are no significant cumulative impacts of the Revised Plan in the project area.

11 COST ESTIMATE

11.1 METHODOLOGY

The Recommended Plan Cost Estimate was based on studies, investigations, and other factual information obtained from records of other projects, as well as the normal quotes, crews, and productivity generation by cost engineers. Risk-based contingencies were based on the judgment of the cost engineer and the PDT and reflect the degree of risk, difficulty of work, unknown and incomplete design, and historical data. Backup for the cost estimate and associated cost products can be found in the Cost Engineering Appendix. MCACES MII software, Version 4.4, was used to prepare the estimate. Feature account codes assigned are in accordance with the Civil Works Breakdown Structure.

The cost of the Revised Plan was calculated in the same manner as the 2021 DPR/EA Recommended Plan. The entire Revised Plan received a cost estimate and is included in this EDR in Appendix D.

11.2 REVISED COST AND SCHEDULE RISK ASSESSMENT

A cost and schedule risk assessment (CSRA) was performed on the Recommended Plan. In the CSRA, the alternative was evaluated to incorporate risk drivers and how those drivers could impact the cost and schedule. The Revised Plan was also analyzed with a cost and schedule risk assessment in the same manner as the Recommended Plan. The revised CSRA is included in this EDR in Appendix D.

11.3 REVISIONS TO THE TOTAL PROJECT COST

11.3.1.1 Paintsville Flood Risk Management Project Total Cost

The Cost Estimate for the Recommended Plan below was developed and certified with the April 2021 DPR/EA. See Table 5 below with the Recommended Plan cost compared to the Revised Plan cost as detailed in this EDR. The costs are given by Feature Account and include the appropriate contingencies based on the CSRA.

Table 5: Total Project Cost Estimate Comparison Table

Feature Account	Alternative 2R Cost	Revised Cost
01 – Lands and Damages	$7,783 ,000	$8,533,000
02 – Relocations	$4,082,000	$6,550,000
06 – Fish and Wildlife Facilities	$552,000	$607,000
11 – Levees and Floodwalls	$35,812,000	$45,495,000

15 – Floodway Control & Diversion Structures	$42,927,000	$695,000
18 – Cultural Resource Preservation	$1,316,000	$1,540,000
19 – Buildings, Grounds, & Utilities	$728,000	$2,901,000
20 – Permanent Operating Equipment	$1,316,000	$1,472,000
30 – Planning. Engineering and Design	$13,229,000	$7,807,000
31 - Construction Management	$9,794,000	$9,570,000
Total Project Cost (Rounded)	$117,539,000	$85,170,000

The fully funded cost estimate for the revised plan, which includes inflation according to the implementation schedule, is $85,170,000. Reference Appendix D for a full description of the development of the MII Cost Estimate, the CSRA, and Total Project Cost Summary.

12 ECONOMIC ANALYSIS

The revisions outlined in section 9 of this EDR have minor impacts to the economic analysis of this project. This section will incorporate the changes to the economic analysis completed in the 2021 DPR/EA. Only revisions to the analysis are incorporated, all portions of the analysis not impacted can be found in the 2021 DPR/EA.

12.1 REVISED ECONOMIC BENEFIT

Benefits for this study were developed using a method first employed by the Dickenson County, VA, Levisa Fork Basin 202 project in 2003. Dickenson County project benefits were estimated through calculation of a per-structure average annual benefit value using project benefit calculations from three separate but similar projects in the region: Pike County, KY 20; Martin County, KY 202; and Wayne County, WV 202. The average annual benefits of commercial and residential structures in these projects were then applied to the Dickenson County structure inventory as a proxy for traditional analysis.

To estimate benefits for the Johnson County study, the per-structure AABs used for Dickenson County were inflated using the Engineering News-Record Construction Cost Index. The index period price increase can be seen in Table 6.

Table 6: ENR Construction Cost Index

ENR Construction Cost Index	
Oct. 2002	6,589
Oct. 2021	12,465
Price Adjustment	1.892

When the Dickenson County 202 study was completed, the average annual benefit per-commercial-structure was estimated to be $1,494 and the per-residential-structure was estimated to be $691. When

inflated to fiscal year 2022 price levels, those values become $2,826 and $1,307, respectively. The per-structure average annual benefit applies to any structure receiving protection, regardless of the amount of damage prevented.

