



# DRAFT ENVIRONMENTAL ASSESSMENT BOB ANTHONY PARKWAY RELOCATION PROJECT

JANUARY 2024



# Environmental Assessment

## Bob Anthony Parkway Relocation and Improvements

Project Number

Project Number FBLD-6945-00(013)LPA/108635-801000

Hinds, Madison Rankin Counties, Mississippi

Submitted to

U.S. Department of Transportation  
Federal Highway Administration

For Presentation at a Public Hearing

Submitted by

Mississippi Department of Transportation  
Pearl River Valley Water Supply District (PRVWSD)

[01/30/2024](#)

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Date of Approval

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Federal Highway Administration

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# LPA Commitments to Environmental Excellence

Project No: FBLD-6945-00(013)LPA/108635-801000

Highway: Bob Anthony Parkway  
 County: Madison, Rankin, Hinds

Date: 1/24/2024  
 Page 1 of 1

\*Value Engineering Study Recommended  Yes  No

Commitments/Requirements	Source of Commitment	Responsible Office	Place on Plans	Requires A Special Provision	Status of Commitment/Requirement
<ul style="list-style-type: none"> <li>Any tree removal activities that occur for the proposed project must take place in the non-maternity/non-breeding season (which is from September 1 to May 15) to minimize impacts to the northern long-eared bat and migratory birds.</li> <li>Nesting sites for Canada geese should be avoided and surveys for eagle nests should be conducted with the USFWS office contacted if any are observed.</li> </ul>	USFWS correspondence Dated December 14, 2023 & January 16, 2024	PRVWSD	No	No	To be handled with a Notice to Bidder (NTB) and during construction.
Access to the recreational fishing areas downstream of the Dam will be maintained during construction to the greatest extent practical.	Section 4.3, Page 27	PRVWSD	No	No	To be handled during construction.
<b>All practical and standard procedures and measures, including Best Management practices will be implemented to avoid or minimize impacts.</b>					

• These commitments should be carried throughout each phase of the project development including Design, Right of Way, Construction, and Maintenance.

\*Value Engineering (VE) Studies are recommended for projects on the NHS System with an estimated project costs approaching \$50 Million, for bridge projects on the NHS System with an estimated project costs approaching \$40 Million, and/or for all Major Projects approaching \$500 Million.

# Table of Contents

1.0	INTRODUCTION .....	1
2.0	PURPOSE AND NEED .....	3
2.1	A Project’s Purpose and Need.....	3
2.2	Purpose of This Study.....	3
2.3	Purpose of This Project .....	4
2.4	Existing Conditions .....	4
2.4.1	Population Characteristics.....	4
2.4.2	Recreational Opportunities.....	4
2.4.3	Transportation Network.....	5
2.4.4	Traffic Conditions and Vehicle Safety Analysis .....	7
2.5	Need.....	8
2.5.1	Maintenance .....	9
2.5.2	Recreation .....	10
2.5.3	Resiliency.....	11
2.6	Lead Agency .....	12
2.7	Purpose of this NEPA Document.....	12
2.8	Consistency with Local Plans.....	12
2.9	Logical Termini and Independent Utility .....	12
3.0	ALTERNATIVES .....	13
3.1	Alternatives Considered .....	13
<b>3.0</b>	.....	14
3.1.1	Alternative A .....	14
3.1.2	Alternative B.....	15
3.1.3	Alternative C.....	17
3.1.4	Alternative D .....	18
3.1.5	Alternative E.....	19
3.1.6	Alternative E2.....	20
3.1.7	Alternative F .....	21
3.2	Eliminated Alternatives .....	22
3.3	Alternatives Carried Forward for Additional Study.....	23
3.4	Traffic Analysis of Alternatives .....	23

3.5	Construction Cost.....	24
4.0	ENVIRONMENTAL IMPACTS EVALUATION .....	25
4.1	Land Use Impacts .....	25
4.2	Farmland Impacts.....	25
4.3	Social Impacts .....	26
4.4	Environmental Justice Impacts.....	27
4.5	Relocation Impacts.....	27
4.6	Section 4(f) Impacts .....	28
4.7	Economic Impacts .....	28
4.8	Joint Development .....	29
4.9	Considerations Relating to Pedestrians and Bicyclists .....	29
4.10	Air Quality Impacts.....	30
4.11	Noise Impacts.....	30
4.12	Water Quality Impacts .....	31
4.13	Permits .....	32
4.14	Wetland Impacts .....	32
4.15	Water Body Modification and Wildlife Impacts .....	33
4.16	Floodplain Impacts.....	34
4.17	Wild and Scenic Rivers Impacts.....	34
4.18	Coastal Barrier Impacts .....	34
4.19	Coastal Zone Impacts .....	34
4.20	Threatened and Endangered Species Impacts.....	35
4.21	Historic and Archaeological Resource Impacts .....	38
4.21.1	Archaeological Survey .....	38
4.21.2	Architectural Survey.....	39
4.22	Hazardous Waste Sites Impacts .....	39
4.23	Visual Impacts .....	41
4.24	Energy Impacts.....	42
4.25	Construction Impacts .....	42
4.26	Cumulative and Secondary Impacts.....	42
5.0	PUBLIC INVOLVEMENT .....	43
6.0	PREFERRED ALTERNATIVE .....	44
7.0	REFERENCES.....	46

## **List of Figures**

**Figure 1 – Proposed project site and vicinity map**

**Figure 2 – Slide cross section illustration**

**Figure 3 – Aerial view of the Ross Barnett Reservoir Dam**

**Figure 4 – Map of PRVWSD recreational areas in the vicinity of the proposed project**

**Figure 5 – Map of the current detour/alternate route vehicles would take in the event of road closures on Bob Anthony Parkway, and the existing route for heavy vehicles accessing either side of the Dam**

**Figure 6 – Maintenance of a slide on the east side of the Dam**

**Figure 7 – View of the existing, unprotected bike lane on the Dam**

**Figure 8 – Map of the alternatives considered for the proposed project**

**Figure 9 – Map of Build Alternative B**

**Figure 10 – Map of Build Alternative C**

**Figure 11 – Map of Build Alternative D**

**Figure 12 – Map of Build Alternative E**

**Figure 13 – Map of Build Alternative E2**

**Figure 14 – Map of Build Alternative F**

**Figure 15 – Map of the Preferred Build Alternative B**

## **List of Tables**

**Table 1 – Population and demographic trends for the Jackson MSA 2010-2020**

**Table 2 – Crash History**

**Table 3 – Crash Rates**

**Table 4 – Summary of environmental and social impacts anticipated for each Build Alternative**

**Table 5 – Construction Costs**

**Table 6 – Alternatives Impacts Table**

## **Appendices**

**Appendix A – Figures**

**Appendix B – Traffic Report**

**Appendix C – Cost Estimate**

**Appendix D – Correspondence with Resource Agencies**  
**Appendix E – Section 4(f) Letter of Support**  
**Appendix F – Noise Study**  
**Appendix G – Wetland and Other Waters Assessment Report**  
**Appendix H – Hydraulic Analysis**  
**Appendix I – Preliminary Biological Assessment**  
**Appendix J – MS-SHPO Letter**  
**Appendix K – EDR Radius Map Report**  
**Appendix L – Public Involvement Documentation**  
**Appendix M – Preferred Alternative**

## 1.0 INTRODUCTION

The Pearl River Valley Water Supply District (PRVWSD) has proposed the Bob Anthony Parkway Relocation Project (project), an east/west multimodal corridor to be located south of the dam of the Ross Barnett Reservoir (Reservoir) in Madison, Rankin, and Hinds Counties, Mississippi. A Site and Vicinity Map is shown in **Figure 1** below. The proposed project is located directly southeast of the Reservoir dam (Dam) in Madison, Hinds, and Rankin Counties. The Beginning of Project (BOP) is located just east of the intersection with Harbor Drive in Ridgeland (32°24'42" N 90°05'24" W) and extends approximately 3.1 miles to the End of Project (EOP) just east of Reservoir Park Road in Rankin County (32°23'08" N 90°02'47" W). Additional maps of the project are included for review in Appendix A.

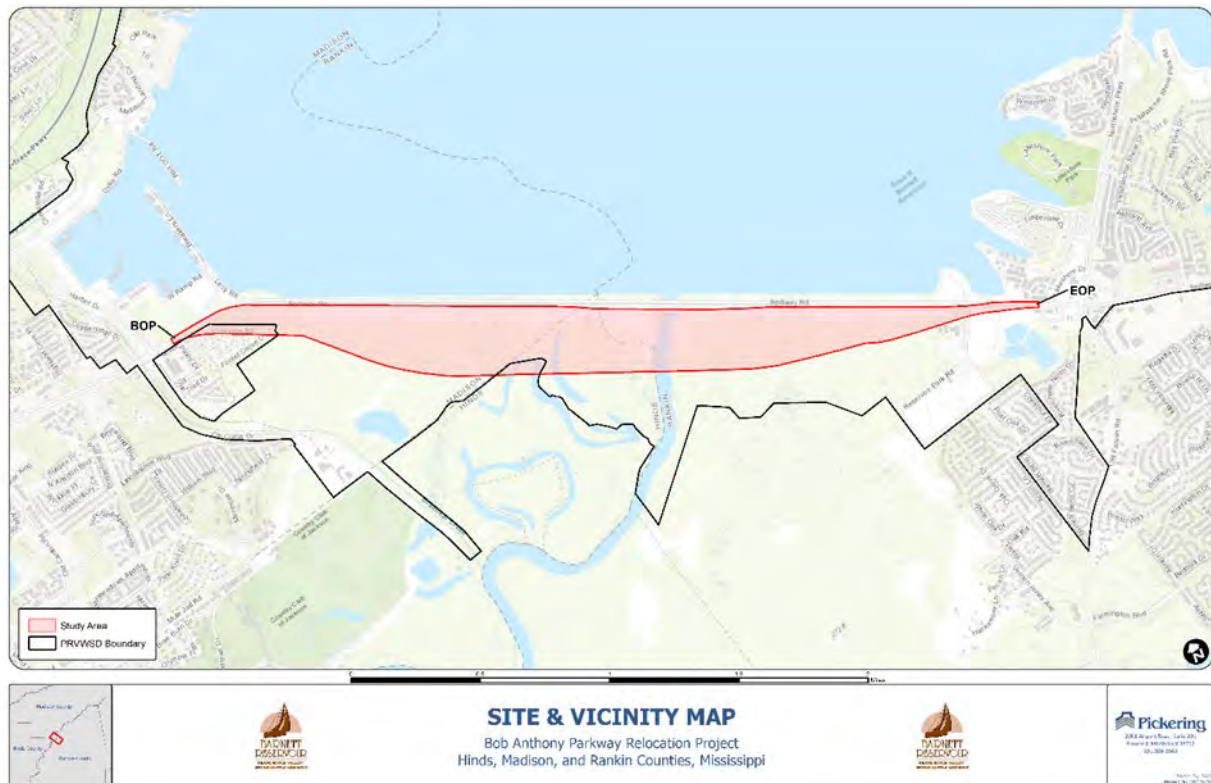


Figure 1 - Proposed project site and vicinity map.

As early as 1926, inadequate water supply to the city of Jackson, Mississippi, during low flow periods and floods during high water events on the Pearl River were of great concern to local and regional leaders. In the mid-1950s, the continuing decline of the water table and inconsistency of wells that provided drinking and industrial water to the Jackson area spurred local leaders and politicians to consider the development of a reservoir on the Pearl River. In 1955, the Water Resource Commission was organized to study the problem and stated that regardless of the cost, an adequate water supply was imperative for the future development of the area. In 1958, the PRVWSD was created, and work on the proposed reservoir gained momentum. Once funding was obtained, construction began on the Reservoir in the early 1960s (Sorrels, 1962).



The approximately 3.1-mile-long earthen Dam that was built to create the Pearl River Reservoir (later renamed Ross Barnett Reservoir) was completed in 1963 and filled to average capacity by 1965. The approximately 33,000-acre reservoir was designed to provide a reliable water resource to half a million people, industries, commerce for current and future water needs, flood control, and recreational opportunities. This water source is critical to the current population of Jackson, the state capitol, and surrounding area residents and businesses as their primary source of drinking water.

The Dam was designed and built by private engineering firms, and the plans were approved by the U.S. Army Corps of Engineers (USACE). The original construction included one two-lane paved road on the crest of the Dam. Due to increasing traffic volumes, two additional lanes were built at the toe of the Dam in 2003. The two original lanes now provide one-way travel westward and the new lower lanes provide one-way travel eastward, as well as access to the public recreational areas below the Dam, located on both sides of the Pearl River. Together, these four lanes are collectively called the Bob Anthony Parkway, also known as Spillway Road.

The Dam has experienced 16 documented earth slides since 1972. Five of those slides have occurred in the past nine years while the others have occurred over a period of 42 years. A slide in an embankment is a mass movement of material. Some typical characteristics of a slide are an arc-shaped crack or scarp along the top and a bulge along the bottom of the slide (**Figure 2**). These slides are occurring more frequently and are of great concern to the PRVWSD and the public.

The Dam is currently classified as a High Hazard Potential Dam (HHPD) by the USACE due to the substantial population and development downstream. A HHPD is defined as a dam where failure or misoperation is expected to result in loss of life and cause significant economic losses, including damages to downstream properties or critical infrastructure, environmental damage, or disruption of lifeline facilities. To get an idea of the catastrophic loss of life and property damage that would result from a failure of the Dam, one only has to review the events that occurred during the Easter Flood of 1979 in Jackson, Mississippi. In April of 1979, heavy rains in the Upper Pearl River Basin sent the Pearl River more than 15 feet above flood stage and resulted in approximately \$600 million in property damages. With increased development below the Dam since 1979, it is believed that a similar event due to dam failure would result in more than \$1 billion in property damage.

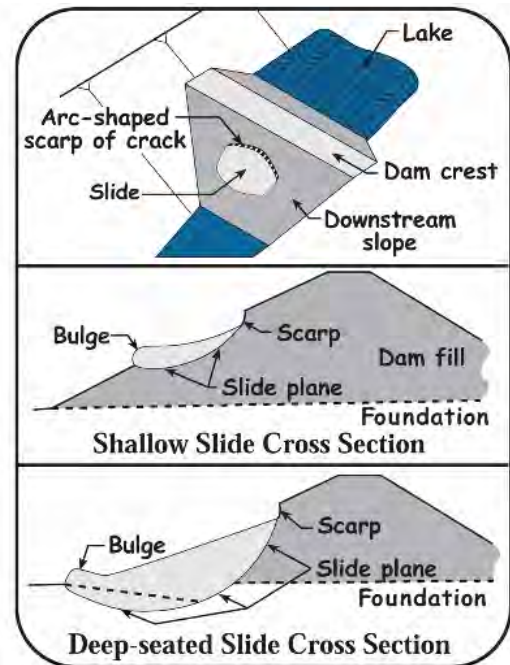


Figure 2 - Slide cross section illustration (ASDSA, n.d.)

