# Draft Supplemental Environmental Assessment and Draft Finding of No Significant Impact

# Town of Avon, Indiana South County Road 625 East, Section 14 Emergency Streambank Stabilization

February 2022

United States Army Corps of Engineers
Louisville District

**DRAFT FINDING OF NO SIGNIFICANT IMPACT**

**TOWN OF AVON, INDIANA SOUTH COUNTY ROAD 625 EAST, SECTION 14 EMERGENCY STREAMBANK STABILIZATION**
**HENDRICKS COUNTY, INDIANA**

The U.S. Army Corps of Engineers, Louisville District (USACE) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Supplemental Environmental Assessment (EA) dated TBD, for the Town of Avon, Indiana, Section 14 Project addresses bank stabilization opportunities and feasibility along White Lick Creek in Avon, Indiana.

The Final Supplemental EA, incorporated herein by reference, evaluated various alternatives that would stabilize the streambank in the study area. The Recommended Plan is the National Economic Development (NED) Plan and includes:

- Protection of approximately 491 linear feet of streambank along White Lick Creek by re-grading the degraded bank slope to a 1.5:1 slope, installing 24 inches of riprap at the toe of the bank from the channel bottom up to 0.2% the Annual Exceedance Probability (AEP) flood elevation (774 msl), installing a high-performance turf reinforced mat above the AEP flood elevation, and hydroseeding the slope with a native seed mix.

- Implementation of any required environmental compensatory mitigation and associated monitoring and mitigation area adaptive management plan, when applicable and appropriate. Monitoring will continue until any required mitigation has been determined to be successful based on the identified criteria within the Avon Monitoring and Mitigation Area Adaptive Management Plan included in the Appendix. Monitoring is expected to last no more than five years.

In addition to a “no action” plan, another six action alternatives were evaluated. The alternatives included:

1. Launched soil nails and riprap toe
2. Riprap stone protection
3. Sheet pile wall
4. Gabion basket toe with riprap slope
5. Gravity retaining wall
6. Relocation of South County Rd 625 East

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the Recommended Plan is listed in Table 1:

**Table 1: Summary of Potential Effects of the Recommended Plan**

| | Insignificant effects | Insignificant effects as a result of mitigation | Resource unaffected by action |
|---|---|---|---|
| Aesthetics | ☐ | ☐ | ☒ |
| Air quality | ☐ | ☐ | ☒ |

| | Insignificant effects | Insignificant effects as a result of mitigation | Resource unaffected by action |
|---|---|---|---|
| Aquatic resources/wetlands | ☒ | ☐ | ☐ |
| Invasive species | ☐ | ☐ | ☒ |
| Fish and wildlife habitat | ☒ | ☐ | ☐ |
| Threatened/Endangered species/critical habitat | ☒ | ☐ | ☐ |
| Historic properties | ☐ | ☐ | ☒ |
| Other cultural resources | ☐ | ☐ | ☒ |
| Floodplains | ☒ | ☐ | ☐ |
| Hazardous, toxic & radioactive waste | ☐ | ☐ | ☒ |
| Hydrology | ☒ | ☐ | ☐ |
| Land use | ☒ | ☐ | ☐ |
| Navigation | ☐ | ☐ | ☒ |
| Noise levels | ☒ | ☐ | ☐ |
| Public infrastructure | ☒ | ☐ | ☐ |
| Socio-economics | ☐ | ☐ | ☒ |
| Environmental justice | ☐ | ☐ | ☒ |
| Soils | ☒ | ☐ | ☐ |
| Tribal trust resources | ☐ | ☐ | ☒ |
| Water quality | ☒ | ☐ | ☐ |
| Climate change | ☒ | ☐ | ☐ |

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the Recommended Plan. Best management practices (BMPs) as detailed in the Supplemental EA will be implemented, if appropriate, to minimize impacts.

The Recommended Plan will result in unavoidable adverse impacts to fish and wildlife habitat through the loss of 0.4 acres of trees and disturbances to 491 linear feet of stream (White Lick Creek). To mitigate for these unavoidable adverse impacts, the USACE will mitigate for the loss of trees greater than 10-inches diameter at breast height (DBH) by planting trees at a ratio of 5:1 in an area within the White Lick Creek watershed, and mitigate for the impact to 491 linear feet of the White Lick Creek stream channel by restoring a stream bank in the White Lick Creek watershed at a 1:1 ratio.

Public review of the draft Supplemental EA and FONSI was completed on **PENDING**. All comments submitted during the public review period were responded to in the Final IFR/EA and FONSI. **PENDING**

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the USACE determined that the Recommended Plan may affect but is not likely to adversely affect the following federally listed species or their designated critical habitat: Indiana Bat (*Myotis sodalis*) and Northern Long-eared Bat (*Myotis septentrionalis*), with take of the Northern Long-eared Bat not being prohibited under the 4(d) rule for this species. The U.S. Fish and Wildlife Service (FWS) concurred with the USACE' determination on **PENDING**

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the Recommended Plan has no potential to cause adverse effects on historic properties.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the Recommended Plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines evaluation is found in The Appendix of the EA.

A water quality certification pursuant to section 401 of the Clean Water Act will be obtained from the Indiana Department of Environmental Management prior to construction. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, economic, and cost effectiveness 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. All applicable laws, executive orders, regulations, and local government plans were 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 my determination that the Recommended Plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

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Date

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Eric Crispino
Colonel, Corps of Engineers
District Commander

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# 1.0 Introduction

## 1.1 Project Overview

This study was initiated by a request from the Town of Avon, Indiana's (hereafter "Avon") Department of Public Works to investigate stabilization solutions for approximately 500 linear feet (lf) of the left descending bank of the White Lick Creek adjacent to South County Road 625 East in Hendricks County, Indiana (Figure 1). The U.S. Army Corps of Engineers (USACE) conducted an initial field inspection of the project on April 27, 2016. A second site visit was conducted on February 2, 2017 to collect data and evaluate the nature and extent of the erosion. Previous attempts to address this erosion, as evidenced by the presence of riprap and rubble along the bank, are currently failing.

The USACE has determined that the cause of the erosion is the sinuous nature of the creek and increased stream velocities during high flow events which undermine the supporting gravel layer of the streambank. Essentially, as the flow velocity increases so does the shear stresses on the streambank. When the shear stresses increase to a point where they exceed the resisting forces, material from this granular layer are removed from the streambank. As material from the gravel layer is removed, the upper bank material is undermined and eventually falls into the creek. Based on the results of this study, the piers of the CSX Avon Railroad Bridge are not affected by this erosion and are not inducing erosion on the stream bank. The progression of erosion is dependent on the number and duration of high flow events that produce velocities great enough to generate the shear forces necessary to remove material from the gravel layer. However, it is likely that erosion rates would continue to accelerate resulting in a failure of the road, unless action is taken to effectively stabilize the bank. The approximate length of the scouring and erosion is 491 linear feet.

A Detailed Project Report (DPR) and integrated Environmental Assessment (EA) was developed to document the results of the feasibility study, which was initiated to determine the best alternative to correct the erosion issues along White Lick Creek. This DPR/EA (also referred to herein as the Feasibility Study) was completed in November 2019 and resulted in the recommendation of the Launched Soil Nails with Riprap Stone Protection at the Toe Alternative (all considered alternatives discussed in detail in Section 2.0).

However, subsequent investigations occurring during the design phase have led to design refinements to the alternative recommended in the feasibility study. The design of the recommended alternative proposed in the feasibility study was based on the available 2015 Light Detection and Ranging (LiDAR) topographic data. No subsurface geotechnical data for the project area were available. During the design phase, in 2021, an updated contour survey and subsurface investigation was conducted. The survey showed that the left bank was steeper and the stream channel deeper than was understood in the feasibility study, which means that the bank would require significant regrading, whereas the feasibility study only anticipated minimal grading. Additionally, to get the 1.5:1 slope required for riprap placement by Engineering Manual (EM) 1110-2-1601, the bank would protrude into the channel approximately nine feet more than was planned from the feasibility study. Further, one of the components of the Recommended Plan in the DPR/EA was the use of soil nails to stabilize the existing slope. However, the subsurface investigation found that the streambank has numerous pockets of stiff soils with blow counts greater than 20 blows per foot, so soil nails would likely not be able to be fully launched, as required for the recommended alternative.

In light of the design changes to the Recommended Plan that have been necessitated by this new data, the USACE has identified the need to produce this supplemental EA to evaluate environmental impacts

that may not have been fully assessed in the DPR/EA. This includes evaluating impacts for the 9-foot extension of the bank that is predicted to extend into the channel after regrading. The design changes referenced above were determined to be significant enough to be discussed as a new alternative, which needs to be fully evaluated for potential environmental effects (see section 2.0).

## 1.2 Purpose and Need

The purpose of this study is to develop and evaluate information pertinent for Avon's request for USACE assistance, and in concert with key stakeholder priorities, identify a viable plan that may be implemented under the above authority. Per the USACE Engineering Regulation (ER) 1105-2-100, Appendix F, Section III, F-23, a plan is considered to be economically justified if the total cost of the preferred alternative is less than the cost of relocating the threatened facility: South County Road 625 East.

The project is needed to prevent the loss of a major county roadway that serves as a primary transportation route for Avon. The roadway is being threatened by streambank erosion along a bend of the White Lick Creek, and continued erosion is likely to result in imminent failure of the road and associated traffic route.

## 1.3 Project Authority

This project is being conducted under Section 14 of the Flood Control Act of 1946, as amended, which authorizes the USACE to study, design and construct emergency streambank and shoreline works, and to protect public services including (but not limited to) streets, bridge approaches, schools, water and sewer lines, historic properties listed on the National Register of Historic Properties, and churches from damage or loss by natural erosion. The project is part of the Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost, and complexity.

## 1.4 Location

The project is located in the town of Avon, Indiana, along the White Lick Creek near South County Road 625 East. South County Road 625 East is a north-south route for local residents travelling to and from Avon, its businesses, and public facilities (Figure 1).


**Figure 1.** Project Area of the proposed Avon Bank Stabilization Project, Hendricks County, Indiana.

# 2.0 Recommended Plan and Alternatives

## 2.1 No Action Alternative

The No Action Alternative (NAA) would result in no action being taken to stop erosion at the site. Based on historical aerial photography, the rate of erosion is estimated to average one foot per year at this site, and is expected to continue at that rate. Continued erosion at this location would restrict traffic for the Thornridge subdivision, as the road would fail and begin to fall into White Lick Creek. The erosion could also eventually threaten the water and sewer lines running along South County Road 625 East. Additional erosion further increases the risk of a large slope failure, releasing large amounts of sediment and debris into White Lick Creek.

## 2.2 Action Alternatives Considered

The following provides a brief description of the alternatives developed and evaluated for this project. Alternatives 1 through 6 were evaluated in the original EA. Alternative 7 reflects the culmination of

changes in design that have occurred during the design and implementation phase of the project. The cumulative design changes were determined to be significant enough to be discussed as a new alternative.

### 2.2.1 Alternative 1 - Launched Soil Nails with Riprap Protection at Toe

For this alternative, soil nails would be installed in a systematic pattern to stabilize the existing bank slope to the north and south of the CSX Avon Railroad Bridge for a total length of 491 linear feet. The soil nails would be inserted using a high-pressure air launcher approaching 2500 pounds per square inch (psi). As the nail comes to rest, the soil would rebound onto the surrounding strata and bond with the nail. The soil nails would reinforce the locally unstable soil mass by transferring the nail's tensile and shear resistance through the failure plane of the sliding soil. Before the soil nails are installed, a surficial reinforcing mesh or High-Performance Turf Reinforcement Mat (HPTRM) would be fastened across the length of the erosion, starting at the 10% Annual Exceedance Probability (AEP) flood elevation (772.5 msl) and progressing up the bank slope. This alternative would also require the installation of a riprap stone toe from the bottom of the channel, below the ordinary high-water mark to the 10% AEP flood elevation to account for the high velocity stream forces affecting the streambank. The riprap stone toe would require excavation of the channel bottom to a depth that is below the calculated scour depth. The scour depth is estimated to be two feet or less. The alternative would require the removal of all debris and vegetation along the streambank for approximately 0.4 acres, and a modification of the bank itself through the removal of earthen material and grading of slope to 1.5H:1V ratio. Removed earthen material would be placed in a state approved landfill. A layer of shotcrete, gunite, or sprayed concrete, would be applied to the HPTRM. Finally, topsoil would be placed on the top of bank to provide an adequate soil media for reseeding of grasses.

### 2.2.2 Alternative 2 - Riprap Stone Protection

This alternative would require the excavation and modification of the existing streambank to the north and south of the CSX Avon Railroad Bridge to form a maximum 2H:1V slope, and the placement of a 24-inch layer of 205-pound maximum riprap over the slope to an elevation of 15 feet above the channel bottom for a total length measuring 491 linear feet. It also would require excavation of the channel bottom to a depth that is below the calculated scour depth, and installation of a riprap stone toe to account for the high velocity stream forces effecting the streambank. The scour depth is estimated to be two feet or less. All debris and vegetation along the streambank would be removed for an area encompassing approximately 0.4 acres. Removed earthen material would be placed in a state approved landfill.

### 2.2.3 Alternative 3 - Sheet Pile Wall

This alternative would require the placement of 491 feet of sheet pile wall to the north and south of the CSX Avon Railroad Bridge. The wall would be 15 feet above the channel and driven approximately 30 feet into the subsoil (the actual embedment depth would be determined in the geotechnical analysis performed in the next study phase). The wall would be driven into the ground using a vibrating hammer. Once the wall is in place, approximately 2,000 cubic yards of the existing slope would be excavated to form two benches. The benches would then be backfilled and compacted with 5,200 cubic yards of earthen material and 430 cubic yards of topsoil to form a slope above the top of the wall at a maximum of 1.5H:1V. The top of the wall would be set above the 500-year flood event, eliminating the need for riprap stone to be placed on the slope. Approximately 1,100 lf of perforated pipe and 37 cubic yards of granular bedding material would be needed for the underdrain of the wall. The alternative would require a clearing of all debris and vegetation for approximately 0.4 acres along the streambank, but the

new slope would be planted with native vegetation. Borrow and topsoil needed for the alternative would be taken from commercial haulers in the area.

### 2.2.4 Alternative 4 - Gabion Basket Toe with Riprap Slope

This alternative would require the placement of 491 feet of Gabion Baskets with a riprap slope to the north and south of the CSX Avon Railroad Bridge. The single unit baskets are assembled, laced together, and then filled with stone to form a monolithic structure. For this alternative, Gabion Baskets would be aligned along the creek's edge and stacked up to the ordinary high-water mark. A 24-inch layer of 205-pound maximum riprap would then be placed over the slope to an elevation of 15 feet above the channel bottom. The alternative would require some excavation and modification of the existing streambank, and excavation of the channel bottom to a depth that is below the calculated scour depth, which is estimated to be two feet or less. The alternative would require the removal of all debris and vegetation along the streambank for approximately 0.4 acres. Soil would be placed on the top of the structure to facilitate the growth of native vegetation.

### 2.2.5 Alternative 5 - Gravity Retaining Wall

This alternative would require the construction and placement of a gravity retaining wall (Redi-Rock wall or equivalent prefabricated wall) to the north and south of the CSX Avon Railroad Bridge. This alternative would require excavation of the channel bottom to a depth that is below the calculated scour depth, estimated to be two feet or less. However, during the design phase, excavations deeper than the estimated two feet scour depth may be determined to be required for the gravity retaining wall system. This alternative would require some excavation and modification of the existing streambank, as well as removal of all debris and vegetation for approximately 0.4 acres. Soil would be placed on the top of the structure to facilitate the growth of native vegetation.

### 2.2.6 Alternative 6 - Road Relocation

This alternative would require the relocation of South County Road 625 on both sides of the CSX Avon Railroad Bridge. Relocating the road would require a complete redesign of the road, a demolition of existing pavement, clearing and grubbing of hardwood trees, excavation for ditches, and placing new asphalt pavement. There would also be mitigation costs associated with relocating the road and local traffic patterns would be permanently altered. A modification of the CSX Avon Railroad Bridge could be required as part of this measure if the bridge abutments cannot be avoided.

### 2.2.7 Alternative 7 – High Performance Turf Reinforcement Mat with Riprap Protection at Toe

This alternative would involve the removal of all debris and vegetation on approximately 0.4 acres of the existing unstable bank. Existing riprap could be used as foundation for the riprap toe or would be disposed of in a state approved landfill. Significant regrading would be necessary to achieve a 1.5:1 slope maximum. In all, 24 inches of new riprap stone would be installed on the toe of the bank from the channel bottom, below the ordinary high water mark, up to the 0.2% AEP flood elevation (774 msl) upstream of the pier and Elevation 772 downstream of the pier). A HPTRM would then be installed above the 0.2% AEP flood elevation to the top of the bank, with anchor trenches along the edges and pins installed on the edges and center, and then revegetated with a native seed mix, through hydroseeding, for surface runoff erosion resistance.

## 2.3 Alternative Evaluation and Recommended Plan

The final array of alternatives considered for implementation were evaluated for their success in meeting the planning objectives and constraints (including technically feasibility and ability to meet the

purpose and need for the project) (Table 1). The evaluation criteria were then considered in screening the alternatives according to their overall acceptability. As stipulated under Engineering Regulation (ER) 1105-2-100, formulation and evaluation should focus on the least cost alternative solution that is less expensive than relocating South County Road 625 East. A discussion of the evaluations follows, with a summary of findings and screening results shown in Table 1.

**Table 1.** Alternative screening summary of the proposed Avon Bank Stabilization Project.

| Avon, Indiana Alternatives Alternative Screening | | | | | | | |
|---|---|---|---|---|---|---|---|
| Alt # | Alternative | Planning Objectives | | Planning Constraints | | | Screening Result |
| | | Meets Purpose & Need | Sustainable | Technically Feasible | Environmentally Acceptable | Estimated Construction Cost | |
| N/A | No Action Alternative | No | No | No | No | N/A | Does not meet project purpose and need |
| 1 | Launched Soil Nails with Rip Rap Stone Toe | Yes | Minimal-to-moderate level of maintenance | No | Yes | $1,492,000 | Determined not to be technically feasible |
| 2 | Riprap Stone Protection | Yes | Minimal-to-moderate level of maintenance | Yes | Yes | $1,610,000 | Environmentally acceptable, but is not the least cost alternative |
| 3 | Sheet Pile Wall | Yes | Minimal-to-moderate level of maintenance | Yes | Yes | $4,760,300 | Environmentally acceptable, but is not the least cost alternative |
| 4 | Gabion Basket Toe with Riprap Slope | Yes | Moderate level maintenance, long- term concern with corrosion associated with gabion baskets | Yes | Yes | $1,814,000 | Environmentally acceptable, but is not the least cost alternative |
| 5 | Gravity Retaining Wall | Yes | Minimal-to-moderate level of maintenance | Yes | Yes | $1,959,900 | Environmentally acceptable, but is not the least cost alternative |
| 6 | Road Relocation | Yes | Moderate to significant level of maintenance | Yes | No | $11,344,200 | Environmentally and economically unacceptable |
| 7 | Riprap toe with HPTRM slope | Yes | Minimal-to-moderate level of maintenance | Yes | Yes | $1,433,000 | Environmentally acceptable and is the least cost alternative. |

HPTRM = High Performance Turf Reinforcement Mat

Alternative 1 – Launched Soil Nails with Riprap Stone Protection at Toe: The Launched Soil Nails with Riprap Stone Protection alternative ($1,492,000) was determined not to be technically feasible after a subsurface geotechnical investigation during the design phase found that soil nails would likely not be able to be fully launched as required. Therefore, Alternative 1 is not considered to be a reasonable alternative for the project, has been screened from further consideration, and is not evaluated further in this supplemental EA.

Alternative 2 – Riprap Stone Protection: The Riprap Stone Protection alternative ($1,610,000) would meet the purpose and need of the project and is a common method of protection for eroding banks. The primary challenge with this alternative is ensuring a good foundation for the stone protection at the toe, which would most likely require the construction of a temporary diversion structure into the creek bottom. The alternative would have a temporary effect to benthic communities within the creek due to the diversion structure. The riparian zone along White Lick Creek would eventually re-establish itself along the streambank. Alternative 2 is considered environmentally acceptable but is not the least cost alternative.

Alternative 3 – Sheet Pile Wall: The Sheet Pile alternative ($4,760,300) would meet the purpose and need of the project. Sheet pile walls are another common method of protection for eroding banks and have advantages for this project. The impact to the existing channel is minimal and there would be little to no change in the flow velocities or upstream stages of White Lick Creek. However, unknown bedrock depth and large cobbles/stone could complicate the installation process and increase the cost of the wall installation. The method of installation for the wall with a vibrating hammer could also threaten the physical integrity of existing infrastructure, namely South County Road 625 East, the CSX Avon Railroad Bridge, and nearby residences. The alternative would likely have a temporary impact on the riparian zone along White Lick Creek and any benthic communities within the creek. Once in place, the native vegetation would easily and quickly re-establish itself. While Alternative 3 is considered environmentally acceptable, it is not the least cost alternative.

Alternative 4 – Gabion Basket Toe with Riprap Slope: The Gabion Basket Toe with a Riprap Slope alternative ($1,814,000) would meet the purpose and need of the project and is another common method of protection for eroding banks. The impact to the existing creek channel would be minimized with this alternative, and there would be no change in flow velocities or upstream stages for White Lick Creek. The primary challenge is ensuring a good foundation for the gabion basket toe, which would most likely require the construction of some type of temporary diversion structure and excavation into the creek bottom. There is also a risk for long term failure if the wire comprising the gabion baskets is damaged or corroded. The alternative would have a temporary effect to benthic communities within the creek due to the diversion structure. The riparian zone along White Lick Creek would eventually re-establish itself. Alternative 4 is considered environmentally acceptable and is not the least cost alternative.

Alternative 5 – Gravity Retaining Wall: The Gravity Retaining Wall alternative ($1,959,900) would meet the purpose and need of the project. With this alternative, the impact to the existing channel would be minimized, and there would be little to no change in flow velocities or upstream stages. The primary challenge with this alternative is ensuring a good foundation for the wall, which most likely would require constructing some type of temporary diversion structure and excavation into the river bottom. The alternative would likely have an impact on the riparian zone along White Lick Creek. It would also have a temporary impact to any benthic communities within the creek. Once in place, the native vegetation and benthic communities would re-establish themselves. Thus, Alternative 5 is considered environmentally acceptable but is not the least cost alternative.

Alternative 6 – Road Relocation: The Road Relocation alternative is the most costly alternative being considered for this project ($11,344,200). It removes the immediate threat to South County Road 625 East but does not reduce the risk of failure to the road. At the rate of current erosion, Avon would have to either re-visit the threat to South County Road 625 East in the future or close the road entirely, which would permanently alter the traffic patterns for local residents and businesses. This alternative could

also expand the risk of failure to the CSX Avon Railroad Bridge. Lastly, the alternative would further degrade riparian habitat and impact aquatic species. This alternative is considered economically and environmentally unacceptable. Because of the relative cost and potential impact to the environment, this alternative has been screened from further consideration and is not evaluated further in this supplemental EA.

Alternative 7 – High Performance Turf Reinforcement Mat with Riprap Protection at Toe (Recommended Plan)

The HPTRM and riprap toe alternative ($1,433,000) would meet the purpose and need of the project. It is a common method of bank stabilization that is easy and quick to install at a modest price. The primary challenge with this alternative is ensuring a good foundation for the stone protection at the toe, which would most likely require the construction of a temporary diversion structure into the creek bottom. The alternative would have a temporary impact on the riparian zone along White Lick Creek and any benthic communities within the creek. Once in place, the native vegetation and benthic communities would re-establish themselves. Because Alternative 7 is considered environmentally acceptable and is the least cost alternative, it has been chosen as the Recommended Plan.

## 3.0 Environmental Setting and Consequences

The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's NEPA Implementing Regulations require that an EA identify the likely environmental effects of a proposed project and its reasonable alternatives, and that the agency determine whether those impacts may be significant. Effects (or impacts) are changes to the human environment that are reasonably foreseeable and have a reasonably close causal relationship to the alternatives evaluated herein. Effects may include ecological, aesthetic, historic, cultural, economic, social, or health effects, and can be either beneficial or adverse.

In considering whether the effects of the proposed action are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action. (40 C.F.R. § 1501.3(b)). The term "affected environment" refers to the areas to be affected or created by the alternatives under consideration and includes reasonably foreseeable environmental trends and planned actions in the area, if applicable (40 C.F.R. § 1502.15). The term "degree" is not defined in the regulations, but generally refers to the magnitude of change that would result from the alternatives evaluated herein.

All potentially relevant resource areas were initially considered for analysis in this EA. Some resource topics are not discussed, or the discussion is limited in scope, due to the lack of anticipated effect from the alternatives on the resource or because that resource is not located within the affected environment.

This section presents the environmental effects of the actions that would be taken under each alternative. This includes the NAA and alternatives two, three, four, five, and seven, as alternatives one and six were screened from further consideration.

This section is organized by resource topic, with the effects of alternatives discussed under each resource topic. Alternatives are discussed together when they are expected to have similar impacts on resources, and are discussed separately when impacts are expected to be different. 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 EA 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; and

- 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; and

- Long term – caused by an alternative and remain after the action has been completed and/or after it is in full and complete operation.

## 3.1 Climate

Indiana's climate exhibits strongly marked seasons. Winters are often cold, and summers are often hot. The transition from cold to hot weather can produce an active spring with thunderstorms and tornadoes. Oppressive humidity and high temperatures arrive in summer. Autumn is generally marked by lower humidity than the other seasons, and mostly sunny skies (National Climatic Data Center, 1976).

A report conducted by the USACE Institute for Water Resources (2015) summarizes the available literature for the Ohio Region, which includes the White Lick Creek basin. The report focuses on both observed climatic trends, as well as projected future findings. While the observed trends may prove to be of some importance, it is the projected findings which are of the most significance. The report finds a strong consensus supporting trends of increasing air temperatures. Average minimum temperatures are expected to experience a small increase, while temperature maximums are predicted to undergo a large increase. Projected increases in mean annual air temperature range from 0 to 14.4°F by the latter half of the 21st century (USACE Institute for Water Resources, 2015). Projections regarding precipitation and

hydrologic streamflow trends are less certain, with some studies calling for increases whereas others call for decreases.

The rate of warming in the Midwest has markedly accelerated over the past few decades. Between 1900 and 2010, the average Midwest air temperature increased by more than 1.5°F. Figure 2 shows annual average temperatures (red line) across the Midwest trending towards increasing temperature. The trend (heavy black line) calculated over the period 1895 - 2012 is equal to an increase of 1.5°F. However, between 1950 and 2010, the average temperature increased twice as quickly, and between 1980 and 2010, it increased three times as quickly as it did from 1900 to 2010 (Pryor and Barthelmie, 2013) Warming has been more rapid at night and during winter.

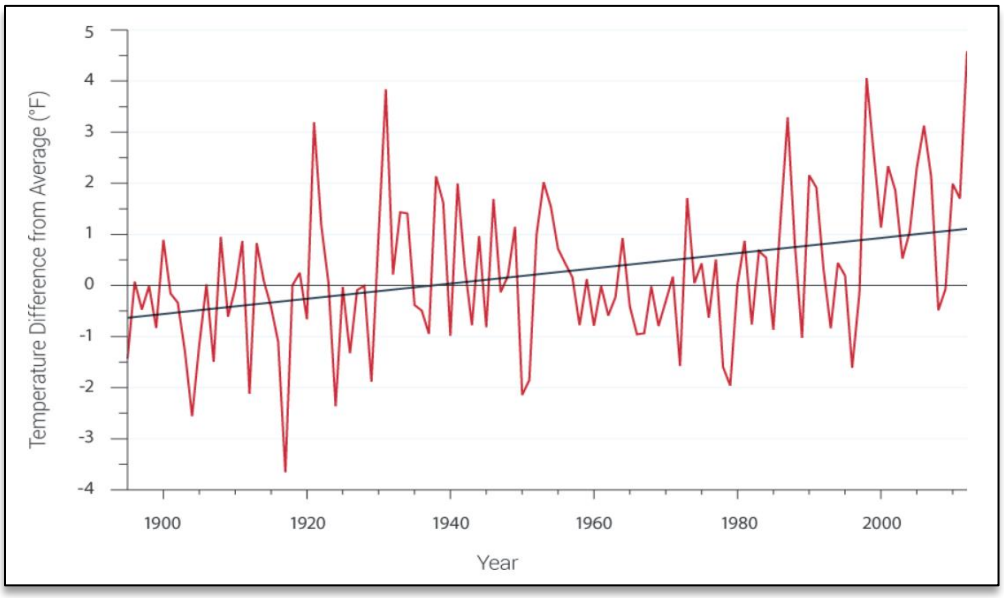


**Figure 2.** Range of annual average temperatures (red line) across Midwest (Source: Kunkel et al., 2013).

Climate vulnerability assessments are necessary to help guide adaptation planning and implementation so that the USACE can successfully perform its missions in an increasingly dynamic physical, socioeconomic, and political environment. The USACE Climate Change Vulnerability Assessment Tool 4 (VA Tool) was used to examine the vulnerability of the Wabash River Basin (HUC 0512) to future changes in climate. The mission business line considered for this analysis was flood risk reduction, as this was the best option provided by the modeling software. While the VA tool did not identify this business line as within the top 20% of vulnerable watersheds, that does not to imply that vulnerability to climate change does not exist within the watershed. Of the vulnerability indicators examined by the VA tool, five reliably drive the vulnerability of the flood risk reduction business line in all scenarios and epochs. These include long-term variability in hydrology (indicator 175C), a high elasticity between increasing precipitation and streamflow (277), changes in flood runoff (568C and 568L), and a projected increase in urban area within 500-year floodplain (590).

The VA Tool was utilized to identify potential vulnerabilities in the Wabash River basin at the HUC-4 watershed level. For the dry scenario, the tool indicated the highest contributor to vulnerability was indicator 277. This indicator is calculated by dividing percent change in runoff by percent change in precipitation. For the wet scenario, the flood magnification factor (568C)- or the change in flood runoff-

was the highest contributor. This factor represents how flood flow (i.e., the monthly flow exceeded 10% of the time) is predicted to change in the future. See factsheets in the Appendix for more details on these indicators. Figure 3 shows the results of the assessment for two climate scenarios (wet and dry) over two epochs (2050 and 2085).

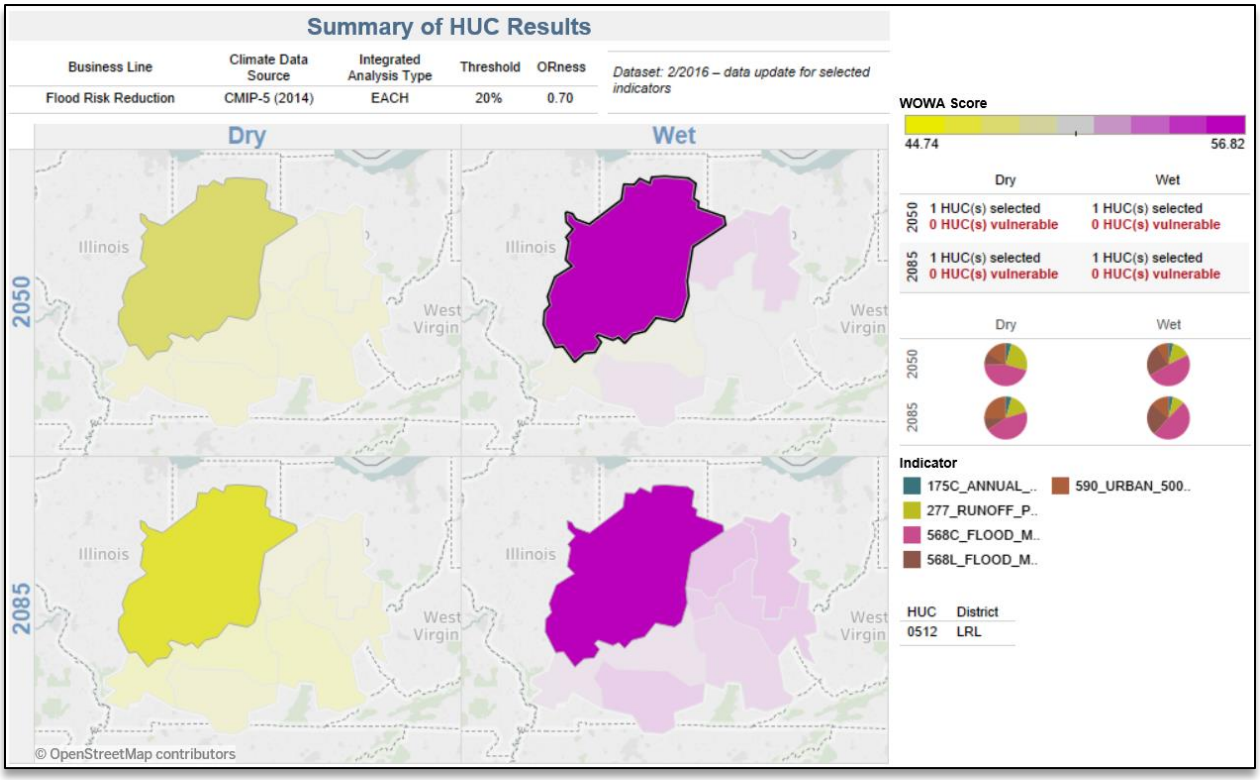


**Figure 3.** USACE Vulnerability Assessment Tool Results for the Wabash River Basin

The vulnerability assessment for the Wabash River watershed indicated that increased precipitation and precipitation runoff may be major contributors to vulnerability of the Wabash River basin in the future. The USACE Nonstationarity Detection Tool was used for analyzing additional climatic trends and projections in the White Lick Creek basin. This tool analyses whether the assumption of stationarity, which is the assumption that statistical characteristics of time-series data are constant over the period of record, is valid for a given hydrologic time-series data set.

