DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

Regional Planning and Environment
Division South
Environmental Planning Branch

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

CONTINUING AUTHORITY PROGRAM, SECTION 14 EMERGENCY STREAMBANK PROTECTION LOUISIANA HIGHWAY 77 AT BAYOU PLAQUEMINE IBERVILLE PARISH, LOUISIANA

EA #587

Description of the Action. The New Orleans District, U.S. Army Corps of Engineers proposes to restore and protect a severely eroded segment of streambank along Bayou Plaquemine to prevent the undermining of Louisiana Highway 77 due to continuing erosion. Approximately 3,000 feet of the left descending streambank of Bayou Plaquemine, and the associated roadbed, will be protected from further erosion.

The project design includes construction of a stone toe dike with a 5 foot crown width and 1:2 side slopes to an elevation of approximately +3.0 feet North America Vertical Datum 1988 (NAVD88). This would be above normal low water elevations and will allow for backfilling with earthen material. The resultant bottom width of the stone toe dike will be approximately 27 feet. The placement of geotextile separator fabric will require 3 feet of extension beyond the stone toe dike resulting in a fabric width of approximately 33 feet. The inside face of the stone toe dike will be blanketed by geotextile fabric and pinned to the stone toe dike crown. A 9 foot width of fabric will cover the entire face and provide adequate laps. The sand backfill will initiate at approximately 1 foot below the stone toe dike crown elevation and proceed landward on an approximate 1:4 slope. This will achieve an inshore elevation of approximately +8.5 feet to +10.0 feet NAVD88, such that the stone armor is in the general range of normal high-water elevation. The final layer of stone armor will be placed on the earthen fill 12 to 18 inches thick dependent upon required hydraulic gradation. The stone armor will also be underlain with geotextile fabric, eliminating shoreline erosion caused by stage differentials or localized wave wash. High-performance turf reinforcement mat (HPTRM) or articulated concrete block bank paving for 200 feet on both sides of the pipeline, for a total of 400 feet of HPTRM or articulated concrete block. The remainder of the repair will utilize the stone toe dike and backfill as indicated. No docks will be reconstructed after the construction of this Project.

All fill material will be obtained from a location, excavated and transported in a manner that complies with all applicable laws and regulations. Fill material will be placed in a manner that will reduce impact to existing stands of bottomland hardwoods. Based on surveys completed in 2017, approximately 22,815 tons of stone, 6,500 cubic yards of earthen fill, and 19,070 square yards of geotextile separator fabric, and 4,000 square yards of HPTRM will be placed. There will be permanent impacts to 1.48 Average Annual Habitat Units (AAHU) of bottomland hardwoods (BLH) as per the Wetland Value Assessment (Appendix D).

Factors Considered in Determination. This office has assessed the potential impacts of implementing the recommended plan on relevant resources including, Bayou Plaquemine; wetlands; aquatic resources/fisheries; wildlife; bottomland hardwood habitat; threatened, endangered and protected species; socioeconomics; transportation; noise; recreation, aesthetics; air quality; cultural resources; water quality; hazardous toxic and radioactive waste (HTRW); and hydraulics and hydrology.

No significant adverse impacts were identified for the following resources (Table 2): wetlands, aquatic resources/fisheries, threatened, endangered and protected species, socioeconomics, noise, aesthetics, cultural resources, and hydraulics and hydrology. An HTRW Land Use History and a Phase I HTRW Initial Site Assessment (ISA) has been completed and is located in Appendix D. The survey discovered a barge, metal support pieces, and 55 gallon drums which are considered potential Recognized Environmental Conditions (RECs) given their age and degraded condition and should be addressed further and removed prior to construction.