The Dam was not designed to withstand the vibrations resulting from the level of traffic currently using the roadway. The traffic on Bob Anthony Parkway is believed to have contributed to five

major slope failures that have occurred since 2014. With traffic projected to increase to 40,000 Average Daily Traffic (ADT) by 2030, slope failures will likely continue to increase in number and magnitude if traffic is not removed from the Dam. These failures could lead to both increased maintenance costs for the PRVWSD and delays for users. Additionally, an extended closure of the existing Parkway resulting from the need to perform future major maintenance in response to potential dam failure would result in an unacceptable Level of Service (LOS) on the primary alternative east-west corridor, Lakeland Drive (SR 25). Daily Traffic counts on Lakeland Drive currently exceed 60,000 vehicles per day. In the event of a Dam closure, the majority of the 30,000 vehicles per day on Bob Anthony Parkway would divert to Lakeland Drive because it is the nearest bridge crossing of the Pearl River to Bob Anthony Parkway. This increase in traffic would lead to a breakdown in traffic flow (LOS F), and during peak hours, traffic on Lakeland Drive would be at a “standstill.” Failure of the Dam due to slope failure has a much higher probability while traffic remains on the current alignment of Bob Anthony Parkway.

## **2.0 PURPOSE AND NEED**

### **2.1 A Project’s Purpose and Need**

A project’s need is an explanation of the specific problems that exist or that are expected to exist in the future. A project’s purpose defines the goals and objectives that should be included as part of a successful solution to the problem. The purpose and need are the foundation for all project studies and are used to identify the range of alternatives (solutions to the problem) for the project.

The purpose and need statement is a living document until the environmental document is approved and can be changed or modified as new information is gathered. The local officials, public agencies, the public, and other stakeholders will have an opportunity to provide comments on the purpose and need throughout the National Environmental Policy Act (NEPA) process.

### **2.2 Purpose of This Study**

The PRVWSD received a \$2.8 million BUILD Grant in 2020 for environmental studies and preliminary engineering needed to relocate an existing 3.1-mile segment of Bob Anthony Parkway from the Dam. The PRVWSD, in cooperation with the Mississippi Department of Transportation (MDOT) and the Federal Highway Administration (FHWA), is conducting environmental and engineering studies to determine the potential environmental and social impacts of the proposed project.



*Figure 3 - Aerial view of the Ross Barnett Reservoir Dam (WLB, 2022.)*

## 2.3 Purpose of This Project

The purpose of the project is to address safety concerns associated with the current roadway’s impacts to, and maintenance of, the Ross Barnett Reservoir Dam. Proposed improvements include relocating the current roadway to reduce vibration impacts to soils on the Dam slope, regrading the slope on the downstream side of the Dam, improving access and safety for routine and emergency maintenance work to the Dam, improving pedestrian and bicycle safety, and enhancing the resiliency and quality of life of the surrounding area.

## 2.4 Existing Conditions

### 2.4.1 Population Characteristics

According to 2020 U.S. Census data, the total population of the Jackson Metropolitan Statistical Area (MSA) (Hinds, Madison, Rankin, Copiah, and Simpson Counties) was 586,758 residents. There were 228,001 households and 139,298 families within the Jackson MSA. The racial mix was 48.2% Black alone, 45.3% White alone, 2.4% Hispanic, and the remaining 4.1% is split between Other, Two or More Races, Native Hawaiian and Other Pacific Islander alone, American Indian and Alaska Native alone, or Asian alone (U. S. Census Bureau, 2020). **Table 1** below shows population growth in the Jackson MSA from 2010 to 2020, according to the U.S. Census Bureau.

*Table 1 - Population and demographic trends for the Jackson MSA 2010-2020 (U.S. Census Bureau).*

		2010 Census	2020 Census	% Change
Total Population		539,057	586,758	+8.8
Total Households		201,054	228,001	+13.4
Total Families		138,530	139,298	+0.6
Demographics	Black	47.7%	48.2%	+0.5
	White	49.1%	45.3%	-3.8
	Other, Two or More Races, Native Hawaiian, Other Pacific Islander alone, American Indian alone, Alaska Native alone, or Asian alone	3.3%	4.1%	+0.8
	Hispanic	2.1%	2.4%	+0.3

### 2.4.2 Recreational Opportunities

The Reservoir provides boating, fishing, and many other water-based recreational opportunities associated with 48 recreational facilities on the 33,000-acre reservoir and 17,000 acres of associated land with an estimated 2.5 million annual visitors. Use of these facilities increases each year, boosting the local economies. The recreational amenities include 16 parks, 22 boat launches, three handicapped-accessible piers, 23 miles of multi-purpose trails, and a mountain bike trail. In conjunction with private and public sectors, the PRVWSD has also developed five

marinas, four baseball/soccer complexes, a tennis center, two disc-golf courses, and one traditional golf course.

The recreational opportunities associated specifically with the Pearl River downstream of the Dam include two boat ramps into the Pearl River, extensive fishing areas, wildlife viewing, road and mountain biking trails, and hiking trails. A 2011 Usage Study of PRVWSD recreational users identified these facilities as the fourth highest usage area for PRVWSD parks (Wiseman et al., 2011).

The area around the Dam has abundant multi-use paths on both sides of the Reservoir including the U.S. National Park Service’s Natchez Trace Chisha Foka Multi-Use Trail. However, there is currently no multi-use path crossing the Dam. An unprotected bike lane on the right shoulder of the existing Bob Anthony Parkway is the only pedestrian connection from one side of the Dam to the other. Currently, the Chisha Foka Multi-Use Trail in Madison County includes approximately 10.6 miles of trails and Rankin County has approximately 19.4 miles of trails connecting PRVWSD land to the City of Flowood. **Figure 4** below shows the recreational areas near the project.

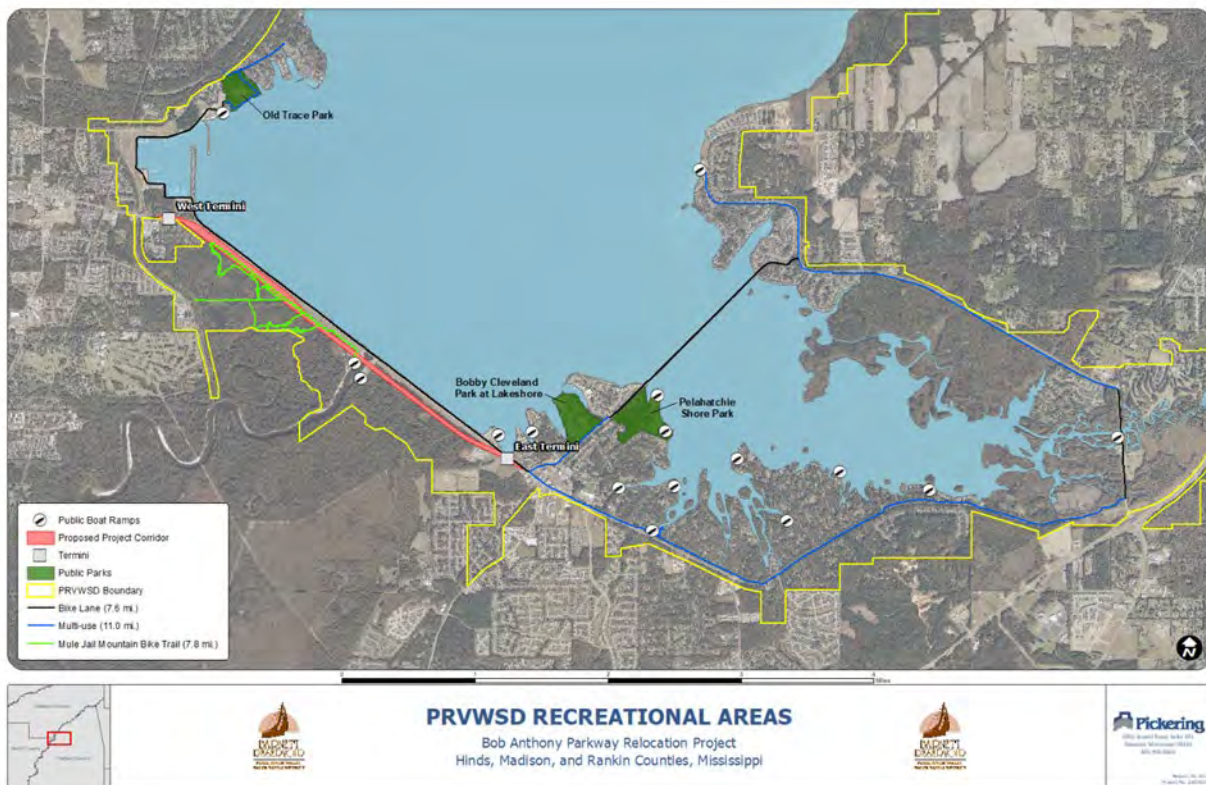


Figure 4 - Map of PRVWSD recreational areas in the vicinity of the proposed project.

### 2.4.3 Transportation Network

Bob Anthony Parkway/Spillway Road is located on the crest and toe of the Dam. The study area is approximately 3.1 miles long and begins on Lake Harbour Drive west of Breakers Lane on the west end, continues as the route turns to the southeast as Bob Anthony Parkway/Spillway Road, Pearl River Valley Water Supply District

and terminates east of Reservoir Park Road on the east end. The existing roadway is a four-lane divided facility with two westbound lanes located on the crest with 12-foot travel lanes, a two-foot paved inside shoulder, and an eight-foot paved outside shoulder which also serves as an unprotected bike path. The two eastbound lanes are located on the toe of the Dam with 12-foot travel lanes, no inside shoulder, and an eight-foot paved outside shoulder which also serves as an unprotected bike path. The lower eastbound lanes provide access to the Pearl River and recreational facilities below the Dam. The speed limit is 55 miles per hour across most of the roadway but drops to 45 miles per hour near the east and west ends of the study area. The intersections of Lake Harbour Drive at Breakers Lane and Spillway Road at Reservoir Park Road are stop-controlled on the minor approaches.

Connecting to the west of the proposed project, Lake Harbour Drive is a four-lane divided facility with 12-foot travel lanes and a two-foot paved shoulder. Breakers Lane intersects the westbound lanes on the north side of Lake Harbour Drive, approximately 350 feet east of the BOP. Approximately 1,200 feet west of the BOP, Harbor Drive and Lake Harbour Drive intersect with a four-way traffic signal that also directs traffic to the south into the Harbor Pines Mobile Home Park and a retail development.

To the east of the EOP, Spillway Road continues as a four-lane facility with 12-foot travel lanes and a center turn lane that merges to a left turn lane at the intersection with North Shore Parkway and Old Fannin Road. Approximately 1,600 feet east of the EOP, North Shore Parkway and Old Fannin Road intersect Spillway Road at a four-way, signal-controlled intersection. Old Fannin Road is a four-lane facility with 12-foot travel lanes and a center turn lane that becomes two dedicated left turn lanes at the intersection with Spillway Road. North Shore Parkway is a four-lane divided facility with 12-foot travel lanes and an additional fifth lane that serves as a dedicated right turn lane at the intersection with Spillway Road. Spillway Road continues to the east towards MS Highway 471 and MS Highway 25.

The roadway does not currently allow heavy vehicle traffic. The shortest route from one side of the Dam to the other for heavy vehicle traffic, or to all traffic if Bob Anthony Parkway is closed, is an approximately 18-mile detour as shown in **Figure 5**. Many of the residents and businesses on both sides of the reservoir are connected to their work places, other businesses, and public recreational areas via this roadway.

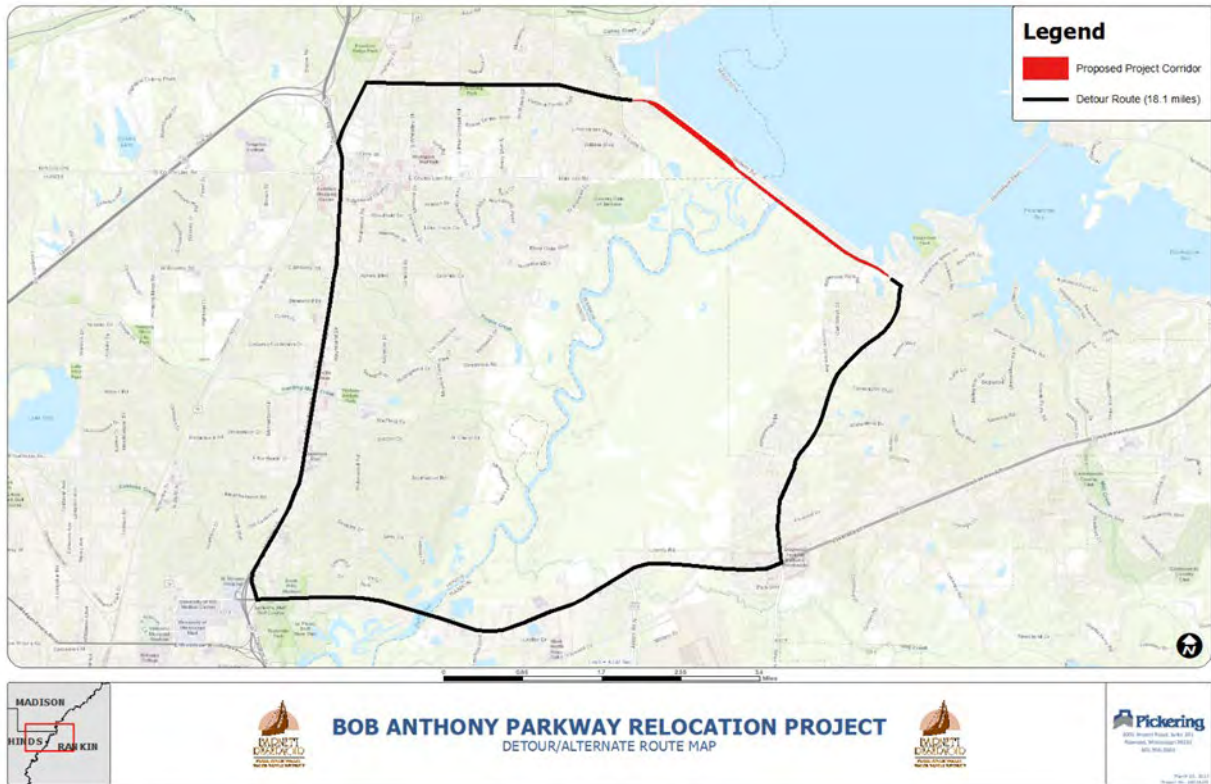


Figure 5 - Map of the current detour/alternate route vehicles would take in the event of road closures on Bob Anthony Parkway, and the existing route for heavy vehicles accessing either side of the Dam.