The structure count in the revised plan is based upon the number of structures whose first-floor elevations or low ground entries fall below elevation 614.1 feet, the top of floodwall elevation. Prior calculations were based upon the FEMA 1% AEP event of 613.7 feet – the level of protection provided by the combined interior and exterior walls of the Recommended Plan.

Table 7 shows the AAB for the Historical Regional Project Method.

Table 7: AAB for the Historical Regional Project Method

	Commercial	Residential	
Revised Plan Structures	243	562	
Historical AAB (2002)	$1,494	$691	
Price Adjustment	1.89	1.89	
Indexed AAB (2022)	$2,826	$1,307	
Total Johnson County AAB	$686,799	$734,661	$1,421,460

Based on this benefit calculation method the expected average annual benefits for the Johnson County project are $1,421,460.

12.2 TOTAL ECONOMIC COSTS OF REVISED PLAN

The total costs and average annual costs of the Revised Plan are outlined below in Table 8. Costs are presented at FY22 price levels, and investment costs are calculated using the FY22 discount rate (2.25%). Construction efforts were expected to begin in 2025 and be completed in 2028.

Table 8: Revised Plan Economic Costs

Total First Costs		
Contractors Earning Plus Contingencies	$	53,545,689
Planning, Engineering & Design	$	7,616,837
Supervision & Administration	$	8,886,310
Total First Costs	$	70,048,837
Previously Expended PED Funds	$	4,928,000
LEERDs	$	8,270,438
Investment Costs		
Total First Costs	$	70,048,837
Interest During Construction	$	2,390,834
Investment Costs	$	72,439,671
Total Costs	$	85,638,110
Average Annual Costs		
Total Costs	$	85,638,110
Partial Payment Factor		0.03526
Average Annual Costs	$	2,428,059
Annual Maintenance	$	339,400
Total Average Annual Costs	**$**	**2,767,459**

12.2.1 Benefit Cost Ratio

The benefit cost ratio is shown in Table 9. Prices are presented at FY22 levels and are annualized using the FY22 discount rate (2.25%).

Table 9: Benefit to Cost Ratio

		AAB	AAC	BCR
Revised Plan	**$**	**1,421,460**	**$ 2,767,459**	**0.51**

13 COST SHARING

13.1 ABILITY TO PAY

The Johnson County, Kentucky, 202 Project is subject to the cost-sharing requirements outlined in the Water Resources Development Act of 1986 (Public Law 99-662). According to Section 103(m) of WRDA, an "Ability-to-Pay" determination is required for any flood control project or separable element covered by the terms of Section 103(a) or Section 103(b). This analysis will employ Economic Guidance Memorandum (EGM) 19-04, Current State and County Income Index Data, Current Eligibility Factor Formula (Ability to Pay).

An "Ability-to-Pay" determination is based on two separate tests – benefits and income. As outlined in ER 1165-2-121, the benefits test is the first step in determining if a project may be eligible for a reduction in the non-Federal cost share. The project's eligibility for a reduction is verified by conducting an income test, which also governs the magnitude of an applicable reduction.

Benefits Test

To determine the project's eligibility for a non-Federal cost share reduction, the Benefits Based Floor (BBF) must first be calculated. The calculation of the BBF is referred to as the benefits test. The BBF is equivalent to the project's benefit-to-cost ratio (BCR) divided by four.

$$BBF = (BCR) / 4$$

If the result of this calculation, when expressed as a percentage, is greater than or equal to the standard non-Federal cost share, the project is not eligible for a reduction and would be subject to the standard non-Federal cost share required under the provisions of Section 103 within Public Law 99-662. Conversely, if the BBF, when expressed as a percentage, is less than the standard non-Federal cost share, the project may be eligible for a reduction.

Of note, the Johnson County project received supplemental funding after the study initiation. All funds provided by supplemental accounts are 100% covered by the Federal Government and are not subject to cost share. Only funds spent before the allocation of supplemental funding are subject to standard non-Federal cost share. The amount subject to cost share is $1,929,994.

Based on the BCRs shown in Table 9, the benefits-based floor for the revised plan was calculated and is shown in Table 10.

Table 10: Benefit-Based Floor

	BCR	Benefits-Based Floor (BCR/4)
Revised Plan	0.51	12.75%

Income Test

Since the calculated BBFs are all less than the standard level of cost-sharing, the amount of the non-Federal share to be applied to the Alternatives' costs must be determined by the income test. The income test as outlined in ER 1165-2-121 determines the fraction of reduction in cost sharing depending on the current economic resources of the state and county in which the project is located.