Nonstationarity detection tests were carried out on the peak annual discharge record collected at USGS gage 03353800 White Lick Creek at Mooresville, Indiana from 1957 to 2014. The gage is located approximately 12.7 miles downstream of the project site in Avon.

A statistically significant ($P<0.05$) nonstationarity was detected by the Cramer-Von-Mises and Mann-Whitney tests in 1964 (Figure 4). This consensus between change point detection methods indicates a strong change point may have occurred in 1964. The nonstationarity detection tool identified this change as a decrease in mean peak annual discharge recorded at the gage. A clear driver of this change was not identified. However, at least six dams were built between 1940 and 1960 on tributaries of White Lick Creek upstream of Mooresville. Three of the dams- Lewis Lake Dam, Lakewood Estates Dam, and Stout Lake Dam- were built between 1957 and 1960. The impoundment of small tributaries

combined with increasing residential development in the 1960's likely contributed to reduced runoff rates and altered hydrology in the watershed.

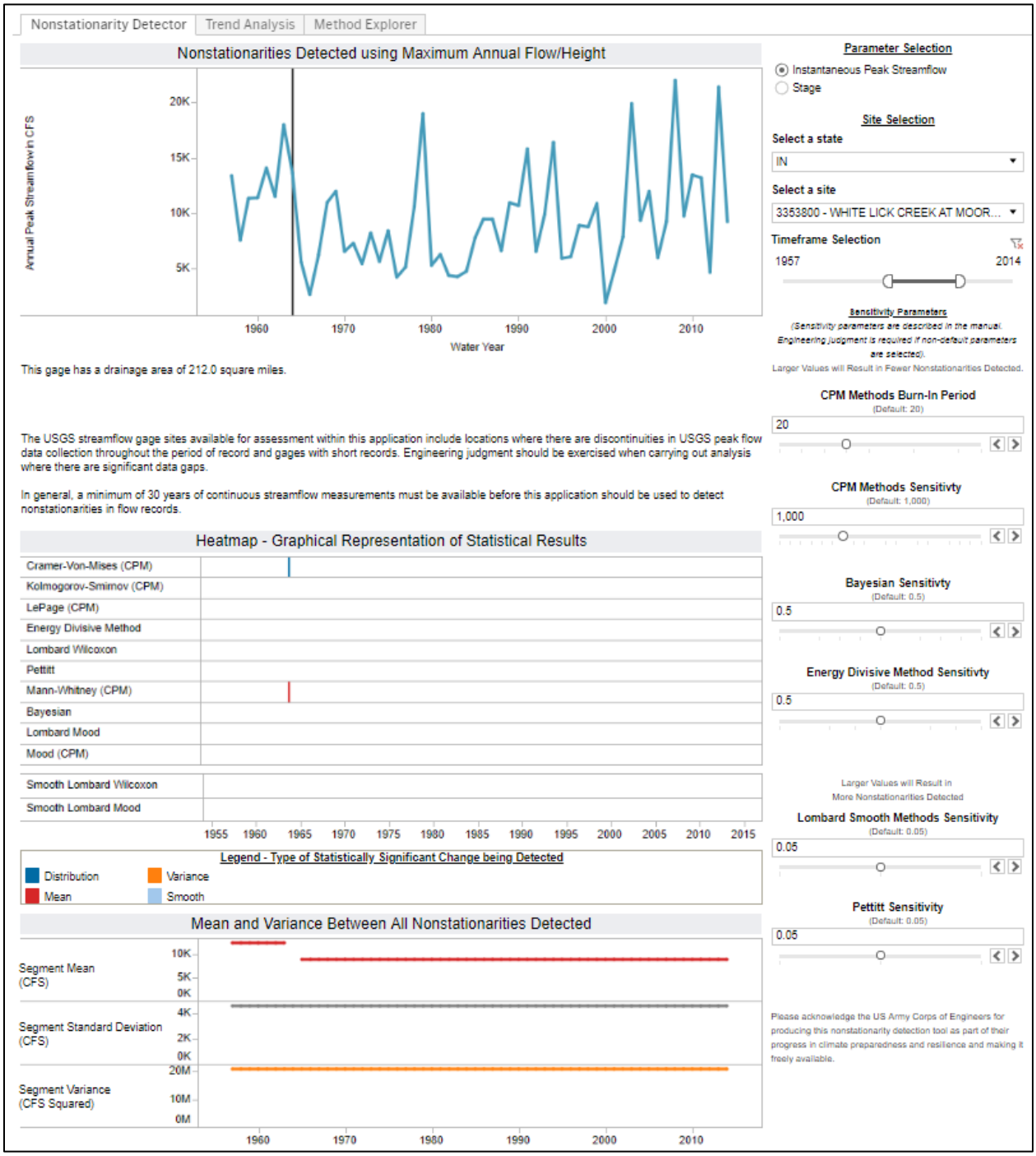


**Figure 4.** Nonstationary Analysis of Peak Annual Discharge on White Lick Creek at the Mooresville, Indiana USGS gage (Gage Number 03353800) from 1957 to 2014

Figure 5 shows the Monotonic Trend Analysis for the subset of maximum annual flow data collected after the change point in 1964. The analysis detected a statistically significant positive trend using the Mann-Kendall Test (p=0.035) and the Spearman Rank Order Test (p=0.041). The period of record before

the change point includes less than 10 years of data and was therefore not tested for trends with the monotonic tests.

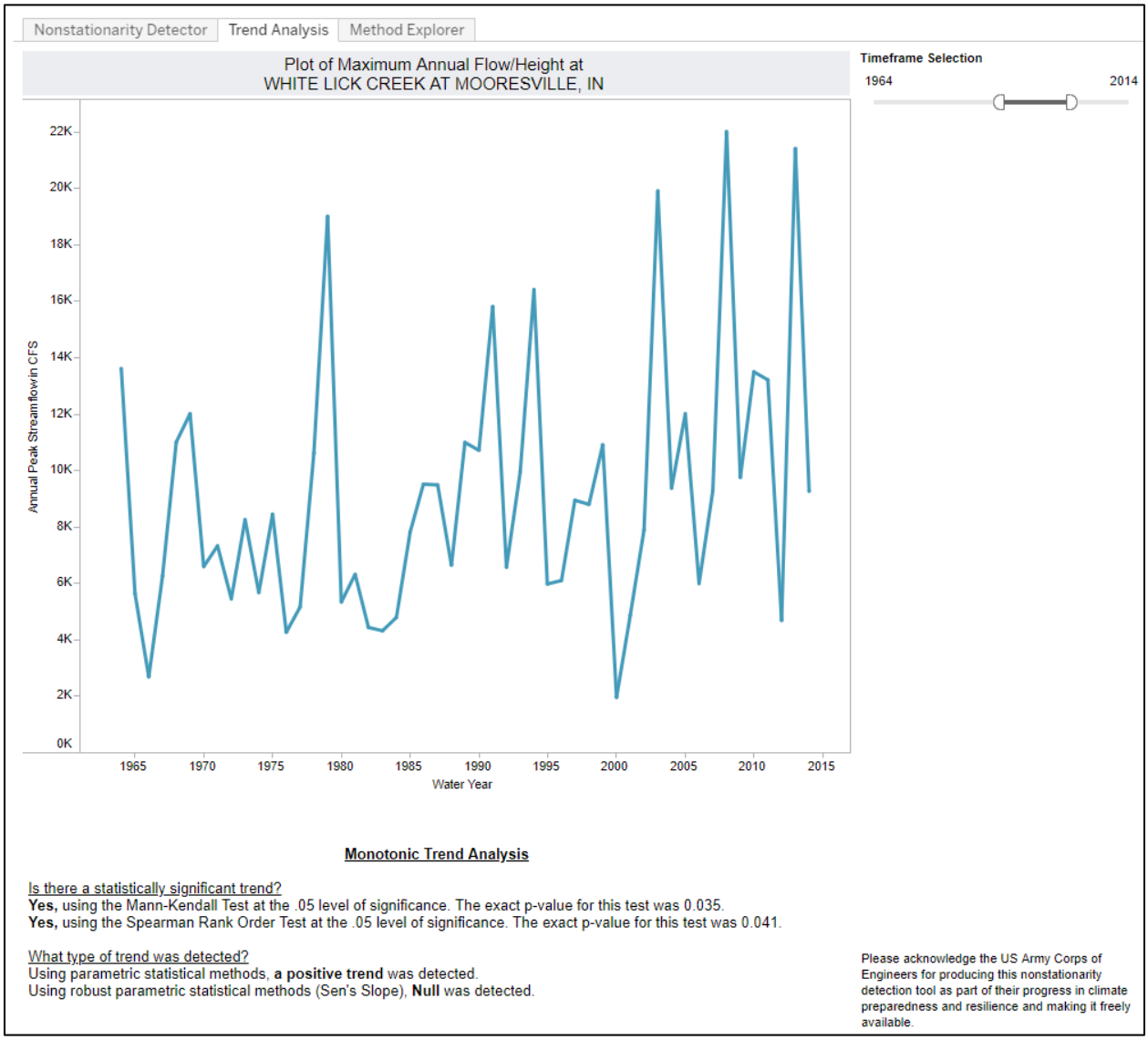


**Figure 5.** Monotonic Trend Analysis of Peak Annual Discharge on White Lick Creek at the Mooresville, Indiana USGS gage (Gage Number 03353800) from 1964 to 2014.

To summarize these data, it appears that the construction of dams on tributaries of White Lick Creek between the 1940s and 1960s resulted in decreased peak streamflow, as indicated in the nonstationarity test (Figure 4). However, the monotonic trend analysis performed on data collected after this decrease in peak streamflow indicate that the amount of runoff into White Lick Creek has been increasing, and that these increases are likely due to increases in precipitation caused by global climate change.

### 3.1.1 Environmental Consequences

Although there is no CEQ guidance currently in effect for consideration of greenhouse gas emissions in NEPA, Executive Order 13990 recommends that federal agencies consider all available tools and resources in assessing greenhouse gas emissions and climate change effects of their proposed actions, including, as appropriate and relevant, the 2016 CEQ guidance on greenhouse gas emissions. That guidance recommended that agencies quantify greenhouse gas emissions, taking into account available data and greenhouse gas quantification tools that are suitable for the proposed action. When greenhouse gas emission calculation tools, methodologies, or data inputs are not reasonably available to support a quantitative analysis, agencies should include a qualitative analysis and explain why quantification is not reasonably available. Currently, the USACE does not have an approved tool to quantify greenhouse gas emissions for projects that would involve varied and complex construction actions. Additionally, review of current available tools provided by the CEQ (https://ceq.doe.gov/guidance/ghg-accounting-tools.html), as well as review of publicly available web-based tools, did not result in any reasonable tools or methodologies for quantifying greenhouse gas emissions of varied and complex construction actions. As such, greenhouse gas emissions and climate change effects from alternatives are discussed in qualitative terms below, and alternatives are compared based on logical reasoning of differences in emissions expected.

No Action Alternative

The NAA would likely result in increased greenhouse gas emissions, as South County Road 625 East would become unusable and traffic would be rerouted, causing a long-term increase in the number of miles driven by local residents. These increases in greenhouse gas emissions would be negligible on the local and regional scale, but would over time result in more greenhouse gas emissions than a temporary increase in emissions caused by construction of bank protection measures.

Climate change itself would have a significant impact on the project area, as forecasted increases precipitation and runoff in the watershed would continue to exacerbate erosion at the site and continue to threaten public infrastructure, including utility lines buried near South County Road 625 East.

Action Alternatives including the Recommended Plan

Implementation of any of the bank stabilization alternatives considered would be expected to produce temporary, localized, and negligible increases in greenhouse gas emissions during construction activities from use of heavy construction vehicles and equipment. This increase would not be expected to make a significant contribution to changes in regional or global climate. Additionally, these activities would release less greenhouse gasses over time than rerouting traffic, as in the NAA. All considered action alternatives would result in similar levels of greenhouse gas emissions, as all alternatives are of similar sizes and would be constructed over similar time periods.

All alternatives would stabilize the streambank and minimize soil erosion caused by potential increases in precipitation and runoff into White Lick Creek. Although it comprises a relatively small portion of the Wabash River watershed, the proposed bank stabilization implemented at Avon would aid in reducing climate-related vulnerabilities to public infrastructure in the future by ensuring the stability of the roadway adjacent to White Lick Creek.

## 3.2 Soils and Geology

The project is located within the Eastern Corn Belt Plains Eco-region, a generally flat and featureless plain with low gradient streams that were laid down during the Wisconsinan glaciation (USGS 1998). In

particular, the project lies on materials of the Cartersburg Till member of the Trafalgar Formation. These materials, including outwash sand and gravels, and end moraines such as the Crawfordsville and Knightsville Moraines, were brought down by advancing glaciers from northeast and south-central Indiana around 20,000 to 21,000 years ago. The thickness of the glacial deposits in the study area ranges from 10 to 200 ft. They overlay various bedrock deposits of limestone, dolomites, and shale from the Devonian, Silurian, and Mississippian periods (Gutschick 1966).

The project area lies within the Miami-Crosby-Treaty soil association. According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the project site is completely comprised of Genesee silt loam (NRCS, 2017). No hydric soils have been identified in the project area. Soils in the area are flooded frequently but are well drained. While Genesee Silt Loam soil association is considered prime farmland, current land use (i.e., stream bank and paved road) preclude agriculture at the site. The NRCS soil map of the project area can be found in the Appendix.

### 3.2.1 Environmental Consequences

No Action Alternative

The NAA would result in the continued undercutting and erosion of the streambank and loss of soils which would eventually impact the physical integrity of County Road 625 South and result in disruptions to transportation.

Action Alternatives including the Recommended Plan

Construction impacts of the action alternatives to soils would result from excavation and grading of the streambank. All action alternatives would have similar impacts to soils. Although regrading would be necessary to achieve a proper slope, these impacts would be considered minor, and would be necessary to stop ongoing erosion at the site. Erosion during construction would be reduced by implementing appropriate erosion control measures to comply with the Indiana Storm and Water Quality Manual (IDEM, 2007). Implementation of any of the action alternatives, including the Recommended Plan, would result in an overall reduction in soil loss at the site. Therefore, impacts to soil are determined to be negligible.

## 3.3 Surface Waters, Wetlands, and Other Aquatic Resources

*Surface Waters*

The White Lick Creek watershed includes approximately 290 square miles of drainage area and eighteen HUC14 sub-watersheds. The creek is 47.7 miles long and flows from its source near Fayette, Indiana to its confluence with the White River in Centerton, Indiana. The project occurs between White Lick Creek stream mile marker 25.5 and 25.7.

White Lick Creek was listed on the Draft Indiana Department of Environmental Management (IDEM) 2016 Section 303(d) List of Impaired Waters. The identification of impaired waters is a requirement of states under Sections 303(d) and 305(d) of the Clean Water Act (CWA). The causes of impairment for the creek were *Escherichia coli (E. coli)* concentrations that exceeded the state's water quality standards. Designated uses for White Lick Creek include aquatic life, fish consumption, and primary contact recreation. These uses are described by IDEM as being fully supported, partially supported and not supported, respectively (Morgan County Soil & Water Conservation District, 2005). An active wastewater treatment outfall (NPDES Permit ID: IN0051632) is approximately 220 feet upstream of the project area. The outfall was permitted in 2006.

*Groundwater*
The potentiometric surface is a measure of the pressure on groundwater in a water bearing formation. Potentiometric surface elevations in Hendricks County, Indiana range from a high of 1,002 feet mean sea level (msl) in the north-central section of the county, to a low of 644 feet msl in the southeastern portion. Groundwater flow direction in the northwestern section of the county is toward West Fork Big Walnut Creek. In the eastern portions of the county, groundwater flow is generally toward White Lick Creek, and in the southwest, groundwater flow is to the south-southwest (Schmidt, 2012).

*Floodplains*
The project site is located within the 100-year floodplain of White Lick Creek and Zone AE as defined by the Federal Emergency Management Agency (FEMA). Most of the erosion protection would be placed within the regulatory floodway of the creek. A FEMA Flood Insurance Rate Map (FIRM) of the project area is included in Appendix.

Based on a flood insurance study of Avon and Hendricks County, Indiana, the discharges along White Lick Creek are estimated to be 7,350 cubic feet per second (CFS) for the 10% chance flood event, 10,300 CFS for the 1% chance flood event, and 14,600 CFS for the 0.2% chance flood event. Water surface profiles are estimated to range from 12 feet for the 10% chance flood event to 14 feet for the 0.2% chance flood event (FEMA, 2009). The estimated velocity for the 10% chance flood event is 7 to 8 feet per second (FEMA, 2009). A flood profile of White Lick Creek and project is provided in the Appendix.

*Wetlands*
Executive Order 11990, Protection of Wetlands, requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

A desktop analysis for presence of wetlands in the area was conducted using the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping tool. White Lick Creek is classified by the USWFS as a riverine wetland. The east bank of the creek, where the project is proposed, possesses a slope greater than 20 degrees and does not contain wetlands. The west side of the creek at the project site is classified as a freshwater forested/shrub wetland. No work is proposed on the west side of the creek. See the Appendix for a NWI map of the project site.

### 3.3.1 Environmental Consequences

#### *3.3.1.1 Surface Waters*

No Action Alternative
Given current trends, the NAA would be expected result in the continued erosion of the streambank and subsequent long-term increases in turbidity and sedimentation downstream in White Lick Creek.

Action Alternatives including the Recommended Plan
Implementation of any of the Action Alternatives, including the Recommended Plan, would be expected to have favorable long-term effects on water quality in, and downstream of, the project area by decreasing erosion and subsequent turbidity introduced to White Lick Creek following high water events. Appropriate sedimentation and erosion control measures that equal or exceed IDEM standards would be designed, installed, and maintained properly to assure compliance with the appropriate turbidity standards, although temporary increases in turbidity may occur during construction. These measures include a Type 2 Department of Transportation (DOT) Turbidity Curtain to be used during in-water material placement and silt fence use on the upland perimeter of construction activity.

Coordination with the Indiana Department of Environmental Management (IDEM) has resulted in the determination that regrading and disturbance to the stream would cause unavoidable impacts to the White Lick Creek corridor, given that an armored toe would be needed for greater than 350 linear feet and replanting of trees and shrubs would not be possible with the use of the HPTRM. These impacts would need to be mitigated at a 1:1 ratio for the 491 linear feet of disturbed stream corridor to comply with state regulations (see section 4 for detailed descriptions of mitigation). A Section 401 water quality certification (WQC) would be acquired prior to implementation of the Recommended Plan. No work would begin until IDEM has formally approved the WQC and subsequent mitigation plan. All proposed work would comply the conditions of the appropriate water quality certificate and the Indiana Storm Water Quality Manual. A 404 b(1) analysis is included in the Appendix to document compliance with section 404 of the Clean Water Act.

Given the limited scale of the action alternatives, long-term positive impacts to water quality from the cessation of erosion and prevention of continued bank failure, as well as only minor impacts to short-term increases in turbidity, impacts to surface waters from the action alternatives would be considered insignificant.

#### *3.3.1.2 Groundwater*

No Action Alternative

The NAA would have no effect on groundwater. This includes any impacts to groundwater levels or quality within or outside of the project area.

Action Alternatives including the Recommended Plan

Implementation of any of the Action Alternatives, including the Recommended Plan, would be expected to have no effect on groundwater. This includes any impacts to groundwater levels or quality within or outside of the project area.

#### *3.3.1.3 Floodplains*

No Action Alternative

Given recent trends, White Lick Creek would be expected continue to erode the streambank at the project site and deposit the eroded material downstream. Therefore, the NAA would be expected to have a long-term moderate impact on the floodplain, as land would continue to be lost.

Action Alternatives including the Recommended Plan

Executive Order 11988 directs federal agencies to avoid long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development, whenever practical. While the proposed project site is located within the floodplain, there are no other practical alternatives than to construct within the floodplain. Due to the limited size and scope of the action alternatives, there is low potential for adverse impacts to the adjacent floodplain. Additionally, none of the action alternatives would support floodplain development either directly or indirectly. Therefore, the USACE has determined that impacts to the floodplain would be negligible.

Every effort would be taken to minimize potential harm to or within the floodplain by reducing the amount of material placed in the floodplain to only that which is required to stabilize the streambank. The construction of the Recommended Plan or any of the other action alternatives within the floodplain

would comply with state/local floodplain protection standards, and the appropriate permits would be obtained prior to the start of construction.

#### *3.3.1.4 Wetlands*

No Action Alternative

The NAA would have no effect on wetlands.

Action Alternatives including the Recommended Plan

Implementation of any of the Action Alternatives, including the Recommended Plan, would be expected to have no effect on wetlands.

## 3.4 Wildlife Habitats

*Terrestrial Habitat*

Vegetation is relatively sparse on the steep, eroded streambank in the proposed impact zone of While Lick Creek (Figure 6). Larger canopy trees consist mostly of American sycamores (*Platanus occidentalis*), red maple (*Acer rubrum*), and American elm (*Ulmus americana*). As streambank erosion continues at the proposed project site, especially following high-water events, riparian vegetation will continue to become increasingly scarce as roots are undercut and plants are washed into the stream. The proposed project site lies on the outer bank of a sharp bend in the stream, which experiences higher water velocities and increased erosive forces. The existing riparian habitat at the project site is of low quality and is highly impacted by the cumulative impacts associated with higher water velocities, severe bank erosion, and previous disturbances from development. A large portion of the streambank is covered in riprap and concrete rubble from previous attempts to slow erosion (Figure 6).

**Figure 6.** Photograph of proposed streambank to be protected, showing vegetation and previous attempts at stabilization.

The land surrounding the project area consists mostly of residential and commercial development with fragmented stands of hardwood trees that would offer habitat to common wildlife species. Additionally, various mammals, waterfowl, amphibians, reptiles, and macroinvertebrates utilize habitat offered by the White Lick Creek corridor.

*Aquatic Habitat*
Site specific information on the biological condition of aquatic communities is lacking. The following analysis was conducted on a watershed level utilizing existing biological data and reports, and thus biological conditions of the site are inferred.

In 2001, the Indiana Department of Natural Resources (IDNR) conducted a fish survey of four sites within the 11- digit HUC White Lick Creek Watershed. Results indicated that habitat scores ranged from "poor" to "very good" (IDNR, 2001). White Lick Creek had average species diversity compared to other major streams in Indiana, although the overall species diversity was better than the state average (IDNR, 2001). The abundance of species intolerant of poor water quality such as the long-ear sunfish, northern hog sucker, and various species of red-horse suggested that water quality is "pretty good." With the exception of river mile 11.4, which has a wide riparian corridor, the remaining sampled reaches had minimal or no riparian zone. The results of the 2001 bioassessment conducted with the White Lick Creek watershed suggest that fish communities in the White Lick Creek appeared to be relatively healthy. The IDNR study recommended that habitat improvements can be made at all stations via the expansion of riparian zones.

In 2005, the Morgan County Soil and Water Conservation District created a watershed management plan for White Lick Creek. The authors suggested that the water quality of greater White Lick Creek watershed is in jeopardy by development occurring in the area, including Avon, IN, that could bring increases in sedimentation associated with construction of residential and commercial structures (Morgan County Soil & Water Conservation District, 2005).

### 3.4.1 Environmental Consequences

No Action Alternative
The NAA would be expected to result in the continued erosion of the streambank, which would eventually result in the undercutting and further loss of terrestrial riparian vegetation at the project site and the fauna that relies on riparian vegetation for habitat, food, and shelter. Furthermore, erosion would continue to impact aquatic habitat by the concomitant levels of sedimentation and turbidity of the project site over the long-term.

Recommended Plan – Alternative 7
Impacts to wildlife habitat from the implementation of the Recommended Plan would be expected to be temporary and minor, with mitigation available to offset impacts. The plan would require grading of the streambank and clearing of approximately 0.4 acres of vegetation. While most of the vegetation on the slope would be removed, this clearing would be minimized to retain as much existing riparian vegetation as practicable. A native herbaceous seed mix would be hydroseeded over the HPTRM to quickly re-establish a vegetated slope. As a result of implementing the Recommended Plan, it has been determined that 38 trees would be removed that have a diameter at breast height (DBH) of 10-inches or greater. No trees over four inches DBH would be removed from April 1st to September 30th to minimize potential impacts to roosting listed bats during the summer maternity season (See section 3.5 for listed species information).

Aquatic resources are impacted by a number of watershed activities, including residential development, pollution sources, and wastewater discharges. White Lick Creek generally has good to average water quality and offers diverse aquatic habitats. From a watershed perspective, the benefits realized from the stabilized streambank would not be significant in the overall reduction of aquatic resource/water quality impairments due to impacts occurring at a larger scale. However, site-specific water quality improvements would be realized by reducing riverbank erosion at the project site. Bank stabilization would likely provide long-term improvements in aquatic resources, water quality, and aquatic habitat. Temporary and localized impacts to benthic organisms and their habitats would occur in the immediate areas of construction; however, benthic organisms are expected to quickly rebound from the short-term impacts of material placement. For details regarding water quality permitting and mitigation of impacts see section 3.3.1.1.

Through coordination with the IDNR it was determined that the project would result in an unavoidable impact to riparian forest habitat in a floodway. A 5:1 mitigation ratio for the loss of these trees would be necessary to offset these impacts (see section 4 for detailed descriptions of mitigation). A construction in a floodway permit would be acquired from the IDNR prior to implementation of the Recommended Plan, and no work would begin until the IDNR has approved the permit and subsequent mitigation plan.

Alternatives 2 and 4 – Riprap and Gabion Baskets

Implementation of these alternatives would result in similar impacts to terrestrial habitat for the construction of the Recommended Plan, as they would also require grading of the streambank. However, extremely limited growth of vegetation would be expected on the stone slopes. As such, implementation of Alternatives 2 and 4 would result in a net loss of riparian habitat once installed. Although minor, impacts to the aquatic fauna would potentially be greater than the Recommended Plan, as full stone protection would require a larger toe at the base of the slope, thereby affecting a greater area of the stream's substrate. Similar mitigation strategies would need to be employed for impacts to riparian forest habitat and the stream corridor as outlined for the Recommended Plan.

Alternatives 3 and 5 – Sheet Pile Wall and Retaining Wall

These alternatives would also require initial clearing of vegetation along the slope and some grading of the streambank. The walls would allow for growth of terrestrial vegetation in the backfilled soil material behind the wall. Growth of both herbaceous and woody plants would be acceptable in these newly constructed areas. However, because of the sheer face of the wall, approximately 50 feet high, connection of the vegetation to the stream would be lost and would not provide many of the natural functions that a naturally vegetated streambank offers. As such, similar mitigation strategies would need to be employed for impacts to riparian forest habitat and the stream corridor as outlined for the Recommended Plan.

## 3.5 Threatened and Endangered Species

According to an official species list from the USFWS's Information for Planning and Consultation (IPaC) online tool dated December 6, 2021 (see the Appendix), there are three listed species that could potentially occur in the area. This includes the endangered Indiana bat (*Myotis sodalis*), the threatened northern long-eared bat (*Myotis septentrionalis*), and the monarch butterfly (*Danaus plexippus*), which is listed as a candidate species. No designated critical habitat exists on or near the project area.

The Indiana Division of Fish and Wildlife "Endangered, Threatened, and Rare Species List" lists 12 species and two natural communities as occurring in Hendricks County, Indiana. An analysis of the known ranges of the state endangered species (IUCN, 2015) indicated that the project site lies within the range of the

following species: upland sandpiper (*Bartramia longicauda*), cerulean warbler (*Dendroica cerulean*), evening bat (*Nycticeius humeralis*), and Indiana bat (*Myotis sodalis*). See the Appendix for the complete list of species and statuses.

### 3.5.1 Environmental Consequences

No Action Alternative

The NAA would have no effect on threatened and endangered species; however, it would result in the continued erosion of the streambank, which would eventually result in the loss of terrestrial riparian habitat which may be utilized by these species.

Action Alternatives including the Recommended Plan

The proposed project site lies within the range of two listed bat species - the endangered Indiana bat and the threatened Northern long-eared bat. In the summer months, these species roost under loose tree bark on dead or dying trees. All action alternatives would involve the removal of 0.4 acres of trees, with 38 trees being removed that have a DBH of 10 inches or more. It is unavoidable that trees over 3 inches DBH would be removed between April 1st and September 30th. Additionally, loss of trees greater than 10 inches DBH would be mitigated at a 5:1 ratio along a nearby streambank, which would result in a net gain of roosting habitat for bats (see section 4.0 for mitigation details). The USACE has determined that the proposed project may affect but is not likely to adversely affect the Indiana bat. The USACE has also determined that the proposed project may affect but is not likely to adversely affect the Northern long-eared bat, but regardless, take would not be prohibited under the 4(d) Rule for this species (see determination key in the Appendix).

The monarch butterfly is a candidate species, meaning the USFWS has determined the species warrants listing, but its listing is precluded at this time by higher priority listing actions. As such, potential impacts to the species should be considered. Threats facing the monarch include habitat loss and fragmentation throughout its range. Pesticide use can destroy the native plants and milkweed that monarchs need for continued survival. The proposed project, regardless of chosen action alternative, would temporarily disturb ground and remove vegetation. Given the small area of land disturbance and lack of the use of pesticides that can harm the species, the USACE has determined that the proposed project would have no effect on the monarch.

The USACE will coordinate these determinations with the USFWS and receive concurrence on all effect determinations. Any additional measures recommendations provided by the USFWS would be incorporated as necessary into the project plans.

## 3.6 Recreational, Scenic, and Aesthetic Resources

White Lick Creek has the potential to offer quality fishing opportunities, as it supports populations of popular sportfish including smallmouth and largemouth bass, sunfish, and channel catfish. Stretches of the creek further downstream of the project site can offer whitewater kayaking opportunities when flows are appropriate.

The project site is adjacent to the Washington Township Park which encompasses 160 acres of property that offers an array of recreational opportunities.

The CSX Avon Railroad Bridge that intersects the project site is locally known as the “Avon Haunted Bridge”. This is a popular local attraction that plays on a few urban legends regarding rumored deaths associated with the bridge. Figure 7 shows a sign near the bridge in Washington Township Park.

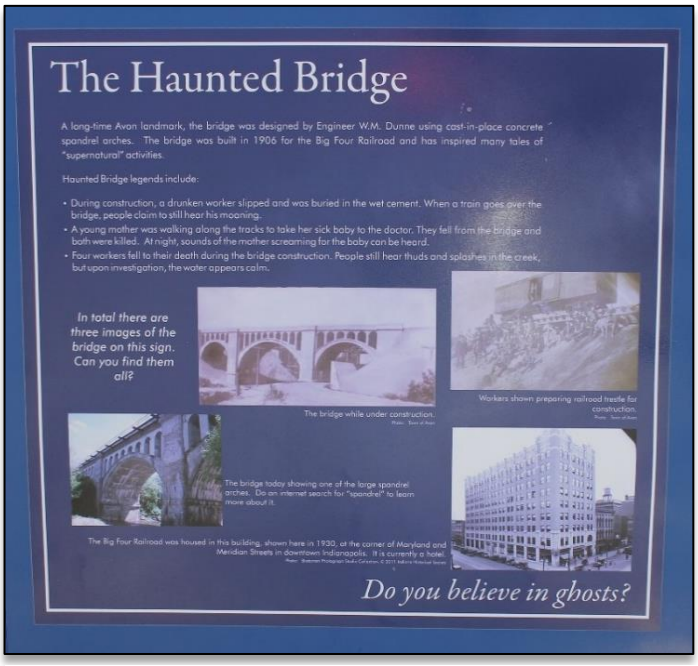


**Figure 7.** Sign near the project site describing the legends of the Haunted Bridge

### 3.6.1 Environmental Consequences

No Action Alternative

Taking no action would result in the continued erosion of the road, with the eventual collapse of the road into White Lick Creek. This would result in the most dramatic impact to aesthetics from any considered alternative due to the sight of crumbling infrastructure and unabated erosion in the project area. Therefore, the USACE has determined the NAA would result in significant impacts to aesthetics. The NAA would be expected to have no effect on recreation.