#### 2.4.4 Traffic Conditions and Vehicle Safety Analysis

A Traffic Needs Analysis Report (Garver, 2023) was developed to evaluate traffic and safety conditions along Spillway Road for the existing and future No Build conditions. The report indicates that the roadway provides an acceptable level of service (LOS) in 2022 with 31,000 vehicles per day (vpd) crossing the Dam. The study team used a 1.3% growth rate to determine that the traffic volume would increase to 42,000 vpd by 2045. The 2045 traffic volume is nearing the threshold for unacceptable conditions, meaning congestion is increased and delays and traffic flow stops are common. The busy signalized intersections at Harbor Drive and Old Fannin Road on either end of Bob Anthony Parkway will also have a negative impact on traffic operations for the corridor, but were not considered in the analysis because they lie outside of the study area.

Crash data from 2017 to 2021 (the latest five years of available data) were reviewed for the Bob Anthony Parkway from west of Breakers Lane to east of Reservoir Park Road. As shown in **Table 2**, the frequency of crashes decreased slightly within the five-year analysis period. Traffic volumes from 2020 and 2021 and

Table 2 - Crash History (Garver, 2023)

Year	No. of crashes
2017	29
2018	39
2019	33
2020	22
2021	28
Percent change	-0.87%

corresponding crash rates may have been affected by travel and assembly restrictions imposed during the Covid-19 pandemic.

Average crash rates were calculated for the latest five years of available crash data to evaluate the safety performance of the study corridor as compared to statewide crash rates for similar facilities. **Table 3** displays the corridor crash rates for total crashes and fatal (KA) crashes for the Bob Anthony Parkway corridor. The average crash and fatal crash rates for Bob Anthony Parkway are lower than the statewide average for similar corridors.

Table 3 - Crash Rates (Garver, 2023)

Route	Segment	Weighted ADT	Total Crashes			KA Crashes		
			Number of Crashes	Crash Rate (per MVM) <sup>1</sup>	Statewide Average (per MVM) <sup>1,2</sup>	Number of Crashes	Crash Rate (per 100 MVM) <sup>1</sup>	Statewide Average (per 100 MVM) <sup>1,2</sup>
Bob Anthony Parkway	W of Breakers Ln. to E of Reservoir Park Rd.	31,250	151	0.84	2.09	0	0.00	4.73
<sup>1</sup> MVM - Million Vehicle Miles								
<sup>2</sup> Arkansas statewide average								

The type of slope instability currently exhibited on the Dam could be partially related to the dynamic trembling (vibration) effect from the high traffic volumes on the crest of the Dam (Kezdi and Rethati 1988). Removing traffic from the Dam structure would remove the negative impacts to the Dam’s soil stability resulting from vehicular vibration.

While large trucks are currently prohibited from crossing the Bob Anthony Parkway, commercial vehicles with heavy loads would be even more harmful to the Dam than the current traffic mix because they could potentially increase dynamic vibration impacts. Additionally, if large trucks were eventually allowed to use the new proposed roadway to cross the Pearl River, users could save resources due to the substantially shorter route than the 18-mile detour currently requires.

## 2.5 Need

The PRVWSD states that the earthen embankment Dam was not designed to carry high traffic loads, which have increased steadily over the years, contributing to soil instability and five slope failures (slides) since 2014. Relocation of the roadway would reduce the risk of dam breach or failure by limiting the stress on the structure, providing additional protection for the over 5,000 commercial and residential structures that would be affected in the event of a breach. A draft flood study developed by the Rankin-Hinds Pearl River Flood and Drainage Control District suggests that a dam breach could result in damages that would surpass \$1 billion (Rankin-Hinds, 2018). In addition to monetary losses, a dam breach would also cause an interruption to the Jackson MSA’s water supply that would severely impact residents’ access to clean water.

Slides can develop for many reasons, including poor soil compaction, the gradient of the slope being too steep for the embankment material, seepage, soil instability, undercutting of the embankment toe, or saturation and weakening of the embankment or foundation. The PRVWSD

believes these slides are a result of a combination of weather, vibration from vehicles, the grade of the slope, and the difficulty of routine and emergency maintenance and inspection.

Recent crises following heavy seasonal rains, like the failure of the Oroville Dam spillway in California in 2017, or the failure of the Edenville and Sanford dams in Michigan, have made major headlines and highlighted the poor condition of many of the Nation's dams. Proper maintenance, routine inspection, necessary upgrades, and implementation of an Emergency Action Plan can ensure optimal conditions, which in turn protect public health, safety, and welfare (ASCE, 2021). If the causes of the slides on the Dam are not addressed, the slides will continue to create maintenance issues, road closures, and potentially threaten the integrity of the Dam.

### **2.5.1 Maintenance**

In order to conduct maintenance activities, the PRVWSD must currently contend with high-speed traffic creating unsafe conditions for both maintenance workers and roadway users during any routine maintenance on the Dam. Due to the high level of traffic and importance of this roadway for commuting and commerce, closing the roadway for maintenance creates a negative impact on the safety and travel times for roadway users. The PRVWSD limits most maintenance operations on the Dam to off-peak hours, which is generally between 10am and 4pm. However, the volume of traffic during this period is still considered to be unsafe for workers. If lane closures are required, all maintenance must be completed during specific workday hours, limiting abilities to address issues quickly and causing additional maintenance time and higher costs. During slides or other major maintenance or repair, at least one lane will typically be closed for one to two weeks at a time.

Stability issues can threaten the safety of the Dam and the safety of people and property downstream. Therefore, stability issues must be detected and repaired in a timely manner. The entire embankment should be routinely and closely inspected for cracks, slides, and depressions. To do this thoroughly, vegetation must be regularly maintained on the embankment.

Reinforcing the Dam would be difficult because of the limited space between the Dam and the lower road. Reinforcement would be time consuming and likely could not be done with the lower road open to traffic. Closing the lower road for an extended period of time would cause major traffic impacts. Also, given the limited space, one of the only ways to reinforce the Dam would be to drive new piles between the backslope of the Dam and the lower road. These piles would interfere with the flow under the Dam to the toe ditch, potentially compromising the functionality of the structure.





*Figure 6 - Maintenance of a slide on the east side of the Dam (March, 2020).*

Relocating vehicular traffic from the Dam will provide the PRVWSD opportunities to safely and efficiently perform routine and emergency inspections and maintenance like the work shown in **Figure 6** above. The relocation would also make planned improvements like spillway gate rehabilitation and emergency spillway reconstruction, possible in a safer, more controlled environment. The proposed project will maintain consistency with the PRVWSD's long-term maintenance and improvement plan by removing traffic from potential future work areas, thus allowing these necessary improvements to proceed.

### **2.5.2 Recreation**

Multi-use trails are a popular way to achieve healthier lifestyles and improve the quality of life for local communities. They can also attract visitors and spur tourism and economic growth. In 2022, Mississippi was ranked 49th for overall health in the United States (United Health Foundation, 2022). As of 2023, Mississippi is the most obese state in the nation over all age groups, with an estimated 40.8% obesity rate (The State of Childhood Obesity, 2023). When people have access to safe places to walk close to their home, they are one and a half times more likely to meet recommended activity levels than those who do not have access to these facilities (Powell et al., 2003). Comprehensive trail systems can increase access to outdoor recreational opportunities and make exercise more accessible.

The unprotected bike paths located adjacent to the Bob Anthony Parkway travel lanes are currently the only reasonable non-motorized connection to recreational facilities located on either end of the Dam (**Figure 7**). Because of safety concerns associated with the high-speed traffic and the lack of a barrier or protection between the bike path and the roadway, the bike lanes are rarely used. If the roadway were to be relocated off the Dam, the existing roadway could be repurposed for recreational activities, adding approximately 3.1 miles of multi-use path to the approximately 30 miles of recreational networks in the area. Most importantly, it would create a connected trail system between Madison and Rankin Counties' existing facilities for pedestrians and bicyclists. Additionally, the path would also provide access to new shoreline fishing opportunities along the crest of the Dam.



Figure 7 - View of the existing, unprotected bike lane on the Dam.

### 2.5.3 Resiliency

FHWA Order 5520 establishes FHWA policy on preparedness and resilience to climate change and extreme weather events and for integrating resilience into long-range transportation planning. The policy encourages state departments of transportation to develop, implement, and evaluate risk-based and cost-effective strategies to minimize climate and extreme weather risks and improve resiliency to protect critical infrastructure using the best available science, technology, and information.

According to Carter, et al. (2018), infrastructure in the Southeastern United States, particularly roads, bridges, and urban drainage, are especially vulnerable to climate change and climate-related events, such as flooding. Extreme rainfall events have increased in frequency and intensity in the Southeast, and there is high confidence they will continue to increase in the future. Improvement and modernization of infrastructure, including roads, bridges, and dams, will be critical to improve the region's resiliency to these climate-related impacts.

Flooding events can have particularly serious impacts to earthen dams. During a flooding event, the phreatic surface (upper surface of the water table) rises as the earth becomes more saturated. Both surface rainfall and percolation through a dam from the increased pressure impact the phreatic surface. If the phreatic surface meets a dam's downstream slope, a partial or total failure may occur (DTN, 2020). The existing slope of the downstream side of the Dam ranges from slightly less than 2.0:1 to 2.5:1 throughout most of the study area. Re-grading the downside slope of the Dam to a 3:1 ratio per the current dam construction guidelines

**Resiliency** is defined as the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruption (FHWA 2014) and to focus on the ability to prepare for and recover from disasters and disruptive events (Dix et al. 2018).

(MDEQ Dam Safety Regulations, 2018) would be an important step in improving the Dam’s resiliency and safety by helping decrease the likelihood of a slide, especially during major storm events that supersaturate the soil of the Dam. Additionally, removing the highway traffic from the roadway on the crest will provide the PRVWSD better access to the Dam and will improve their ability to monitor and maintain the Dam before, during, and after severe weather events.

## 2.6 Lead Agency

The PRVWSD is the project sponsor and the FHWA is the federal lead agency and has the primary responsibility for the content and accuracy of this environmental document in accordance with NEPA. The PRVWSD received a \$2.8 million BUILD Grant in 2020 for environmental studies and preliminary engineering needed to relocate an existing 3.1-mile segment of Bob Anthony Parkway from the Dam.

## 2.7 Purpose of this NEPA Document

This environmental document is being prepared to:

- Explain the purpose and need of the project;
- Describe the alternatives considered for the project;
- Evaluate the social, economic, and environmental effects of the alternatives;
- Inform and receive feedback from the public and local officials about the potential impacts of the proposed project;
- Identify a Preferred Alternative; and,
- Determine whether effects are significant and require an Environmental Impact Statement or if the project effects can be sufficiently documented through an Environmental Assessment and a Finding of No Significant Impact (FONSI).

A **Finding of No Significant Impact (FONSI)** presents the reasons why an action will not have significant environmental effects and therefore does not require preparing an Environmental Impact Statement. Based on analyses and project feedback received to date, MDOT anticipates preparing a FONSI for this project.

## 2.8 Consistency with Local Plans

The project is consistent with local plans by providing a needed transportation link that would enhance connectivity, functionality, quality of life, and economic competitiveness in the area.

## 2.9 Logical Termini and Independent Utility

The defined project area is of sufficient size to address environmental concerns of a broad scope. The proposed project has logical termini because it connects two roadways in the local transportation system (Spillway Road and Lake Harbour Drive). The proposed project does not require the construction of any additional projects to be fully usable as a standalone project.

### **3.0 ALTERNATIVES**

A range of build alternatives and a No Build Alternative were initially developed to address the purpose and need of the project. As the project developed, alternatives were modified, removed from consideration or carried forward as studies were conducted, providing a better understanding of the environment and the design needs. The alternative analysis evaluated how well each of the alternatives addressed the purpose and need, what the social and natural environmental impacts would be, engineering and design considerations, constructability, and costs.

The following alternative descriptions are for each alternative that was considered during the project development. Section 3.2 discusses the rationale as to why some alternatives were dismissed from further consideration, and Section 3.3 describes the rationale for why certain alternatives were carried forward for additional study and consideration ultimately leading to a Preferred Alternative.

#### **3.1 Alternatives Considered**

The following seven alternatives were considered during the preliminary engineering phase of the proposed project (**Figure 8**). A No Build Alternative (Alternative A) and six Build Alternatives (Alternatives B, C, D, E, E2, and F) were developed as solutions to the project's purpose and need and are described in this chapter. **Table 4** summarizes the environmental and social impacts for each Build Alternative.