It is first necessary to calculate the Eligibility Factor (EF) for the project area according to the following formula (based on EGM 19-04):

$$EF\ (Eligibility\ Factor) = a - b1\ (State\ income\ index) - b2\ (County\ income\ index)$$

$$Where\ a = 18.22;\ b1 = 0.079;\ b2 = 0.158$$

For the three latest calendar years for which data are available, the per capita personal income in the state and county in which the project beneficiaries are located are compared to the national average of per capita personal income. (Source: Department of Commerce, Bureau of Economic Analysis, Table 11.)

Table 11: Per Capita Personal Income by County, 2018-2020

Per Capita Personal Income by County, 2018 - 2020

	Per capita personal income[1]				Percent change from preceding period		
	Dollars			Rank in state	Percent change		Rank in state
	2018	2019	2020	2020	2019	2020	2020
United States	**54,098**	**56,047**	**59,510**	**--**	**3.6%**	**6.2%**	**--**
Kentucky	**42,193**	**43,881**	**47,339**	**--**	**4.0%**	**7.9%**	**--**
Johnson County	32,985	34,442	37,769	85	4.4%	9.7%	36

1. Per capita personal income was computed using Census Bureau midyear population estimates. Estimates reflect county population estimates available as of March 2021.

Source: U.S. Bureau of Economic Analysis - Most recent data as of Dec. 15, 2021

Using per capita personal income compared to the national average (US = 100), a three-year average is calculated to create state and county income index factors, shown in Table 12.

Table 12: Kentucky and Johnson County Income Index Factors

State Factor	County Factor
78.64	**62.01**

The eligibility factor for Johnson County was calculated as follows:

$$EF = 18.22 – (.079 * 78.64) – (.158 * 62.01) = 2.21$$

Because the EF is greater than one, the non-Federal share equals the BBF. The non-Federal share of funds spent before the allocation of supplemental funding ($1,929,994) for each of the alternatives is shown below in Table 13.

Table 13: Non-Federal Cost Share

	BCR	BBF	Non-Federal share (BBF * $1,929,994)	Federal Share ($1,929,994 – Non-federal share)
Revised Plan	0.51	12.75%	$ 246,074	$ 1,683,920 (87.25%)

13.2 Risk and Uncertainty in Benefits and Ability to Pay

The method used to develop benefits is non-conventional to USACE benefit guidance methods. It was used for several factors that included speed of analysis, available information, and risk in outcome. This project

is fully funded and pre-authorized. As a result, benefits were only required to determine the ability to pay calculation. Since the project was fully funded with supplemental funds, ability to pay is only measured against the funds spent before supplemental funds were allocated. This was a value of $1,929,994. Given that the maximum cost share for these funds is 50%, or just under $1 million, risk-based policy focused on speed of analysis over a more rigorous benefit calculation. Since the project only focused on structures impacted by the 1977 flood and providing mitigation to the 1% AEP, other hydraulic profiles needed to develop benefits following USACE guidance were not constructed. Additionally, the project needs to be studied, planned, designed, and constructed within a five-year window. This led to a focus on speed over completeness. It should be noted that the maximum cost share of $1 million represents less than 1% of the total funds provided for this project.

13.3 COST SHARING REQUIREMENTS

The Bipartisan Budget Act of 2018 provided full Federal funding for the authorized project. Therefore, this project requires no cost share. There are no cost sharing requirement changes since the 2021 DPR/EA. See DPR for additional information regarding this. An updated PPA will be executed with the non-Federal sponsor based on the Revised Plan. Work to be completed under Alternative 4R may need an updated or amended PPA after implementation of the Revised Plan as detailed in the 2021 DPR/EA.

13.4 LERRDS

The Johnson County Section 202 project is to be implemented at full-Federal expense. However, the Non-Federal Sponsor will be required to conduct real estate acquisitions in accordance with the Uniform Act. All lands, easements, rights-of-way, and suitable borrow and dredged or excavated materials disposal areas, and perform all utility and facility relocations (LERRD) determined by the Government to be necessary for the construction, operation, maintenance, repair, replacement, or rehabilitation of the project will be acquired by the NFS. See the 2021 DPR/EA and Volume 4 Real Estate Plan for additional information.