Recommended Plan – Alternative 7

Implementation of the Recommended Plan would result in the temporary disturbance of ground and removal of vegetation from the project area. However, once complete, the regraded bank would be revegetated with a native seed mix, and existing rubble and riprap would be removed, thereby making the site more aesthetically appealing for residents and those recreating on White Lick Creek. As such, the USACE has determined the Recommended Plan would have no effect on aesthetics or recreation.

Alternatives 2, 3, 4 and 5

Implementation of the other action alternatives would also result in the temporary disturbance of ground and removal of vegetation from the project area. However, unlike with the Recommended Plan, these alternatives would result in an overall loss of riparian habitat. This would occur either through hard armament on the regraded slope as in alternatives two and four, or a sheer wall being placed on the bank as in alternatives three and five. This would thereby make the site less aesthetically appealing for residents and those recreating on White Lick Creek. As such, the USACE has determined that these alternatives would result in moderate impacts to aesthetics. These alternatives would have no effect on recreation.

## 3.7 Cultural Resources

A number of steps were taken in an effort to identify cultural resources within the proposed streambank erosion project along White Lick Creek and South County Road 625 East. A background records check was conducted within a two-kilometer (1.24 mile) radius of the project site. Four different sources of information were used: National Register of Historic Places (NRHP), Indiana State Historic Architectural and Archaeological Research Database (SHAARD), review of the Hendricks County Interim Report, published by Historic Landmarks Foundation of Indiana, and previous cultural resources reports. A records search at the Indiana Division of Historic Preservation and Archaeology (DHPA), was not necessary because all the Hendricks County archaeological surveys and site forms are available on SHAARD (communication with DHPA records check coordinator, 2016). The site file search of the SHAARD database allowed the use of topographic maps, previous investigations, and historic structures and archaeological sites to collect information about the project vicinity. Reviews of the previous reports pertaining to Hendricks County were used to provide background information around the project area. The NRHP online research database was used to collect information on NRHP eligible or listed properties within a two-kilometer project radius. All online research was conducted December 16, 2016 and January 9, 2017.

Two archaeological investigations have been conducted around the project area since 2009. King (2009) conducted an archaeological field reconnaissance of 7,900 lf for a proposed trail located along the right descending bank of White Lick Creek, adjacent to the project area. The reconnaissance consisted of pedestrian ground survey with a soil probe, as well as a bucket auger to determine soil depth. No archaeological sites were identified during the survey. In 2011, Zoll examined an additional 3,000 lf of land, which connected to the aforementioned trail that was surveyed by King in 2009. Again, shovel probes were spaced at 15-meter intervals were used to determine soil depth. Soil probes were approximately 35-centimeter in diameter and excavated until subsoil was encountered, which was approximately 20- to 25-cenimeter (Zoll, 2011). The archaeological reconnaissance revealed no archaeological sites.

In 2014, the Federal Highway Administration submitted a Categorical Exclusion Finding for a guardrail installation along County Road 625. The proposed installation consisted of approximately 700 feet of guardrail along the west side of County Road 625 E north and south of the CSX Avon Railroad Bridge. The Federal Highway Administration consulted with the Indiana State Historic Preservation Office (IN-SHPO) and IN-SHPO concurred the proposed undertaking would not result in an adverse effect and the guardrail would not change the characteristics of the bridge (see attached SHPO concurrence letter in the Appendix).

The Avon CSX Railroad Bridge, formally known as the Big Four Railroad Bridge, bisects the project area. The bridge was constructed in 1907 and is considered the oldest open-spandrel railroad in the state. In addition, the CSX Railroad is one of three tracks that connect to the New York Central tracks (SHAARD, 2016). The CSX Avon Railroad Bridge meets the criteria of eligibility for the inclusion of the NRHP, due to its age and architectural significance.

An onsite cultural resources assessment was conducted on February 2, 2017 in the project area. The area was examined by a visual pedestrian ground surface inspection. Since the project location is on terrain greater than 20 percent slope, no shovel tests were excavated (IN-SHPO Guidelines, 2008). The

project area is disturbed due to the construction of the road and placement of riprap in previous attempts to slow erosion of the streambank. No cultural resources were observed during the site visit.

### 3.7.1 Environmental Consequences

No Action Alternative

The NAA would have no effect on historic properties or cultural resources.

Action Alternatives including the Recommended Plan

The project designs for the considered action alternatives, including the Recommended Plan, would not necessitate placement of material onto the railroad easement. As such, no historic properties or cultural resources would be affected by implementation of any of the action alternatives for streambank stabilization.

## 3.8 Air Quality

The U.S. Environmental Protection Agency (USEPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called "criteria" pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of microns or less in size (PM-10 and PM-2.5), and sulfur dioxide. Ozone is the only parameter not directly emitted into the air, but that forms in the atmosphere when three atoms of oxygen ($O_3$) are combined by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC, also known as ozone precursors. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air.

Hendricks County, Indiana, is in attainment with both State and Federal National Ambient Air Quality Standards parameters (Indiana Department of Environmental Management, 2021; USEPA, 2021).

### 3.8.1 Environmental Consequences

No Action Alternative

No construction activities would occur under the NAA. Therefore, the NAA would result in no impacts to air quality.

Action Alternatives including the Recommended Plan

Air quality would be temporarily affected by implementation of any of the action alternatives. Emissions are expected from equipment used during construction, and any other support equipment which may be on or adjacent to the proposed project area. Increases in dust emissions would occur during construction, but these impacts would be short-term, only occur while construction is active, and not significantly impact overall air quality. Any action alternative-related emissions are not expected to contribute significantly to direct or indirect emissions and would not impact air quality within the project area. Therefore, the USACE has determined that any considered action alternative would only have negligible impact on air quality.

## 3.9 Noise

In the proposed project area vicinity, noise levels are generally low; however, they can be sharply elevated by traffic on South County Road 625 East and by trains crossing the bridge.

### 3.9.1 Environmental Consequences

No Action Alternative

No construction activities would occur under the NAA. Therefore, the NAA would result in no impacts to noise levels.

Action Alternatives including the Recommended Plan

For all considered action alternatives noise levels would be temporarily elevated during construction activities, with an expected duration of up to 180 days. Construction activities associated with the Recommended Plan would only occur during daylight hours and would comply with all published noise ordinances. Therefore, the USACE has determined that these alternatives would result in negligible impacts to noise levels.

## 3.10 Hazardous and Toxic Substances

The USEPA Envirofacts and NEPAssist mapping tools were queried to identify the presence of EPA-regulated facilities within three miles of the proposed project area. These mapping tools contain information collected from regulatory programs and other data relating to environmental activities with the potential to affect air, water, and land resources in surrounding areas. There were 13 EPA-regulated facilities within a three-mile radius of the project site. See the Appendix for the complete list of these facilities. The West Central Conservancy District's water treatment facility, immediately upstream of the project area, likely has the greatest potential for detrimental environmental effects within the project area.

Multiple on-site inspections of the project area and surroundings have been performed by Louisville District staff. Based on the site visit on February 2, 2017, and an investigation of historic aerial photographs, no evidence of improperly managed hazardous and/or toxic materials, or indicators of those materials, were present in the proposed project area.

### 3.10.1 Environmental Consequences

Implementation of any of the considered action alternatives, as well as the NAA, would not be expected to adversely impact hazardous and toxic materials in the proposed project area, nor would they produce hazardous and toxic materials.

## 3.11 Socioeconomics and Environmental Justice

Under Executive Order 12898, "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations." The EPA generally defines "environmental justice" as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The EPA further defines "fair treatment" to mean that no group of people should bear a disproportionate share of the negative human health impact from industrial, governmental, or commercial operations or policies.

In its guidance for Federal agencies on implementing environmental justice analysis under NEPA, the CEQ defines a "minority population" as:

1. A readily-identifiable group of people living in geographic proximity with a population that is 50 percent minority or greater. The population may be made up of one minority or a number of different minority groups; together the sum is 50 percent or more; or,
2. A minority population may be a meaningfully greater minority population than the adjacent geographic areas, or may also be a geographically dispersed/transient set of individuals such as migrant workers or Native Americans (CEQ 1997).

Although the CEQ guidance does not provide criteria to determine whether the population of an affected area is considered a "low-income population," the CEQ criteria for defining a minority population can be adapted for this purpose. Thus, that an affected geographic area would be considered to consist of a low-income population when the percentage of low-income persons (i.e., below the poverty level) is at least 50 percent of the total population; or is meaningfully greater than the low-income population percentage in the adjacent geographic areas (or other appropriate unit of geographical analysis).

Under this framework, the USACE evaluated the potential environmental justice impacts of this project using a two-step process. The first step involves evaluating the demographic data of the affected area determine whether the population would be considered a "minority population" or "low income population" based on the guidance described above. If the affected area does consist of a "minority population" or a "low income population" (or both), the USACE would evaluate the effects of the project to determine whether the proposed action would result in a disproportionately high adverse effect on these populations.

According to the U.S. Census Bureau (2015), The 2010 U.S. Census indicated that racial minorities made up 13.3% of the population of Hendricks County, Indiana, and 3.3% of the total population earned income considered less than the poverty level threshold. The EPA's EJScreen online mapping tool was utilized to generate a report on environmental and demographic indicators within the general project area. The report generated by the EJScreen mapping tool indicated both percentages of minority and low-income populations near the project site are well below that of Indiana and the United States. The full EJScreen Report can be found in the Appendix.

Under Executive Order 13045, Federal agencies must identify and assess environmental health and safety risks that may disproportionately affect children as a result of the implementation of Federal policies, programs, activities, and standards. According to the U.S. Census Bureau (2015), the 2010 U.S. Census indicated that 30.2% of the total population of Avon was under 18 years of age, and 8.7% was under five years of age. This is compared to the state of Indiana which has 23.3% of its population under the age of 18 and 6.2% under five years of age.

### 3.11.1 Environmental Consequences

Implementation of any of the considered alternatives, including the NAA, would not have potential for disproportionate health or environmental effects on minorities or low-income populations and communities and would comply with Executive Order 12898 following completion of the NEPA process. First, the affected population in the project area does not constitute a "minority population" or "low-income population" under the applicable CEQ guidance. But regardless of the demographic makeup of the population, this Supplemental EA has not identified any significant adverse health or environmental effects of the project to the community.

Further, implementation of any of the considered alternatives, including the NAA, would not have the potential to disproportionately affect the safety or health of children and would comply with Executive Order 13045 following completion of the NEPA process. Any of the action alternatives would enhance safety for the entire community, including children, by preventing further erosion that could threaten the safety of motorists using South County Road 625 East.

## 4.0 Mitigation of Adverse Effects

Impacts to surface water from the placement of fill material would be minimized by using appropriate erosion control measures, such as sediment fences, turbidity curtains, and by constructing the project during periods of low water. However, coordination with the IDEM has led to the determination that these impacts would need to be mitigated with the implementation of a 1:1 stream mitigation plan, which would include invasive species removal, as well as tree and shrub plantings. This mitigation effort would be along 491 linear feet of stream within the White Lick Creek watershed and would meet or exceed all stream mitigation success criteria outlined by the IDEM.

Through coordination with the IDNR, it was determined that unavoidable impacts to riparian habitat, due to the loss of 38 trees with a DBH greater than 10 inches, would also need to be mitigated. The mitigation would require the replanting of trees at a 5:1 ratio across 0.4 acres of non-wetland riparian habitat.

See the Monitoring and Mitigation Adaptive Management Plan in the Appendix for complete mitigation details.

## 5.0 Status of Environmental Compliance

The Recommended Plan is in compliance or in the process of attaining compliance with all applicable local, State, and Federal statutes as well as Executive Orders. Compliance status is documented below in Table 2.

**Table 2**. Status of Environmental Compliance.

| Statute/Executive Order | Full Compliance | Compliance In-Progress |
|---|---|---|
| National Environmental Policy Act | | X |
| Endangered Species Act | | X |
| Clean Water Act | X | |
| Wild and Scenic Rivers Act | X | |
| Clean Air Act | X | |
| National Historic Preservation Act | X | |
| Archeological Resources Protection Act | X | |
| Comprehensive, Environmental Response, Compensation and Liability Act | X | |
| Resource Conservation and Recovery Act | X | |
| Toxic Substances Control 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 in Minority Populations and Low-Income Populations | X | |
| Executive Order 14008 Tackling the Climate Crisis at Home and Abroad | X | |

## 6.0 Public and Stakeholder Involvement

This EA and associated 404(b)(1) evaluation will be circulated for a 30-day public review, pursuant to the requirements of 40 C.F.R. § 6.203. All stakeholders listed in Table 3 will receive the draft EA and 404(b)(1) evaluation for review. Comments received during public review will be placed in the Appendix and responded to in this section, with discussion of any necessary changes to the EA.

**Table 3**. Stakeholders contacted for public and agency reviews.

| Stakeholder Type | Stakeholder Name |
|---|---|
| Federal Agencies | U.S. Fish and Wildlife Service, Indiana Field Office<br>Environmental Protection Agency, Region 5 Office<br>U.S. Geological Survey Ohio-Kentucky-Indiana Water Science Center<br>National Resource Conservation Service, Indiana Office |
| State Agencies | Indiana Division of Wildlife<br>Indiana Division of Nature Preserves<br>Indiana Division of Historic Preservation and Archaeology<br>Indiana Division of Outdoor Recreation<br>Indiana Department of Environmental Management<br>Indiana Department of Transportation |
| Local Officials | Hendricks County Commissioner<br>Hendricks County Engineer<br>Washington Township Office |
| NGOs | Hoosier Environmental Council<br>Indiana Forest Alliance<br>Indiana Karst Conservancy<br>Indiana Native Plant Society<br>The Nature Conservancy of Indiana<br>Oxbow, Inc.<br>Sierra Club Hoosier Chapter |

NGO = Non-governmental Organization

## 7.0 Conclusion

After consideration of environmental impacts associated with considered alternatives for the proposed emergency bank stabilization project in Avon at South County Road 625 East, it is concluded that implementation of Alternative 7 – HPTRM with Riprap Protection at the Toe would not cause significant adverse effects on the quality of the human environment. This alternative will have the least environmental impacts of all of the alternatives considered (see Section 2.3). This is due to this alternative's ability to re-establish native vegetation on the bank and maintain connectivity of the riparian habitat with the stream. There are still unavoidable impacts to riparian habitat and surface waters due to the need to remove existing vegetation and regrade the bank. However, these impacts would be mitigated appropriately in consultation with the IDNR and IDEM. Additionally, all necessary permits would be acquired prior to construction.

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# APPENDIX

US Army Corps
of Engineers
Louisville District

# Clean Water Act Section 404(b)(1) Evaluation

# Section 14 Emergency Streambank Protection

# White Lick Creek

# Avon, Indiana

Prepared by:
U.S. Army Corps of Engineers, Louisville District
December 2021

## I. Project Description

### a. Location

The Town of Avon was incorporated in 1995 and is located approximately five miles west of the city of Indianapolis. U.S. Highway 36, also known as Rockville Road, and Indiana State Highway 267, also known as Avon Road, are its main thoroughfares. Most of the town is characterized by single family dwellings and community parks, the largest being the Washington Township Park which is located adjacent to the project. The most iconic landmark of the town is the "Haunted Bridge of Avon", which is an active CSX double track railroad bridge located adjacent to the project area. (Latitude 39.757670, Longitude -86.413942)


***Figure 1***. Project site location map

## b. General Description

This Clean Water Act Section 404(b)(1) evaluation addresses the proposed discharge of dredged or fill material into the waters of the U.S. The U.S. Army Corps of Engineers (USACE) prepared a draft Environmental Assessment for Section 14 Emergency Streambank Protection Project, which included the proposed placement of a riprap toe and High-Performance Turf Reinforcement Mat (HPTRM) along the bank of 491 linear feet (LF) of White Lick Creek in Avon, Indiana.

This alternative would protect 491 LF of bank. The bank would be cleared, removing all the trees with exposed roots and any trees that are dead, dying or otherwise unstable. Once the bank has been cleared, thank bank would be regraded and granular fill would be placed to form a stable slope upon which the riprap toe and HPTRM can be installed. It is expected that much of the fill needed could be sourced from on-site. Because of the proximity of the bank to the road, excavating to form the slope is not possible for the majority of the length of the protection and in those areas where it is possible, it would require removing additional trees than by using granular fill to form the slope.

Once the slope was formed, riprap would be placed at the foot of the slope to the 0.2% annual exceedance probability flood elevation (774 msl). This alternative would require clearing approximately 0.4 acres, placing 578 cubic yards of granular fill, 1,434 cubic yards of riprap, 235 cubic yards of bedding stone and approximately 11,000 square feet of HPTRM. Guardrail would be installed between the top of the bank and the edge of the road to meet roadside safety requirements.

## c. Authority and Purpose

This project is being conducted under Section 14 of the Flood Control Act of 1946, as amended, which authorizes the USACE to study, design and construct emergency streambank and shoreline works to protect public services including (but not limited to) streets, bridges, schools, water and sewer lines, National Register Historic sites, and churches from damage or loss by natural erosion. It is a Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost and complexity.

## d. General Description of Dredged or Fill Material

### (1) General Characteristics of Material

Fill material would consist of clean granular fill, either sourced from on-site or an approved distributer. 86-pound maximum graded limestone riprap and bedding stone would be placed at the toe of the slope to the 0.2% annual exceedance probability flood level. The remaining bank would be stabilized using HPTRM that is hydroseeded with native species.

### (2) Quantity of Material

Bank stabilization would require placing approximately 578 cubic yards of granular fill, 1,434 cubic yards of riprap, 235 cubic yards of bedding stone and approximately 11,000 square feet of HPTRM.

**(3) Source of Material**

The HPTRM and rock would be obtained from commercial sources.

**e. Description of the Proposed Discharge Sites**

**(1) Location**

The project site is located on the left descending bank of White Lick Creek at river mile 24.5, adjacent to South County Road 625 East in Avon, Indiana.

**(2) Size**

The proposed project involves placement of 578 cubic yards of granular fill, 1,434 cubic yards of riprap, 235 cubic yards of bedding stone and approximately 11,000 square feet of HPTRM.

**(3) Type(s) of Sites and Habitats**

White Lick Creek substrates are primarily clean gravel and sand. Cobble and, to a lesser extent, large boulders are present in some reaches. Moderate silt accumulation near stream margins and organic enrichment, as evidenced by abundant filamentous algae, occurs in most reaches.

**(4) Time and Duration of Discharge**

The total construction time of the recommended plan would be 180 days.

**f. Description of Disposal Method**

Placement of the rock-filled mattress system will be accomplished from land by crane and/or excavator. Excavated material will be hauled off site to a commercial landfill.

## II. Factual Determinations

**a. Physical Substrate Determinations**

**(1) Substrate**

The substrates are primarily clean gravel and sand. Cobble and, to a lesser extent, large boulders are present in some reaches. Moderate silt accumulation near stream margins have occurred from eroded banks.

**(2) Sediment Type**

Sediments at the project sites are mostly fine sediments, sands, and deposited material from the river. Sediments resulting from erosion along the riverbank transported by water flow are composed of sorted gravel, sand, silt, and other fine materials.

**(3) Dredged/Fill Material Movement**

The installed mattress system will be securely anchored to the streambank to reduce possible movement.

**(4) Physical Effects on Benthos**

Temporary and localized impacts to benthic organisms and their habitats would occur in the immediate areas of construction; however, benthic organisms are expected to quickly rebound from the short-term impacts of material placement.

**(5) Other Effects**

No other effects are known.

**(6) Actions Taken to Minimize Impacts**

Impacts to surface water and physical substrates from excavation of riverbed material would be minimized by using appropriate construction best management practices and limiting excavation quantities and ground disturbance to the absolute minimum required.

The marine mattress system was proposed due the smaller toe size requirement compared to other methods of streambank protection. The decreased toe size will limit impact to benthic habitats.

**b. <u>Water Circulation, Fluctuation, and Salinity Determinations</u>**

**(1) Water**

Temporary increases in turbidity would occur at the construction areas and downstream of the areas during construction. These changes in turbidity have not been modeled; however, due to the limited scope of the project, they are not expected to significantly impact water quality.

No significant negative impacts would be expected to water quality or sensitive organisms where material would be placed.

**(a) Salinity**

There are no impacts expected to salinity.

**(b) Water Chemistry**

There are no impacts expected to water chemistry.

**(c) Clarity**

There may be a local and temporary increase in turbidity during construction activities. Because of reduced sediment load, water clarity near the project site is expected to improve from preconstruction conditions shortly after operations are completed.

**(d) Color**

Water immediately surrounding the construction area may become discolored temporarily due to disturbance of the sediment during placement of the riprap.

**(e) Odor**

Negligible amounts of hydrogen sulfide may be expected when disturbing possible anoxic sediments at the construction sites. Otherwise, there are no long-term impacts to odor.

**(f) Taste**

There are no impacts expected to taste.

**(g) Dissolved Gas Levels**

No impacts to dissolved gas levels would be expected.

**(h) Nutrients**

The proposed action could cause temporary nutrient increases during periods of resuspension of sediment and organic debris. Once construction is complete, nutrients entering the water column from erosion of the streambank would be significantly decreased at the project site.

**(i) Eutrophication**

Construction activities would not lead to eutrophication of surrounding waters.

**(j) Others as Appropriate**

None known

**(2) Current Patterns and Circulation**

**(a) Current Patterns and Flow**

Construction activities would not have a significant effect on inflows to the system or water surface elevations.

**(b) Velocity**

Placement of material within the channel would not significantly impact velocities.

**(c) Stratification**

No changes in water stratification are anticipated.

**(d) Hydrologic Regime**

Hydrologic regimes would not be altered with placement of material.

**(3) Normal Water Level Fluctuations**

The average water surface elevation throughout the study area would be unaffected by construction activities.

**(4) Salinity Gradients**

There would be no change in salinity gradients**.**

**(5) Actions That Would Be Taken to Minimize Impacts**

Impacts to surface water and physical substrates from excavation of riverbed material would be minimized by using appropriate construction best management practices and limiting excavation quantities to the absolute minimum required.

**c. <u>Suspended Particulate/Turbidity Determination</u>**

**(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site**

A temporary and localized increase in suspended particulates and turbidity levels is expected during excavation and placement of material at the project site. Upon completion of construction activities, suspended particulates and turbidity levels are expected to quickly return to preconstruction levels.

**(2) Effects on Chemical and Physical Properties of the Water Column**

**(a) Light Penetration**

Turbidity levels would be temporarily increased during placement operations material. Upon completion of construction activities light penetration is expected to improve from preconstruction levels due to reduced sedimentation from erosion at the project sites.

**(b) Dissolved Oxygen**

No adverse impacts to dissolved oxygen (DO) are expected; a reduction in DO may occur at localized and temporary events during construction activities.

**(c) Toxic metals and organics**

Suspended particles resulting from placement would not result in detrimental effects to chemical and physical properties of the water column.

**(d) Pathogens**

None expected or found.

**(e) Aesthetics**

No impacts to aesthetics would be anticipated.

**(f) Others as Appropriate**

None known

**(3) Effects on Biota**

No impacts are expected on photosynthesis, suspension/filter feeders, and sight feeders, except for temporary and localized impacts from placement operations (e.g., burial of benthos or temporary increase of local turbidity levels).

**(4) Actions Taken to Minimize Impacts**

Impacts to surface water and physical substrates from excavation of riverbed material would be minimized by using appropriate construction best management practices and limiting excavation quantities and ground disturbance to the absolute minimum required.

**d. Contaminant Determinations**

The riprap and HPTRM would be acquired from a state-approved commercial source. No contaminated materials would be released during construction of this project. Should contamination be found, necessary steps to avoid the materials or cleanup of the area would take place.

**e. Aquatic Ecosystem and Organism Determinations**

**(1) Effects on Plankton**

The proposed action could cause some negligible mortality because of increases in total suspended solids and turbidity and decreases in dissolved oxygen levels during construction periods. Impacts would be temporary and short-term in nature, and recolonization of the area by plankton should occur quickly after construction is complete.

**(2) Effects on Benthos**

Temporary effects on benthic macroinvertebrates could occur during construction, but once the project is complete, recolonization of the project areas by the native benthos is expected.

**(3) Effects on Nekton**

No significant impacts to the nekton of the area from the proposed construction and placement operations are expected.

**(4) Effects on Aquatic Food Web**

Reductions in primary productivity from turbidity would be temporary and localized around the immediate area of the construction and would be limited to the duration of the plume at a given site.

**(5) Effects on Special Aquatic Sites**

Construction activities would not have detrimental effects on special aquatic sites in the study area (i.e., sanctuaries and refuges, wetlands, mudflats).

**(6) Threatened and Endangered Species**

Coordination is ongoing with the U.S. Fish and Wildlife Service (USFWS) and the Indiana Department of Natural Resources (DNR). The scoping response received from the USFWS on February 22, 2017 listed one threatened or endangered species that may occur in the proposed project area. Coordination has been ongoing with the USFWS, and the Corps has made a determination of "may affect, not likely to adversely affect", for these species.

**(7) Other Wildlife**

Because existing conditions (eroded river bank) within the proposed project area provide poor quality wildlife habitat, there would be no significant loss of wildlife habitat. However, placed stone, over time, could provide wildlife habitat.

**(8) Actions to Minimize Impacts**

Construction and riprap placement operations would be limited to low flow conditions, where possible, to minimize the overall impacts of disturbance. Construction best management practices would be implemented to minimize impacts. Additionally, USACE is coordinating with the USFWS regarding potential impacts to threatened and endangered species in the action area, and a Clean Water Act - Section 401 Water Quality Certification will be obtained from the Indiana Department of Environmental Management (IDEM) before construction begins. To minimize impacts to roosting endangered Indiana bats (*Myotis sodalis*), no trees over four inches diameter at breast height will be removed from April 1st to September 30th.

**f. <u>Proposed Disposal Site Determinations</u>**

**(1) Mixing Zone Determination**

N/A

**(2) Determination of Compliance with Applicable Water Quality Standards**

In the No Action Alternative condition, water and sediment quality are not expected to substantially change in the Ohio River or its surrounding waters.

For the proposed project alternative, no violation of water quality standards is anticipated. A Clean Water Act - Section 401 Water Quality Certification will be obtained from the IDEM before construction begins.

**(3) Potential Effects on Human Use Characteristics**

**(a) Municipal and Private Water Supply**

Construction activities would not impact any municipal or private water supplies.

**(b) Recreational and Commercial Fisheries**

No significant impacts to recreational and commercial fishing are anticipated from implementation of the proposed project. Completion of the bank stabilization project may have positive effects on the aquatic food chain by providing additional habitat below OHW for aquatic plant and animal species. This in turn, could potentially improve the local fishery.

**(c) Water-related Recreation**

No impacts to water-related recreation would occur as a result of the proposed construction activities.

**(d) Aesthetics**

No significant impacts to aesthetics are expected. Some trees will be removed from the project site; however, without the implement of an erosion protection, these trees will be undercut and fall in a relatively short timeframe. Construction of the project will protect the bank and allow new vegetation to establish.

**(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves**

No special sites would be negatively impacted by the project.

**g. <u>Determination of Cumulative Effects on the Aquatic Ecosystem</u>**

From a watershed perspective, the stabilized 491 LF of riverbank would not be highly visible in the overall reduction of aquatic resource impairments due to sedimentation; however, it would provide some minor progress in reducing riverbank erosion.

The construction activities of the proposed project are expected to have negligible adverse impacts to the environment when considered directly, indirectly, and/or cumulatively. The placement of bank protection is expected to improve water quality from preconstruction conditions by reducing erosion in the area. Riprap protection currently exists in the footprint of the project but will be improved and extended to protect more riverbank from erosion. Cumulative effects are discussed in further detail in Section 4.12 of the Environmental Assessment.

**h. Determination of Secondary Effects on the Aquatic Ecosystem**

Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill material but do not result from the actual placement of the material. No adverse significant secondary effects on the aquatic ecosystem should occur as a result of the proposed project.

## III. Findings of Compliance with Restrictions on Discharge with Section 404(b)(1) Guidelines for the White Lick Creek Streambank Protection Study

**a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation**: No significant adaptations of the Guidelines were made relative to the evaluation for this project.

**b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem**: The proposed project is the result of thorough evaluation of six proposed alternatives (including the No-Action Alternative). Refer to the associated Environmental Assessment and Feasibility Report for a complete comparative analysis of available alternatives. The proposed alternative of streambank protection in the form of riprap mattress system is the practicable alternative that would have the least adverse impact on the aquatic ecosystem.

**c. Compliance with Applicable State Water Quality Standards**: The discharges associated with the proposed project alternative are not anticipated to cause or contribute to violation of any water quality standards. A Clean Water Act Section 401 Water Quality Certification will be obtained from the State of Indiana before commencing any work in waters of the U.S. Additionally**,** the proposed project alternative would not violate any toxic effluent standards of Section 307 of the Clean Water Act.

**d. Compliance with Applicable Toxic Effluent Standard of Prohibition Under Section 307 of the Clean Water Act**: Bank stabilization operations would not violate Section 307 of the Clean Water Act.

e. **Compliance with the Endangered Species Act**: The Corps has made a determination that the proposed project may affect, but is not likely to adversely affect any federally of State-listed threatened or endangered species or their critical habitat or violate any protective measures for any sanctuary. The US Fish and Wildlife Service is being consulted regarding the potential issues of any federally or State-listed threatened or endangered species or their critical habitat.

f. **Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972**: Not applicable.

g. **Evaluation of Extent of Degradation of the Waters of the United States**: The proposed project would not result in adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, wildlife, and special aquatic sites. There are no significant adverse impacts expected to the aquatic ecosystem diversity, productivity and stability, or recreational, aesthetic, and economic values.

h. **Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the discharge on the Aquatic Ecosystem**: Appropriate steps to minimize potential adverse impacts on the aquatic system include close coordination with the State and Federal resource agencies during the final design prior to construction to incorporate all valid suggestions. Construction best management practices would be implemented to minimize impacts to the riparian zone and river bed and to control erosion and resuspension of soil and sediments. Additionally, construction activities would be limited to low flow conditions to minimize the overall effects of sediment disturbance and alterations of the river bank, riparian vegetation, and the river substrate would be limited to the greatest extent possible.

i. **EPA 404 (b) (1) Guidelines:** The proposed disposal site for the discharge of dredged or fill material is in compliance with requirements of these guidelines, with the inclusion of the appropriate conditions and construction best management practices to minimize impacts to the aquatic ecosystem.

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Indiana Ecological Services Field Office
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To: December 06, 2021
Consultation Code: 03E12000-2022-SLI-0503
Event Code: 03E12000-2022-E-02151
Project Name: Avon, Indiana Emergency Streambank Stabilization

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project "may affect" listed species or critical habitat.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at - http://www.fws.gov/midwest/endangered/section7/s7process/index.html. This website contains step-by-step instructions which will help you determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all **wind energy projects** and **projects that include installing towers that use guy wires or are over 200 feet in height**, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project or may be affected by your proposed project.