Clean Water Act (CWA) section 401 is currently in review by Louisiana Department of Natural Resources. CWA section 404(b)(1) is in public review with this document. Louisiana Department of Natural Resources (LADNR) indicated that this project is outside of the coastal zone in a letter dated July 24, 2020, resolving the Coastal Zone Management Act coordination. A 'No Affect' determination was made for the Endangered Species Act through the Information for Planning and Consultation (IPaC) website on August 17, 2020, which expired; and again on November 17, 2021. No consultation under the ESA will be required for the recommended plan. Louisiana State Historic Preservation Officer (SHPO) concurred with a determination of No Potential to Affect Historic Properties in a letter received December 11, 2020. No comments were received from consulting Tribes within the regulatory consultation timeframe.

Environmental Design Commitments. The following commitments are an integral part of the recommended plan:

1. If the recommended plan changes significantly or is not implemented within one year, CEMVN will reinitiate consultation with the USFWS to ensure that the recommended plan will not affect any federally-listed threatened or endangered species, or their critical habitat.

2. Adverse impacts to 1.48 AAHU of BLH will require compensatory mitigation. Compensatory mitigation will be achieved by the purchase of mitigation bank credits from a mitigation bank within the watershed.

3. Surveys will be conducted for migratory birds and bald and golden eagles prior to construction to confirm there is no nesting occurring in the project area. Migratory bird, and eagle nests will be coordinated with USFWS for avoidance and minimization of disturbance.

4. Inadvertent Discovery and Unexpected Effects: If during the course of work, archaeological artifacts (prehistoric or historic) are discovered or unexpected effects to historic properties, including architecture, architectural elements, and/or archaeology, are identified, the contractor shall stop work in the general vicinity of the discovery or unexpected effect and take all reasonable measures to avoid or minimize harm to the artifacts(s) or affected property. The contractor will ensure that the discovery is secured and stabilized, as necessary, and access to the area is restricted. The contractor will inform CEMVN. Furthermore, if during the course of work, Native American artifacts or human remains are encountered CEMVN will immediately contact Tribes.

5. Louisiana Unmarked Human Burial Sites Preservation Act: If human bone or unmarked grave(s) are present within the Work area, compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) is required. The contractor shall notify the law enforcement agency of the jurisdiction where the remains are located within twenty-four hours of the discovery. The contractor shall also notify USACE and the Louisiana Division of Archaeology within seventy-two hours of the discovery. Discoveries of unmarked graves, burials, human remains, or items of cultural patrimony on Federal or Tribal lands shall be subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. §3001-3013, 18 U.S.C. § 1170) and the Archaeological Resources Protection Act of 1979 (ARPA)(16 U.S.C. §470aa – 470mm). Tribes will be contacted as soon as possible in the event Native American artifacts or human remains are encountered.

Public Involvement. The recommended plan has been coordinated with appropriate federal, state, and local agencies and businesses, and organizations through distribution of the EA #587 for a 30 day public review and comment period ending on January 10, 2022.

Decision. CEMVN Environmental Planning Branch has assessed the potential environmental impacts of implementing the recommended plan. Based on this assessment, a review of the comments made on EA #587, and the implementation of the environmental design commitments listed above, a determination has been made that the proposed action would have no significant impact on the human environment.

Therefore, an Environmental Impact Statement will not be prepared. The EA is attached hereto and incorporated herein by reference and made a part of this FONSI.

I have reviewed the EA #587 and have considered public and agency comments and recommendations. I find that the public interest will be best served by implementation of the recommended plan to repair and protect approximately 3,000 feet of streambank along Louisiana Highway 77.