Changes from the 2021 DPR/EA Recommended Plan to the Revised Plan necessitated several updates to the real estate requirements of the Johnson County Flood Risk Management Project. The primary driver of these changes is the deletion of the Main Flood wall and closure structure found in the Recommended Plan; and the expansion of the Walnut Avenue Levee, now known as the South Levee, as detailed in this EDR. In the Recommended Plan, the Walnut Avenue Levee was approximately 90 feet long and impacted only two properties. In the Revised Plan, the Walnut Avenue/ South Levee will now run the full length of Walnut Avenue, approximately 2500 feet, from 12th Street west passed 8th Street and connecting with College Street. A summary of these changes can be found in the Table 14 below. Table 15 is a summary of the changes to the estates required for the project.

Table 14: Comparison of Land by Acres Needed

	DPR	EDR	Difference
Total Project Acres	54.17	73.63	+19.46
Total Acquisitions (owners)	98	132	+34
Total Tracts	143	188	+45
Commercial Relocations	5	6	+1
Residential Relocations	20	35	+15
Real Estate Cost Estimate	$11,477,000	$16,000,000	+$4,523,000

Table 15: Comparison of Estate by Acres Needed

Estate	DPR (acres)	EDR (acres)	Difference (acres)
Fee	10.00	43.23	+33.23
Flood Protection Easement	15.61	0.00	-15.61
Utility Easement	1.30	0.74	-0.56
Temporary Work Area Easement (Borrow)	14.07	22.19	+8.12
Temporary Work Area Easement	13.19	7.47	-5.72
Total	54.17	73.63	+19.46

The fully funded cost of LERRDs based on the Revised Plan is estimated to be approximately $16 million.

One major change of the Revised Plan is the decision to acquire lands underlying the structural elements of the Project in fee, rather than permanent easements. Acquisition in fee eliminates the possibility of future issues arising from concurrent use or underlying owners exercising subsurface rights. Given the proximity of these project features to private residences and commercial businesses, the risk of encroachments and disputes with adjoining property owners is high. Given that the permanent easements originally proposed are valued at 90% of fee value, the cost saving of acquiring easements rather than fee title is negligible and does not outweigh the benefit to the Sponsor of acquisition in fee.

Additional facility/utility relocations will be required as a result of the Revised Plan. A total of nearly 30,000 linear feet of utility lines will require relocation. Table 16 below includes a summary of the type, owner, and estimated length of the utilities expected to be impacted by Project construction based on currently available data. The Sponsor has requested that the USACE perform the facility/utility relocations on their behalf given the complexities involved in incorporating the relocated utility into the newly constructed floodwalls and levees. LRL supports the Sponsor's request and is in the process of requesting approval to perform relocations on their behalf from HQ. The Sponsor will remain responsible for acquiring all lands, easements, rights of way, and other real estate interests required to support the relocations.

Table 16: Utilities Within the Project Area

Service	Type	Owner	Length (LF)
Communication	OH Poles/Lines	AT&T	248
Electric	OH Poles/Lines	Kentucky Power (AEP)	1,714
Gas	UG	Paintsville Utilities	7,161
Sanitary Sewer	UG	Paintsville Utilities	12,240
Water	UG	Paintsville Utilities	9,724
Storm Sewer	UG	City of Paintsville	2,363

No other significant departures from the original real estate plan have taken place. All new lands required by this revised plan have been reviewed (or are currently being reviewed) for HTRW concerns. See section 15 below for details on that progress. No HTRW issues have been identified to date and none are anticipated. No induced flooding is anticipated as a result of the Revised Plan, and no changes were made to the nonstructural plan (Alternative 4R) or the FWEEP.

14 PUBLIC AND AGENCY COORDINATION

Throughout the life of the Johnson County Flood Risk Management Project, public and agency coordination has played an integral role in project development. Public participation is a significant component of the NEPA process. Reference the 2021 DPR/EA for initial public and stakeholder engagement. In compliance with NEPA, the EDR with integrated SEA will go out for a 30-day public review and comment period, which will be initiated by public notice. Stakeholder and Agency engagement has been ongoing and continues throughout the EDR process. The District coordinates with the NFS along with other local and state entities for input, and to address questions and comments about the project. This engagement will continue through design and implementation. While stakeholders as well as the interested public have been engaged throughout the process, a formal public and agency review period of the draft EDR/SEA will occur in June 2022, along with a public meeting to present the Revised Plan and anticipated environmental impacts to the public. All comments received during this review period will be evaluated and changes to this draft EDR/SEA and FONSI will be incorporated, as necessary. All received comments will be included in an Appendix of the final EDR/SEA.