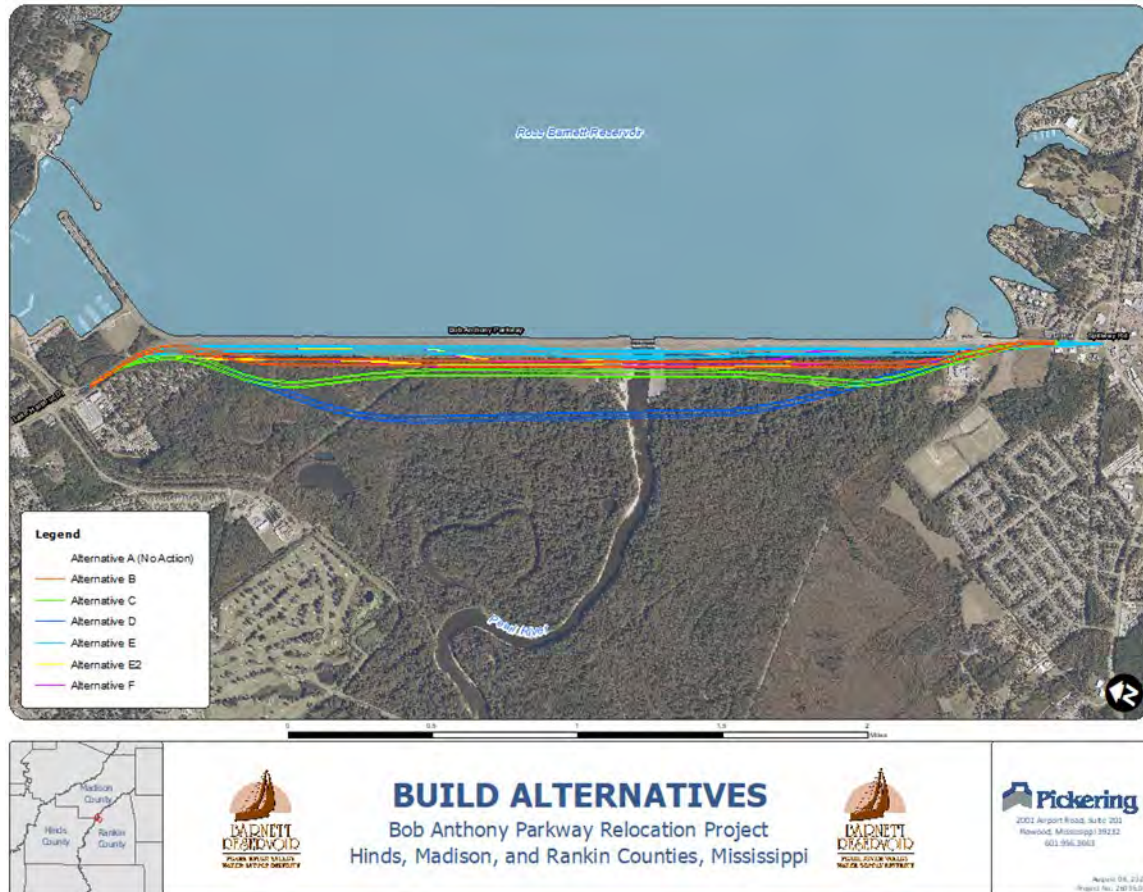


Figure 8 - Map of the alternatives considered for the proposed project.

### 3.1.1 Alternative A

The No Build Alternative would involve taking no action to address the concerns with the Dam. In this scenario, the facility would remain in its current configuration. Selection of the No Build Alternative would not meet the stated purpose and need, but would avoid both impacts to natural and social environments and major state and federal expenditure.

NEPA requires a “**No Build**” alternative in environmental analysis. Although it is unlikely to meet the project’s purpose and need, the “No Build” alternative provides a baseline against which the other alternatives can be compared.

Table 4 - Summary of environmental and social impacts anticipated for each Build Alternative.

Impacts	Alternative B	Alternative C	Alternative D	Alternative E	Alternative E2	Alternative F
Land Use	Minimal	Minimal	Minimal	None	Minimal	Minimal
Farmland	None	None	None	None	None	None
Social	Positive	Positive	Positive	Positive	Positive	Positive
Relocations	None	Moderate	Moderate	None	None	None
Environmental Justice	None	Moderate	Moderate	None	None	None
Economic	Positive	Positive	Positive	Positive	Positive	Positive
Bicyclists and Pedestrians	Positive	Positive	Positive	Positive	Positive	Positive
Air Quality	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Noise	Minimal	Moderate	Moderate	Minimal	Minimal	Minimal
Water Quality	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Wetlands	Moderate	Substantial	Substantial	None	Moderate	Moderate
Floodplain	Moderate	Moderate	Moderate	None	Minimal	Minimal
Water Body Modification & Wildlife	Minimal	Substantial	Substantial	Minimal	Minimal	Minimal
Permits	Moderate	Substantial	Substantial	Minimal	Moderate	Moderate
Wild and Scenic Rivers	None	None	None	None	None	None
Threatened and Endangered Species	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal
Cultural Resources	None	Substantial	Substantial	None	None	None
Hazardous Waste Sites	None	None	None	None	None	None
Visual	Moderate	Moderate	Moderate	Minimal	Moderate	Moderate
Energy	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Construction	Moderate	Moderate	Substantial	Moderate	Moderate	Moderate
Alternative Length	± 3.54 miles	± 3.35 miles	± 3.38 miles	± 3.46 miles	± 3.35 miles	± 3.54 miles

### 3.1.2 Alternative B



Figure 9 - Map of Build Alternative B.

During the initial public involvement period, two iterations of this alignment (B1 and B2) were presented. Further engineering analysis and the review of public comments led to aspects of B1

and B2 being combined to create Alternative B (**Figure 9**). Alternative B is being carried forward for additional study. Alternative B would construct four 12-foot-wide lanes divided by a raised median with 4-foot inside shoulders and 10-foot outside shoulders. The eastbound lanes would include an offramp on both sides of the spillway to provide access to recreational areas. This alignment begins on Lake Harbour Drive just to the east of Harbor Drive. Both the eastbound and westbound lanes veer north at the start of the existing toe ditch before turning south and crossing back over the toe ditch. The alignment, staying parallel to the existing roadway just south of the toe ditch, crosses the Pearl River approximately 350 feet downstream of the spillway gates. This four-lane bridge would be a steel plate girder bridge with no bridge bents in the river channel. The main span of the bridge would be approximately 400 feet. The total length of the four-lane bridge would be approximately 4,000 feet, which includes the additional spans over other stream channels and wetlands. Alternative B continues east parallel to the Dam (approximately 4,500 feet) before tying back into the existing roadway east of the emergency spillway. The total length of this alternative is approximately 3.54 miles. Additional bridges may be needed to span wetland areas located along the proposed project's corridor. If necessary, the exact locations of these spans will be determined following receipt of concurrence from the U.S. Army Corps of Engineers (USACE) regarding wetlands and other waters within the project area. Alternative B would allow for future expansion to a six lane facility if it is determined to be needed in the future. Alternative B is being carried forward for additional study because it meets the stated purpose and need by effectively removing vehicular traffic from the Dam while also creating space for regrading the downstream slope of the Dam, improving access to the Dam for routine and emergency maintenance work, improving pedestrian and bicycle safety, and enhancing the resiliency and overall quality of life for the surrounding area.

### 3.1.3 Alternative C

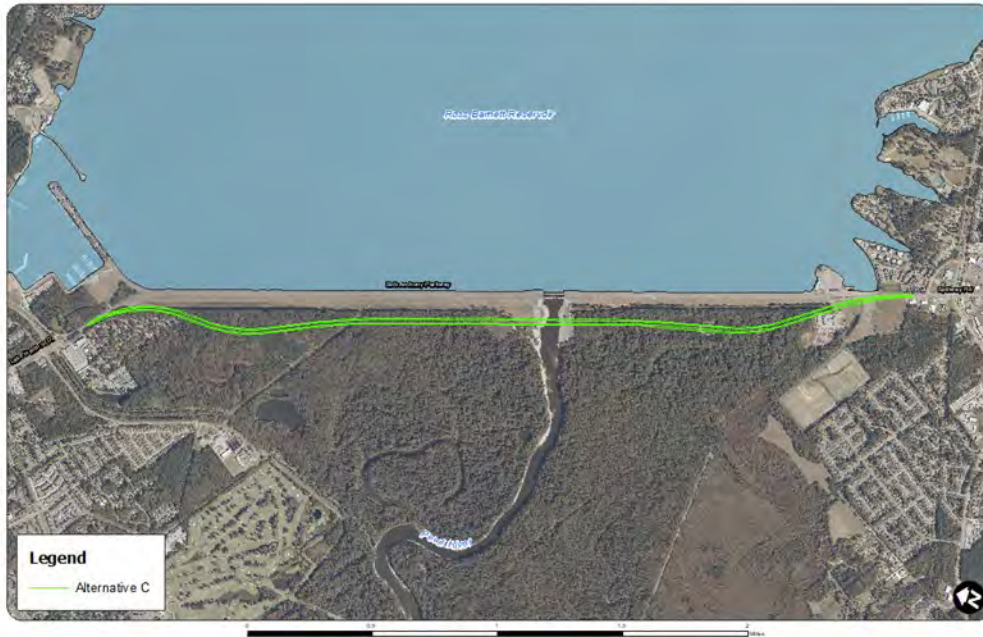


Figure 10 - Map of Build Alternative C.

Similar to Alternative B, two iterations of Alternative C (C1 and C2) were presented during the initial public involvement period. Further engineering analysis and the review of public comments led to aspects of C1 and C2 being modified to become Alternative C (**Figure 10**). Alternative C has been eliminated from further consideration. Alternative C would construct four 12-foot-wide lanes divided by a raised median with 4-foot inside shoulders and 10-foot outside shoulders. The eastbound lanes would include an offramp on both sides of the spillway to provide access to recreational areas. This alignment begins on Lake Harbour Drive east of Harbor Drive, then after approximately 1,300 feet the alignment veers to the south for approximately 5,000 feet and runs parallel to the existing roadway, south of the toe ditch. This alternative crosses the Pearl River approximately 500 feet downstream of the spillway gates. The main span length of the four-lane bridge would be approximately 700 feet, which would include additional spans based off the hydraulic and other design requirements. This bridge would have two bents per bridge within the river channel. Alternative C continues east parallel to the Dam (approximately 1,300 feet) before veering slightly south and back to the northeast to tie back into the existing roadway east of the emergency spillway. The total length of this alternative is approximately 3.35 miles. Alternative C was not carried forward for further study due to the substantial environmental impacts that would occur from its implementation. Alternative C would directly impact a known cultural resource site, a mound complex that is considered eligible for listing in the National Register of Historic Places (NRHP) by the Mississippi Department of Archives and History (MDAH).



Alternative C would also impact several acres of wetlands and other waters throughout the project area, and would place bridge bents directly in the river channel.

### 3.1.4 Alternative D



Figure 11 - Map of Build Alternative D.

Alternative D (**Figure 11**) would construct four 12-foot-wide lanes divided by a raised median with 4-foot inside shoulders and 10-foot outside shoulders. The eastbound lanes would include an offramp on both sides of the spillway to provide access to recreational areas. This alignment begins on Lake Harbour Drive just to the east of Harbor Drive then veers approximately 1,100 feet to the south, running approximately 4,750 feet parallel to the existing roadway before crossing the Pearl River approximately 1,250 feet downstream of the spillway gates. The main span length of the four-lane bridge would be approximately 150 feet, which would include additional spans based off the hydraulic and other design requirements. This bridge would include four bents per bridge within the river channel. Alternative D continues east parallel to the Dam (approximately 1,400 feet) before veering northeast for approximately 5,000 feet to tie back into the existing roadway east of the emergency spillway. The total length of this alternative is approximately 3.38 miles. Alternative D was not carried forward for further study due to the substantial environmental impacts that would occur from its implementation. Alternative D would directly impact a known cultural resource site and would impact several acres of wetlands and other waters throughout the project area. In addition, the Alternative D bridge design would impact the Pearl River and threatened and endangered species by placing bents directly in the river channel much further downstream than other alternatives considered. This area has not been modified by the construction of the Dam, and is therefore more suitable habitat for wildlife inhabiting the

area. The bridge bents would impact the habitat of the threatened Ringed map turtle and Pearl River map turtle that have been documented in the area of the Alternative D bridge crossing.

### 3.1.5 Alternative E

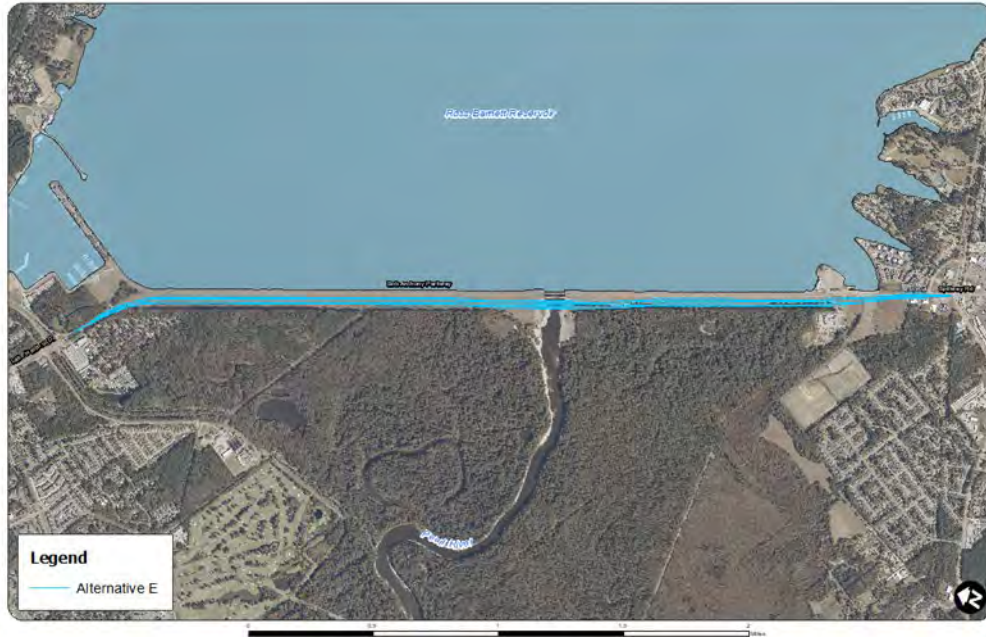


Figure 12 - Map of Build Alternative E.

Alternative E was presented during the initial public involvement period. The alignment of Alternative E was presented to be north of the existing toe ditch for the entire length of the alignment (**Figure 12**). Further engineering analysis and the review of public comments led to the decision that construction north of the toe ditch should be minimized in order to meet the purpose and need of the proposed project. Alternative E would utilize the existing lower road of the Dam for the two westbound lanes, and construct two new 12-foot-wide lanes with 4-foot inside shoulders and 10-foot outside shoulders for the eastbound lanes, all north of the existing toe ditch. The alignment would veer south from the existing lower road to cross the Pearl River just south of the Dam structure. The Alternative E crossing is approximately 150 feet downstream of the spillway gates. This four-lane bridge would include four bents per bridge within the river channel. The main span of the bridge would be approximately 250 feet. The total length of the four-lane bridge would be approximately 850 feet. On the east side of the bridge, both the eastbound and westbound alignments veer back north of the toe ditch and run parallel to the existing roadway for approximately 4,000 feet, where they both turn northeast to tie into the existing roadway east of the emergency spillway. The total length of this alternative is approximately 3.46 miles. Alternative E was not carried forward for further study because it does not accomplish the purpose and need of the proposed project. Vehicular traffic would not be fully removed from the Dam, and maintenance access would continue to be impeded by the presence

of traffic on the lower roadway. In addition, the Alternative bridge design would impact the Pearl River by placing bents directly in the river channel.

### 3.1.6 Alternative E2



Figure 13 - Map of Build Alternative E2.