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and Migratory Bird Treaty Act *(*16 U.S.C. 703 *et seq*), as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html to help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

# Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Indiana Ecological Services Field Office**
620 South Walker Street
Bloomington, IN 47403-2121
(812) 334-4261

# Project Summary

Consultation Code: 03E12000-2022-SLI-0503
Event Code: Some(03E12000-2022-E-02151)
Project Name: Avon, Indiana Emergency Streambank Stabilization
Project Type: ** OTHER **
Project Description: CAP Section 14 emergency streambank stabilization along White Lick Creek.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.757373,-86.41398201878476,14z


Counties: Hendricks County, Indiana

# Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

| NAME | STATUS |
|---|---|
| Indiana Bat *Myotis sodalis*<br>There is **final** critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: https://ecos.fws.gov/ecp/species/5949 | Endangered |
| Northern Long-eared Bat *Myotis septentrionalis*<br>No critical habitat has been designated for this species.<br>This species only needs to be considered under the following conditions:<br>▪ Incidental take of the NLEB is not prohibited here. Federal agencies may consult using the 4(d) rule streamlined process. Transportation projects may consult using the programmatic process. See www.fws.gov/midwest/endangered/mammals/nleb/index.html<br>Species profile: https://ecos.fws.gov/ecp/species/9045 | Threatened |

## Insects

| NAME | STATUS |
|---|---|
| Monarch Butterfly *Danaus plexippus*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/9743 | Candidate |

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Indiana Ecological Services Field Office
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To: December 06, 2021
Consultation code: 03E12000-2022-TA-0503
Event Code: 03E12000-2022-E-02152
Project Name: Avon, Indiana Emergency Streambank Stabilization

Subject: Verification letter for the 'Avon, Indiana Emergency Streambank Stabilization' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Steele McFadden:

The U.S. Fish and Wildlife Service (Service) received on December 06, 2021 your effects determination for the 'Avon, Indiana Emergency Streambank Stabilization' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Indiana Bat *Myotis sodalis* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

**Action Description**
You provided to IPaC the following name and description for the subject Action.

**1. Name**

Avon, Indiana Emergency Streambank Stabilization

**2. Description**

The following description was provided for the project 'Avon, Indiana Emergency Streambank Stabilization':

> CAP Section 14 emergency streambank stabilization along White Lick Creek.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.757373,-86.41398201878476,14z


**Determination Key Result**

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

**Determination Key Description: Northern Long-eared Bat 4(d) Rule**

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may

affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

# Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

## Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   *Yes*

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   *No*

3. Will your activity purposefully **Take** northern long-eared bats?

   *No*

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   **Automatically answered**
   *No*

5. [Semantic] Is the project action area located within 0.25 miles of a known northern long-eared bat hibernaculum?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency

   **Automatically answered**
   *No*

6. [Semantic] Is the project action area located within 150 feet of a known occupied northern long-eared bat maternity roost tree?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency

   **Automatically answered**
   *No*

# Project Questionnaire

**If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.**

1. Estimated total acres of forest conversion:

*0*

2. If known, estimated acres of forest conversion from April 1 to October 31

*0*

3. If known, estimated acres of forest conversion from June 1 to July 31

*0*

**If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.**

4. Estimated total acres of timber harvest

*0.4*

5. If known, estimated acres of timber harvest from April 1 to October 31

*0*

6. If known, estimated acres of timber harvest from June 1 to July 31

*0.*

**If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.**

7. Estimated total acres of prescribed fire

*0*

8. If known, estimated acres of prescribed fire from April 1 to October 31

*0*

9. If known, estimated acres of prescribed fire from June 1 to July 31

*0*

**If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.**

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

*0*

# Indiana County Endangered, Threatened and Rare Species List

## County: Hendricks

| Species Name | Common Name | FED | STATE | GRANK | SRANK |
|---|---|---|---|---|---|
| **Mollusk: Bivalvia (Mussels)** | | | | | |
| Ptychobranchus fasciolaris | Kidneyshell | | SSC | G4G5 | S2 |
| Villosa lienosa | Little Spectaclecase | | SSC | G5 | S3 |
| **Insect: Odonata (Damselflies)** | | | | | |
| Enallagma divagans | Turquoise Bluet | | SR | G5 | S3 |
| **Reptile** | | | | | |
| Sistrurus catenatus catenatus | Eastern Massasauga | C | SE | G3G4T3Q | S2 |
| **Bird** | | | | | |
| Bartramia longicauda | Upland Sandpiper | | SE | G5 | S3B |
| Cistothorus platensis | Sedge Wren | | SE | G5 | S3B |
| Dendroica cerulea | Cerulean Warbler | | SE | G4 | S3B |
| **Mammal** | | | | | |
| Myotis sodalis | Indiana Bat or Social Myotis | LE | SE | G2 | S1 |
| Nycticeius humeralis | Evening Bat | | SE | G5 | S1 |
| Taxidea taxus | American Badger | | SSC | G5 | S2 |
| **Vascular Plant** | | | | | |
| Juglans cinerea | Butternut | | WL | G4 | S3 |
| Poa paludigena | Bog Bluegrass | | WL | G3 | S3 |
| **High Quality Natural Community** | | | | | |
| Forest - flatwoods central till plain | Central Till Plain Flatwoods | | SG | G3 | S2 |
| Wetland - seep circumneutral | Circumneutral Seep | | SG | GU | S1 |

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

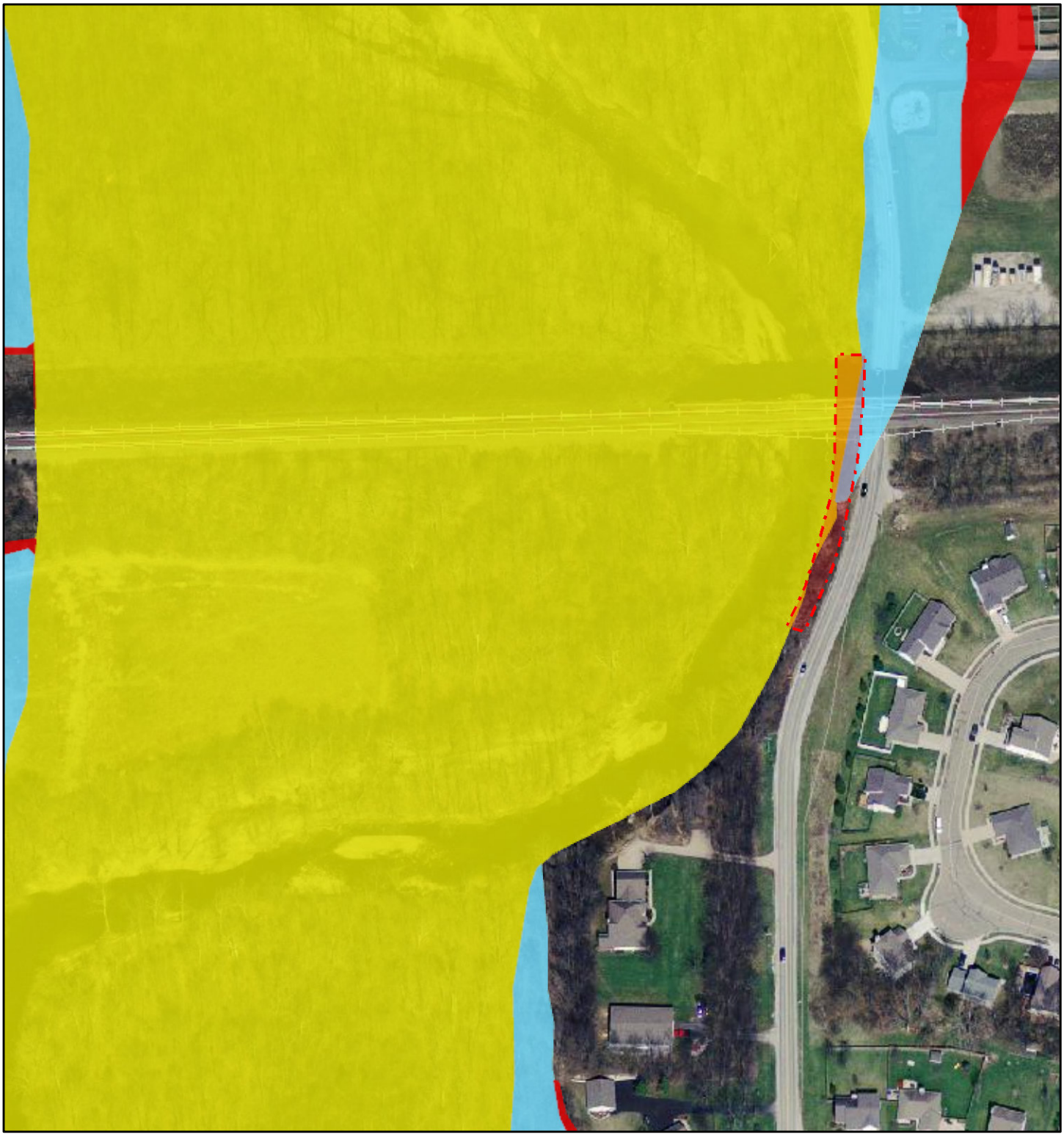
Fed: LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting

State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list

GRANK: Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank

SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

# Avon, Indiana Section 14 Project



February 21, 2017

1:2,000

0 0.015 0.03 0.06 mi

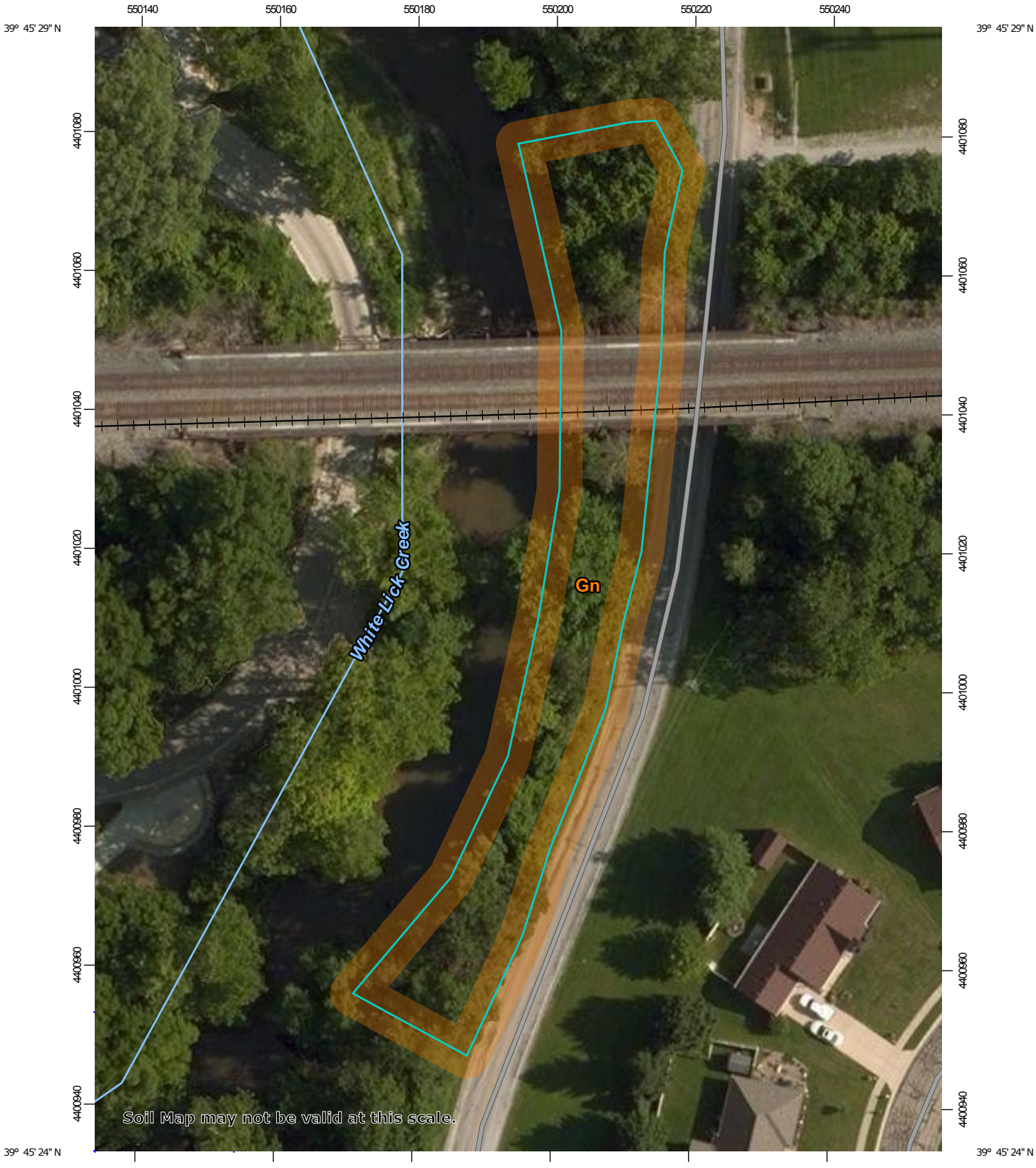
0 0.0275 0.055 0.11 km

**Floodplains - FIRM (June 2016)**

- Floodway
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance, Protected by Levee
- 0.2% Annual Chance Flood Hazard

Indiana Spatial Data Portal, UITS, ESRI
Federal Emergency Management Agency (FEMA), Indiana Department of Natural Resources (IDNR)

Soil Map—Hendricks County, Indiana
(Avon , Indiana Section 14 Project)




Map Scale: 1:789 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hendricks County, Indiana
Survey Area Data: Version 20, Sep 14, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 27, 2014—Aug 28, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

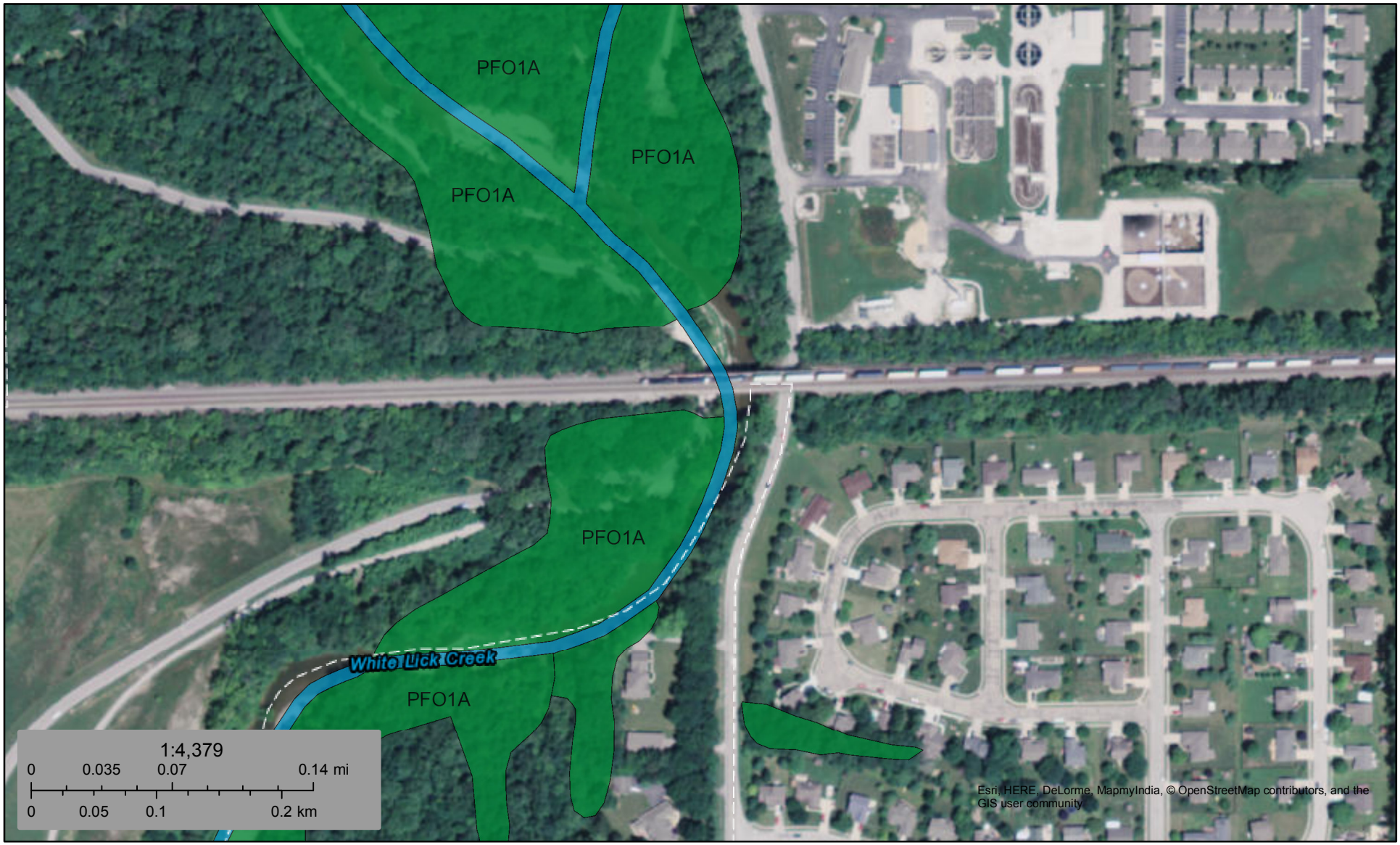
# Map Unit Legend

| Hendricks County, Indiana (IN063) | | | |
|---|---|---|---|
| **Map Unit Symbol** | **Map Unit Name** | **Acres in AOI** | **Percent of AOI** |
| Gn | Genesee silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration | 0.5 | 100.0% |
| **Totals for Area of Interest** | | **0.5** | **100.0%** |

U.S. Fish and Wildlife Service

# National Wetlands Inventory

## Avon, Indiana Section 14 Project




February 17, 2017

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

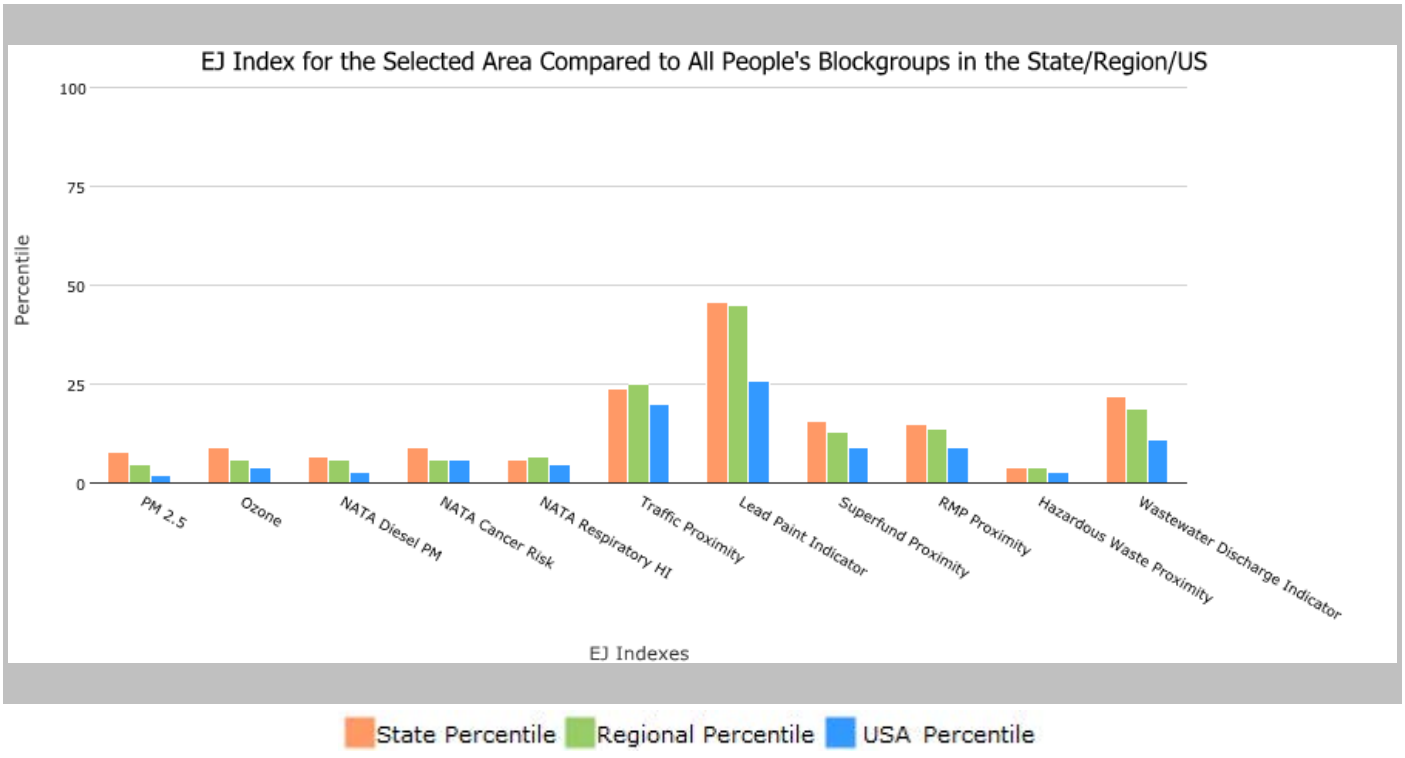
# EJSCREEN Report (Version 2017)

**the User Specified Area, INDIANA, EPA Region 5**

**Approximate Population: 67,886**

**Input Area (sq. miles): 83.92**

| Selected Variables | State Percentile | EPA Region Percentile | USA Percentile |
|---|---|---|---|
| **EJ Indexes** | | | |
| EJ Index for PM2.5 | 8 | 5 | 2 |
| EJ Index for Ozone | 9 | 6 | 4 |
| EJ Index for NATA* Diesel PM | 7 | 6 | 3 |
| EJ Index for NATA* Air Toxics Cancer Risk | 9 | 6 | 6 |
| EJ Index for NATA* Respiratory Hazard Index | 6 | 7 | 5 |
| EJ Index for Traffic Proximity and Volume | 24 | 25 | 20 |
| EJ Index for Lead Paint Indicator | 46 | 45 | 26 |
| EJ Index for Superfund Proximity | 16 | 13 | 9 |
| EJ Index for RMP Proximity | 15 | 14 | 9 |
| EJ Index for Hazardous Waste Proximity | 4 | 4 | 3 |
| EJ Index for Wastewater Discharge Indicator | 22 | 19 | 11 |



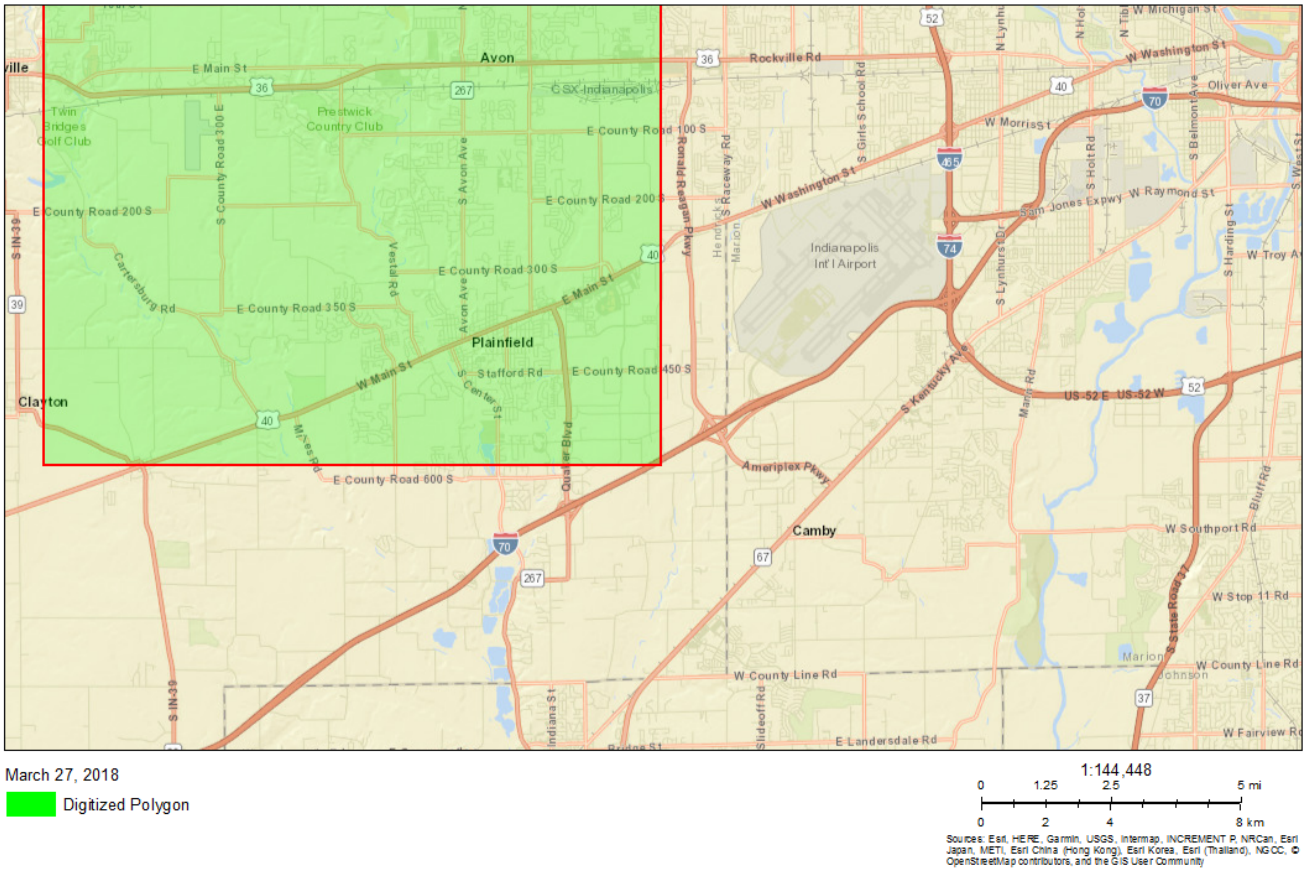

This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

# EJSCREEN Report (Version 2017)

**the User Specified Area, INDIANA, EPA Region 5**

**Approximate Population: 67,886**

**Input Area (sq. miles): 83.92**




| Sites reporting to EPA | |
|---|---|
| Superfund NPL | 0 |
| Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) | 0 |

# EJSCREEN Report (Version 2017)

**the User Specified Area, INDIANA, EPA Region 5**

**Approximate Population: 67,886**

**Input Area (sq. miles): 83.92**

| Selected Variables | Value | State Avg. | %ile in State | EPA Region Avg. | %ile in EPA Region | USA Avg. | %ile in USA |
|---|---|---|---|---|---|---|---|
| **Environmental Indicators** | | | | | | | |
| Particulate Matter (PM 2.5 in µg/m$^3$) | 11.2 | 10.9 | 74 | 10.1 | 86 | 9.14 | 92 |
| Ozone (ppb) | 37.7 | 38.2 | 22 | 37.6 | 46 | 38.4 | 47 |
| NATA* Diesel PM (µg/m$^3$) | 0.889 | 0.835 | 60 | 0.932 | 50-60th | 0.938 | 50-60th |
| NATA* Cancer Risk (lifetime risk per million) | 33 | 34 | 52 | 34 | <50th | 40 | <50th |
| NATA* Respiratory Hazard Index | 1.7 | 1.4 | 77 | 1.7 | 60-70th | 1.8 | 50-60th |
| Traffic Proximity and Volume (daily traffic count/distance to road) | 93 | 250 | 54 | 370 | 53 | 590 | 50 |
| Lead Paint Indicator (% Pre-1960 Housing) | 0.11 | 0.35 | 25 | 0.39 | 23 | 0.29 | 38 |
| Superfund Proximity (site count/km distance) | 0.072 | 0.16 | 50 | 0.13 | 58 | 0.13 | 55 |
| RMP Proximity (facility count/km distance) | 0.39 | 0.81 | 50 | 0.81 | 51 | 0.73 | 55 |
| Hazardous Waste Proximity (facility count/km distance) | 0.12 | 0.078 | 86 | 0.091 | 80 | 0.093 | 80 |
| Wastewater Discharge Indicator (toxicity-weighted concentration/m distance) | 0.0027 | 0.29 | 57 | 4.2 | 64 | 30 | 73 |
| **Demographic Indicators** | | | | | | | |
| Demographic Index | 15% | 27% | 29 | 29% | 31 | 36% | 19 |
| Minority Population | 13% | 19% | 54 | 25% | 49 | 38% | 29 |
| Low Income Population | 17% | 35% | 21 | 33% | 27 | 34% | 25 |
| Linguistically Isolated Population | 1% | 2% | 65 | 2% | 59 | 5% | 45 |
| Population With Less Than High School Education | 6% | 12% | 31 | 11% | 39 | 13% | 33 |
| Population Under 5 years of age | 6% | 6% | 52 | 6% | 55 | 6% | 53 |
| Population over 64 years of age | 13% | 14% | 47 | 14% | 45 | 14% | 50 |

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

# EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description:

| Summary of ACS Estimates | 2011 - 2015 |
|---|---|
| Population | 67,886 |
| Population Density (per sq. mile) | 784 |
| Minority Population | 8,947 |
| % Minority | 13% |
| Households | 24,224 |
| Housing Units | 25,925 |
| Housing Units Built Before 1950 | 1,193 |
| Per Capita Income | 30,139 |
| Land Area (sq. miles) (Source: SF1) | 86.63 |
| % Land Area | 99% |
| Water Area (sq. miles) (Source: SF1) | 0.61 |
| % Water Area | 1% |

| | 2011 - 2015 ACS Estimates | Percent | MOE (±) |
|---|---|---|---|
| **Population by Race** | | | |
| Total | 67,886 | 100% | 1,046 |
| Population Reporting One Race | 66,621 | 98% | 2,413 |
| White | 60,788 | 90% | 1,072 |
| Black | 3,843 | 6% | 556 |
| American Indian | 96 | 0% | 58 |
| Asian | 1,290 | 2% | 391 |
| Pacific Islander | 4 | 0% | 45 |
| Some Other Race | 601 | 1% | 291 |
| Population Reporting Two or More Races | 1,265 | 2% | 230 |
| Total Hispanic Population | 2,368 | 3% | 476 |
| Total Non-Hispanic Population | 65,518 | | |
| White Alone | 58,939 | 87% | 933 |
| Black Alone | 3,832 | 6% | 556 |
| American Indian Alone | 71 | 0% | 55 |
| Non-Hispanic Asian Alone | 1,221 | 2% | 391 |
| Pacific Islander Alone | 4 | 0% | 45 |
| Other Race Alone | 358 | 1% | 258 |
| Two or More Races Alone | 1,093 | 2% | 230 |
| **Population by Sex** | | | |
| Male | 33,935 | 50% | 609 |
| Female | 33,950 | 50% | 636 |
| **Population by Age** | | | |
| Age 0-4 | 4,159 | 6% | 226 |
| Age 0-17 | 17,474 | 26% | 523 |
| Age 18+ | 50,412 | 74% | 686 |
| Age 65+ | 8,582 | 13% | 246 |

**Data Note:** Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.
**Source:** U.S. Census Bureau, American Community Survey (ACS) 2011 - 2015.

# EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description:

| | 2011 - 2015 ACS Estimates | Percent | MOE (±) |
|---|---|---|---|
| **Population 25+ by Educational Attainment** | | | |
| Total | 44,321 | 100% | 631 |
| Less than 9th Grade | 924 | 2% | 146 |
| 9th - 12th Grade, No Diploma | 1,915 | 4% | 158 |
| High School Graduate | 12,763 | 29% | 328 |
| Some College, No Degree | 13,939 | 31% | 420 |
| Associate Degree | 3,984 | 9% | 193 |
| Bachelor's Degree or more | 14,780 | 33% | 382 |
| **Population Age 5+ Years by Ability to Speak English** | | | |
| Total | 63,727 | 100% | 920 |
| Speak only English | 60,345 | 95% | 814 |
| Non-English at Home[1+2+3+4] | 3,382 | 5% | 442 |
| [1]Speak English "very well" | 2,288 | 4% | 296 |
| [2]Speak English "well" | 736 | 1% | 309 |
| [3]Speak English "not well" | 309 | 0% | 93 |
| [4]Speak English "not at all" | 50 | 0% | 115 |
| [3+4]Speak English "less than well" | 359 | 1% | 132 |
| [2+3+4]Speak English "less than very well" | 1,094 | 2% | 336 |
| **Linguistically Isolated Households*** | | | |
| Total | 136 | 100% | 89 |
| Speak Spanish | 30 | 22% | 45 |
| Speak Other Indo-European Languages | 50 | 37% | 64 |
| Speak Asian-Pacific Island Languages | 41 | 30% | 32 |
| Speak Other Languages | 15 | 11% | 39 |
| **Households by Household Income** | | | |
| Household Income Base | 24,224 | 100% | 292 |
| < $15,000 | 1,588 | 7% | 133 |
| $15,000 - $25,000 | 1,450 | 6% | 93 |
| $25,000 - $50,000 | 4,828 | 20% | 230 |
| $50,000 - $75,000 | 5,213 | 22% | 244 |
| $75,000 + | 11,145 | 46% | 386 |
| **Occupied Housing Units by Tenure** | | | |
| Total | 24,224 | 100% | 292 |
| Owner Occupied | 19,183 | 79% | 289 |
| Renter Occupied | 5,041 | 21% | 213 |
| **Employed Population Age 16+ Years** | | | |
| Total | 52,842 | 100% | 695 |
| In Labor Force | 35,051 | 66% | 712 |
| Civilian Unemployed in Labor Force | 1,994 | 4% | 175 |
| Not In Labor Force | 17,791 | 34% | 463 |

**Data Note:** Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2011 - 2015.

*Households in which no one 14 and over speaks English "very well" or speaks English only.

# EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description:

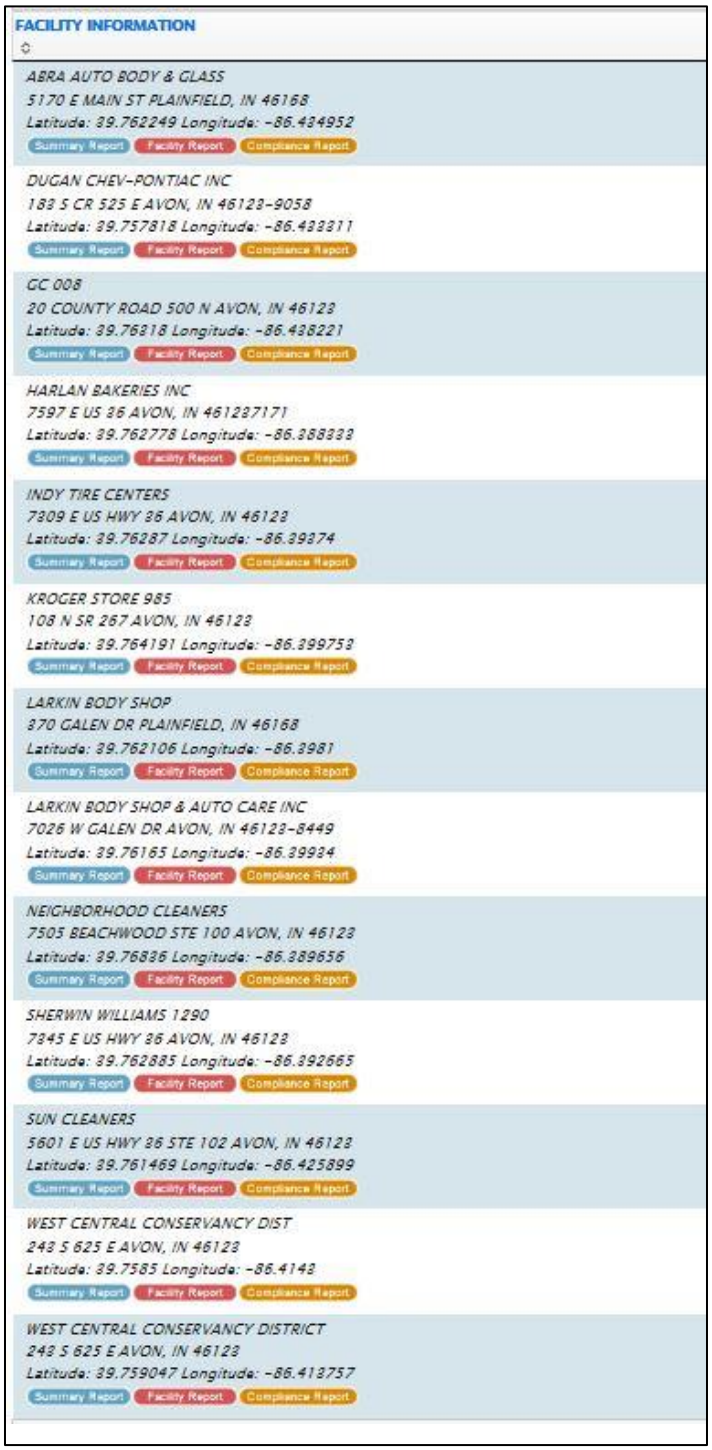
| | 2011 - 2015 ACS Estimates | Percent | MOE (±) |
|---|---|---|---|
| **Population by Language Spoken at Home*** | | | |
| Total (persons age 5 and above) | 63,727 | 100% | 920 |
| English | N/A | N/A | N/A |
| Spanish | N/A | N/A | N/A |
| French | N/A | N/A | N/A |
| French Creole | N/A | N/A | N/A |
| Italian | N/A | N/A | N/A |
| Portuguese | N/A | N/A | N/A |
| German | N/A | N/A | N/A |
| Yiddish | N/A | N/A | N/A |
| Other West Germanic | N/A | N/A | N/A |
| Scandinavian | N/A | N/A | N/A |
| Greek | N/A | N/A | N/A |
| Russian | N/A | N/A | N/A |
| Polish | N/A | N/A | N/A |
| Serbo-Croatian | N/A | N/A | N/A |
| Other Slavic | N/A | N/A | N/A |
| Armenian | N/A | N/A | N/A |
| Persian | N/A | N/A | N/A |
| Gujarathi | N/A | N/A | N/A |
| Hindi | N/A | N/A | N/A |
| Urdu | N/A | N/A | N/A |
| Other Indic | N/A | N/A | N/A |
| Other Indo-European | N/A | N/A | N/A |
| Chinese | N/A | N/A | N/A |
| Japanese | N/A | N/A | N/A |
| Korean | N/A | N/A | N/A |
| Mon-Khmer, Cambodian | N/A | N/A | N/A |
| Hmong | N/A | N/A | N/A |
| Thai | N/A | N/A | N/A |
| Laotian | N/A | N/A | N/A |
| Vietnamese | N/A | N/A | N/A |
| Other Asian | N/A | N/A | N/A |
| Tagalog | N/A | N/A | N/A |
| Other Pacific Island | N/A | N/A | N/A |
| Navajo | N/A | N/A | N/A |
| Other Native American | N/A | N/A | N/A |
| Hungarian | N/A | N/A | N/A |
| Arabic | N/A | N/A | N/A |
| Hebrew | N/A | N/A | N/A |
| African | N/A | N/A | N/A |
| Other and non-specified | N/A | N/A | N/A |
| Total Non-English | N/A | N/A | N/A |

**Data Note:** Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2011 - 2015.
*Population by Language Spoken at Home is available at the census tract summary level and up.

# EPA Regulated Facilities within Three Miles of Project Site

***from EPA Envirofacts website***

***https://oaspub.epa.gov/enviro/enviroFACTS.quickstart?ve=11,39.762804,-86.394680&pSearch=Avon,%20Indiana&miny=39.71185000000007&minx=-86.44567999999994&maxy=39.81385000000007&maxx=-86.34367999999994***



**FACILITY INFORMATION**

*ABRA AUTO BODY & GLASS*
*5170 E MAIN ST PLAINFIELD, IN 46168*
*Latitude: 39.762249 Longitude: -86.434952*
Summary Report | Facility Report | Compliance Report

*DUGAN CHEV-PONTIAC INC*
*183 S CR 525 E AVON, IN 46123-9058*
*Latitude: 39.757818 Longitude: -86.433211*
Summary Report | Facility Report | Compliance Report

*GC 008*
*20 COUNTY ROAD 500 N AVON, IN 46123*
*Latitude: 39.76818 Longitude: -86.438221*
Summary Report | Facility Report | Compliance Report

*HARLAN BAKERIES INC*
*7597 E US 36 AVON, IN 461237171*
*Latitude: 39.762778 Longitude: -86.388333*
Summary Report | Facility Report | Compliance Report

*INDY TIRE CENTERS*
*7309 E US HWY 36 AVON, IN 46123*
*Latitude: 39.76287 Longitude: -86.39374*
Summary Report | Facility Report | Compliance Report

*KROGER STORE 985*
*108 N SR 267 AVON, IN 46123*
*Latitude: 39.764191 Longitude: -86.399753*
Summary Report | Facility Report | Compliance Report

*LARKIN BODY SHOP*
*370 GALEN DR PLAINFIELD, IN 46168*
*Latitude: 39.762106 Longitude: -86.3981*
Summary Report | Facility Report | Compliance Report

*LARKIN BODY SHOP & AUTO CARE INC*
*7026 W GALEN DR AVON, IN 46123-8449*
*Latitude: 39.76165 Longitude: -86.39934*
Summary Report | Facility Report | Compliance Report

*NEIGHBORHOOD CLEANERS*
*7505 BEACHWOOD STE 100 AVON, IN 46123*
*Latitude: 39.76836 Longitude: -86.389656*
Summary Report | Facility Report | Compliance Report

*SHERWIN WILLIAMS 1290*
*7345 E US HWY 36 AVON, IN 46123*
*Latitude: 39.762885 Longitude: -86.392665*
Summary Report | Facility Report | Compliance Report

*SUN CLEANERS*
*5601 E US HWY 36 STE 102 AVON, IN 46123*
*Latitude: 39.761469 Longitude: -86.425899*
Summary Report | Facility Report | Compliance Report

*WEST CENTRAL CONSERVANCY DIST*
*243 S 625 E AVON, IN 46123*
*Latitude: 39.7585 Longitude: -86.4143*
Summary Report | Facility Report | Compliance Report

*WEST CENTRAL CONSERVANCY DISTRICT*
*243 S 625 E AVON, IN 46123*
*Latitude: 39.759047 Longitude: -86.413757*
Summary Report | Facility Report | Compliance Report

# EJSCREEN Census 2010 Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description:

| Summary | Census 2010 |
|---|---|
| Population | 64,833 |
| Population Density (per sq. mile) | 749 |
| Minority Population | 7,101 |
| % Minority | 11% |
| Households | 23,386 |
| Housing Units | 24,772 |
| Land Area (sq. miles) | 86.61 |
| % Land Area | 99% |
| Water Area (sq. miles) | 0.62 |
| % Water Area | 1% |

| Population by Race | Number | Percent |
|---|---|---|
| Total | 64,833 | ------- |
| Population Reporting One Race | 63,776 | 98% |
| White | 58,910 | 91% |
| Black | 2,662 | 4% |
| American Indian | 133 | 0% |
| Asian | 1,439 | 2% |
| Pacific Islander | 19 | 0% |
| Some Other Race | 613 | 1% |
| Population Reporting Two or More Races | 1,057 | 2% |
| Total Hispanic Population | 1,971 | 3% |
| Total Non-Hispanic Population | 62,862 | 97% |
| White Alone | 57,732 | 89% |
| Black Alone | 2,628 | 4% |
| American Indian Alone | 103 | 0% |
| Non-Hispanic Asian Alone | 1,421 | 2% |
| Pacific Islander Alone | 18 | 0% |
| Other Race Alone | 73 | 0% |
| Two or More Races Alone | 885 | 1% |

| Population by Sex | Number | Percent |
|---|---|---|
| Male | 32,613 | 50% |
| Female | 32,220 | 50% |

| Population by Age | Number | Percent |
|---|---|---|
| Age 0-4 | 4,403 | 7% |
| Age 0-17 | 17,253 | 27% |
| Age 18+ | 47,580 | 73% |
| Age 65+ | 7,157 | 11% |

| Households by Tenure | Number | Percent |
|---|---|---|
| Total | 23,386 | |
| Owner Occupied | 18,235 | 78% |
| Renter Occupied | 5,151 | 22% |

**Data Note:** Detail may not sum to totals due to rounding. Hispanic population can be of any race.
**Source:** U.S. Census Bureau, Census 2010 Summary File 1.

DNR Indiana Department of Natural Resources

Eric Holcomb, Governor
Cameron F. Clark, Director

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

April 23, 2019

Drew Russell, PMC-PL
U.S. Army Engineer District, Louisville
Corps of Engineers
P.O. Box 59
Louisville, Kentucky 40201

Federal Agency: U.S. Army Corps of Engineers

Re: Environmental Assessment regarding emergency streambank and shoreline protection along White Lick Creek (DHPA #20499)

Dear Mr. Russell:

Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated March 27, 2019 and received on April 1, 2019, for the above indicated project in Avon, Washington Township, Hendricks County, Indiana.

Thank you for the environmental assessment.

As previously stated, in terms of archaeology, no currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places have been recorded within the proposed project area. No additional archaeological investigations appear necessary.

If any prehistoric or historic archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations, including but not limited to 36 C.F.R. 800.

As previously stated, in regard to buildings and structures, we have noted the following structure within the probable area of potential effects, and we believe that it meets the criteria of eligibility for inclusion in the National Register of Historic Places due to its historical and architectural significance:

Big Four Railroad Bridge, carrying the CSX railroad over CR 625 E. and White Lick Creek, (site # 063-074-45040)

We understand the "project design does not necessitate placement of material onto the railroad easement"; therefore avoiding the bridge and abutments during streambank stabilization efforts. Based on the information provided to our

office, we do not believe the characteristics that qualify the above identified historic property for inclusion in the National Register will be diminished as a result of this project.

Therefore, we concurred with the U.S. Army Corps of Engineers' August 14, 2018 finding that there are no historic buildings, structures, districts, objects, or archaeological resources within the area of potential effects that will be affected by the above indicated project.

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Kim Marie Padgett at (317) 234-6705 or kpadgett@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #20499.

Very truly yours,

Beth K. McCord
Deputy State Historic Preservation Officer

BKM:KMP:kmp

US Army Corps
of Engineers
Louisville District

# Avon Mitigation, Monitoring, and Adaptive Management Plan

Emergency Streambank Stabilization Project

Continuing Authorities Program (CAP) Section 14

Town of Avon, Indiana

December 2021

# 1.0 Introduction

The U.S. Army Corps of Engineers, Louisville District (USACE) in partnership with the city of Avon, IN has developed a feasibility study and plans for an emergency streambank stabilization along White Lick Creek in Avon, IN.

In accordance with the Council of Environmental Quality National Environmental Policy Act (NEPA) regulation, mitigation includes (a) avoiding the impact by not taking a certain action or parts of an action; (b) minimizing the impact by limiting the degree of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating or restoring the effected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; (e) compensating for the impact by replacing or providing substitute resources or environments.

This document outlines the compensatory mitigation, monitoring, and adaptive management plan for the Avon Emergency Streambank Stabilization Project, and only addresses compensatory mitigation. The other forms of mitigation exercised prior to considering compensatory mitigation (e.g., avoidance, minimization, reduction of impact) are addressed within the Detailed Project Report/Environmental Assessment and Supplemental Environmental Assessment for the project.

This plan identifies and describes the mitigation, monitoring and adaptive management activities proposed. The general purpose of this plan is to provide a systematic approach for improving mitigation outcomes and a structured process for recommending decisions.

More specifically, the plan:

- Outlines mitigation requirements
- Establishes specific mitigation success criteria
- Sets a framework for effective monitoring and assessment of monitoring data
- Provides a decision-making process for implementation of adaptive management

## 1.1 Compensatory Mitigation Guidelines

The following Federal laws and Corps implementation guidance provide guidance pertinent to developing this mitigation, monitoring, and adaptive management plan:

- CECW-PC 31 August 2009 Memo: Implementation Guidance for Section 2036(a) of the Water Resources Development Act of 2007 (WRDA 07) – Mitigation for Fish and Wildlife and Wetlands Losses" – requires: 1) monitoring until successful, 2) criteria for determining ecological success, 3) a description of available lands for mitigation and the basis for the determination of availability, 4) the development of contingency plans/adaptive management plans, 5) identification of the entity responsible for monitoring; and 6) establish a consultation process with appropriate Federal and State agencies in determining the success of mitigation.

- ER 1105-2-100 dated 22 April 2000, Planning Guidance Notebook, Section C-3 e. Mitigation Planning and Recommendations
- Compensatory Mitigation for Losses of Aquatic Resources; Final Rule; Federal Register, Volume 73, No. 70, April 10, 2008.
- Water Resource Reform and Development Act (WRRDA) 2014, Section 1040 Fish and Wildlife Mitigation.
- Water Infrastructure Improvements for the Nation Act (WIIN Act) 2016, Sections 1162 Fish and Wildlife Mitigation, and 1163 Wetlands Mitigation. Implementation Guidance has not been issued by USACE HQ.
- CECW-P 02 February 2018 Memo Implementation Guidance for Section 1162 of the Water Resources Development Act of 2016 (WRDA 2016) - Fish and Wildlife Mitigation. Section 1162 authorizes the use of Preconstruction, Engineering Design funds to satisfy mitigation requirements through 3rd party arrangements or acquire lands for mitigation requirements.

## 1.2 Recommended Plan Description

The proposed action is comprised of the following:

- Protection of approximately 491 linear feet (LF) of streambank along White Lick Creek by re-grading the degraded bank slope to a 1.5:1 slope, installing 24 inches of riprap at the toe of the bank from the channel bottom up to the 0.2% Annual Exceedance Probability (AEP) flood elevation (774 msl), installing a high-performance turf reinforced mat above the 0.2% AEP flood elevation, and hydroseeding the slope with a native seed mix. In all, 0.4 acres of riparian vegetation would be removed.

## 1.3 Recommended Plan Impacts and Compensatory Mitigation Requirements

The recommended plan would result in an unavoidable impact to 491 LF of stream due to the placement of fill materials in the channel. The Indiana Department of Environmental Management (IDEM) typically requires compensatory mitigation if a construction project impacts greater than 350 LF of stream. Through coordination with the IDEM, it was determined that these impacts would need to be mitigated with the implementation of a 1:1 stream mitigation. This would include invasive species removal, tree and shrub plantings, and native seeding along one side of 491 LF of stream in the White Lick Creek watershed. All work would be done to meet IDEM stream mitigation success criteria, however no in-stream channel modification would be required.

The recommended plan would also result in the unavoidable removal of 38 trees that are greater than 10-inches in diameter at breast height within a floodway. Through coordination with the Indiana Department of Natural Resources (IDNR), it was determined that this impact

would need to be mitigated by planting trees that are 1-2-inches in diameter at breast height (DBH) at a 5:1 ratio across 0.4 acres of non-wetland riparian habitat.

## 1.4 Mitigation Area Location

The mitigation will occur along a tributary to White Lick Creek that is approximately 0.5 miles south of Bradford Rd. and 0.05 miles east of Dan Jones Rd. in Avon, Indiana (39.726637, -86.379965). The mitigation site would extend 491 LF along the tributary and would encompass 0.66 acres of non-wetland riparian habitat. See Figure 1 for a map of the mitigation area.

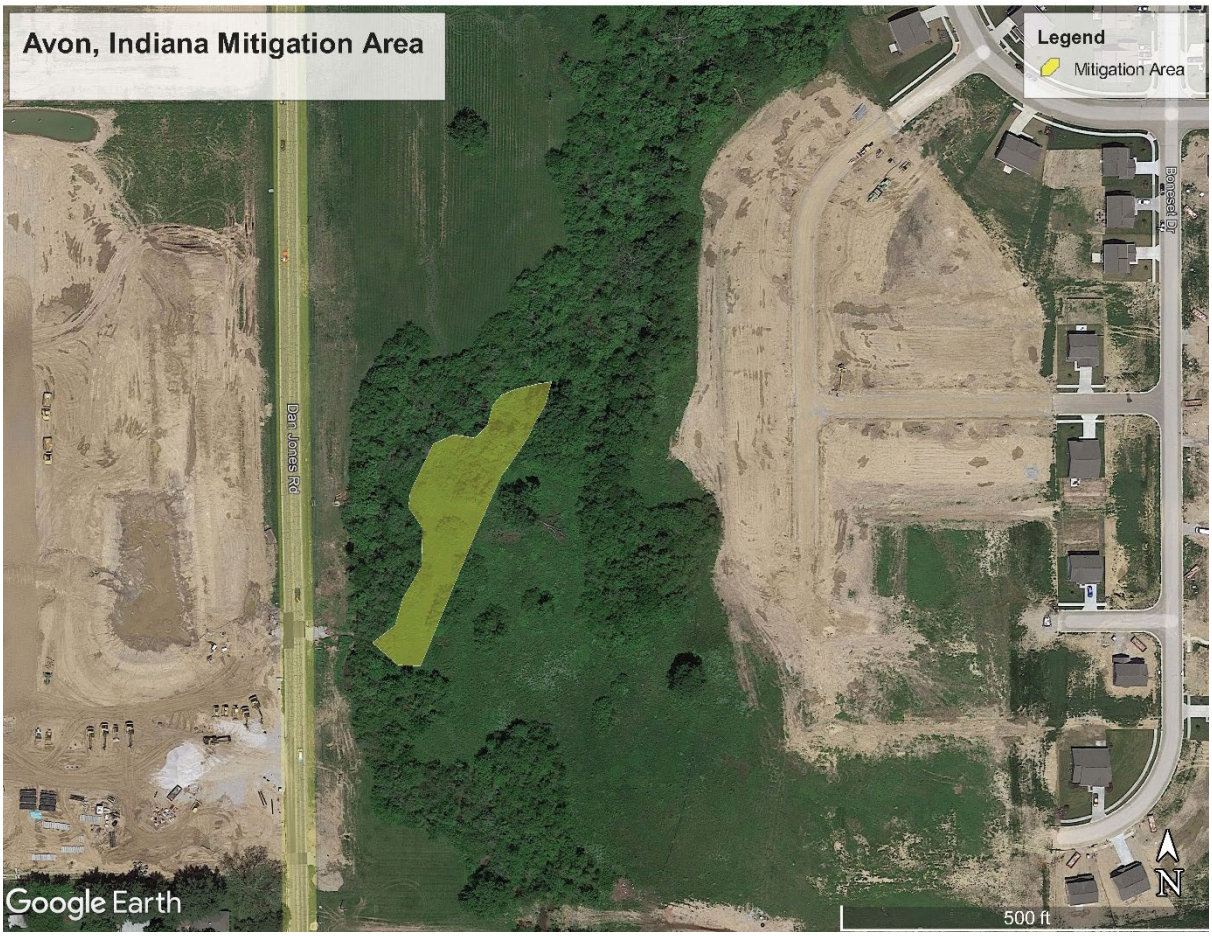



**Figure 1**. Avon, Indiana Mitigation Area.

A site visit with an IDEM biologist on December 13, 2021 revealed that the site would be appropriate to meet stream mitigation requirements. The mitigation was dominated by mostly exotic species including bush honeysuckle (*Lonicera maackii*), multiflora rose (*Rosa multiflora*), hedge apple (*Maclura pomifera*) and fescue (*Lolium arundinaceum*).

# 2.0 Mitigation Success Criteria

Successful completion of compensatory mitigation to satisfy both IDEM and IDNR requirements would occur on the same site (Figure 1). The site will include appropriate invasive species removal, proper

preparations for plantings, and appropriate planting to reach all mitigation success criteria. Mitigation success criteria are as follows:

1. Establish at least 190 trees that are 1-2-inches in DBH (= 287 trees per acre)
2. Establish at least 290 shrubs (= 439 shrubs per acre)
3. Establish an approved herbaceous native seed mix across the mitigation site to reach at least 90% vegetation cover
4. At least 70% of vegetation cover across the mitigation site must consist of native species (excluding cattail (*Typha* spp.))
5. No single tree or shrub species shall constitute more than 20% of the total vegetation cover
6. No 10-meter square area shall have a combined surface areal coverage greater than 10% of any combination of the following: (Note: bare ground is defined as an area with less than 10% areal vegetative cover. If the area of the stream channel below the ordinary high-water mark (OHWM) has less than 10% vegetative cover it shall not be considered bare ground.)
    a. Cattail (*Typha* spp.)
    b. Reed canary grass (*Phalaris arundinacea*)
    c. Open water
    d. Bare ground
    e. Garlic mustard (*Alliaria petiolata*)
    f. Panicled aster (*Aster simplex*)
    g. Barnyard grass (*Echinochloa crus-galli*)
    h. Glossy buckthorn (*Rhamnus frangul*)
7. The mitigation area must be free of:
    a. Purple loosestrife (*Lythrum salicara*)
    b. Common reed (*Phragmites australis*)
    c. Autumn olive (*Elaegnus umbellata*)
    d. Russian olive (*Elaeagnus angustifolia*)
    e. Multiflora rose (*Rosa multiflora*)
    f. Bush honeysuckle species (*Lonicera maackii, L. morrowii, L. tatarica*)
8. Permanently and clearly identify on-site all mitigation areas with “Do Not Mow or Spray – Restoration Area” signs placed no further apart than every 100 feet after construction. If the mitigation areas to be established are adjacent to or near existing mitigation areas, then permanent stakes/markers must distinguish the new mitigation areas from the existing mitigation areas.

Each individual tree or shrub that is planted must be evenly distributed, show growth for two consecutive years, and be a species in the IDEM approved mitigation planting list to be considered successful. Suitable tree and shrub species can be found in Table 1. The use of species other than those listed in Table 1 must be approved by the IDEM prior to planting.

**Table 1.** Suitable tree and shrub species for planting.

| | Common Name | Scientific Name |
|---|---|---|
| Trees | Paw Paw | *Asimina triloba* |
| | Shellbark hickory | *Carya laciniosa* |
| | Common hackberry | *Celtis occidentalis* |
| | Kentucky coffee tree | *Gymnocladus dioica* |
| | Tulip tree | *Liriodendron tulipifera* |
| | Black cherry | *Prunus serotina* |
| | White oak | *Quercus alba* |
| | Swamp white oak | *Quercus bicolor* |
| | Pin oak | *Quercus palustris* |
| | Shingle oak | *Quercus imbricaria* |
| | Burr oak | *Quercus macrocarpa* |
| | Northern red oak | *Quercus rubra* |
| | Shumard oak | *Quercus shumardii* |
| Shrubs | Black chokeberry | *Aronia melanocarpa* |
| | Buttonbush | *Cephalanthus occidentalis* |
| | Elderberry | *Sambucus canadensis* |
| | Gray dogwood | *Cornus racemose* |
| | Highbush cranberry | *Viburnum trilobum* |
| | Ninebark | *Physocarpus opulifolius* |
| | Silky dogwood | *Cornus amomum* |
| | Spicebush | *Lindera benzoin* |

# 3.0 Monitoring

Within three months of completion of required mitigation plantings, as-built plans will be submitted to the IDEM that include the species and quantities of each species that was planted. Any deviations from the approved mitigation plan must be highlighted and explained.

The site will then be monitored annually, starting the first full growing season after completion, for a minimum period of five continuous years to determine if success criteria are being met. Data to be collected during annual monitoring includes:

1. Counts of living and dead trees
2. Counts of living and dead shrubs
3. Estimate of total vegetation coverage
4. Estimate of invasive plant coverage
5. Estimate of native plant coverage
6. Photographs of the mitigation area
7. Status of mitigation area signage

All plant coverage would be estimated with USACE methods for monitoring herbaceous vegetation (Herman et. al., 2019). Additionally, it should be noted if living trees are showing signs of growth, and dead trees should be marked with flagging tape.

# 4.0 Reporting

The District will prepare an annual Monitoring Report summarizing the results of monitoring efforts conducted for compensatory mitigation and describing any necessary adaptive management measures. The format of the report will contain, but not be limited to 1) an executive Summary, 2) requirements and goals of approved mitigation proposal that have been achieved, 3) documentation including assessment worksheets, photos, and field notes, and 4) suggested adaptive management measures.

As required by the IDEM, the USACE will submit the annual report to the agency by no later than December 31$^{st}$ of each year until monitoring is complete. The Louisville District will also submit the report to USACE Headquarters for inclusion to the annual mitigation report that is submitted to Congress.

# 5.0 Adaptive Management

The USACE would be responsible for ensuring that monitoring data and assessments are properly used in the adaptive management decision-making process. Adaptive management triggers are used to determine if and when adaptive management activities should be implemented. In the case of this mitigation effort, adaptive management actions would be triggered if monitoring data show that the mitigation is outside of the minimum success criteria outlined in section 2.0. The USACE shall review the initial and annual monitoring results and recommend actions, as needed, to reach success criteria outlined in section 2.0.

Adaptive management measures that could be implemented include:

**Irrigation/Supplemental Water**: Irrigation and/or supplemental water may be needed if triggers for vegetative cover are met. Assessment of monitoring results may show that drought conditions are causing poor establishment or die off of planted vegetation. Adaptive management actions would include supplemental water to support achievement of percent cover criteria and successful restoration of riverine habitats. This is expected to only be necessary during the initial establishment of plant communities and would only be implemented if a trigger is met during year 1 or if significant replanting actions are required.

**Replanting**: Additional planting of habitat may be required if triggers for vegetative cover are met. Monitoring results would be reviewed to identify source of underlying cause of inadequate cover, which may require that additional adaptive management actions be implemented. Monitoring results may indicate that drought conditions are causing poor establishment or die off of planted vegetation. Trampling or other factors may also trigger action.

**Plant Protection**: Plant protection may be needed if triggers for vegetative cover are met. Monitoring results may show that plantings are failing due to predation or trampling from recreational use, homeless encampments, or nuisance species. Adaptive management actions would include measures such as plant cages or protective fencing that could be installed to protect plantings.

**Invasive Species Control**: If monitoring results show that triggers for invasive species are met, the USACE may recommend adjustments to invasive control methods.

DNR Indiana Department of Natural Resources

Eric Holcomb, Governor
Cameron F. Clark, Director

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

April 23, 2019

Drew Russell, PMC-PL
U.S. Army Engineer District, Louisville
Corps of Engineers
P.O. Box 59
Louisville, Kentucky 40201

Federal Agency: U.S. Army Corps of Engineers

Re: Environmental Assessment regarding emergency streambank and shoreline protection along White Lick Creek (DHPA #20499)

Dear Mr. Russell:

Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated March 27, 2019 and received on April 1, 2019, for the above indicated project in Avon, Washington Township, Hendricks County, Indiana.

Thank you for the environmental assessment.

As previously stated, in terms of archaeology, no currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places have been recorded within the proposed project area. No additional archaeological investigations appear necessary.

If any prehistoric or historic archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations, including but not limited to 36 C.F.R. 800.

As previously stated, in regard to buildings and structures, we have noted the following structure within the probable area of potential effects, and we believe that it meets the criteria of eligibility for inclusion in the National Register of Historic Places due to its historical and architectural significance:

Big Four Railroad Bridge, carrying the CSX railroad over CR 625 E. and White Lick Creek, (site # 063-074-45040)

We understand the "project design does not necessitate placement of material onto the railroad easement"; therefore avoiding the bridge and abutments during streambank stabilization efforts. Based on the information provided to our

office, we do not believe the characteristics that qualify the above identified historic property for inclusion in the National Register will be diminished as a result of this project.

Therefore, we concurred with the U.S. Army Corps of Engineers' August 14, 2018 finding that there are no historic buildings, structures, districts, objects, or archaeological resources within the area of potential effects that will be affected by the above indicated project.

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Kim Marie Padgett at (317) 234-6705 or kpadgett@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #20499.

Very truly yours,

Beth K. McCord
Deputy State Historic Preservation Officer

BKM:KMP:kmp

Federal Recognized Tribal Coordination January 20, 2017:

Delaware Nations of Oklahoma
Pokagon Band of Potawatomi Indians of Michigan
Forest County Potawatomi Community
Absentee-Shawnee Tribe of Indians
Hannahville Indian Community
Miami Tribe of Oklahoma
Gun Lake Tribe
Delaware Tribe of Indians, Oklahoma
Citizen Potawatomi Nation
Prairie Band Potawatomi Nation of Kansas
Nottawaseppi Huron Band of Potawatomi
Eastern Shawnee Tribe of Oklahoma
Shawnee Tribe
Kickapoo Traditional Tribe of Texas
Kickapoo Tribe of Kansas
Kickapoo Tribe of Oklahoma
Grand Traverse Band of Ottawa and Chippewa
Little River Band of Ottawa
Ottawa Tribe of Oklahoma

**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059
PM-P-E

http://www.lrl.usace.army.mil/

January 17, 2018

Civil Works, Planning, Programs and
Project Management Branch
Planning Section

Mr. Mitch Zoll
Indiana Historic Preservation & Archaeology
402 W. Washington Street Room W274
Indianapolis, IN 46204

Mr. Zoll,

The U.S. Army Corps of Engineers-Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in the Town of Avon in Hendricks County, Indiana (Figure 1). This review was initiated under the authority of Section 14 of the 1946 Flood Control Act (Public Law 79-526); and was coordinated with your office 19 January 2017 (DHPA #20499). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The proposed Area of Potential Effect (APE) is approximately 500 linear feet of the left descending bank of the White Lick Creek adjacent to South County Road 625 (Figures 2-5).

The stabilization alternatives that were chosen for the streambank erosion, are the riprap stone protection and Launched SuperNail (soil nails)(Enclosure 1). The riprap stone protection is a method of armoring the streambank from erosion through the placement of blocky, graduated stone. A toe is excavated to the depth of scour and a revetment top to prevent erosion and wave action. This alternative will include removal of all debris and vegetation from the slope. The Launched SuperNail, known as soil nails, are approximately 20-foot long steel tubes that are projected into earth to stabilize and increase soil density. The soil nails will reduce the amount of water pressure in the soil and improve drainage. A steel mesh mat, similar to a chain-link fencing, will be placed over the soil nails for added stabilization.

The records search on the Indiana State Historic Architectural and Archaeological Research Database (SHAARD), revealed a CSX Railroad Bridge, formally known as the Big Four Bridge located in the immediate project area. The CSX Railroad abutments are located within the APE on the streambank that will be repaired. Based on the Historic Landmarks Foundation of Indiana and Wikipedia, the railroad bridge was constructed in 1907 and was doubled tracked in 1908. The

bridge was primarily constructed with concrete and consists of a series of open-spandrel concrete arches (Figure 3). Albeit the CSX Bridge is 110 years old, it has not yet been evaluated for the National Register of Historic Places (NRHP). However, the bridge and abutments will be avoided during streambank stabilization efforts.