15 ENVIRONMENTAL COMPLIANCE

The USACE has incorporated environmental values throughout the decision-making process. The information gathered during and after the development of the 2021 DPR/EA has led to alterations in project design and mitigation measures. This information will be provided to the public and resource agencies for input into the process and Revised Plan. This has allowed USACE to address compliance with other environmental laws (Table 17) as part of a single review process rather than through separate reviews, thereby reducing paperwork while ensuring comprehensiveness. An integrated SEA has been prepared as a component of this EDR. Status of compliance for the Revised Plan is shown in Table 17 followed by notes on some of the table line items.

Table 17: Environmental Compliance Status

Statute/Executive Order	Full	Partial	N/A
National Environmental Policy Act (considered partial until the FONSI is signed)		X	
Fish and Wildlife Coordination Act		X	
Endangered Species Act	X		
Clean Water Act		X	
Wild and Scenic Rivers Act			X
Clean Air Act	X		
Executive Order 14008: Tackling the Climate Crisis at Home and Abroad	X		
National Historic Preservation Act	X		

Archeological Resources Protection Act	X		
Comprehensive, Environmental Response, Compensation and Liability Act		X	
Quiet Communities Act			X
Farmland Protection Act			X
Executive Order 11988 Floodplain Management	X		
Executive Order 11990 Protection of Wetlands	X		
Executive Order 12898 Environmental Justice	X		
Executive Order 13122 Invasive Species	X		
Executive Order 11593 Protection & Enhancement of the Cultural Environment	X		
Migratory Bird Treaty Act	X		
River and Harbors Act			X
Watershed Protection and Flood Prevention Act	X		

National Environmental Policy Act: This is partial compliance pending agency/public review and comment, evaluation of comments received, and a decision whether to proceed with a Finding of No Significant Impact (FONSI).

Fish and Wildlife Coordination Act: Consultation with the USFWS and the Kentucky Department of Fish and Wildlife Resources (KDFWR) regarding effects on wildlife resources in accordance with the Act is ongoing through the agency review of this SEA. Compliance will be met when any comments from the USFWS or the KDFWR on this SEA are addressed.

Clean Water Act: Full compliance with the Clean Water Act requires a Section 401 Water Quality Certification (WQC) issued by the State of Kentucky. The WQC for the West and East segments of the project has been received. The North and South segments are still in the pre-application phase, the application will be submitted upon finalization of design details.

National Historic Preservation Act: As noted in Section 9.6.6, above, the USACE in consultation with the SHPO, Advisory Council on Historic Preservation (ACHP), Tribal Nations, and consulting parties executed a Programmatic Agreement (PA) that outlines a phased approach to identify historic properties and the mitigation stipulations to resolve adverse effects to historic properties and archaeological sites that have either been recommended eligible for the listing to the NRHP or are already listed in the NRHP. The PA was executed on December 18, 2020.

Archeological Resources Protection Act: This compliance is a part of the PA noted above under National Historic Preservation Act.

Comprehensive, Environmental Response, Compensation and Liability Act: Current preliminary review for the Revised Plan (North and South Floodwalls along Paint Creek) had not identified any Recognized Environmental Conditions (RECs) not already indicated from the 2020 preliminary evaluation. Site investigations of the RECs are ongoing to verify CERCLA compliance.

Floodplain Management EO 11988: Executive Order 11988 requires Federal agencies to consider their potential effects of their proposed action to floodplains. As noted in section 10.4.1.1, the project has moderate positive long-term effects on floodplains by removing developed areas from the floodplain. The evaluation for floodplain management has been conducted as required by EO 11988, see Appendix G for full analysis. The eight steps associated with the decision-making process in EO 11988 were considered in

the evaluation of the Revised Plan. Based on the findings and determination discussed in this report, the Revised Plan is in compliance with EO 11988.

15.1 MITIGATION

Throughout the planning process, consideration has been given for avoiding and minimizing environmental impacts through good engineering and design, along with the previous reviews of the 2021 DPR/EA and Recommended Plan. Although losses of some habitat areas from construction and implementation are unavoidable, the levee and floodwall alignments have been adjusted to avoid undisturbed areas and habitat to the most practicable extent.

The 2021 DPR/EA proposes two separate mitigation actions to compensate for project impacts on habitat. (See section 10.4 above for additional informaton regarding mitigation payment, andrefer to the Mitigation section of the DPR/EA for details on how the compensation is calculated.)