During the initial public involvement period, the alignment of Alternative E was presented to be north of the existing toe ditch for the entire length (Alternative E). Further engineering analysis and the review of public comments led to the decision that construction north of the toe ditch should be minimized in order to fulfill the purpose and need of the proposed project. Therefore, Alternative E2 was developed (**Figure 13**). Alternative E2 would construct four new 12-foot-wide lanes with 4-foot inside shoulders and 10-foot outside shoulders. The east and west lanes have different alignments. The eastbound alignment would veer downstream of the toe ditch and parallel the existing lower road, while the westbound alignment veers south of the existing lower road on the upstream side of the toe ditch, allowing for the regrading of the backside of the Dam. The eastbound and westbound alignments straddle the toe ditch until just west of the intake structure where the westbound alignment crosses the toe ditch, and the alignments run parallel with a 52-foot-wide grassed median at the Pearl River crossing. The Alternative E2 crossing is approximately 350 feet downstream of the spillway gates. This four-lane bridge would be a steel plate girder bridge with no bridge bents in the river channel. The main span of the bridge would be approximately 400 feet. The total length of the four-lane bridge would be approximately 4,000 feet, including the additional spans over other aquatic channels and wetlands. On the east side of the bridge, both the eastbound and westbound alignments run parallel to the existing roadway for approximately 2,700 feet, where they both turn northeast to tie into the existing roadway east of the emergency spillway. The total length of this alternative is approximately 3.35 miles. Despite

being one of the shortest proposed alternatives, Alternative E2 was not carried forward for additional study because it does not meet the stated purpose and need. Alternative E2 does not effectively remove vehicular traffic from the Dam on the western end of the alignment. On the western end of the alignment, Alternative E2 would not remove traffic fully off of the Dam. In addition, the alignment would also cross the Dam's toe ditch at multiple locations, which could lead to engineering difficulties, additional hydraulic impacts, and the potential for increased costs. Therefore, maintenance access would continue to be impeded by the presence of traffic on the lower roadway. Although the environmental and social impacts of Alternative E2 are similar to Alternative B, Alternative E2 would impact the floodplain and wetlands to a greater degree.

### 3.1.7 Alternative F

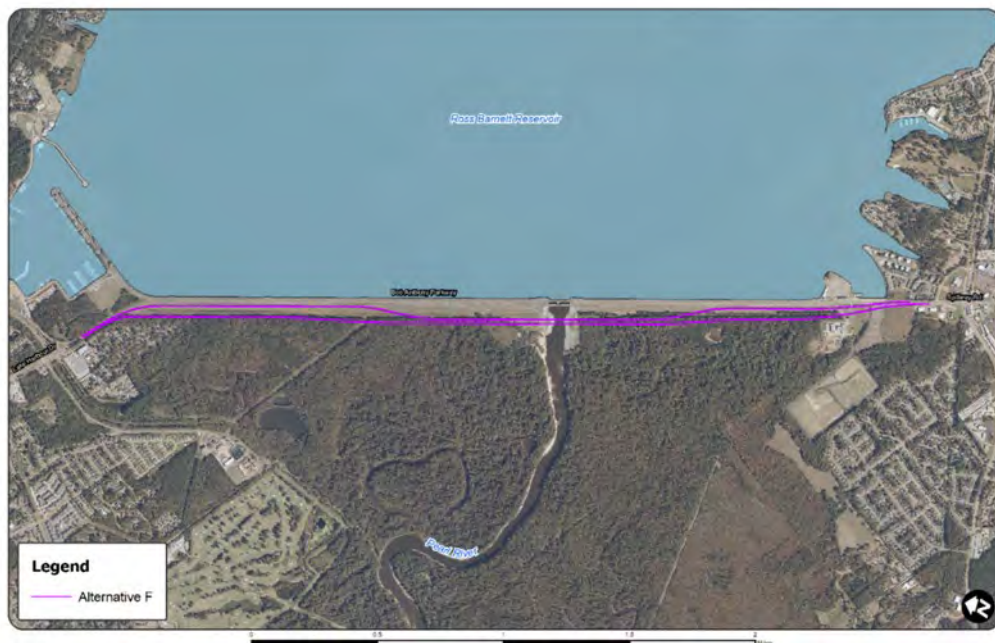


Figure 14 - Map of Build Alternative F.

Alternative F (**Figure 14**) would construct four new 12-foot-wide lanes with 4-foot inside shoulders and 10-foot outside shoulders. Like Alternative E, the eastbound alignment would veer downstream of the toe ditch and parallel the existing lower road, while the westbound alignment veers south of the existing lower road on the upstream side of the toe ditch, allowing for the regrading of the backside of the Dam. The eastbound and westbound alignments straddle the toe ditch until just west of the intake structure where the westbound alignment crosses the toe ditch, and the alignments run parallel with a 52-foot-wide grassed median at the Pearl River crossing. The Alternative F crossing is approximately 350 feet downstream of the spillway gates. This four-lane bridge would be a steel plate girder bridge with no bridge bents in the river channel. The main span of the bridge would be approximately 400 feet. The total length of the four-lane bridge would be approximately 4,000 feet, which includes the additional spans over other aquatic channels and wetlands. On the east side of the bridge, both the eastbound and westbound

alignments run parallel to the existing roadway for approximately 1,750 feet, where they both turn northeast. The eastbound lane remains south of the toe ditch, while the westbound lane crosses the toe ditch and continues parallel to the existing roadway north of the ditch. Both lanes then tie into the existing roadway east of the emergency spillway. The eastbound and westbound alignments are both approximately 3.54 miles. Alternative F was not carried forward for further study due to engineering constraints on the eastern portion of the alignment. The required access to Rankin Landing and the Northwest Rankin Athletic Association (NWRAA) soccer fields, the presence of the PRVWSD facilities and the dam fuse plug (emergency spillway), and the narrowing of the distance between the toe ditch and the Dam do not allow adequate spacing for the proposed layout of Alternative F. Analysis has shown that the turning of the lanes back to the north is neither a feasible nor cost effective solution.

### **3.2 Eliminated Alternatives**

Alternative C was not carried forward for further study due to the environmental impacts that would occur from its implementation. Alternative C would directly impact a known cultural resource site, impact several acres of wetlands and other waters throughout the project area, and place bridge bents directly in the river channel.

Alternative D was not carried forward for further study due to the environmental impacts that would occur from its implementation. Alternative D would directly impact a known cultural resource site, impact more acres of wetlands and other waters than the alternatives moving forward for further evaluation, and place bridge bents directly in the river channel. In addition, Alternative D's bridge design would impact the Pearl River and threatened and endangered species by placing bents directly in the river channel much further downstream than other alternatives considered.

Alternative E was not carried forward for further study because it does not accomplish the purpose and need of the proposed project. Vehicular traffic would not be fully removed from the Dam, and maintenance access would not be improved. In addition, Alternative E's bridge design would impact the Pearl River and threatened and endangered species by placing bents directly in the river channel.

Alternative E2 was initially carried forward for further study, but was later eliminated because it does not fully accomplish the purpose and need of the proposed project. On the western end of the alignment, Alternative E2 would not remove traffic fully off of the Dam. In addition, the alignment would also cross the Dam's toe ditch at multiple locations, which could lead to engineering difficulties, additional hydraulic impacts, and the potential for increased costs. Although the environmental and social impacts of Alternative E2 are similar to Alternative B, Alternative E2 would impact the floodplain and wetlands to a greater degree.

Alternative F was not carried forward for further study due to engineering constraints on the eastern portion of the alignment. Analysis has shown that the turning of the lanes back to the

north is neither a feasible nor cost effective solution due to the lack of space needed to flatten the backslope of the Dam, construct the two new lanes, and accommodate the toe ditch.

### **3.3 Alternatives Carried Forward for Additional Study**

After receiving comments from a public meeting and corresponding with federal, state, and local resource agencies, two alternatives (Alternatives B and E2) were initially carried forward for further, more detailed analysis. Following additional environmental and engineering studies, Alternative B has been identified as the Preferred Alternative because it provides the best alignment to meet the purpose and need for the proposed project. The environmental and social impacts are similar for Alternatives B and E2, but Alternative B addresses the purpose and need more completely by removing vehicular traffic off of the Dam's structure, creating more space for re-grading the downstream slope of the Dam, substantially improving safety and access to the Dam for routine and emergency maintenance work, expanding pedestrian and bicycle opportunities, and increasing the resiliency of the Dam to extreme weather events. Despite being longer in length, Alternative B has fewer wetland and floodplain impacts than Alternative E2. Additionally, Alternative B only crosses the toe ditch of the Dam once, and includes a right-of-way (ROW) that can accommodate a potential widening to six lanes if needed in the future. Alternative A (No Build Alternative) is also carried forward as a baseline for comparison of impacts for the other alternatives. A detailed map of each Build Alternative is provided in Appendix A.

### **3.4 Traffic Analysis of Alternatives**

The traffic analyses showed that poor LOS conditions already exist for cross street turning movements within the study area. By 2045, the delays for turning movements become extremely high without improvements. Due to the congestion and stop-and-go traffic along Harbor Drive/Spillway Road, rear-end crashes are common within the study area. However, because the congestion along Harbor Drive/Spillway Road is caused by nearby intersections, which are not included within the study area, this issue was not considered in the development of Build Alternatives. The following improvements are recommended for the Alternatives being carried forward:

At the intersection of Lake Harbour Drive/Spillway Road and Breakers Lane:

- Prohibit southbound left turn. (This movement will make a southbound right turn and then a westbound u-turn at the signalized intersection of Lake Harbour Drive at Harbor Pines Drive/Harbor Drive.)
- Convert the southbound yielding right turn into a free right turn with a receiving lane addition. This lane will tie into a free flow right turn outside the study area, from the EOP to the Lake Harbour Drive/Harbor Drive intersection, a distance of approximately 700 feet.

At the intersection of Spillway Road at Reservoir Park Road:

- Prohibit northbound left turn and make the northbound right turn a yield-controlled channelized right.
- Provide a westbound u/left turn bay. Provided an inside dedicated receiving lane for the westbound u-turning movement. This inside lane will continue to the downstream eastbound u-turn.

At Rankin Landing:

- Provide an eastbound left turn lane.
- Provide a yield-controlled channelized westbound right turn.
- Prohibit southbound left turns. Provide a yield-controlled southbound channelized right turn with a downstream westbound u-turn bay. The inside eastbound receiving lane will be dedicated for the westbound u-turning movement. This inside lane will continue to the eastbound left turn at Rankin Landing.

These improvements will provide adequate performance for all movements within the study area with current volumes. However, as volumes grow, additional intersection improvements such as signalization will likely become necessary in the future to avoid unacceptable delays for the minor approach turning movements and major approach left turning movements. It is recommended that the design for the new facility not prohibit future expansion to six lanes if future traffic volumes exceed four-lane capacity. A copy of the final Traffic Report completed by Garver is included as Appendix B

### 3.5 Construction Cost

The proposed \$4.5 million Environmental Studies, Preliminary Engineering and ROW acquisition project is the initial phase of a much larger project, currently estimated to have a total cost of approximately \$140.3 million. Upon completion of this first phase, the PRVWSD will seek funding through federal grants to complete phase two of the project which will construct the needed roadway approaches and build the new westbound bridge enabling traffic to be removed from the existing crest of the Dam. The final phase of the project will be to construct the needed eastbound bridge which will remove the traffic from the toe of the Dam. **Table 5** gives the estimated cost of the project. This cost estimate does not include future projects, such as regrading the slope of the Dam, as this would be completed as a separate project. A copy of the complete construction cost estimate is included as Appendix C.

*Table 5 - Construction Costs*

Build Year	Estimated Total Cost
2023	\$121,900,000
2030	\$156,100,000

## **4.0 ENVIRONMENTAL IMPACTS EVALUATION**

The natural and social environmental impacts of the project were evaluated through a process of research, technical studies, and collaboration with the public, government agencies, and other stakeholders. This information was used to help the project team develop alternatives that minimized the natural and social impacts to the extent practical while still addressing the project purpose and need.

A public meeting, including local officials and resource agencies, was held on July 28, 2022. In addition, several meetings with state and federal natural resource agencies, FHWA, MDOT, and the PRVWSD were held starting early in the environmental process to fully consider the potential environmental impacts from the proposed project. Appendix D contains a record of meetings and correspondences with each agency. Appendix L provides the documentation of the public involvement meeting. The following section discusses the results of these studies and stakeholder involvement.

### **4.1 Land Use Impacts**

Most of the land on which the project would be built is undeveloped floodplain and wetland forests. The approaches of the proposed alignment will overlay existing roadway. The land use of the surrounding area is mostly developed, except for the Pearl River floodplain forests to the southeast. Approximately 116.7 acres of land will be converted from forested land to roadway and/or ROW for the project.

### **4.2 Farmland Impacts**

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) office in Jackson, Mississippi was contacted regarding the potential for farmland impacts within the project study area. Prime and Unique Farmlands are lands that have the best combinations of physical and chemical properties to be able to produce fiber, feed, or food, and are available for these uses. Prime farmlands are protected under the Farmland Protection Policy Act (FPPA) of 1980 and 1995. The FPPA's purpose is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. As required by Section 1541(b) of the Act, 7 U.S.C. 4202(b), federal agencies are (a) to use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that could lessen adverse effects, and (c) to ensure that their programs, to the extent practicable, are compatible with state, units of local government and private programs and policies to protect farmland (USDA 2000).

The FPPA requires coordination with the NRCS for a determination of project involvement with farmland. In order to comply with the coordination requirements of the FPPA, Form NRCS-CPA-106, the Farmland Conversion Impact Rating, was submitted to the State Office of the NRCS on February 27, 2020, for completion of Parts II, IV and V of the form.



Parts I and III were completed as required prior to submission to the NRCS. Mr. James Curtis, State Soil Scientist, of the NRCS completed a Farmland Conversion Impact Rating for the project study area. According to information obtained from the NRCS on March 2, 2020, the NRCS evaluated the relative value of farmland to be converted for the project study area. This evaluation is based on the following criteria:

- The total acres of prime and unique farmland impacted in the study area;
- The total acres of statewide and local important farmland impacted in the study area;
- The percentage of farmland in local jurisdiction to be converted in the study area; and
- The percentage of farmland in local jurisdiction with the same or higher relative value than the farmland within the study area.

Mr. Curtis determined that zero acres of prime farmland and zero acres of statewide and local important farmland will be converted directly by the project due to the proximity of commercial and urban development. The NRCS assigned a relative value of zero on a scale of zero to 100 to the farmland to be converted directly by the project. A copy of the NRCS response letter, containing the completed Farmland Conversion Impact Rating, is included in Appendix D.