25FEB22
Date

STEPHEN F. MURPHY
COL, EN
Commanding

ENVIRONMENTAL ASSESSMENT

CONTINUING AUTHORITY PROGRAM, SECTION 14
EMERGENCY STREAMBANK PROTECTION
LOUISIANA HIGHWAY 77 AT BAYOU PLAQUEMINE
IBERVILLE PARISH, LOUISIANA

EA #587

U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environment Division South
New Orleans District

US Army Corps of Engineers®

February 2022

Lead Agency

United States Army Corps of Engineers
Mississippi Valley Division
New Orleans District
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PUBLIC COMMENT PERIOD

The 30-day public comment period began on December 11, 2021 and ended January 10, 2022. Written comments were submitted through the project website https://www.mvn.usace.army.mil/Missions/Environmental/NEPA-Compliance-Documents/Civil-Works-Projects/2021-Civil-Works/, or by mail, email, or phone to the following addressee:

Eric Tomasovic
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Contents

List of Figures

List of Tables

Appendices

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division (MVD), New Orleans District (CEMVN), prepared this Environmental Assessment #587 (EA #587) to evaluate the potential impacts associated with the Continuing Authorities Program (CAP), Section 14, Emergency Streambank and Shoreline Erosion Feasibility Study for Louisiana Highway 77 at Bayou Plaquemine in Iberville Parish, Louisiana (LA).

EA #587 has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's (CEQ) Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2.

The proposed action and project location is along LA Highway 77 east of Jase Street within Bayou Plaquemines, approximately 4.5 miles southwest of the intersection of LA Highway 77 and LA Highway 1 south of the city of Plaquemines in Iberville Parish, LA. The streambank failure location is northeast of the Bayou Sorrel Lock and southwest of the Port Allen Lock along Bayou Plaquemine which parallels LA Highway 77 (Figure 1).

The following sections include a discussion of the purpose and need, the authority, alternatives to the proposed action, relevant resources affected, and the potential impacts of implementing the proposed action to those resources.

1.1 PROPOSED ACTION

The proposed action is the stabilization of approximately 3,000 feet of streambank along Bayou Plaquemine adjacent to LA Highway 77. The proposed solution is to construct a minimal (less than 4 feet high) stone toe dike at the water's edge, backfill behind the stone toe dike with earthen material, and cap the earthen fill with a minimal layer of stone scour protection. A standard placement of geotextile separator fabric would be placed under the stone toe dike section. An additional layer of geotextile separator fabric would be placed between the earthen fill and the stone armor to prevent material from leaching. This bank protection technique (Figure 3) has been successfully used on other reaches in the vicinity. This proposed construction area is approximately 5.35 acres. A natural gas pipeline crosses the project footprint.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The Bayou Plaquemine banks are eroding causing steep banks resulting in undermining of the shoulders of LA Highway 77 and threatening the integrity of the highway. LA Highway 77 is an important thruway as it is used by approximately 1,610 vehicles daily, as of 2018 and serves as a collector road to access the evacuation route LA Highway 1.

Bank erosion is occurring along a portion of the federally authorized navigation channel known as Bayou Plaquemine and this erosion is threatening the structural

integrity of a section of Louisiana Highway 77 which runs parallel to the Bayou. The Highway is used by motorists traveling between Iberville Parish and the cities of Baton Rouge and Plaquemine, LA. The Highway is the most direct route between the city of Plaquemine and the villages of Rosedale and Grosse Tete, LA and is also the primary route from the city of Plaquemine to agricultural areas along the Gulf Intracoastal Waterway (GIWW) Port Allen to Morgan City Alternate Route. The Non-Federal Sponsor (NFS), Louisiana Department of Transportation and Development (LaDOTD), has attempted to protect and repair the Highway, but the repairs have been temporary and have only lasted approximately 4 years.

This watershed is a complex hydraulic system. Various data sets such as, existing gage data, permits, surveys, Atchafalaya River basin models, and effective floodplain maps were examined to determine if fluctuations in water surface elevations along Bayou Plaquemine caused the bank failure. Based on the Hydrologic and Hydraulic assessment, Appendix C, it was determined that stream flow fluctuations in Bayou Plaquemine are caused by rainfall and that these fluctuations are the cause of the channel erosion. The Feasibility Report for Louisiana Highway 77 at Bayou Plaquemine, Iberville Parish, Louisiana, Engineering Appendix – Appendix C provides more detail on how H&H reviewed existing gage data in the basin to determine if a correlation between stages at the lock and stages in the Bayou existed. The Bayou Sorrel lock gates (south of the problem area) are closed the majority of the time acting as a dam and are only opened after a tropical storm or hurricane to drain the interior area or to control the flood pool under certain conditions. It does not appear that Bayou Sorrel or Port Allen lock operations are impacting the bank line erosion along Bayou Plaquemine.