In accordance with 36CFR800.3, the proposed undertaking does not have the potential to affect the CSX Railroad Bridge. Based on the records review, there are no known prehistoric archaeological sites or historic properties within the proposed undertaking. In addition, the CSX railroad is active and has a high level of rail traffic daily. The railroad company has also modified the bridge by adding steel plates to the interior spandrel arches and new concrete supporting the spandrel arches (Figure 6). The project area has been disturbed by previous streambank stabilization efforts, as well as installation of a guardrail that runs along 625 E and White Lick Creek.

If you have any questions and comments regarding this emergency effort, they should be directed to Ms. Jennifer Guffey at (502) 315-7468 or jennifer.m.guffey@usace.army.mil. Please provide a response by 16 February 2018.

Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

Enclosure 1
Engineering Plans

**Figure 1: Project Location in the Town of Avon**

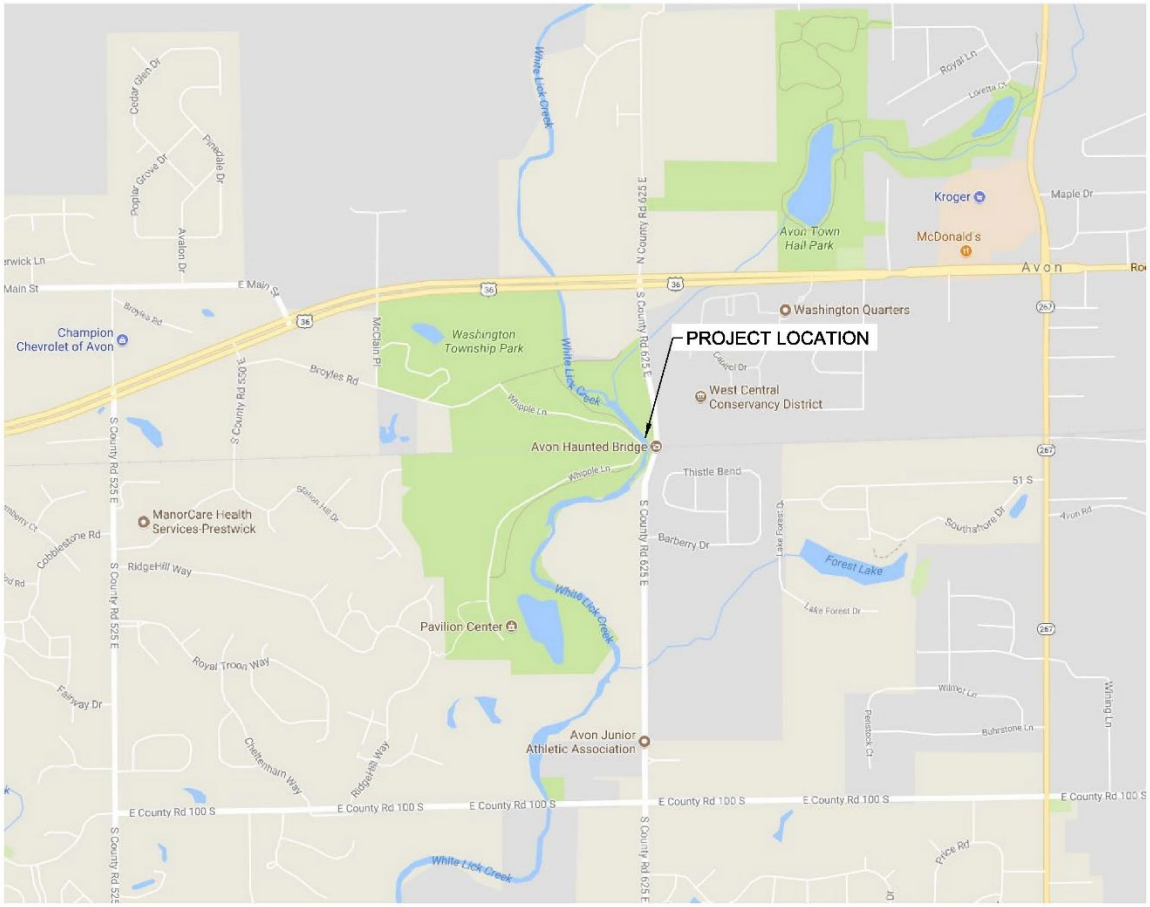


**Figure 2: Project Location on the White Lick Creek**

**Figure 3: Looking northeast at top of bank at the proposed streambank to be protected along White Lick Creek and South County Road 625 E.**

**Figure 4: Looking east, across White Lick Creek at the proposed streambank to be protected**

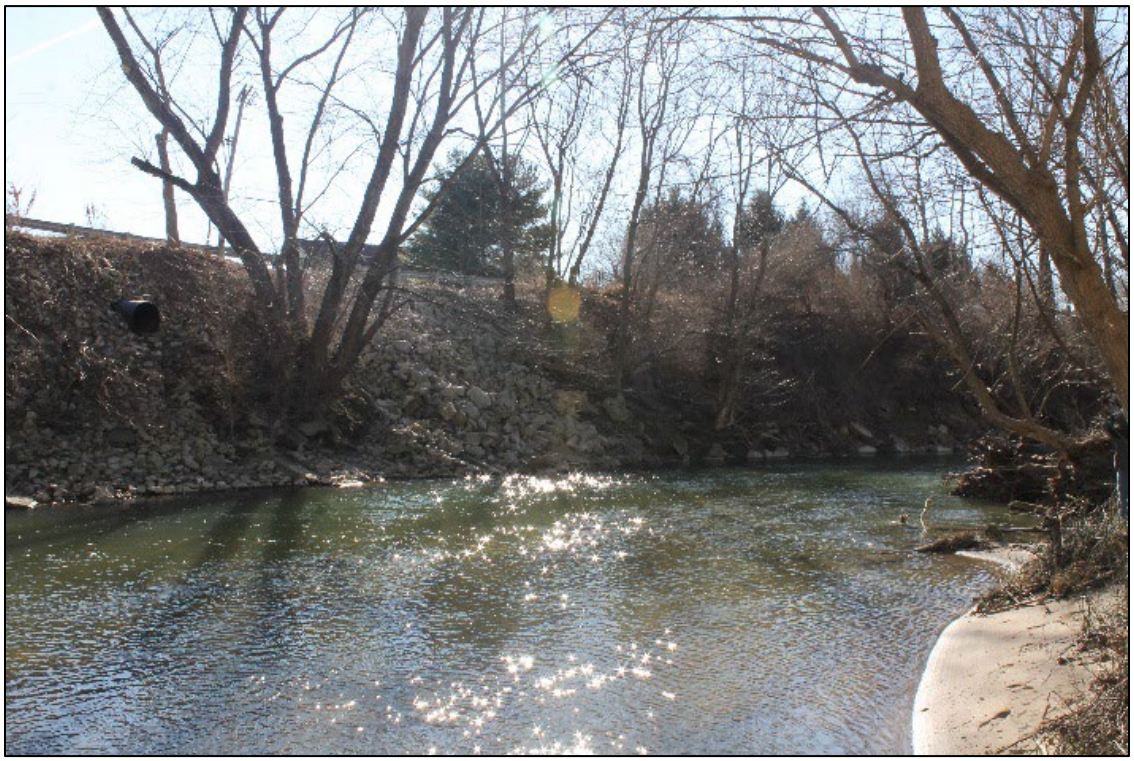


**Figure 5: Looking east, across White Lick Creek at the proposed streambank to be protected, left side of CSX Railroad Bridge**

**Figure 6: Steel Reinforcements on the internal archways and new concrete**

DNR Indiana Department of Natural Resources

Eric Holcomb, Governor
Cameron F. Clark, Director

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

February 8, 2018

Jennifer Guffey
U.S. Army Engineer District, Louisville
Corps of Engineers
P.O. Box 59
Louisville, Kentucky 40201

Federal Agency: U.S. Army Corps of Engineers

Re: Additional project information regarding emergency stream bank and shoreline protection along White Lick Creek (DHPA #20499)

Dear Ms. Guffey:

Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated January 17, 2018 and received on January 19, 2018, for the above indicated project in Avon, Washington Township, Hendricks County, Indiana.

Thank you for the additional information.

In terms of archaeology, no currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places have been recorded within the proposed project area. No archaeological investigations appear necessary provided that all project activities remain within areas disturbed by previous construction.

If any prehistoric or historic archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations, including but not limited to 36 C.F.R. 800.

As previously stated, in regard to buildings and structures, we have noted the following structure within the probable area of potential effects, and we believe that it meets the criteria of eligibility for inclusion in the National Register of Historic Places due to its historical and architectural significance:

Big Four Railroad Bridge, carrying the CSX railroad over CR 625 E. and White Lick Creek, (site # 063-074-45040)

We understand the bridge and abutments will be avoided during streambank stabilization efforts. Therefore, based on the information provided to our office, we do not believe the characteristics that qualify the above identified historic property for inclusion in the National Register will be diminished as a result of this project.

Upon completion of all identification and evaluation efforts, seeking all necessary views on the effects, and gathering supporting documentation, then it will be appropriate for the U.S. Army Corps of Engineers to analyze the information that has been provided by the applicant or its consultant and consider the views of the Indiana SHPO, the general public, and any other consulting parties to make the necessary determinations and findings. Refer to the following comments for guidance:

1) If the U.S. Army Corps of Engineers believes that a finding of "no adverse effect" accurately reflects its assessment, then it shall provide documentation of its finding as set forth in 36 C.F.R. § 800.11(e) to the Indiana SHPO, notify all consulting parties, and make the documentation available for public inspection (36 C.F.R. §§ 800.5[b-c] and 800.2[d][2]).

2) If, on the other hand, the U.S. Army Corps of Engineers believes that a finding of "adverse effect" accurately reflects its assessment, then it shall provide notification to the Advisory Council on Historic Preservation by providing the documentation in 36 C.F.R. § 800.11(e) as stated in 36 C.F.R. § 800.6(a)(1). Additionally, the U.S. Army Corps of Engineers may proceed to provide documentation of its finding as set forth in 36 C.F.R. § 800.11(e) to the Indiana SHPO, all consulting parties, and make the documentation available for public inspection and proceed to seek ways to avoid, reduce and mitigate effects as stated in 36 C.F.R. § 800.6 (a)(2-5).

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Kim Marie Padgett at (317) 234-6705 or kpadgett@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #20499.

Very truly yours,

Mitchell K. Zoll
Deputy State Historic Preservation Officer

MKZ:KMP:ALJ:aj

**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059
PM-P-E

http://www.lrl.usace.army.mil/

August 14, 2018

Civil Works, Planning, Programs and
Project Management Branch
Planning Section

Mr. Chad Slider
Indiana Historic Preservation & Archaeology
402 W. Washington Street Room W274
Indianapolis, IN 46204

Mr. Slider,

The U.S. Army Corps of Engineers-Louisville District, initiated consultation January 2017, for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

The initially preferred project was to implement a combination of launched soil nails and riprap to address the streambank erosion. After further investigation, the Corps has determined installation of riprap only on the entire streambank would be the most appropriate alternative to address the erosion. Currently, the project area is sparsely covered with riprap, which has been ineffective in controlling streambank erosion. The Corps will be removing the old riprap, re-grading the slope, placing proper bedding material, and placing new riprap over the bank (Figure 3).

The USACE has determined that the proposed undertaking will have no effect to historic properties and/or previously undiscovered cultural resources. A number of steps were taken in an effort to identify any cultural resources within the area of the proposed streambank and shoreline protection area. These included a background check of the National Register of Historic Places (NRHP), USACE Geographic Information System (GIS), the Indiana Division of Historic Preservation and Archaeology (DHPA) records, and site file search of the Indiana State Historic

Architectural and Archaeological Research Database (SHAARD), review of the Hendricks County Interim Report, published by Historic Landmarks Foundation of Indiana, and previous cultural resource survey reports that have occurred near the vicinity of the project area. The purpose of this records search was to identify and locate any cultural resources or historic properties that could be potentially impacted by the proposed undertaking. The records review of the SHAARD website on January 9, 2017 found no known prehistoric sites in the immediate project area. There is one historic bridge CSX Railroad Bridge, formally known as the Big Four Railroad Bridge located within the project area. The CSX Bridge meets the criteria of eligibility for the inclusion of the National Register of Historic Places, due to its age and architectural significance. However, the project design does not necessitate placement of material onto the railroad easement, and therefore has no potential to effect the historic property.

An onsite cultural resources assessment was conducted on February 2, 2017, in the project area. The area was examined by means of a visual pedestrian ground surface inspection. Since the project location is on terrain greater than 20 percent slope, no shovel tests were excavated (IN-SHPO Guidelines 2008). The project area is disturbed due the presence of buried sewer lines, utilities lines, a guardrail system, and placement of the previous riprap from past flooding events (Figures 4-6). No cultural resources were observed during the site visit.

Based on the site visit, cultural resources review on file at the Louisville Office, a search on the NRHP database, a search of the SHAARD database literature review, and past disturbances notes in the proposed project location, including, guardrail system, sewer drainages, buried utilities, and riprap along the shoreline and streambank, the proposed undertaking has no potential to affect historic properties or cultural resources. The CSX Railroad Bridge that is in the proposed project location, however the project will not infringe over on the railroads easement. Currently, there are no known prehistoric archaeological sites or historic properties within the proposed undertaking. In accordance with 33CFR800.3(a)(1), the proposed streambank and shoreline protection has no potential to effect history properties and the Corps has no further obligation under Section or this part.

If you have any questions and comments regarding this emergency effort, they should be directed to Ms. Jennifer Guffey at (502) 315-7468 or jennifer.m.guffey@usace.army.mil.

Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

Enclosure

**Figure 1: Project Location in the Town of Avon**

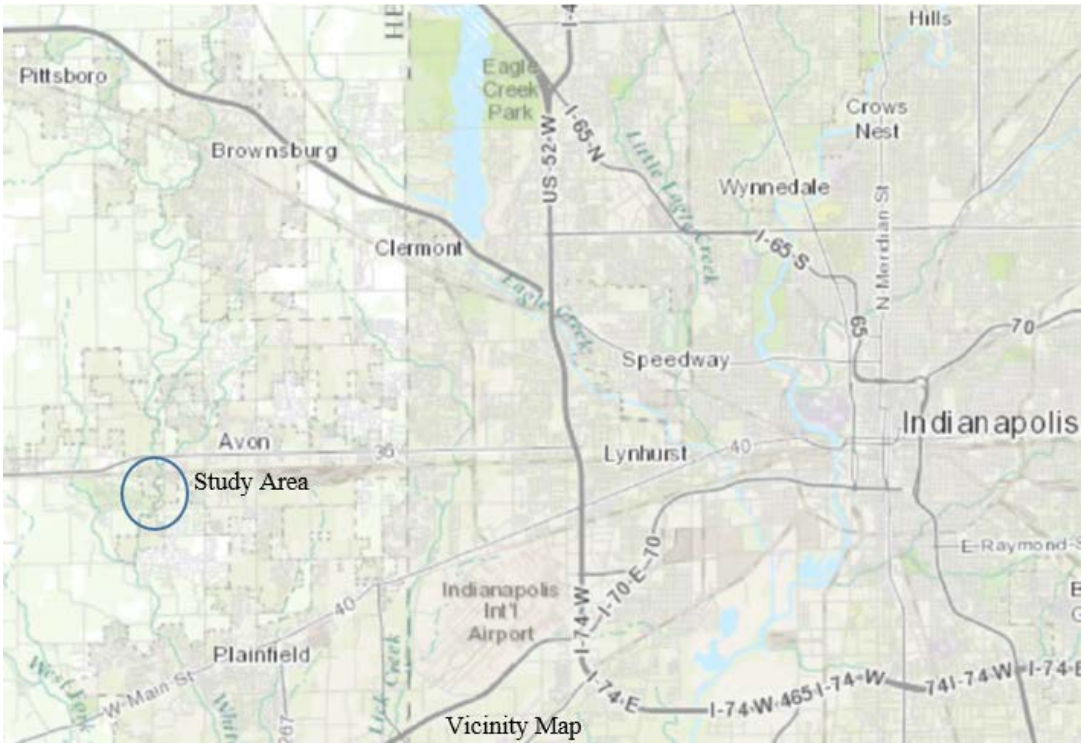



**Figure 2: Area of Concern on the White Lick Creek along South County Road 625 East**

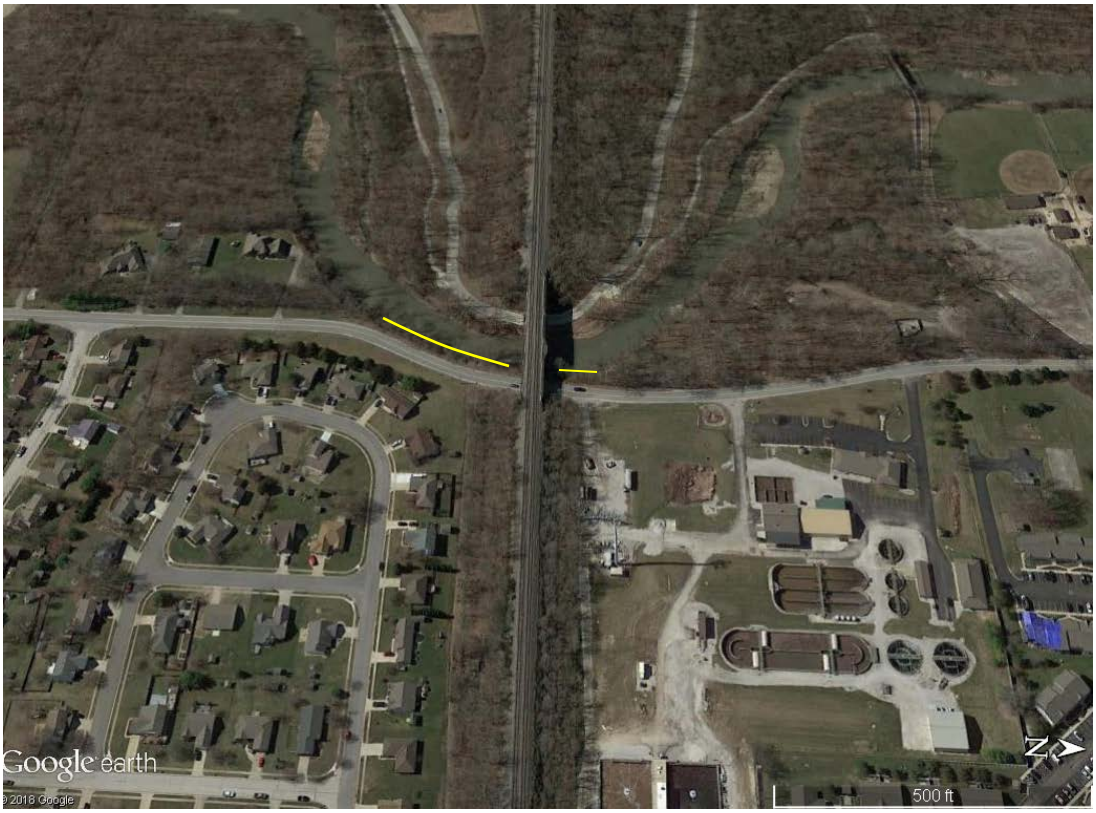


**Figure 3: Proposed image new riprap**

**Figure 4: Project area for new riprap, east view**

**Figure 5: Project Area showing old riprap, drainage lines, and guardrail location on Slope greater than 15 percent, south view.**

**Figure 6: Project area overview: showing old riprap, guardrail placement, and drainage lines, aerial view of the east.**

DNR Indiana Department of Natural Resources

Eric Holcomb, Governor
Cameron F. Clark, Director

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

September 11, 2018

Jennifer Guffey
U.S. Army Engineer District, Louisville
Corps of Engineers
P.O. Box 59
Louisville, Kentucky 40201

Federal Agency: U.S. Army Corps of Engineers

Re: U.S. Army Corps of Engineers' finding of "no effect" regarding emergency streambank and shoreline protection along White Lick Creek (DHPA #20499)

Dear Ms. Guffey:

Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated August 14, 2018 and received on August 16, 2018, for the above indicated project in Avon, Washington Township, Hendricks County, Indiana.

As previously stated, in terms of archaeology, no currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places have been recorded within the proposed project area. No additional archaeological investigations appear necessary.

If any prehistoric or historic archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations, including but not limited to 36 C.F.R. 800.

As previously stated, in regard to buildings and structures, we have noted the following structure within the probable area of potential effects, and we believe that it meets the criteria of eligibility for inclusion in the National Register of Historic Places due to its historical and architectural significance:

Big Four Railroad Bridge, carrying the CSX railroad over CR 625 E. and White Lick Creek, (site # 063-074-45040)

We understand the "project design does not necessitate placement of material onto the railroad easement"; therefore avoiding the bridge and abutments during streambank stabilization efforts. Based on the information provided to our office, we do not believe the characteristics that qualify the above identified historic property for inclusion in the National Register will be diminished as a result of this project.

Therefore, we concur with the U.S. Army Corps of Engineers' August 14, 2018 finding that there are no historic buildings, structures, districts, objects, or archaeological resources within the area of potential effects that will be affected by the above indicated project.

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Kim Marie Padgett at (317) 234-6705 or kpadgett@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #20499.

Very truly yours,

Chad W. Smith

Christopher A. Smith
Deputy Director
Indiana Department of Natural Resources

CAS:KMP:ALJ:aj

**From:** Diane Hunter
**To:** Guffey, Jennifer M CIV USARMY CELRL (US)
**Subject:** [EXTERNAL] White Lick Creek in Hendricks County, Indiana
**Date:** Monday, February 6, 2017 9:35:01 AM

---

Dear Ms. Guffey:

Aya, kikwehsitoole – I show you respect. My name is Diane Hunter, and I am the Tribal Historic Preservation Officer for the Federally Recognized Miami Tribe of Oklahoma. In this capacity, I am the Miami Tribe's point of contact for all Section 106 issues.

The Miami Tribe offers no objection to the above-mentioned project at this time, as we are not currently aware of existing documentation directly linking a specific Miami cultural or historic site to the project site. However, as this site is within the aboriginal homelands of the Miami Tribe, if any human remains or Native American cultural items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) or archaeological evidence is discovered during any phase of this project, the Miami Tribe requests immediate consultation with the entity of jurisdiction for the location of discovery. In such a case, please contact me at 918-541-8966, or by email at dhunter@miamination.com to initiate consultation.

The Miami Tribe requests to serve as a consulting party to the proposed project. In my capacity as Tribal Historic Preservation Officer I am the point of contact for consultation.

Respectfully,

Diane Hunter
Tribal Historic Preservation Officer
Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355

**From:** Brice Obermeyer
**To:** Guffey, Jennifer M CIV USARMY CELRL (US)
**Subject:** [EXTERNAL] Re: White Lick Creek, Hendricks County, Indiana- Streambank Erosion Project
**Date:** Saturday, February 11, 2017 12:37:58 PM

---

Dear Jennifer,

Hendricks County, IN is not in the Delaware Tribe's area of interest. We do not wish to consult on this project.

Brice Obermeyer
Delaware Tribe Historic Preservation Office
Roosevelt Hall, Rm 212
1 Kellog Drive
Emporia, KS 66801

**From:** "Guffey, Jennifer M CIV USARMY CELRL (US)" <Jennifer.M.Guffey@usace.army.mil>
**To:** "bobermeyer@delawaretribe.org" <bobermeyer@delawaretribe.org>
**Sent:** 2/3/2017 12:42 PM
**Subject:** White Lick Creek, Hendricks County, Indiana- Streambank Erosion Project

> Good Afternoon,
>
> My name is Jennifer Guffey and I am an archaeologist with the United States Army Corps of Engineers (USACE), Louisville District. I am notifying you of a Section 14 emergency streambank and shoreline erosion project along the White Lick Creek in Hendricks County, Indiana. Attached is the copy of the initial Section 106 review of the project, while a hard copy is being sent "snail" mail.
>
> After reviewing this email please let know me know if White Lick Creek (Hendricks County, IN) is in your Nation's area of interest and if you have comments for us to consider. Thanks.
>
> I look forward to receiving your reply and any comments. Please let me know if you have any questions.
>
> Sincerely,
> Jennifer
>
> Jennifer Guffey
> Archaeologist
> Planning Section,
> Civil Works, Planning, Programs and Project Mgmt Branch
> Louisville District
> U.S.Army Corps of Engineers
> Office Phone- 502.315.7468
> Office Fax- 502.315.6864

**From:** Robin Dushane
**To:** Guffey, Jennifer M CIV USARMY CELRL (US)
**Subject:** [EXTERNAL] RE: White Lick Creek, Hendricks County, Indiana- Streambank Erosion Project
**Date:** Monday, February 6, 2017 1:48:05 PM

---

Dear Ms. Guffey,
In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f), and implementing regulation, 36 CFR 800, "Protection of Historic Properties" the Eastern Shawnee Tribal Historic Preservation Office is responding to your request for identifying properties of significance to our Tribe within Avon, IN.

Currently this office is unaware of properties of significance to inform you of that would be involved in the proposed construction at White Lick Creek.
There remains the possibility that unrecorded cultural resources, including archaeological artifacts or human remains, may be encountered during construction, demolition or earthmoving activities of this project. Should this occur, we require you contact this office in order that we may offer appropriate comments under 36 CFR 800.13.
Most sincerely,

Robin Dushane
Tribal Historic Preservation Officer
Eastern Shawnee Tribe
70500 E 128 Rd.
Wyandotte, OK 74370
918 533 4104-cell
rdushane@estoo.net

-----Original Message-----
From: Guffey, Jennifer M CIV USARMY CELRL (US) [mailto:Jennifer.M.Guffey@usace.army.mil]
Sent: Friday, February 03, 2017 12:56 PM
To: Robin Dushane <RDushane@estoo.net>
Subject: White Lick Creek, Hendricks County, Indiana- Streambank Erosion Project

Good Afternoon,

My name is Jennifer Guffey and I am an archaeologist with the United States Army Corps of Engineers (USACE), Louisville District. I am notifying you of a Section 14 emergency streambank and shoreline erosion project along the White Lick Creek in Hendricks County, Indiana. Attached is the copy of the initial Section 106 review of the project, while a hard copy is being sent "snail" mail.

After reviewing this email please let know me know if White Lick Creek (Hendricks County, IN) is in your Nation's area of interest and if you have comments for us to consider. Thanks.

I look forward to receiving your reply and any comments. Please let me know if you have any questions.

Sincerely,
Jennifer

Jennifer Guffey
Archaeologist
Planning Section,
Civil Works, Planning, Programs and Project Mgmt Branch Louisville District U.S.Army Corps of Engineers Office
Phone- 502.315.7468 Office Fax- 502.315.6864

| | |
|---|---|
| **From:** | Tonya Tipton |
| **To:** | Guffey, Jennifer M CIV USARMY CELRL (US) |
| **Cc:** | ben.barnes@gmail.com |
| **Subject:** | [EXTERNAL] Emergency steam bank and shoreline protection project along White Lick Creek in Hendricks County, Indiana |
| **Date:** | Wednesday, February 15, 2017 5:22:38 PM |

This letter is in response to the above referenced project.

The Shawnee Tribe's Tribal Historic Preservation Department concurs that no known historic properties will be negatively impacted by this project.

We have no issues or concerns at this time, but in the event that archaeological materials are encountered during construction, use, or maintenance of this location, please re-notify us at that time as we would like to resume immediate consultation under such a circumstance.

Thank you for giving us the opportunity to comment on this project.

Sincerely,
Tonya Tipton
Shawnee Tribe

**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Glenna J. Wallace, Chief
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

Dear Ms. Wallace:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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The USACE, Louisville District has determined that the proposed undertaking is an activity that has the potential to cause affect to historic properties and/or previously undiscovered cultural resources. We invite your tribe to consult on these affects pursuant to Section 106 of the National Historic Preservation Act 10 1966 (as amended).

Based on the records review, the proposed undertaking does have potential to affect the CSX Railroad Bridge that is in the proposed project location. Currently, there are no known prehistoric archaeological sites or historic properties within the proposed undertaking. We request your comments and information on the proposed APE, bridge, and any known cultural resources within or near the project location. Any information that you provide will assist in our identification efforts and in development of alternatives. Please be assured that we will remain sensitive to any concerns you may have regarding the confidentiality of this information.

If you have any questions and comments regarding this effort, they should be directed to me at (502) 315-7468 or jennifer.m.guffey@usace.army.mil. Please provide a response by February 21, 2017.

Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

cc. Ms. Dushane, THPO

**Figure 1: Project Location in the Town of Avon**

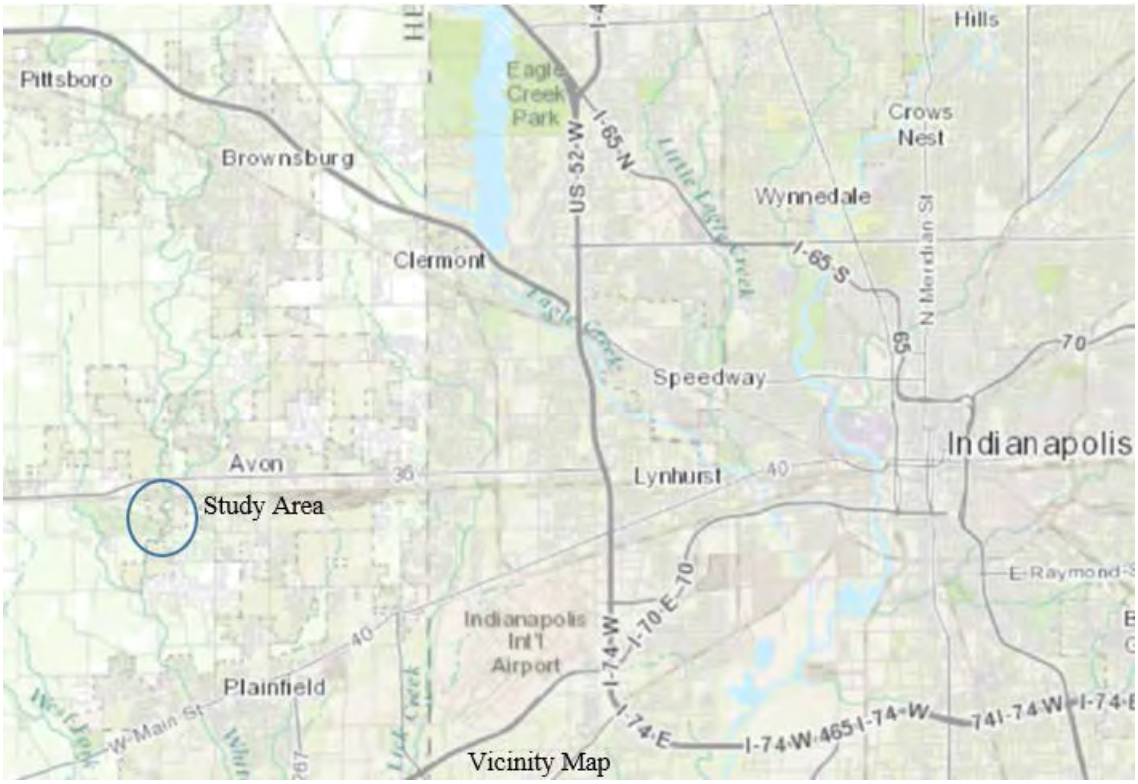

**Figure 2: Area of Concern on the White Lick Creek along South County Road 625 East**

**Figure 3: The 110 Year Old Concrete CSX Railroad Abutments within the APE.**

**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Liana Onnen
Chairperson, Praire Band Potawatomi Nation
16281 Q Road
Mayetta, KS 66509

Dear Ms. Onnen:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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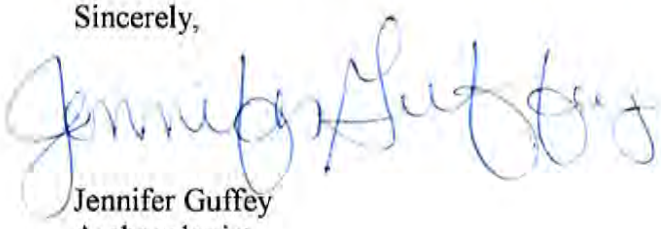

Jennifer Guffey
Archaeologist
Planning Section

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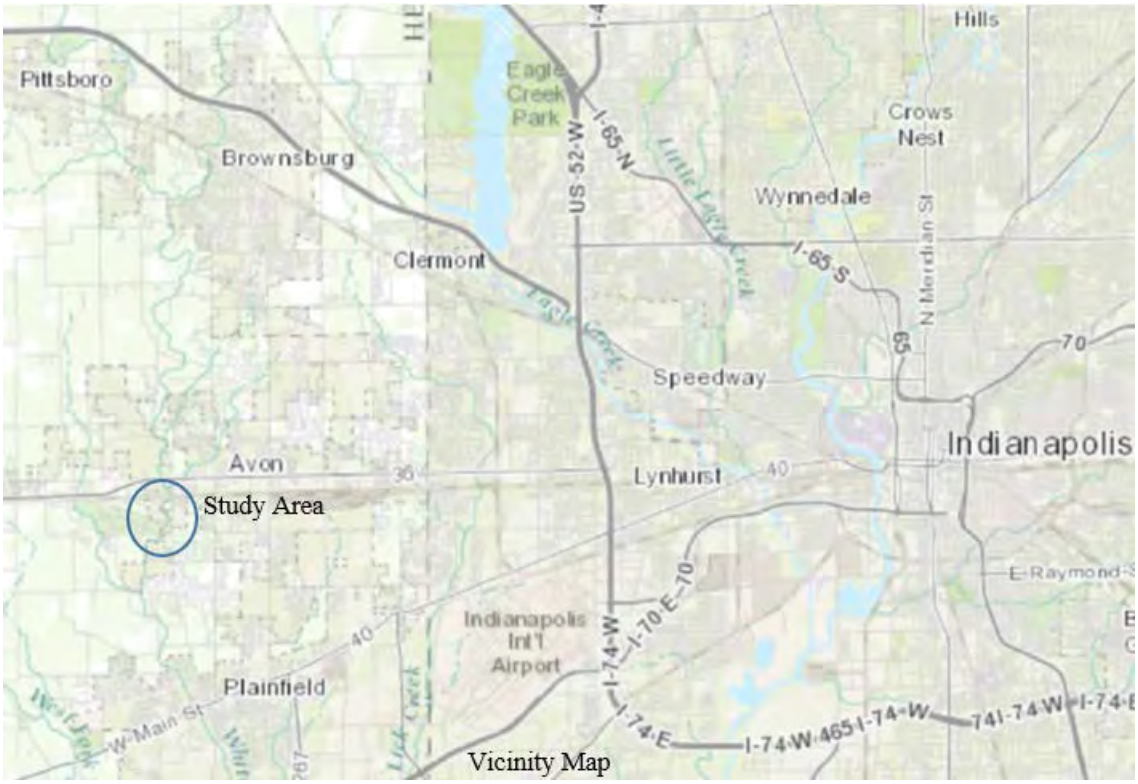

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Ethel Cook, Chief
Ottawa Tribe of Oklahoma
P.O. Box 110
Miami, OK 74355

Dear Ms. Cook:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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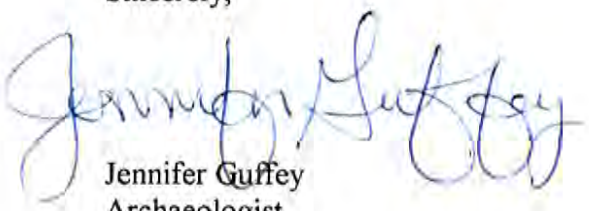
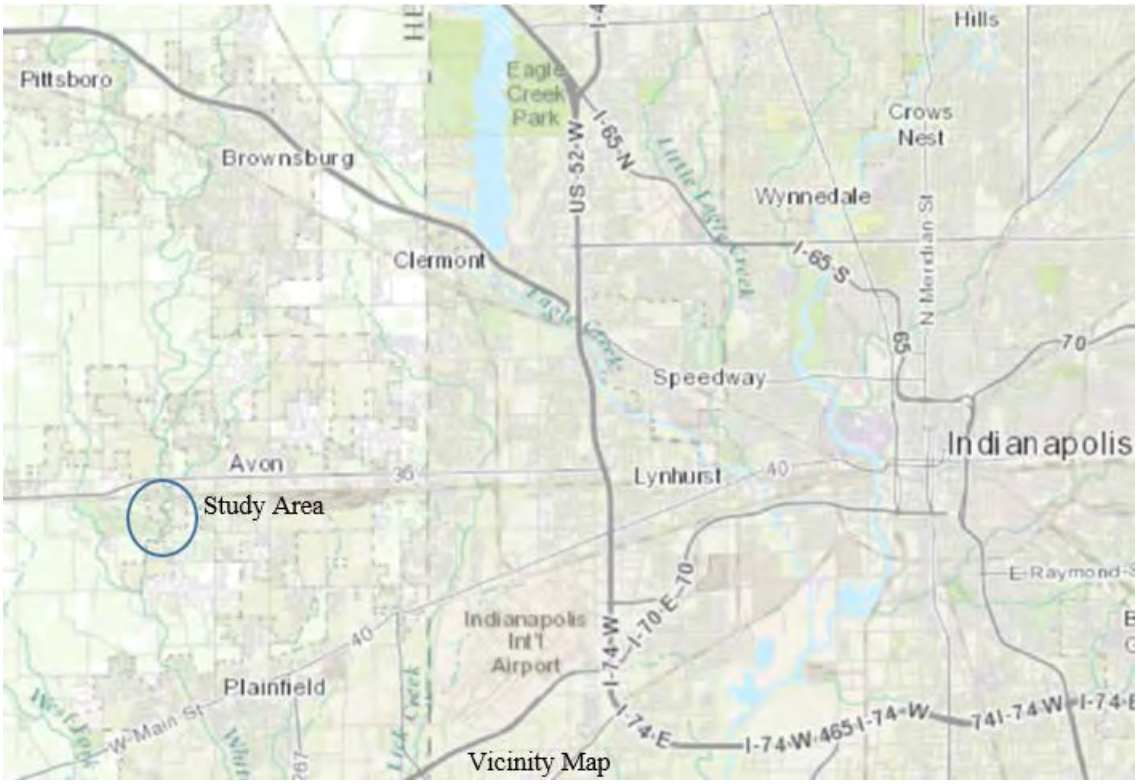


Jennifer Guffey
Archaeologist
Planning Section

**Figure 1: Project Location in the Town of Avon**



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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Edwina Butler-Wolfe, Governor
Absentee-Shawnee Tribe of Indians
2025 S. Gordon Cooper Drive
Shawnee, OK 74801-9381

Dear Ms. Butler-Wolfe:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

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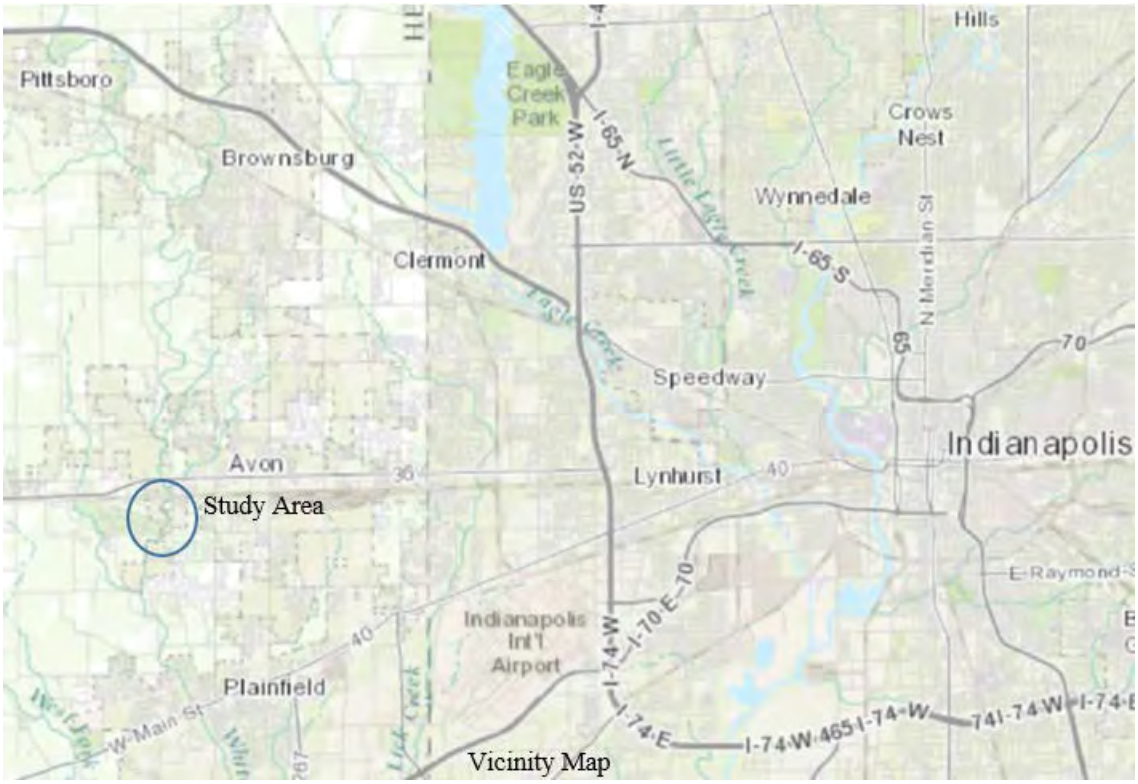

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable John Warren
Chairman, Pokagon Band of Potawatomi
58620 Sink Road
Box 180
Dowagaic, MI 49047

Dear Mr. Warren:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

cc. Mr. Wesaw, THPO

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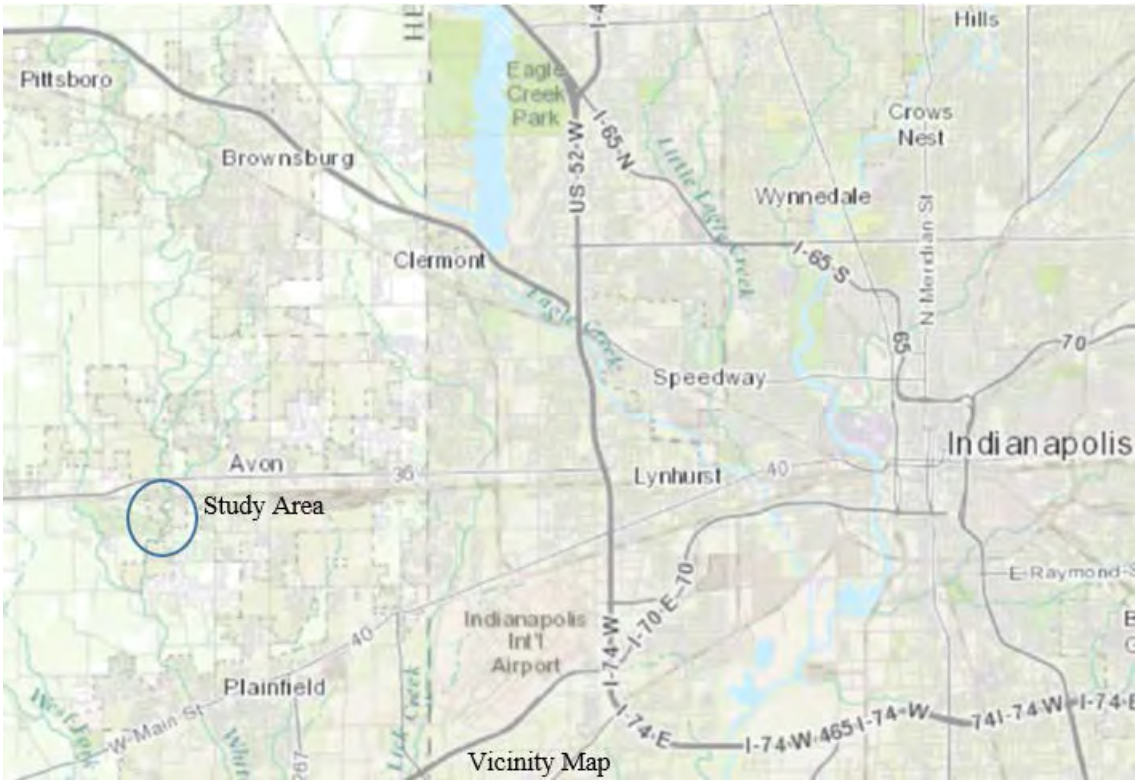

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Jamie Stuck
Chairman, Nottawaseppi Huron Band of Potawatomi
1485 Mno-BMadzwen Way
Fulton, MI 49052

Dear Mr. Stuck:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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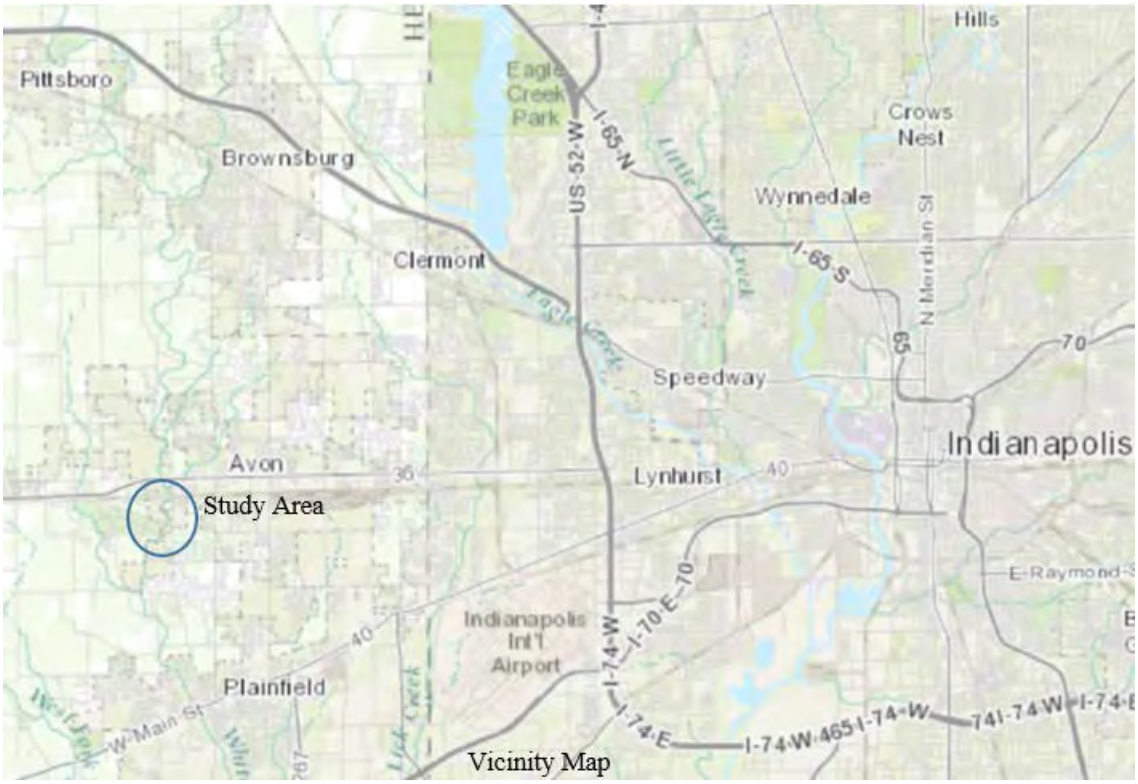
Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

cc. Ms. Moody, CHPO

**Figure 1: Project Location in the Town of Avon**



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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Scott Sprague
Chairman, Match-E-Be-Nash-She-Wish Band
Of Potawatomi Indians
2872 Mission Drive
Shelbyville, MI 49344

Dear Mr. Sprague,

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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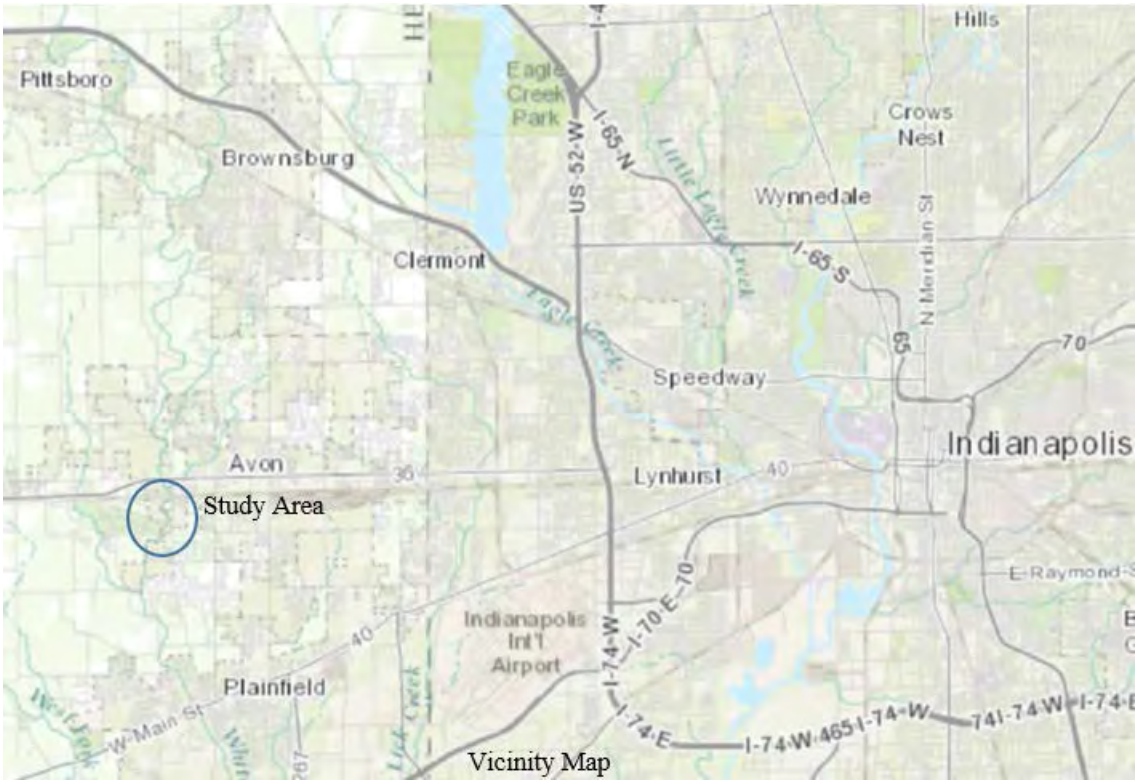
Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

cc. Sydney Martin, Cultural Resources

**Figure 1: Project Location in the Town of Avon**



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U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Ron Sparkman
Chairman, Shawnee Tribe
P.O. Box 189
Miami, OK 74355

Dear Mr. Sparkman:

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Jennifer Guffey
Archaeologist
Planning Section

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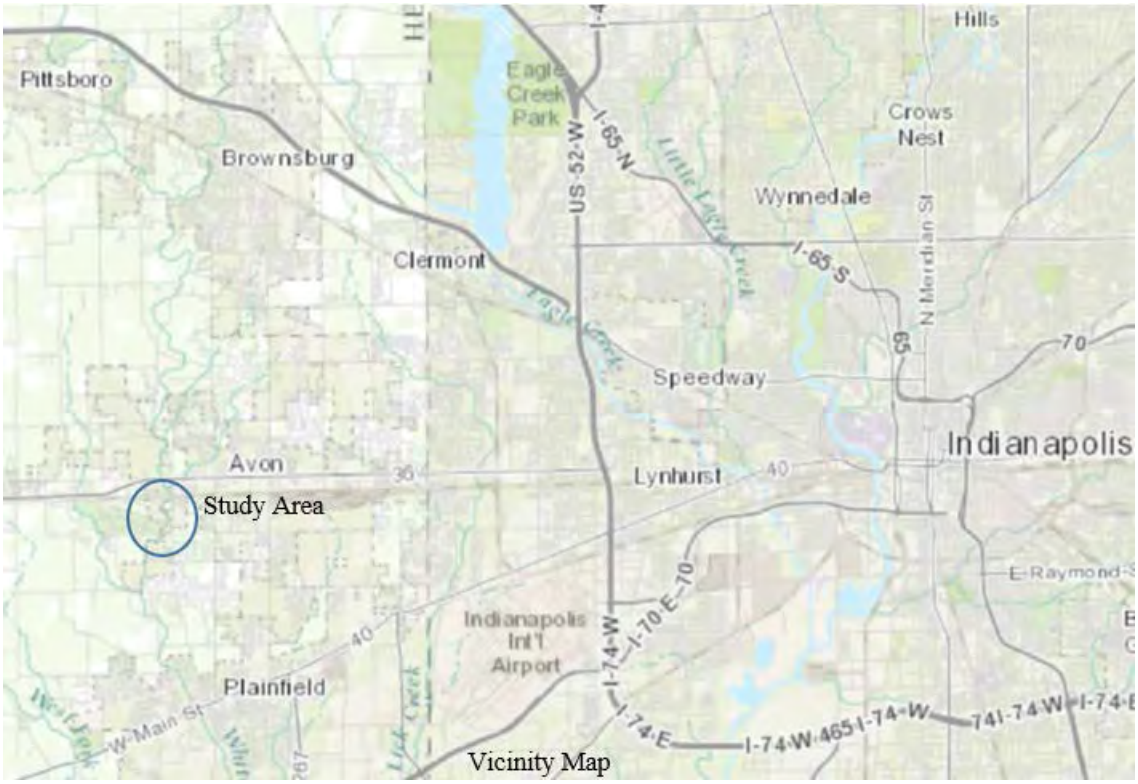

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U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Larry Romanelli, Tribal Ogema
Little River Band of Ottawa
2608 Government Center Drive
Manistee, MI 74355

Dear Mr. Romanelli:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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If you have any questions and comments regarding this effort, they should be directed to me at (502) 315-7468 or jennifer.m.guffey@usace.army.mil. Please provide a response by February 21, 2017.

Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

**Figure 1: Project Location in the Town of Avon**

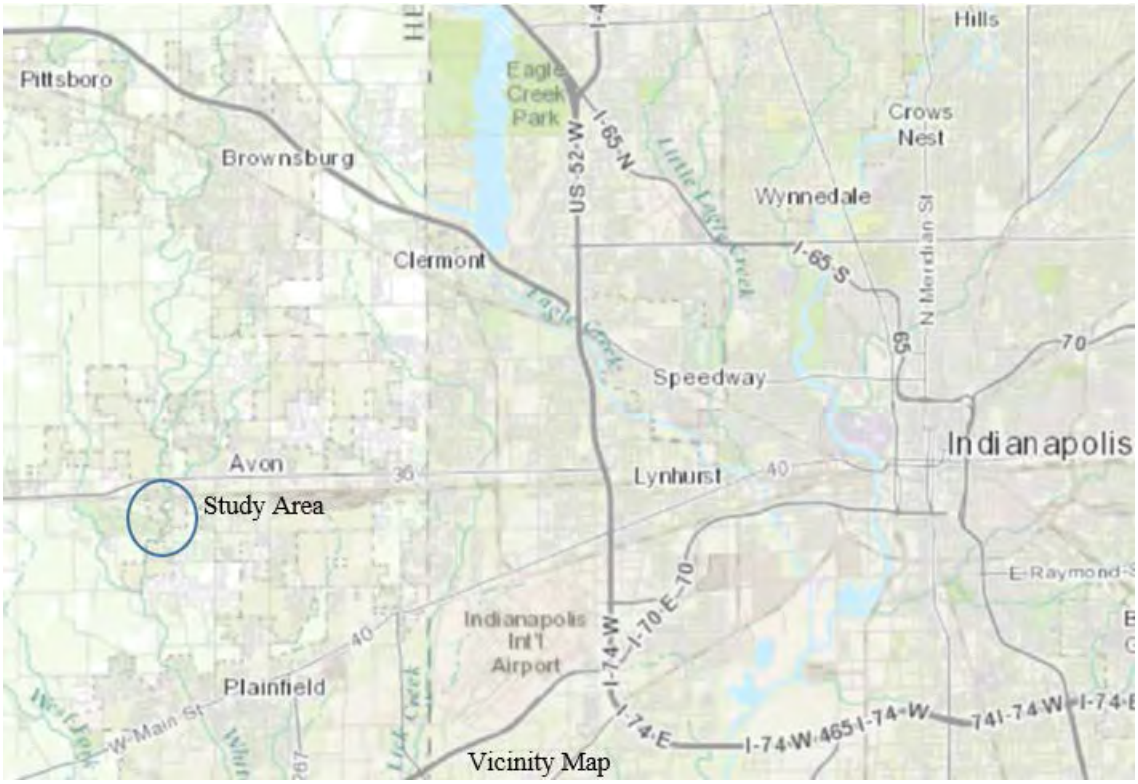

**Figure 2: Area of Concern on the White Lick Creek along South County Road 625 East**

**Figure 3: The 110 Year Old Concrete CSX Railroad Abutments within the APE.**

**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Lester Randall
Chairman, Kickapoo Tribe of Indians
824 111th Drive
Horton, KS 66439

Dear Mr. Randall:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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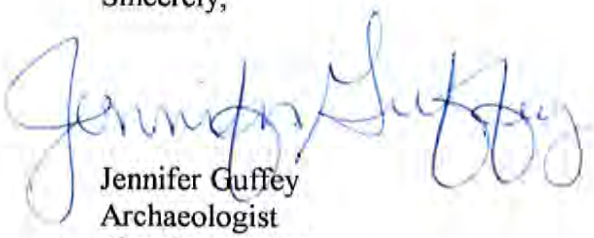

Jennifer Guffey
Archaeologist
Planning Section

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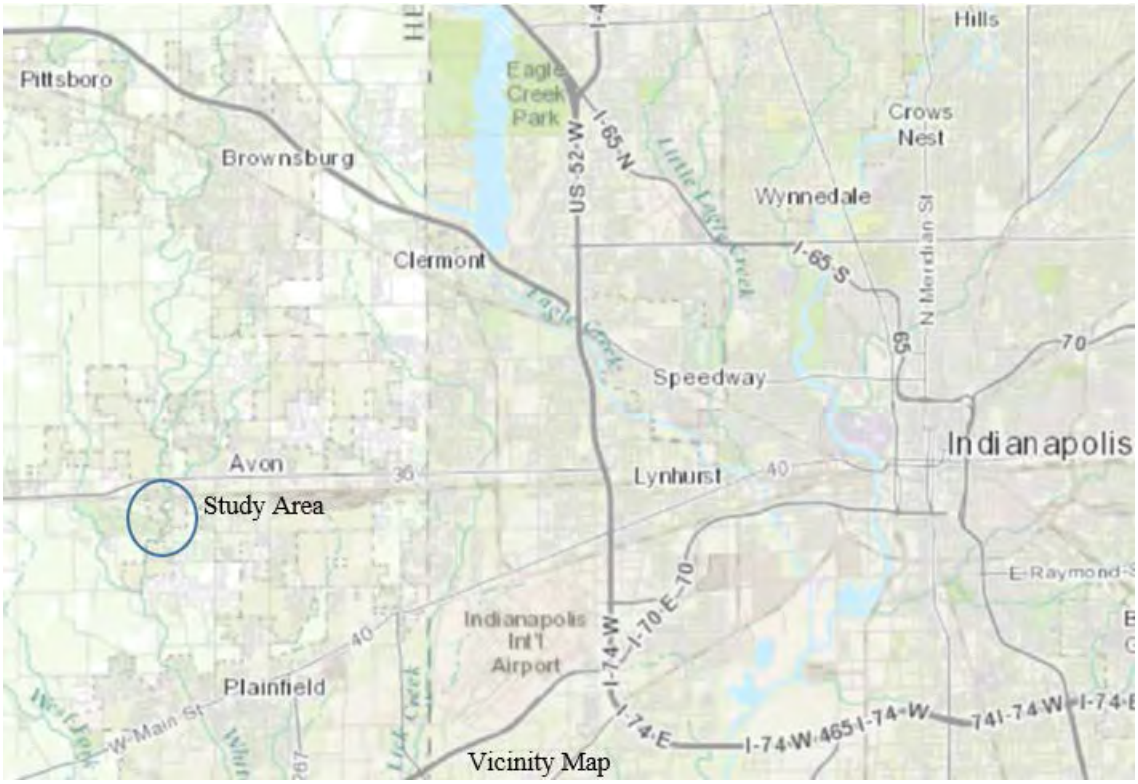

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Dave Pacheco, Jr.
Chairman, Kickapoo Tribe of Oklahoma
105365 S. Highway 102
McCloud, Ok 74851

Dear Mr. Pacheco:

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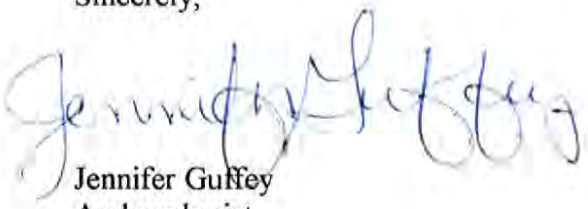

Jennifer Guffey
Archaeologist
Planning Section

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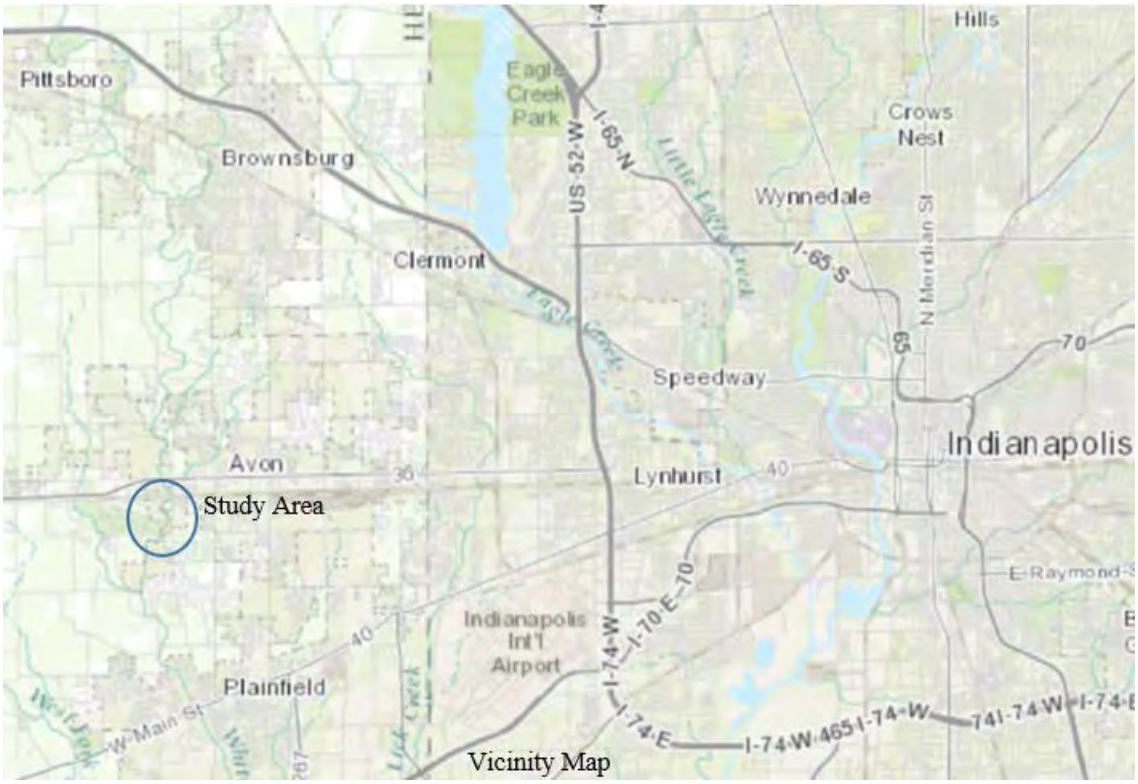

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Kenneth Meshigaud
Chairman, Hannahville Indian Community,
Band of Potawatomi, Michigan
N14911 Hannahville B-1 Road
Wilson, MI 49896-9728

Dear Mr. Meshigaud:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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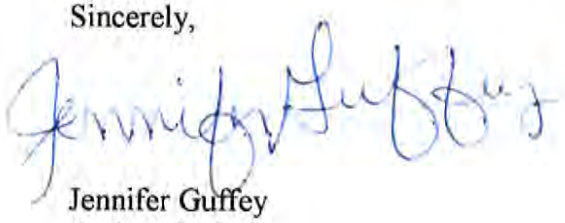