### **4.3 Social Impacts**

The project area has the potential for direct impacts to an EJ community, several businesses, and public community features. However, Alternative B (Preferred Alternative) will not require any ROW acquisition and will not cause any relocations or direct impacts to residences or businesses. The general land use of the project area will not change. Potential social impacts were reviewed for the project and it was determined that Alternative B (Preferred Alternative) would have a positive social impact by improving the roadway and pedestrian safety. No relocations of residences or businesses are required, traffic noise impacts would be minimal, Section 4(f) impacts will be *de minimis*, and no Environmental Justice issues are anticipated. These impacts are discussed in more detail in Sections 4.4, 4.5, 4.6, and 4.11 of this report. Alternative B (Preferred Alternative) would enhance the social capital of the project area by providing a safer and more efficient mode of travel for motorists, bicyclists, and pedestrians alike. The completion of this project will enhance the quality of life for residents by removing the vehicular traffic from the existing Dam. The existing upper road will provide increased recreational opportunities by allowing safe pedestrian and bicycling travel without vehicular traffic. Recreational fishing will also be available to the public from the crest of the Dam, creating additional social benefits for the community. The public will be better served by the implementation of the project by eliminating the need for road closures for routine and emergency maintenance to the Dam and potential economic development.

Temporary impacts to travel patterns during construction may occur, but access to public use areas, businesses, and the Harbor Pines Mobile Home Park will be maintained during

construction. There will also be temporary impacts to fishing and recreational access east and west of the Dam, but the PRVWSD is committed to maintaining access to these areas to the extent practical during construction.

According to the 2020 Census, the total population of the Jackson Metropolitan Statistical Area (MSA) (Hinds, Madison, Rankin, Copiah, and Simpson Counties) was 586,758. There were 228,001 households and 139,298 families within the MSA. The racial mix was 48.2% Black alone, 45.3% Black alone, 2.4% Hispanic, and the remaining 4.1% is split between, Other, Two or More Races, Native Hawaiian, and Other Pacific Islander alone, American Indian and Alaska Native alone, or Asian alone (U. S. Census Bureau, 2020).

#### **4.4 Environmental Justice Impacts**

The U.S. Environmental Protection Agency (EPA), Office of Environmental Justice defines Environmental Justice as follows: "Environmental Justice is 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. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work."

The Harbor Pines Mobile Home Park, located near the BOP, is a low-income community. However, the project will not require any relocations or take of property, nor will the project substantially increase noise or impact other environmental factors relating to this community.

The EPA's online EJSCREEN tool reported no significant minority or low-income populations present in the project area. This project is being designed to create benefits such as decreased traffic congestion, safer roadways, better pedestrian amenities, and more efficient travel time in the surrounding areas. This project will benefit all people in the project area, regardless of race or economic status. With the results from the Environmental Justice Analysis, Alternative B (Preferred Alternative) will not result in a disproportionately high and adverse impact to any minority or low-income population along the Preferred Alternative. A copy of the EJSCREEN data is included in Appendix D.

#### **4.5 Relocation Impacts**

Alternative B (Preferred Alternative) has been designed to avoid relocating any residences or businesses and will be constructed entirely within existing ROW or PRVWSD owned land. The proposed alignment does intersect with the PRVWSD-owned maintenance shop and Reservoir Police Department building located at 100 Reservoir Park Road. However, PRVWSD has expressed they would address the need for modifying this facility in order to allow for the new roadway. The Harbor Pines Mobile Home Park (701 Harbor Pines Drive) is located near the BOP just off Lake

Harbour Drive, but will not be directly impacted by the project. No take of property will be required as part of the project.

#### **4.6 Section 4(f) Impacts**

Section 4(f) refers to the original section within the U.S. Department of Transportation Act of 1966 which provided for consideration of park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development. The law, now codified in 49 U.S.C. §303 and 23 U.S.C. §138, applies only to the U.S. Department of Transportation (USDOT) and is implemented by the FHWA and the Federal Transit Administration through the regulation 23 Code of Federal Regulations (CFR) 774. Section 4(f) properties include publicly owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately owned historic site listed or eligible for listing on the National Register of Historic Places.

The project area contains multiple recreation areas and publicly owned parks/trails. One of these resources, Mule Jail Trail, is underutilized and poorly maintained. This trail's value to the public is insignificant relative to the multitude of recreational opportunities available on PRVWSD lands. Totalling approximately 4.33 miles, the trail predominately serves as a mountain biking trail and would be substantially impacted by the construction of the project. Approximately 1.87 miles of the trail would be permanently removed, and the remaining trail would likely be cut-off from the existing trailhead. The other recreational areas in the project area will be unaffected other than brief alterations to access during construction that will be returned to normal operation at the conclusion of the project.

The project has been designed to provide new recreational opportunities along the crest of the Dam, including a multi-use pedestrian and bike path and shoreline fishing, as well as enhance the existing recreational areas. In addition, it is anticipated that the access roads to existing recreational facilities will remain open throughout construction in order to maintain access to those facilities. These new and enhanced recreational opportunities will allow the PRVWSD to further enhance the quality of life for the public.

Because the impacts to publicly owned recreational areas and parks within the project area will overall be positive and the project will result in a net gain of recreational areas, the impacts to the Mule Jail Trail are considered to be *de minimis*.

A letter of support signed by PRVWSD concurring with the *de minimis* impact is included as Appendix E.

#### **4.7 Economic Impacts**

Once completed, this project will improve the infrastructure condition and reliability through the corridor and allow for better accessibility to employment, retail, educational, recreational, and medical service centers. Currently, routine and emergency maintenance activities on the Dam requires lane closures that lead to traffic delays. These traffic delays can lead to negative

economic impacts for surrounding businesses. Economic competitiveness benefits indicate that this project will contribute to the economic competitiveness of the region by decreasing transportation costs, improving long-term efficiency and reliability in the movement of workers and goods, and facilitating freight movement. Additionally, if commercial vehicles more than one ton are allowed to use the roadway in the future, it would eliminate the need for the 18-mile detour currently required. Highway congestion and the resulting negative effect of travel delays and the lack of system reliability can have a severe impact on the economic vitality of a region. Truck traffic delays often result in increased transportation costs for freight, which are typically passed on to consumers in the form of higher retail prices. Additionally, user costs (fuel, tire, maintenance, and repair costs) also increase due to poor infrastructure conditions.

#### **4.8 Joint Development**

The PRVWSD is the sole sponsor and developer of this project. There is no joint development planned as part of this project.

#### **4.9 Considerations Relating to Pedestrians and Bicyclists**

The USDOT supports the development of fully integrated active transportation networks. The establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments. Walking and bicycling foster safer, more livable, family-friendly communities, promote physical activity and health, and reduce vehicle emissions and fuel use. Because of the numerous individual and community benefits that walking and bicycling provide, including health, safety, environmental, transportation, and quality of life, transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes. Public involvement and input are also essential in the development of transportation plans and programs, including the bicycle and pedestrian components. In accordance with 23 USC 109(n), the FHWA recommends that MDOT and PRVWSD give full consideration to bicycle facilities by providing reasonable alternatives to the bicycling public in the development of transportation projects. The inclusion of bicycle and pedestrian elements in transportation plans and programs is accomplished by addressing bicycle and pedestrian issues throughout the transportation planning process and integrating bicycle and pedestrian elements appropriately in the transportation plan and programs.

The project is being planned with consideration to pedestrian and bicyclist traffic. The existing roadway on the crest of the Dam is planned to be converted to a pedestrian and bicycle path. Only operations and maintenance vehicles will be allowed to access these areas. This path would help connect existing pedestrian paths and trails that currently exist in Madison and Rankin Counties. Shore fishing amenities will also be provided on the pedestrian path, further enhancing the recreation and quality of life benefits of this pathway. Pedestrian and bicycle lanes would help improve the overall health and well-being of the community by offering better opportunities to exercise and be outdoors.

#### **4.10 Air Quality Impacts**

The Mississippi Department of Environmental Quality (MDEQ), Air Quality Division was contacted by letter, dated February 27, 2020, requesting comment for the proposed project. The MDEQ response by letter, dated February 28, 2020, stated “We do not expect the referenced project to adversely affect ambient air quality.” The MDEQ requested “the project manager will ensure that the owner or operator secures any required air emissions permits from the Mississippi Department of Environmental Quality Permit Board prior to commencing construction of a covered activity and that all applicable asbestos and lead-based paint control regulations are being complied with.” Copies of the correspondence with the MDEQ are included in Appendix D.

Under the Clean Air Act, the EPA establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of “sensitive populations, such as people with asthma, children, and older adults.” Secondary air quality standards protect public welfare by promoting ecosystems health, preventing decreased visibility, and preventing damage to crops and buildings. The EPA has set national ambient air quality standards (NAAQS) for six of the following criteria pollutants: ozone (O<sub>3</sub>), particulate matter (PM 2.5 and 10), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). According to the MDEQ, most areas of Mississippi are classified as being in attainment, meaning criteria air pollutants do not exceed the NAAQS. Madison, Rankin and Hinds Counties are all within an attainment area.

#### **4.11 Noise Impacts**

A traffic noise study was conducted to analyze the potential impacts the proposed project will have on the current and future noise environments, and determine sites where noise impacts are likely to occur, if any. At the time of this traffic study, both Alternative B (Preferred Alternative) and Alternative E2 were being considered as a feasible alternative for the proposed project. Since the completion of this study, Alternative B has been selected as the preferred alternative. However, the analysis of Alternative E2 noise impacts is still included within this study.

Estimates of the exterior noise levels in the vicinity of the proposed project were made using the FHWA Traffic Noise Model (TNM), Version 2.5 program developed by the USDOT John A. Volpe National Transportation Systems Center, Acoustics Facility. The model was validated by four field measurements taken along the existing roadway. Traffic data used in the model was obtained from the Bob Anthony Parkway, Final Traffic Report, dated August 2023, prepared by Garver, and the design year for this project was set as 2045. Four scenarios including Existing Conditions, Future No Build, Future Build Alternative B (Preferred Alternative), and Future Build Alternative E2 were modeled. A total of 27 receivers, representing 279 residential and six commercial properties, were located within 500 feet from the proposed project area, and were included in the analysis.

When comparing the noise model results between the Existing Conditions and the Future No Build scenario, all 27 receivers experienced a minor noise impact due to increased future traffic

counts. When comparing the Existing Conditions to the two Future Build scenarios, one receiver resulted in a decrease in noise levels, another receiver resulted in a moderate increase in noise levels, and two receivers resulted in a substantial increase in noise levels in both Future Build alternatives considered.

Receiver 19, Shaggy's, a restaurant adjacent to the Rankin Landing, resulted in a decrease in noise levels within the Build scenarios Alternative B (Preferred Alternative) and Alternative E2. This decrease is due to the proposed alternatives moving traffic further away from this receiver. Receiver 20, the PRVWSD maintenance shop and office for Reservoir Police Department, resulted in a moderate noise level increase in the Build scenarios Alternative B (Preferred Alternative) and Alternative E2. This increase is due to the proposed alternatives projected intersection with this facility, which could cause modification or relocation of this facility. However, because the sponsor of this proposed project owns this facility, the necessary decisions to determine the potential modification or relocation of this shop are planned along with the implementation of the proposed project. Receivers 21 and 22, West Spillway and East Spillway, the recreational areas on either side of the Pearl River, resulted in a substantial noise level increase in both Build scenarios. In addition, Receiver 21 also resulted in a noise level of 71.1 dBA, which exceeded the Noise Abatement Criteria (NAC) of 67 dBA for recreational facilities. These substantial increases are due to the proposed roadways being built on structure directly over this area. Although these increases are substantial, noise abatement measures are not feasible within this area due to the ongoing and substantial noise pollution from the flow of released water from the Dam. It would be impossible to decrease the noise pollution level using barriers without negatively affecting the operation of the Dam, as well as restricting the recreational fishing and boating within this area. Therefore, it is not feasible to consider traffic noise abatement measures.

The remaining 23 receivers, representing 279 residential and two commercial properties, resulted in minor increases when comparing the results of Existing Conditions to Future No Build and both Future Build scenarios. This result suggests the cause of increased noise within this environment is predominately due to the projected increase in future traffic counts, regardless of the implementation of the proposed project within this area. The complete Traffic Noise Study completed for this project is included as Appendix F.

#### **4.12 Water Quality Impacts**

The proposed project would cross the Pearl River and the adjacent floodplains. In a response email, dated March 27, 2020, the EPA stated that the Project is located within the Middle Pearl River-Strong River watershed (Hydrologic Unit Code [HUC] 03180002), which is designated as a priority watershed. Within priority watersheds, collaborative watershed protection and restoration efforts are implemented to address parameters of concern that appear on the Mississippi Section 303(d) list of impaired waterbodies. Segment MSUMPLR1E, from the Ross Barnett Reservoir Spillway to the confluence with the Strong River, is an impaired waterbody with established total maximum daily load (TMDL) values. According to the MDEQ's TMDL Program

website, TMDL values for segment MSUMPLR1E have been completed for sediment, total nitrogen, total phosphorus, dichlorodiphenyltrichloroethane, and toxaphene. The EPA recommended that the PRVWSD contact the MDEQ regarding the proposed project to ensure the project is constructed consistent with the applicable TMDL values and watershed plans.

The MDEQ is aware of the project and has been involved in interagency meetings throughout the preliminary engineering phase. It is anticipated that a Section 401 Water Quality Certification will be required for the project. A copy of the EPA email and the MDEQ letter is included in Appendix D.

#### **4.13 Permits**

It is anticipated that the proposed alignment will require the following permits:

- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit from MDEQ (per EPA email received 3/27/2020). Large Construction General Permit for projects, which will disturb five or more acres, issued in accordance with the provisions of the Mississippi Water Pollution Control Law (Sec 49-17-1 et seq., MS Code of 1972) and Section 402(b) of the Federal Water Pollution Control Act via the MDEQ.
- Section 401 Water Quality Certification via the MDEQ.
- Section 404 of the Clean Water Act Permit from the Department of the Army (per USACE letter received 4/20/2020) and it is anticipated the MDOT General Permit 46 for projects, which require activities such as the repair and stabilization of existing roadway embankments and bridge abutments, the upgrading of bridges and other stream-crossing structures, and construction along new alignments.
- While no Section 408 properties are known to be impacted, Section 408 involvement will be evaluated as part of the USACE Section 404 permit process.
- Section 10 of the Rivers and Harbors Act Permit from the Department of the Army (per USACE letter received 4/20/2020).