1.3 PROJECT AUTHORITY

The proposed action is authorized under the Continuing Authority Program, Section 14 of the Flood Control Act of 1946 (PL 79-526) as amended. Section 14, as amended, authorizes the USACE to study, adopt, and construct emergency streambank and shoreline protection works to protect public highways and bridges, and other public works, and nonprofit public services such as churches, hospitals, and schools. Section 14 of the Flood Control Act approved July 24, 1946, as amended by Section 1030 of the Water Resources Reform and Development Act of 2014, as amended, 33 U.S.C. 701r, states:

> "*The Secretary of the Army is authorized to allot from any appropriations heretofore or hereinafter made for flood control, not to exceed $25,000,000 per year, for the construction, repair, restoration, and modification of emergency streambank and shoreline protection works to prevent damage to highways, bridge approaches, public works, churches, hospitals, schools, and other nonprofit public services, when in the opinion of the Chief of Engineers such work is advisable: Provided, That not more than $5,000,000 shall be allotted for this purpose at any single locality from the appropriations for any one fiscal year.*"

1.4 PRIOR REPORTS

EA #250, Plaquemine Lock, Section 1135, Bayou Plaquemine, Iberville Parish, Louisiana, assessed impacts associated with the construction of a small scale water diversion facility along the west bank of the Mississippi River intended to enhance environmental attributes for fisheries resources in Bayou Plaquemine and to alleviate water quality problems. The FONSI was signed on September 25, 1997.

EA #329, Emergency Streambank Protection Project, Louisiana State Highway 77, Iberville Parish, Louisiana, evaluated the potential impacts associated with the proposed streambank protection measures to be taken along a 500 foot segment, approximately 300 feet upstream of this requested repair on Bayou Plaquemine as a CAP, Section 14 project. The FONSI was signed on October 3, 2001.

Figure 1: Proposed repair reach and Alternative Design Options 1.1 and 1.2

1.5 PUBLIC CONCERNS

Concern for this project centers on the availability of LA Highway 77 for public use within and adjacent to Iberville Parish, LA. LA Highway 77 is an important thruway as it is used by approximately 1,610 vehicles daily, as of 2018 and serves as a collector road to access the evacuation route LA Highway 1. Bank failure could jeopardize the stability of the road and force the relocation of the road unless action is taken to alleviate the problem.

2.0 ALTERNATIVE FORMULATION

2.1 Initial Array of Alternatives

Three primary design measures were considered as repair options to stabilize Bayou Plaquemines. The study considered the option of a highway relocation/bypass around the problem area or taking no action at all to resolve the problem. The following alternatives were considered:

Alternative 1: Proposed Action. Streambank Stabilization

- Design Option 1.1: Relocate Pipeline. The pipeline would be relocated at the pipeline owners' expense and 3,000 feet of bank line would be reinforced using the typical repair (Section 2.3, Figure 3).
- Design Option 1.2: Alternate Design at the Pipeline Crossing. A High-performance turf reinforcement mat (HPTRM) will be used for approximately 400 feet of the repair, centered on the buried pipeline to avoid accidental damage to the pipeline. The remaining 2,600 feet will be constructed using the typical repair as described in Section 2.3 and illustrated in Figure 3.
- Design Option 1.3: Stone with Gap. 3,000 feet of bank line will be reinforced using the typical repair (Section 2.3, Figure 3) except a gap of 200 feet centered on the buried pipeline would not have stone placed, to avoid damage to the pipeline.