Jennifer Guffey
Archaeologist
Planning Section

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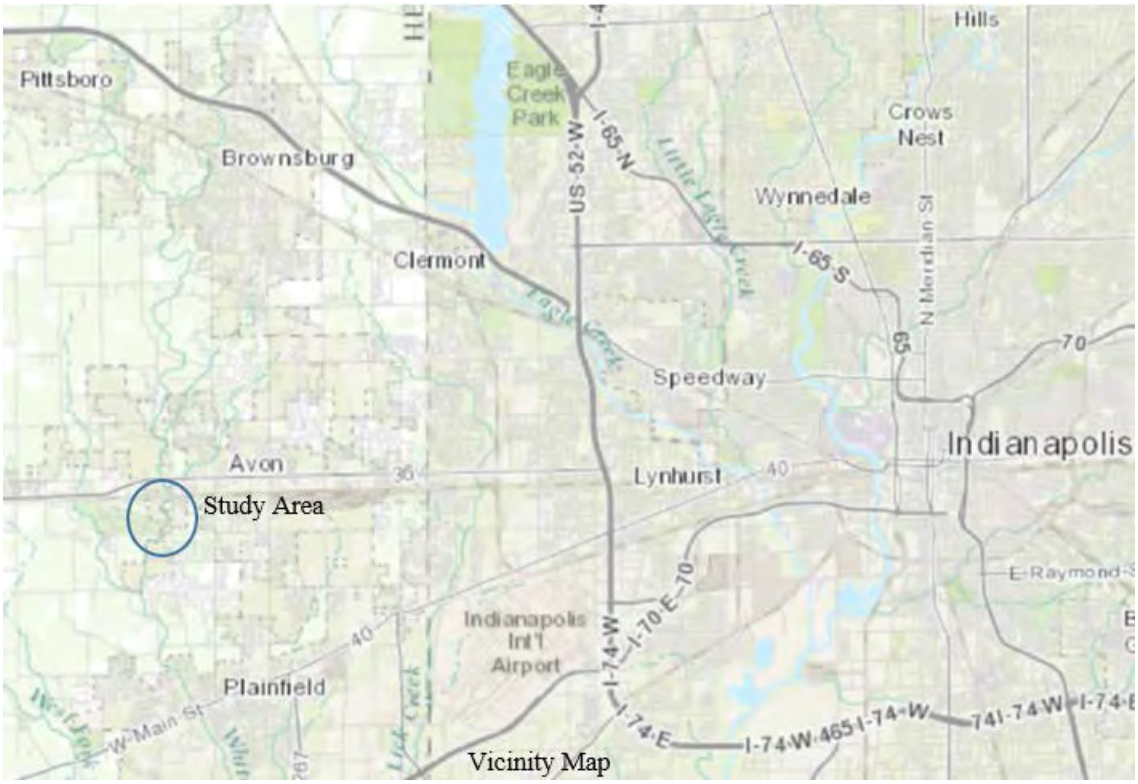

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Thurlow McClellan
Grand Traverse Band of Ottawa and Chippewa
2605 N. West Bay Shore Drive
Peshawbestown, MI 49682

Dear Mr. McClellan:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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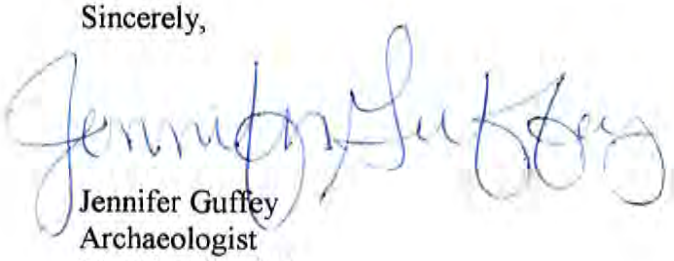

Jennifer Guffey
Archaeologist
Planning Section

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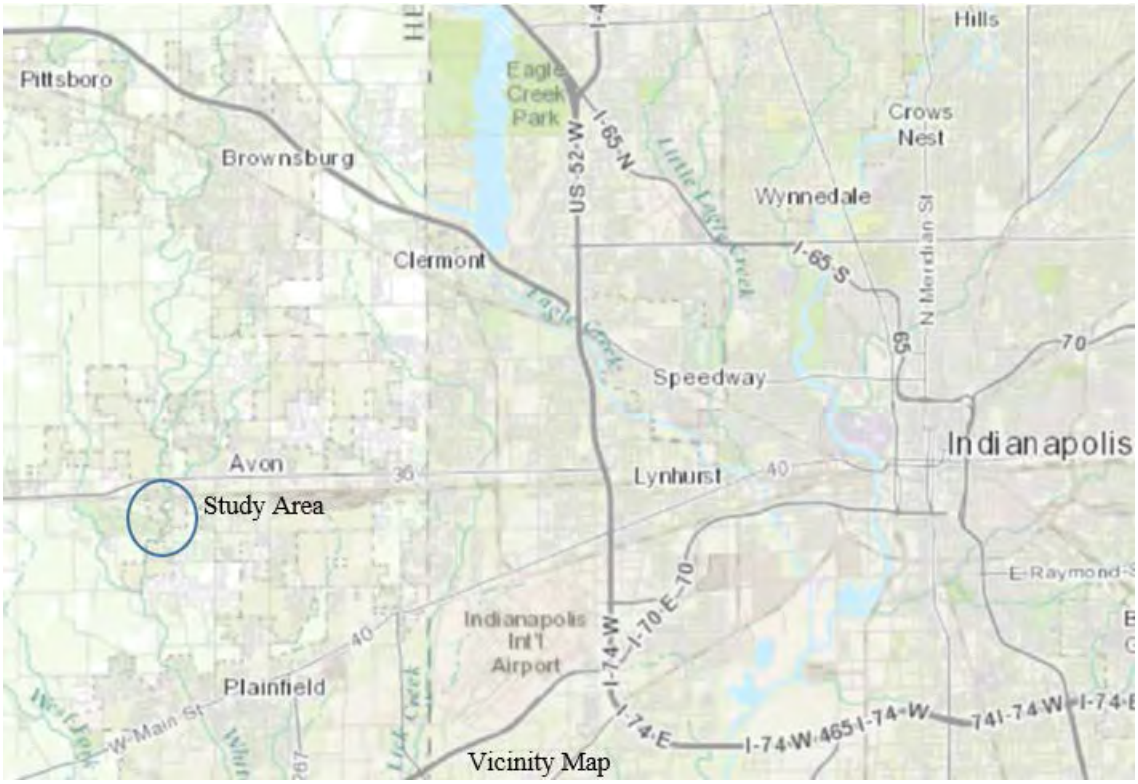

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable John Barrett
Chairman, Citizen Potawatomi Nation
1601 S. Gordon Cooper Drive
Shawnee, OK 74801

Dear Mr. Barrett:

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Jennifer Guffey
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Planning Section

cc. Dr. Mosteller, THPO

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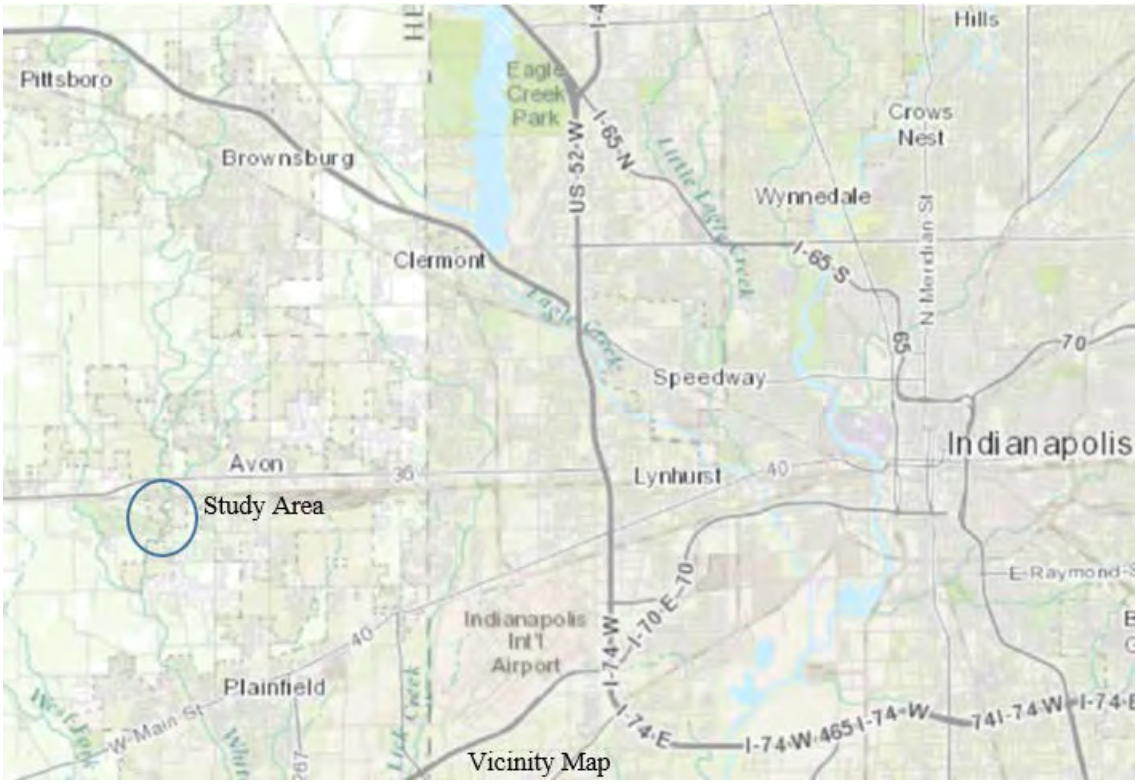

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U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Chester Brooks, Chief
Delaware Tribe of Indians
5100 Tuxedo Blvd
Bartlsville, OK 74006-2838

Dear Mr. Brooks:

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Planning Section

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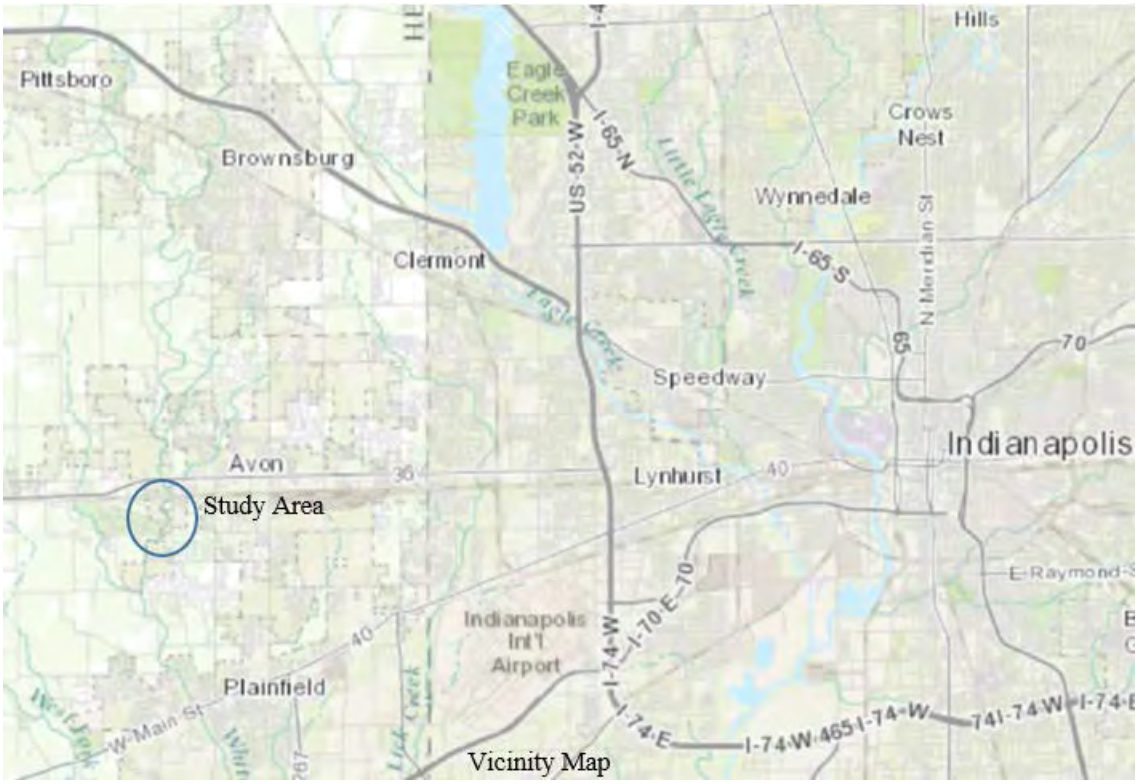

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Harold Frank
Chairman, Forest County Potawatomi Community, Wisconsin
5416 Everybody's Road
Crandon, WI 54520

Dear Mr. Frank:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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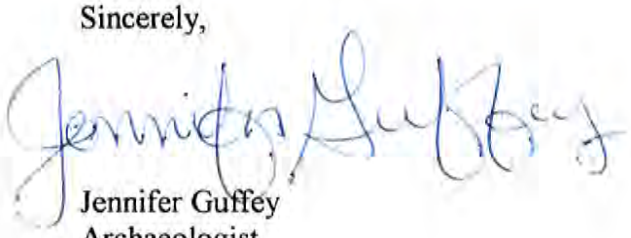

Jennifer Guffey
Archaeologist
Planning Section

cc. Ms. Cook, THPO

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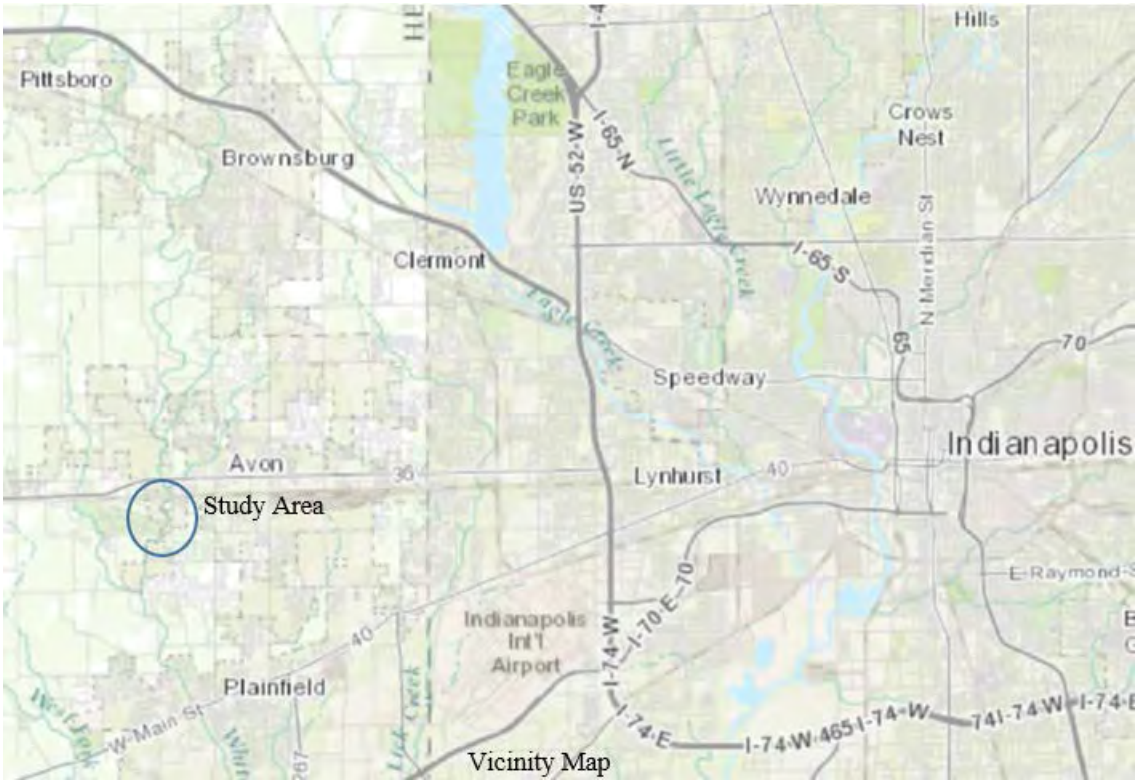

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable John Froman, Chief
Peoria Indian Tribe of Oklahoma
P.O. Box 1527
Miami, OK 74355

Dear Mr. Froman:

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If you have any questions and comments regarding this effort, they should be directed to me at (502) 315-7468 or jennifer.m.guffey@usace.army.mil. Please provide a response by February 21, 2017.

Sincerely,

Jennifer Guffey
Archaeologist
Planning Section

**Figure 1: Project Location in the Town of Avon**

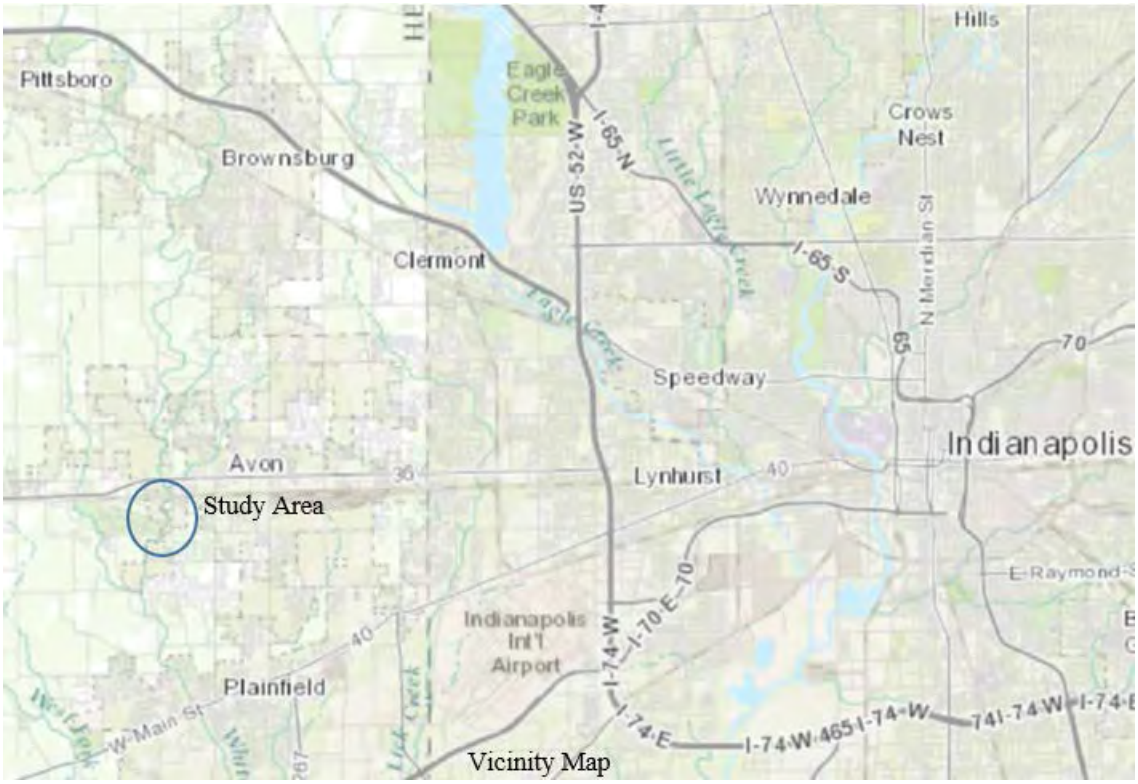

**Figure 2: Area of Concern on the White Lick Creek along South County Road 625 East**

**Figure 3: The 110 Year Old Concrete CSX Railroad Abutments within the APE.**

**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Juan Garza, Jr.
Chairperson, Kickpoo Traditional Tribe of Texas
HC 1 Box 9700
Eagle Pass, TX 78852-9752

Dear Mr. Garza:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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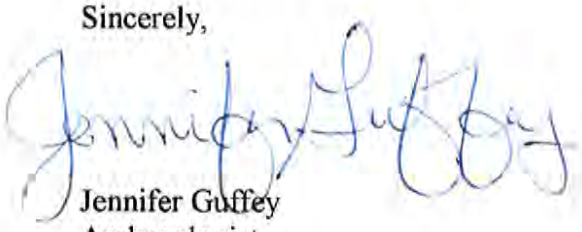

Jennifer Guffey
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Planning Section

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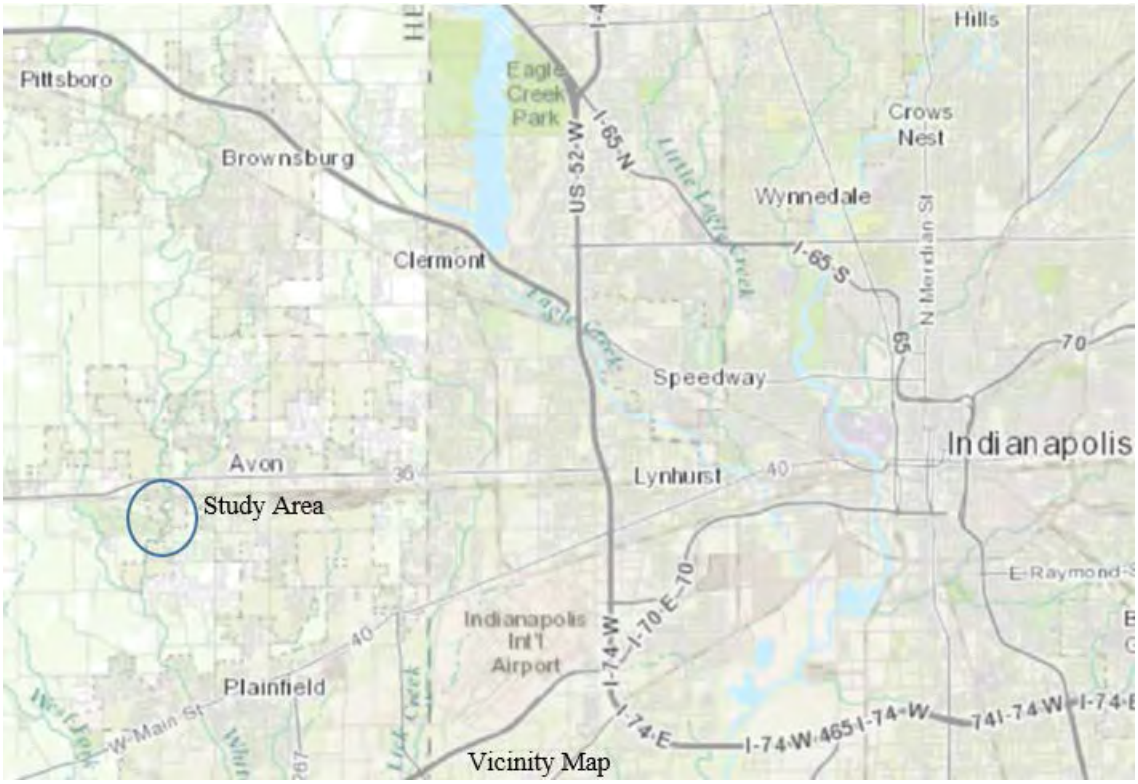

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**DEPARTMENT OF THE ARMY**
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CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Kerry Holton, President
Delaware Nations of Oklahoma
P.O. Box 825
Anadarko, OK 73005

Dear Mr. Holton:

The U.S. Army Corps of Engineers, Louisville District has conducted a records review for an emergency streambank and shoreline protection project along White Lick Creek in Hendricks County, Indiana. This review was initiated under the authority of Section 14 of the 1946 Flood Control Act, as amended (Public Law 79-526). This project is a cooperative effort among the Louisville District, the Town of Avon and Washington Township. The project is located in Avon, Hendricks County, Indiana. Specifically it is located along White Lick Creek between US Highway 36 W and County Road 100 South (Figure 1). The proposed Area of Potential Effect (APE) is currently described as consisting of 540 feet of streambank and channel bed located along the White Lick Creek at South County Road 625 East (Figure 2).

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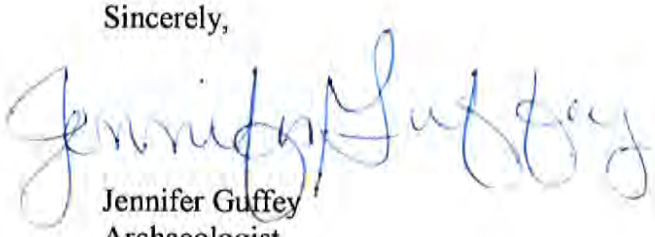

Jennifer Guffey
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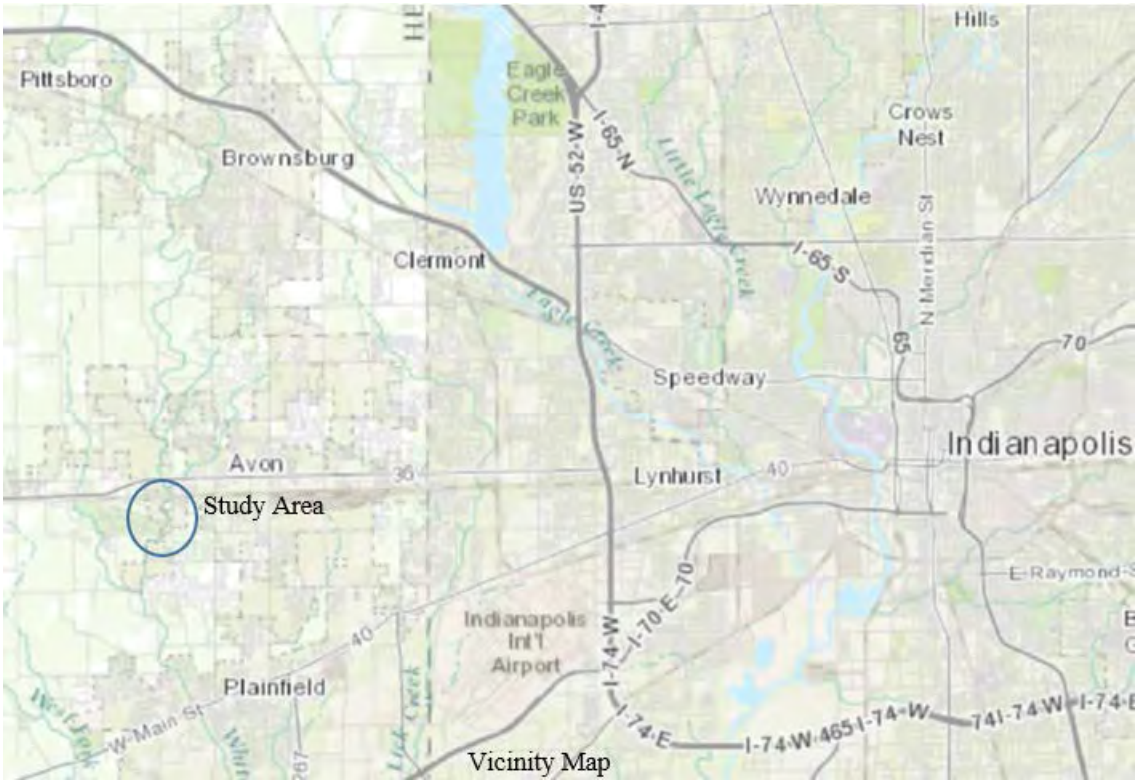

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**DEPARTMENT OF THE ARMY**
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
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P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Douglas Lankford, Chief
Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355

Dear Mr. Lankford:

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cc. Ms. Diane Hunter, Acting THPO

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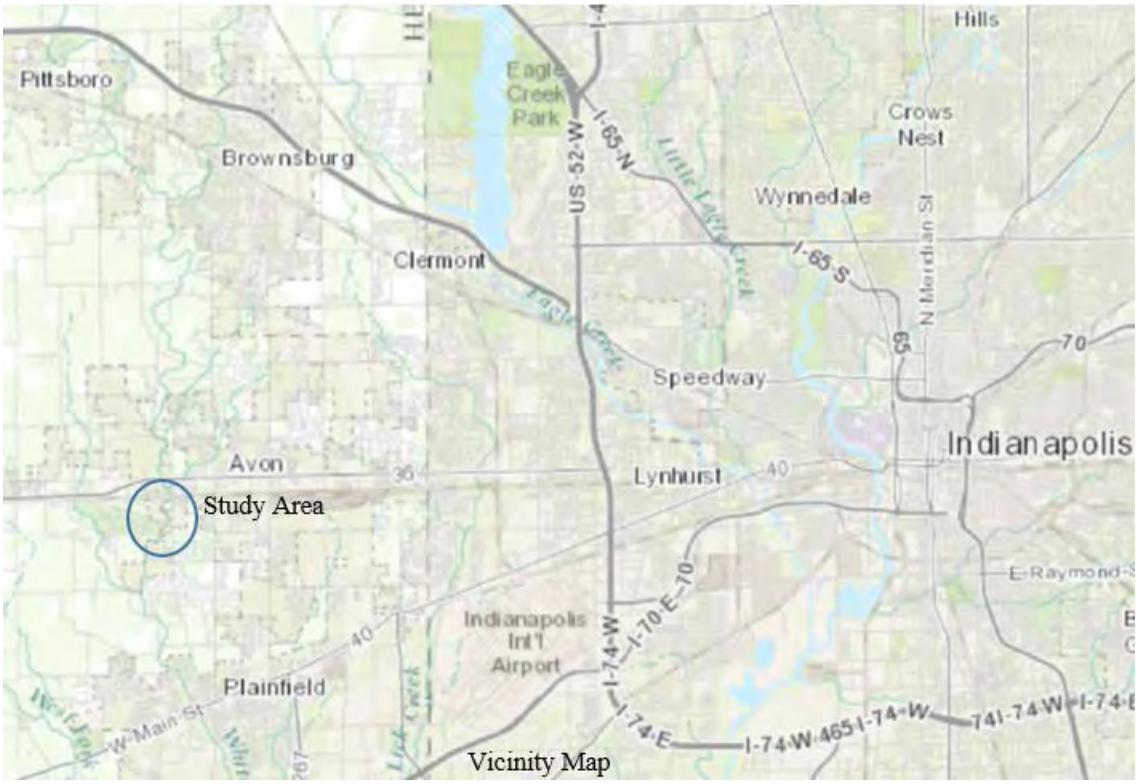

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P.O. BOX 59
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January 20, 2017

Planning, Programs and
Project Management Branch
Planning Section

Honorable Leonard Longhorn, THPO
Absentee Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, OK 74801

Dear Mr. Longhorn:

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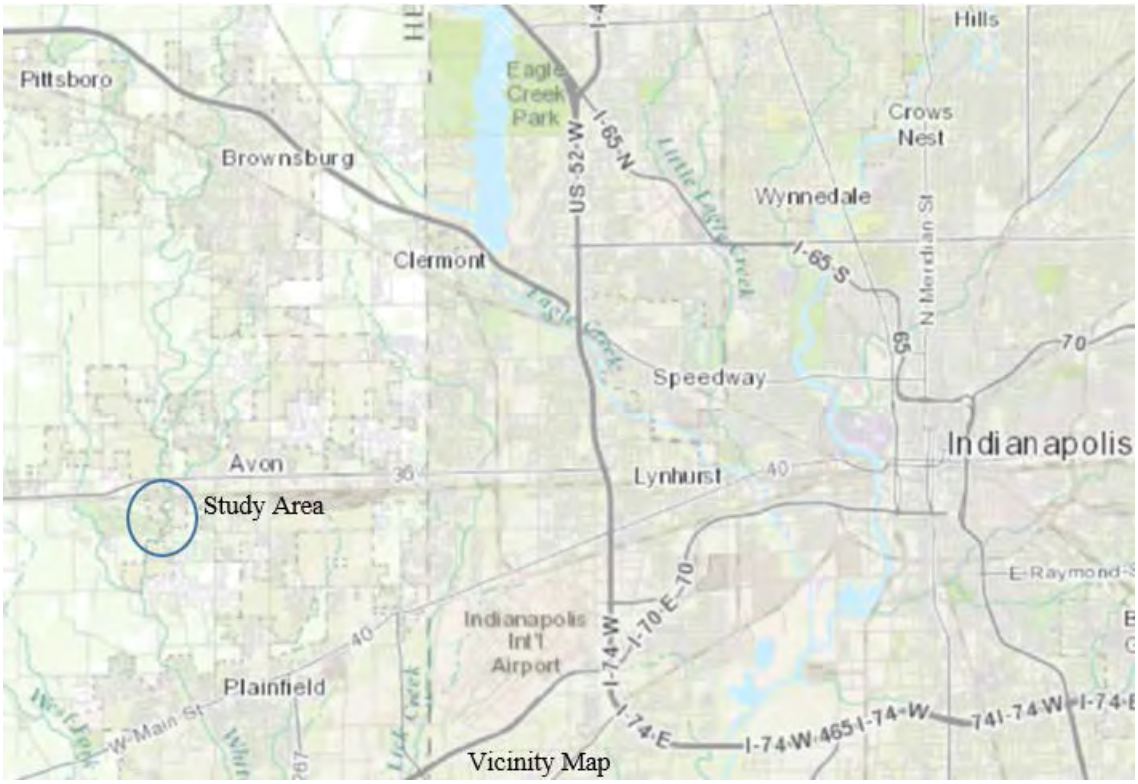

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