#### **4.14 Wetland Impacts**

Construction activities affecting waters of the U.S. are regulated by Section 404 of the Clean Water Act (33 U.S.C. 1344). Wetlands are identified and delineated according to the methods outlined in the Corps of Engineers Wetlands Delineation Manual, published January 1987, by the USACE. As defined in the Corps of Engineers Wetlands Delineation Manual, wetlands are: “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient

to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

The PRVWSD contacted the USACE for comments via email, dated February 27, 2020. On April 20, 2020, the PRVWSD received an email from Mr. Charles Allred, Chief, Enforcement Section of the USACE regarding impacts to wetlands and other waters. In this email, Mr. Allred stated that “Based upon the information provided, we have determined that it appears there are jurisdictional waters of the United States located on the property subject to regulation pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Any work involving the discharge of dredged or fill material (land clearing, ditching, filling, leveeing, etc.) into jurisdictional wetlands and/or other waters of the United States at the site will require a Department of the Army Section 404 permit prior to beginning work. In addition, any work within the ordinary high-water elevation of the Pearl River, a navigable water of the United States, will require a Department of the Army Section 10 permit prior to beginning work.” The National Wetland Inventory (NWI) Map shows that a large portion of the Project area is comprised of wetland habitat. Therefore, a wetland delineation and assessment report has been prepared for the Project, and is included as Appendix G.

The wetland and other waters report identified the impacts for both Alternative B (Preferred Alternative) and Alternative E2. Proposed work for Alternative B (Preferred Alternative) would result in 6.68 acres of permanent wetland impacts, 3.43 acres of permanent open water impacts, and 2,653 linear feet of permanent impacts to other waters. Proposed work for Alternative E2 would result in 5.78 acres of permanent wetland impacts, 6.70 acres of permanent impacts to other waters, and 2,575 linear feet of permanent impacts to other waters.

#### **4.15 Water Body Modification and Wildlife Impacts**

Two bridge crossings would traverse a section of Pearl River southeast of the Dam. These crossings would span the entire width of the river, with supports placed on opposite banks. Alternative B (Preferred Alternative) is being designed without any supports in the river channel itself. Therefore, no substantial water body modifications would be necessary. The project area also contains several smaller channels, sloughs, and wetlands. These areas should be considered potentially jurisdictional until concurrence is given by a representative of the USACE. Additionally, Best Management Practices (BMPs) shall be implemented to prevent negative impacts to water quality and habitat during construction. As a result, impacts regarding water body modifications and wildlife (including aquatic species and habitat) would be minimal. BMPs shall be used throughout the construction sequence to prevent secondary impacts to adjacent, downstream, and upstream habitats.

Potential impacts to wildlife were assessed as a part of the initial project planning. Species accounts and habitat requirements were collected and reviewed by the U.S. Fish and Wildlife Service (USFWS). In a letter dated March 23, 2020, Ms. Amy Carson, biologist with the USFWS, indicated that the proposed project is located within the range of four federally listed species,



and one federally listed critical habitat; the endangered Northern Long-eared Bat (*Myotis septentrionalis*), the threatened Gulf sturgeon (*Acipenser oxyrinchus (=oxyrhynchus) desotoi*) and its designated critical habitat, the threatened ringed map turtle (*Graptemys oculifera*) and the threatened wood stork (*Mycteria americana*). The impacts to these species and habitat are further discussed in Section 4.20 of this report.

#### **4.16 Floodplain Impacts**

The PRVWSD reviewed applicable Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA) to determine the impact that Alternative B (Preferred Alternative) would have on floodplains. It appears that nearly all of the project would overlay the Pearl River floodplain. Most of the project area is in 'Zone AE' indicating "special flood hazard areas subject to inundation by the 1% annual chance flood". In addition, the project would exist directly adjacent to the special "floodway areas in zone AE" which are defined by FEMA as "the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights". The project's design will include additional bridges as needed to reduce the overall floodplain impacts and allow for proper hydraulic flow. A copy of the FIRMs containing the project area are included as Appendix A.

Hydraulic analysis showed that a 3,720-foot main bridge over the Pearl River would be required with a span arrangement of 10 spans at 120 feet, one span at 960 feet, and 13 spans at 120 feet would be required. In addition, a relief bridge with a total length of 600 feet with a span arrangement of 6 spans at 100 feet would be required approximately one mile west of the Pearl River. The full hydraulic analysis report completed by Garver is included as Appendix H.

#### **4.17 Wild and Scenic Rivers Impacts**

There are no wild and scenic rivers in Madison, Rankin, or Hinds County, Mississippi. The only wild and scenic river listed for the state of Mississippi is Black Creek, in the Desoto National Forest near Brooklyn, Mississippi. This river is not part of the Pearl River Basin; therefore, this project would have no impacts to wild and scenic rivers.

#### **4.18 Coastal Barrier Impacts**

The project would have no impacts on the coastal barriers in the Mississippi Sound.

#### **4.19 Coastal Zone Impacts**

This project would have no impacts on the coastal zone of the Gulf of Mexico, including the Mississippi Sound.

## 4.20 Threatened and Endangered Species Impacts

In 2020, the USFWS was contacted regarding the possible presence of federally listed threatened or endangered species, or their habitats, within the project area. Written responses from this agency indicate that the proposed project is located within the range of the four federally listed species; the endangered northern long-eared bat (*Myotis septentrionalis*), the threatened Gulf sturgeon (*Acipenser oxyrinchus (=oxyrhyinchus) desotoi*) and its designated critical habitat, the threatened ringed map turtle (*Graptemys oculifera*), and the threatened wood stork (*Mycteria americana*). In addition, USFWS stated the ongoing effort to petition for listing of the Pearl River map turtle (*Graptemys pearlensis*) under the Endangered Species Act (ESA) in early 2021. USFWS stated in a March 23, 2020, letter that “Due to the scope and location of the proposed project, we recommend the applicant or their federally designated representative prepare a biological assessment to determine if the proposed project will affect the wood stork, ringed map turtle, and Gulf sturgeon and its critical habitat.” The letter further states, “We request to be a participating agency (as defined in 23 U.S.C. 139(d)) throughout the planning process as it pertains to maintaining and developing future recreational opportunities on the Pearl River.”

The PRVWSD also contacted the Mississippi Natural Heritage Program (MNHP), a division of the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP), for information regarding state threatened or endangered species. Their response dated March 24, 2020, indicated that “if best management practices are properly implemented, monitored, and maintained (particularly measures to prevent, or at least, minimize negative impacts to water quality), the proposed project likely poses no threat to listed species or their habitats. We recommend that BMPs be properly implemented, monitored, and maintained for compliance, specifically measures that will prevent suspended silt and contaminants from leaving the site in stormwater run-off as this may negatively affect water quality and habitat conditions within nearby streams and waterbodies.” This project shall comply with these recommendations to minimize impacts to threatened and/or endangered species or their habitat(s). Copies of the correspondence with the USFWS and the MDWFP-MNHP are included in Appendix D.

Since the 2020 letter, the wood stork has been delisted while the northern long-eared bat has been reclassified to endangered, the alligator snapping turtle (*Macrochelys temminckii*) and the Louisiana pigtoe (*Pluerochama riddellii*) have been proposed threatened, and the monarch butterfly has been made a candidate species. In addition, the Pearl River map turtle has not been listed as a candidate species. USFWS was contacted via email on December 6, 2023, regarding the current recommendations on vulnerable species within the project area. Coordination with the USFWS continues in order to obtain concurrence on this Biological Assessment for this project. In addition to this coordination, a Threatened and Endangered species list was obtained from the USFWS Information for Planning and Consultation (IPaC) website.

Due to these changes, USFWS was contacted via email on December 6, 2023, regarding the current recommendations on vulnerable species. Their response letter, dated December 14,

2023, listed four federally listed species, including the gulf sturgeon, the ringed map turtle, the northern long-eared bat, and the Louisiana pigtoe. The letter continues by discussing several recommendations which could reduce the impact to these species. The recommendations include the use of erosion and sedimentation precautions to minimize the impact to the gulf sturgeon, ringed map turtle, and the Louisiana pigtoe, and any tree removal activities be restricted to non-maternity/non-breeding season (September 1 to May 14) to minimize any impacts to the northern long-eared bat and any birds protected under the Migratory Bird Treaty Act.

Pickering responded to this letter via email on January 15, 2024, stating the implementation of these recommendations were agreeable. In a response letter dated January 16, 2024, USFWS stated “Due to your commitment to implement these recommendations, the Service concurs with your determination that the proposed project may affect, but is not likely to adversely affect federally listed species.” A copy of this concurrence letter is included in Appendix I.

Following the initial consultation with USFWS and MDWFP, a Preliminary Biological Assessment (BA) was developed to determine the impacts, if any, to the listed species native to the Project area. Our preliminary determination is that the proposed Project “may affect, but is not likely to adversely affect” or would have “no effect” for the listed species. Although not listed, the Pearl River map turtle is included in this BA due to the potential of this species being listed in the future. A copy of this BA is included as Appendix I, and is summarized below:

- Northern Long-eared Bat (*Myotis septentrionalis*) – no maternity roost trees or hibernacula are known near the proposed project area. The Northern Long-Eared Bat Rangewide Determination Key was submitted to the IPaC website on December 6, 2023. After inputting the project information, this key determined the proposed project would have “No Effect” for the Northern long-eared bat.
- Alligator snapping turtle (*Macrochelys temminckii*) - Isolated wetland habitat was recorded within the project area during the wetland delineation. These areas are considered suitable habitat for the alligator snapping turtle. However, these turtles are more likely found in and around the main stem of the Pearl River. The preferred alternative crosses the river approximately 350 feet downstream of the dam’s gate. Therefore, due to the high velocity of water flow in that area, the presence of individuals is unlikely. A pond located west of the Pearl River would be the most suitable habitat for this turtle within the project area. This portion of the proposed roadway is designed to be bridged and run directly north of this pond. Therefore, the shape and size of the pond will not be impacted by the proposed project. Still some individuals within this area may be impacted during construction. However, these impacts would be temporary in nature and the long-term ability of the alligator snapping turtle to use this pond would not be impacted.
- Ringed map turtle (*Graptemys oculifera*) and Pearl River map turtle (*Graptemys pearlensis*) – both species of turtle are known to inhabit the study area. However, the project should not adversely affect the quantity or quality of water, or the sandbars the turtles use for nesting. The bridge crossings are going to reach from bank to bank and have

no bents within the Pearl River. Therefore, the flow should not be affected by the project. Construction impacts will include the temporary increase of sediment flowing downstream. However, this impact can be greatly mitigated by following BMPs during construction and should only be temporary in duration. In addition, all construction will be confined to areas already disturbed by the Dam's structure.

- Gulf sturgeon (*Acipenser oxyrinchus (=oxyrhyinchus) desotoi*) – Individual Gulf sturgeons are unlikely to inhabit the study area, as the last documented individual caught within the study area was in the mid-1980s. The Pool Bluff sill and Bogue Chitto sill have created barriers for migration, but can be passed during times of high-water flow. In the spring of 2021, an individual adult Gulf sturgeon was detected at LeFleur's Bluff State Park in Jackson, approximately 10 river miles downstream of the study area. This is the closest documented individual to the study area in nearly 40 years. The main concern regarding the Gulf sturgeon would be modification of spawning habitat and decline of water quality. The substrate found within the study area was a mix of sand, silt, and clay with highly turbid water due to the mixing from the dam. Additionally, any impacts to the water quality as a result of construction disturbance would be temporary and mitigated by the implementation of applicable erosion control BMPs.
- Louisiana pigtoe (*Pluerobema riddellii*) has historically been reported within the Pearl River. However, not within the proposed project's study area. The portion of the Pearl River within the study area has high sedimentation levels, with causes the substrate to be unstable. The potential concerns impacting this mussel include changes to the water column and water flow by the addition of a river crossing downstream of the existing dam. However, the bridge design addresses this concern by restricting bents to the banks of the Pearl River. Therefore, there should not be any long-term effects to stream flow due to the project. Construction disturbance may cause excess sedimentation downstream and water flow disruption, but this disturbance would be temporary in nature and would return to normal levels once construction is concluded. Bank erosion and sedimentation can also be reduced by implementing applicable BMPs during construction.
- Monarch Butterfly (*Danaus plexippus*) - Monarch butterflies were not observed within the project area. During the wetland delineation, milkweed was not reported within the wetland areas. However, it is likely milkweed grows within the study area since this species prefers moist, medium to wet clay soils. Therefore, monarch butterflies may use this area during the springs and summer months. Therefore, this project may impact individuals of this species. However, the proposed project should not impact the monarch butterfly population as a whole.
- Critical habitat for Gulf sturgeon – The assessment determined that this project “May affect, but is not likely to adversely affect” the critical habitat for the Gulf sturgeon. During various site visits no optimal spawning habitat for the Gulf sturgeon was observed. Within the Pearl River, the sediment underlying the study area is dominated by silt and clay with

highly turbid water due to the mixing from the Dam. The construction of the proposed project should not impede the Gulf sturgeon's ability to inhabit this area or cause any long-term effects to the existing habitat.

## **4.21 Historic and Archaeological Resource Impacts**

MDAH was contacted by letter, dated February 27, 2020, requesting comment for the proposed project. The MDAH responded by letter, dated March 20, 2020, stating "it is our determination due to the presence of recorded sites within the Area of Potential Effect (APE), topography of the area, and the fact that the area was surveyed prior to 1994, that a cultural resources survey should be performed by a qualified archaeologist."

Based on the March 20, 2020 response by the MDAH, a Cultural Resources Survey Report within the APE was completed in March, 2023, by Commonwealth Heritage Group. The results of the report are discussed in Sections 4.21.1 and 4.21.2. In a letter dated May 24, 2023, the MDAH State Historic Preservation Officer (SHPO) stated in response to the Cultural Resources Survey "We have reviewed the March, 2023, cultural resources survey by C. Andrew Buchner, Principal Investigator, received on May 16, 2023, for the above referenced undertaking pursuant to our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800. After review, we concur that sites 22Md770-771, 22Md775 and 22Ra672-673 are ineligible for listing in the National Register of Historic Places. We concur that the NRHP eligibility status of site 22Md772 is unknown. We concur that the site 22Md680 mound complex is eligible for listing in the NRHP. We also concur that the structures within the Harbor Pines Mobile Home Park are not eligible for listing and the Harbor Pines Mobile Home Park is not eligible for listing as a historic district. It is our determination that the project would have No Adverse Effect to any resources and no resources eligible for listing in the NRHP are likely to be affected. As such, we have no reservations with the undertaking." A copy of the Cultural Resources Survey Report can be made available upon request. The MS-SHPO letter is included as Appendix J.