Alternative 2: Relocation of Highway. This alternative consists of the relocation of the endangered 3,000 feet of LA Highway 77, which would be moved further inland. This alternative would be designed and constructed by LaDOTD. This alternative was incorporated as a cost comparison.

Alternative 3: No Action. The alternative of taking no action would mean the streambank would continue to erode, which would likely lead to the failure of a portion of the highway. LA Highway 77 would be impassable, and traffic will need to be diverted either to LA Highway 3066 or another option to be decided by LaDOTD.

Evaluation of Alternatives

Two alternatives to the proposed action as described in Section 1.1 were removed from consideration. Alternatives/design options were screened based on their ability to

meet the project purpose and need, planning constraints, technical feasibility, and likelihood for implementation.

The planning constraints that were considered include: 1) To minimize impacts to threatened and endangered species, 2) To minimize impacts to established recreation areas, and 3) To minimize impacts to LA Highway 77. A major impediment to implementation of streambank protection is the perpendicular crossing of a 14 inch natural gas pipeline installed in 1958 that is physically located within the construction footprint.

The alternatives/design options considered but eliminated from further consideration include:

Alternative 1: Design Option 1.3 (Stone with Gap):

The project would be constructed using the typical repair section (Section 2.3, Figure 3), except stone protection would not be placed on the area above the gas pipeline. Utilizing this method would leave a gap in the shoreline protection. This alternative design option was eliminated since it would not achieve the purpose of the action, i.e., protection of the roadway from erosion.

Alternative 2: Relocation of the highway.

NEPA requires the consideration of other alternatives to the proposed action. Since this alternative would be designed and constructed by Louisiana Department of Transportation and Development (LaDOTD), the location and design for this alternative is unknown.

This alternative was developed as per CAP Section 14 requirements to validate that the total cost of the proposed alternative (Alternative 1) is less than the cost to relocate the threatened facility EP 1105-2-58 Ch3§29d states:

> *"The least-cost alternative plan is considered to be justified if the total cost of the proposed alternative is less than the costs to relocate the threatened facility."*

Therefore, a general design of a connection between two existing roads was utilized by CEMVN Engineering to develop general costs for this alternative. The relocation spanned from Kirtley Road to Jase Street, avoiding the eroding streambank (Figure 2).

This alternative has been eliminated from consideration since it would cost significantly more than the streambank protection.

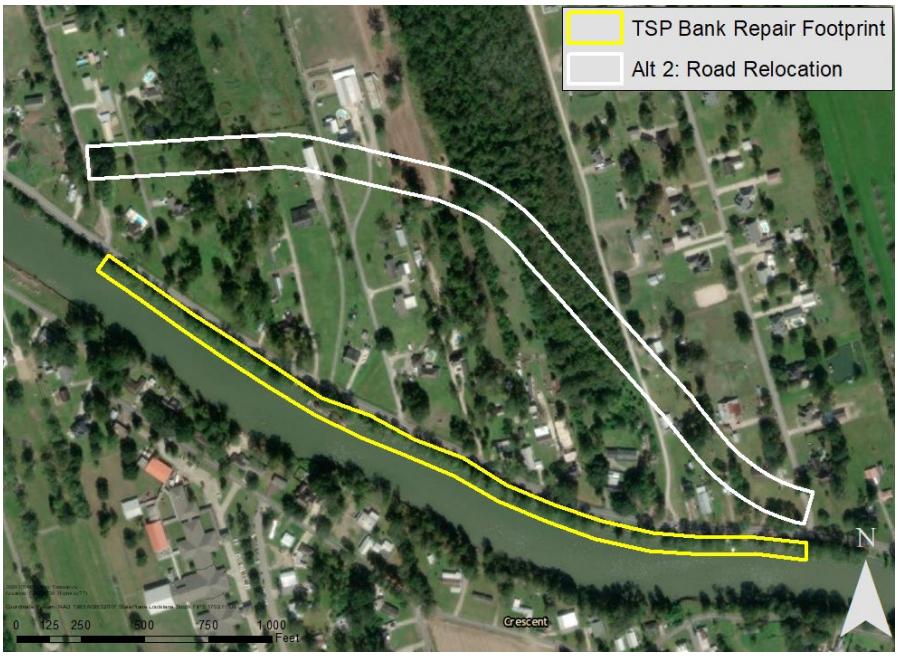

Figure 2: Alternative 2: Relocation of LA Highway 77 between Kirtley Road and Jase Street