1. Payment into the Imperiled Bat Conservation Fund (IBCF). This payment compensates for project impacts to habitat that is suitable for NLEB and Indiana bat in accordance with use of the USFWS Biological Opinion (BO) on the two bat species. The ICBF payment for the Revised Plan was calculated in coordination with the USFWS using the multipliers provided for the IBCF calculations. The proposed project occurs in *potential* Indiana bat habitat and known *summer 1* NLEB habitat, which has a multiplier of 1.5 for clearing during the unoccupied timeframe (August 16 – March 31). The worse-case scenario for the Revised Plan would eliminate 12.72 acres of trees in summer 1 habitat during the unoccupied timeframe. At the current avg. value of farm real estate in KY ($4,000), the calculation is 12.72 acres * 1.5 (multiplier) * $4,000 = $76,320.00 for the mitigation payment to the IBCF.

2. Payment into a mitigation bank for general impacts to stream habitat. For the Recommended Plan, a purchase of 247.5 credits from a mitigation bank was calculated at an estimated cost of $210,375. Alternately, the USACE could construct mitigation for 4.1 acres of riparian habitat at an estimated cost of $155,800. Therefore, stream impacts could be mitigated through either an approved mitigation bank, in-lieu fee program, and/or USACE responsible restoration. The current USACE plan is proposing to use the in-lieu fee program as mitigation.

With a 20% contingency for increased cost of in-lieu-of mitigation bank credits, the 2021 DPR/EA concluded that required mitigation could be as much as 297 credits, totaling $243,500, for the Recommended Plan. The Revised Plan would decrease overall impacts to the environment, accordingly the mitigation costs would decrease. Once the project design is finalized the necessary adjustments to the stream habitat mitigation costs would be made. This would account for the decrease in total impacts of the Revised Plan and would consider any mitigation that is appropriate under the Clean Water Act.

Monitoring and Adaptive Management: By using the recommended mitigation alternative above, a monitoring and adaptive management plan will be the responsibility of the IBCF and for the bank/in-lieu fee program to develop. No additional monitoring or adaptive management will be required of the proposed project.

15.2 PRELIMINARY FINDING OF NO SIGNIFICANT IMPACTS

A Preliminary Finding of No Significant Impact (Preliminary FONSI) has been developed and is provided in Appendix F of this document. The Preliminary FONSI assumes the state of compliance that is expected to be present at the time the FONSI would be considered for signature. The Preliminary FONSI includes technical, environmental, and economic criteria used in the formulation of alternative plans were those

specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. The Preliminary FONSI concludes (on the assumption that no significant impacts are revealed through the public review process) that,

> All applicable laws, executive orders, regulations, and local Government plans were or are being considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State, and local agencies, Tribes, input of the public, and the review by my staff, it is the preliminary determination that the Revised Plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement (EIS) is not required.

This EDR/SEA is subject to a 30-day agency/public review. Following the 30-day review and upon evaluation of the comments received, a final decision will be made regarding the necessity of preparing an EIS for the proposed action. If the final decision is that an EIS is not needed, the preliminary FONSI would be finalized, and the project would proceed. Otherwise, the project would either be modified to eliminate the significant impacts or an EIS would be required.

16 RECOMMENDATION AND APPROVAL

The project was developed consistent with national environmental statutes, applicable executive orders, and other Federal planning and engineering requirements. The Revised Plan avoids, minimizes, or mitigates adverse environmental effects to the extent practicable and identifies feasible measures to adequately compensate for unavoidable effects to significant resources. The Revised Plan is in the public interest and does not constitute a major federal action that would significantly affect the quality of the environment; therefore, preparation of an EIS is not required. The Revised Plan also aligns with the legislative requirement of Section 202 of the Energy & Water Development Appropriation Act, 1981, P.L. 96-367, tit II, § 202 (1981) (Section 202). Following the approved 2021 DPR/EA with improvements captured in the Revised Plan and detailed in this EDR, the District recommends that the Johnson County Project be constructed and implemented under prior approved authorization and available funding.

The NFS understands its responsibility as discussed above and has indicated willingness to continue the partnership with the Federal Government for implementation of the Revised Plan through an updated PPA. I have given consideration to all significant aspects in the overall public interest included those related to environmental, social, economic effects, and engineering feasibility; and as such, I recommend approval of the Revised Plan as presented in this report.

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Eric D. Crispino
Colonel, U.S. Army Corps of Engineers
District Commander

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