### **4.21.1 Archaeological Survey**

The cultural resources APE included the footprints of proposed Alternates B and E, and some additional terrain that is part of neither alternate. The cultural resources APE is a 123.6-ac. (50.02 ha) linear corridor that is 3.1-mi. (5.0 km) long by 328-ft. (100 m) wide. Based on multiple reviews of the online MDAH Historic Resources Inventory Map, and after post-field consultations, it was determined that there were seven previously recorded sites within the Bob Anthony Parkway relocation APE.

A four-person crew conducted the fieldwork from July 4-14, 2022. Shovel testing at 30 m intervals was the primary site detection method. The shovel tests were distributed along 31 transects. During the course of investigations 466 shovel locations were recorded; 423 were negative for cultural material and 43 were not dug due to slope, water, or disturbance. The excavated shovel tests ranged from 4 to 80 cm deep and average depth was 23.3 cm  $\pm$  8.9 cm. A projectile

point/knife (PP/K) and a flake recovered from the surface of an animal burrow at 22MD680 were the only artifacts recovered during the investigation.

Site 22MD680 is a previously recorded Prehistoric mound site located southeast of the Harbor Pines Mobile Home Park. Site 22MD680 consists of three conical mounds (“knolls” on the site card) located on the Pearl River floodplain overlooking a low swale or relic channel to the east. The northern flank of the largest mound (Mound A) is within the APE, while the two smaller mounds (Mounds B and C; about 1 m high) are outside the APE to the southwest. The mound complex covers an approximately 120-x-50m area parallel to a low swale or relic channel. The Site 22MD680 mound complex is considered to be eligible for the NRHP under criterion D as it contains the potential to yield significant information regarding the Late Archaic to Woodland occupation of the Pearl River basin. The recommended management treatment for the mound complex is avoidance, and the preferred Alternative B has been shifted well to the north of the mounds to ensure avoidance, therefore, there will be no adverse impact to Site 22MD680. The village portion of the site to the west of the mound complex is of undetermined eligibility and requires Phase II testing to make a formal determination of its eligibility. However, this site lies entirely outside of the project’s APE and will be avoided.

#### **4.21.2 Architectural Survey**

The Architectural Survey was conducted as part of the Cultural Resources Survey Report completed in March, 2023 by Commonwealth Heritage Group. Review of the online MDAH architectural database revealed that there are no previously recorded architectural properties within the APE, nor are there any NRHP listed properties within the APE. The only standing structures within the Bob Anthony Parkway APE that are more than 50 years old are located on the north side of Lakeview Road in the Harbor Pines Mobile Home Park. Harbor Pines was established in 1972, nine years after the completion of the Dam, making it 51 years old. However, Harbor Pines does not meet the standard criteria for NRHP significance for mobile home parks and is considered not eligible for the NRHP as a Historic District.

#### **4.22 Hazardous Waste Sites Impacts**

A regulatory database search report was obtained from Environmental Data Resources, Inc. (EDR), which lists federal, state, and local records of registered sites in the vicinity of the project area. A copy of the EDR Radius Report is included as Appendix K. Ten sites were reported on the EDR and are described below.

- One Stop Mini Mart (Dynamic Minute Mart, Mini Mart), located at 1075 Lake Harbour Drive, is a gasoline service station and package store that has four active underground storage tanks (USTs); three 10,000-gallon gasoline USTs and one 4,000-gallon diesel UST. This facility has experienced six separate leaking UST (LUST) events. The first event was confirmed on May 31, 1990 and received a No Further Action (NFA) decision from MDEQ on August 10, 1999. The second event was reported on November 1, 1999 and received a

NFA decision on March 17, 2000. The third event was confirmed on February 9, 2001 and received a NFA decision on July 23, 2001. The fourth event was reported on November 26, 2001 and received a NFA on December 20, 2001. The fifth event was confirmed on July 15, 2002 and received a NFA on December 31, 2002. The sixth event was confirmed on April 1, 2009 and received a NFA on September 16, 2011. Due to the LUST events being resolved by MDEQ, and the distance from the project, this site does not represent a significant potential source for off-site contamination at this time.

- Rapids on the Reservoir, formerly located at 1808 Spillway Road, was a water park that operated from 1984 through 2007, and was fully demolished by 2012. This facility is listed in the Facility Index System (FINDS) and is also reported to have had asbestos abatement during demolition of the park. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.
- Old Penn's Restaurant Building, located at 101 Village Square Circle, was the site of a restaurant from sometime in the 1980's until it was demolished in the late 2000's. This facility is listed in the FINDS database. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.
- BankPlus, located at 1841 Spillway Road is a bank listed in the FINDS database for having a NPDES stormwater permit. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.
- Mid South Refinery and Smelting Inc, listed at 310 Old Fannin Road, was a refinery company office. No refining or smelting operations are known to have taken place in the project area. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.
- Spillway Chevron, located at 1861 Spillway Road, is a gasoline service station that has three active USTs; two 15,000-gallon gasoline USTs, and one 8,000/4,000-gallon gasoline/diesel UST. The facility also had one 500-gallon used-oil UST removed on April 1, 1995, and three 12,000-gallon gasoline USTs removed on October 7, 2001. This facility has experienced three separate LUST events. The first event was confirmed on March 27, 1998 and received a NFA decision from MDEQ on September 16, 1998. The second event was confirmed on October 9, 2001 and received a NFA decision on April 2, 2002. The third event was confirmed on September 21, 2011 and received a NFA decision on September 28, 2012. Due to the LUST events being resolved by MDEQ, and its distance from the project, this site does not represent a significant potential source for off-site contamination at this time.

- Polk's Drugs – Spillway, located at 1866 Spillway Road is a gasoline service station and pharmacy that has three active USTs; two 10,000-gallon gasoline USTs and one 7,000-gallon diesel UST. No LUST events have been reported at this facility. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.
- Old Fannin Shell, located at 1126 Old Fannin Road, is a gasoline service station that has two active USTs; one 12,000-gallon gasoline UST, and one 8,000-gallon gasoline UST. No LUST events have been reported at this facility. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.
- Main Harbor Marina, located on Harbor Drive, was a boat marina and fueling station that had two 6,000-gallon gasoline USTs. Both USTs were permanently removed between November 19 and 21, 1989. No LUST events have been reported at this facility. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.
- BST North Rankin Central Office, once located at 200 Spillway Road, was a Bellsouth Telecommunications office that had one 1,000-gallon kerosene UST. This UST was permanently removed on November 14, 1994. This small UST was likely used to power an emergency generator for the facility and was removed when the office closed. No LUST events have been reported at this facility. Due to the lack of violations and reports, this site does not represent a significant potential source for off-site contamination at this time.

Based on field observations conducted by the PRVWSD, review of available record documents, and interviews with various local and state regulatory officials, no evidence of hazardous materials or Recognized Environmental Conditions (RECs) that would warrant further investigation have been detected.

#### **4.23 Visual Impacts**

Visual impacts can be defined as change to the visual landscape. Visual impacts can be categorized as minimal, moderate, or high. Minimal impact generally occurs when existing transportation facilities are already part of the view shed, the view has few or no visually sensitive resources and/or the proposed project would introduce few, if any, noticeable changes to the view shed. Moderate visual impact occurs when changes to the existing view shed would be noticeable, but not substantial and/or there are visually sensitive resources that would undergo a noticeable change of view. High visual impact occurs when substantial changes are made to the existing view shed that would result in a greatly changed view and/or there are visually sensitive resources that would undergo a substantial change in view.



Alternative B (Preferred Alternative) would have moderate visual impacts because the existing view of the Reservoir while traveling on the crest of the Dam would be eliminated for motor vehicle traffic. However, the view from the proposed roadway would be towards the Pearl River and the surrounding forest downstream of the Dam. The crest of the Dam will be converted to a multi-use pedestrian path, therefore improving the viewshed for pedestrians using this path. In addition, existing transportation facilities are already a part of the view shed. While the proposed project would introduce a new facility, it would not change the nature of the area in an impactful way due to the level of development already present in the area.

#### **4.24 Energy Impacts**

There is no officially adopted state energy plan in Mississippi. There would be irretrievable energy (hydrocarbon) losses resulting from construction activities; however, traffic flow after completion of the facility would improve due to the removal of frequent Dam maintenance activities (including lane closures) from the roadway, thereby resulting in slightly lower fuel consumption. Over time, the fuel conservation resulting from the construction of the project would offset the energy consumed during construction of the project.

#### **4.25 Construction Impacts**

Alternative B (Preferred Alternative) would create construction impacts in the form of tree clearing, potential erosion, and increased noise in the construction areas. Traffic congestion can be expected at the intersection with Lake Harbour Drive and Rice Road to the west and Spillway Road and Old Fannin Road to the east, especially during construction of the approaches. There would be fill requirements for Alternative B (Preferred Alternative) and materials to be used for the construction and would result in temporary increased heavy truck traffic during construction. Preliminary engineering plans indicate that approximately 74.8 acres will be filled to construct Alternative B (Preferred Alternative). There are no other known construction impacts.

#### **4.26 Cumulative and Secondary Impacts**

Cumulative and secondary impacts are a potential concern in any transportation improvement project. Cumulative effects encompass all effects related to a project, both direct and indirect, as well as effects of any other action that may impact the environment in the area under study. The cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR 1508.7). Actions considered in a cumulative effects assessment include not only previous or future actions of transportation projects, but actions of other government agencies, private citizens, corporations, or other entities which may be either related or unrelated to the project.

Secondary, or indirect, impacts are “caused by the action and occur later in time or farther removed in distance” as opposed to direct impacts. These effects are often less predictable than

direct project effects but are still “reasonably foreseeable” (40 CFR 1508.8). Secondary, or indirect, impacts would mainly be the result of induced development that would be encouraged by construction of Alternative B (Preferred Alternative), since it provides more efficient access to developed areas surrounding the Reservoir.

## **5.0 PUBLIC INVOLVEMENT**

A Public Involvement Meeting for the proposed project was held on Thursday, July 28, 2022 at the Rankin County Community Center (2230 Spillway Road) in Brandon, Mississippi. The Public Meeting was held from 5:00 – 7:00 p.m. Efforts to involve the public in the Public Meeting included:

- Direct mailing of letters to public officials, elected officials, and key stakeholders were sent on Thursday, July 14, 2022.
- A Project website was published on Friday, July 15, 2022.
- Newspaper advertisements were published in the Clarion Ledger on Sunday, July 17, 2022 and Sunday, July 24, 2022.
- An email blast was sent to the PRVWSD contact list on Monday, July 18, 2022.
- A copy of the public meeting display ad was sent via text message to PRVWSD customers who signed up for these updates on Wednesday July 20, 2022.
- A news release was published on the PRVWSD website on Thursday, July 21, 2022.
- Flyers with project information were delivered door-to-door at the Harbor Pines Mobile Home Park and local businesses on Thursday, July 21, 2022.
- Meeting materials, including maps and exhibits, were published on the project website on Sunday, July 24, 2022.
- A court reporter was available on-site during the July 28, 2022 public meeting to take oral comments.
- WLBT News published a story and video both on television and online about the project and public meeting on Thursday, July 28, 2022.

Three agency meetings were held by MDOT to involve relevant resource agencies and allow them to comment on the various alternatives and the project’s purpose and need. The first was an in-person meeting at the MDOT Environmental Division conference room on July 5, 2022. The second agency meeting was held at the MDOT RWD conference room on May 18, 2023. The third agency meeting was held virtually via Microsoft Teams on September 25, 2023.

In addition to the Public Meeting and multiple agency meetings, monthly project progress calls were held virtually via Microsoft Teams that included representatives from PRVWSD, MDOT, FHWA, local government, and relevant resource agencies along with the consultant team. These progress meetings were intended to involve these agencies throughout the development stages of the proposed project. A total of 20 meetings were held from March 2022 through November 2023.

A full synopsis of the Public Meeting, meeting minutes from the three agency meetings, and the meeting agendas and minutes from the monthly progress calls are included in Appendix L.

## 6.0 PREFERRED ALTERNATIVE

A total of seven roadway Alternatives were considered during the preliminary engineering phase of the proposed project. A No Build Alternative (Alternative A) and six Build Alternatives (Alternatives B, C, D, E, E2, and F) were developed as solutions to address the project's purpose and need. After receiving comments from a public meeting and corresponding with federal, state, and local resource agencies, two alternatives (Alternatives B and E2) were carried forward for further, more detailed analysis.

Following additional environmental and engineering studies, Alternative B (**Figure 15**) has been identified as the Preferred Alternative because it provides the best alignment to meet the purpose and need for the proposed project. The environmental and social impacts are similar for Alternatives B and E2, but Alternative B addresses the purpose and need more completely by removing vehicular traffic off of the Dam's structure, creating more space for re-grading the downstream slope of the Dam, substantially improving safety and access to the Dam for routine and emergency maintenance work, expanding pedestrian and bicycle opportunities, and increasing the resiliency of the Dam to extreme weather events. Additionally, Alternative B only crosses the toe ditch of the Dam once, and does not prohibit the potential to widen the facility to six lanes if needed in the future.



Figure 15 – Map of the Preferred Build Alternative B.

A table presenting the social and environmental impacts for the preferred Alternative B is presented on the following page in **Table 6**. A copy of the Preferred Alternative statement is included as Appendix M.

*Table 6 - Alternatives Impacts Table*

<b>Impacts</b>	<b>Alternative B</b>
Land Use	Minimal
Farmland	None
Social	Positive
Relocations	None
Environmental Justice	None
Economic	Positive
Bicyclists and Pedestrians	Positive
Air Quality	Minimal
Noise	Minimal
Water Quality	Minimal
Wetlands & Other Waters	10.12 acres 2,653 linear feet
Floodplain	64.96 acres (100 year) 68.78 acres (500 year)
Water Body Modification & Wildlife	Minimal
Permits	Moderate
Wild and Scenic Rivers	None
Threatened and Endangered Species	Minimal
Cultural Resources	None
Hazardous Waste Sites	None
Visual	Moderate
Energy	Minimal
Construction	Moderate
Alternative Length	± 3.54 miles

## 7.0 REFERENCES

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## **Appendices**

**Appendix A – Figures**

**Appendix B – Traffic Report**

**Appendix C – Cost Estimate**

**Appendix D – Correspondence with Resource Agencies**

**Appendix E – Section 4(f) Letter of Support**

**Appendix F – Noise Study**

**Appendix G – Wetland and Other Waters Assessment Report**

**Appendix H – Hydraulic Analysis**

**Appendix I – Preliminary Biological Assessment**

**Appendix J – MS-SHPO Letter**

**Appendix K – EDR Radius Map Report**

**Appendix L – Public Involvement Documentation**

**Appendix M – Preferred Alternative**