2.2 Final Array of Alternatives

Alternatives remaining following the initial screening include the two design options of Alternative 1. The design options vary only in a 400 feet section that covers a natural gas pipeline; either the Typical Repair across the project with Design Option 1.1, or HTPRM for the 400 feet centered across the pipeline and the remainder using the typical repair, for Design Option 1.2. Both design options would have nearly identical environmental impacts.

The Final array of Alternatives include: Alternative 1: stabilization of the eroding streambank using one of two design options and Alternative 3: No Action.

Alternative 1 Design Option 1.1 remains an option, should the pipeline owner decide that they will relocate the pipeline. The repair will consist of 3,000 feet of the typical repair section indicated in Figure 3.

Alternative 1 Design Option 1.2 has been identified as the Recommended Plan. This alternative will require less coordination regarding the pipeline relocation, reduces risk of a spill since there would be no pipeline relocation, reduces environmental impacts from the equipment necessary to relocate the pipeline, and provides additional protection to the pipeline via the HPTRM. This option provides similar protection as design option 1.1 which includes relocating the pipeline. CEMVN has not yet received a response from the pipeline company on the pipeline's precise location and condition, or their willingness to relocate the pipeline.

Alternative 3: No Action. NEPA requires agencies to consider taking “no action”. The consideration and analysis of taking “no action” provides a benchmark to allow decision makers and the public to compare the environmental effects of the alternatives.

2.3 Alternative 1 Proposed Action

A segment of the Bayou Plaquemine streambank is experiencing erosion which, if it continues, it will undermine the base of LA Highway 77, and compromise the integrity of the highway. As a solution to this problem, Alternative 1 proposes stabilization of the streambank.

Because of uncertainties surrounding how a gas pipeline in the project area would be accommodated, two design options (Alternative Design Options 1.1 and 1.2) for addressing bank stabilization techniques were considered. The design options are described in detail below. The environmental impacts of Alternatives 1.1 and 1.2 are nearly identical and as such they will be evaluated in this EA together as Alternative 1, unless otherwise stated.

General Construction Plan

The typical repair section is proposed to reduce the existing bank slope and eliminate future streambank erosion at the water line. The design options under this alternative address uncertainties on how the bank stabilization would accommodate the natural gas pipeline. Design Options must be approved by the owner of the pipeline to ensure stability and safety of the pipeline. If the pipeline was to be relocated, the relocation will be the responsibility of the pipeline owner.

Typical Design Plan

The proposed streambank stabilization area is approximately 3,000 feet. In general, construction will include the placement of a minimal stone toe dike at the water's edge, the use of earthen material to backfill behind the stone toe dike, and the capping of the earthen fill with a minimal layer of stone scour protection. Geotextile separator fabric will be placed under the stone toe dike section and an additional layer of geotextile separator fabric will be placed between the earthen fill and the stone armor to prevent the stone from sinking. This typical repair type has been successfully used on other reaches in the vicinity of this project. The construction right of way necessary for the proposed repair is approximately 5.35 acres.

The existing bank line slope below the ordinary high-water stage is near vertical. Therefore, construction access for the repair will have to be from Bayou Plaquemine. It is envisioned that all stone and fill material will be barged to the site from the GIWW Alternate Route, via the Port Allen Lock canal. In order to avoid excavation for floatation, barges will be light loaded when delivering the repair materials and equipment. Staging areas will be located on barges along Bayou Plaquemine, within or adjacent to the construction footprint. Based on 2017 surveys, no excavation or flotation dredging would be required for the bank stabilization.

Clearing of the water's edge, if performed, will be minimal. Most existing trees are located on the upper bank along the road and above the proposed repair. If tree removal is required, trees would be cut, and the stumps left in place. Trees and debris will be hauled off-site and disposed of at an approved land fill site.

Detailed Design Plan

The detailed design proposes construction of a stone toe dike with a 5 foot crown width and 1:2 side slopes to an elevation of approximately +3.0 feet North American Vertical Datum of 1988 (NAVD88). This will be above normal low water elevations and allow for backfilling with earthen material. The resultant bottom width of the stone toe dike will be approximately 27 feet. The placement of geotextile separator fabric will require 3 feet of extension beyond the stone toe dike resulting in a fabric width of approximately 33 feet. The inside face of the stone toe dike will be blanketed by geotextile fabric, and pinned to the stone toe dike crown. A 9-foot width of fabric will cover the entire face and provide adequate laps. The earthen backfill will require some sandy content (silty sand) to allow for sufficient compaction. The sand backfill will initiate at approximately 1 foot below the stone toe dike crown elevation and proceed landward on an approximate 1:4 slope. This will achieve an inshore elevation of approximately +8.5 feet to +10.0 feet NAVD88, such that the stone armor is in the general range of normal high-water elevation. The final layer of stone armor will be placed on the earthen fill 12 inches to 18 inches thick dependent upon required hydraulic gradation. The stone armor will also be underlain with geotextile fabric, eliminating shoreline erosion caused by stage differentials or localized wave wash. No docks will be reconstructed after the construction of this Project.

Equipment required for construction of either design option include approximately; five 350 horsepower trucks operated for 720 total hours or 140 hours each, two 400 horsepower cranes operated for 920 total hours or 460 hours each, one 275 horsepower excavator operated for 520 hours, one 900 horsepower tugboat operated for 260 hours, and one 60 horsepower rotary cutter operated for 60 hours. Standard safety requirements for floating plants will be required from the Contractor.

Relocation of a gas pipeline may be required for Alternative Design Option 1.1, but not for Alternative Design Option 1.2. The pipeline runs perpendicular to the repair section and would either be relocated via horizontal directional drill or relocated to an alignment outside of the construction footprint. Information on the current depth or cover of the pipeline is unknown at this time. Additionally, overhead powerlines located along LA Highway 77 would not require relocation under this alternative.

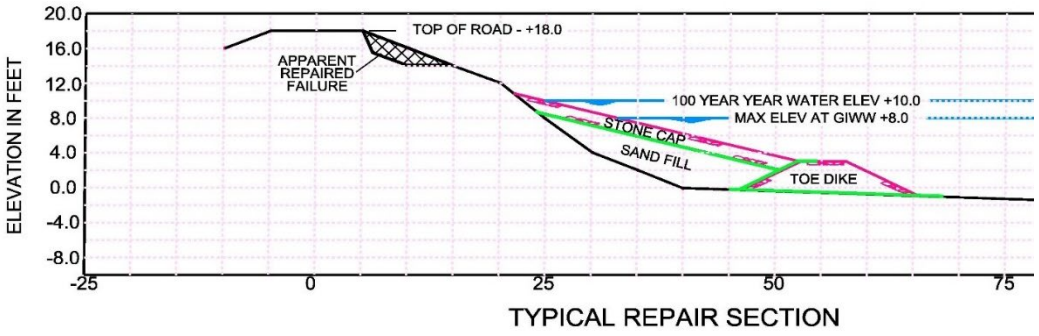

Figure 3: Typical Repair Section

Alternative Design Option 1.1: Relocate Pipeline

The relocation of the pipeline on its existing alignment or on a new alignment would occur. Relocation on its existing alignment would lower the pipeline to a depth which is safe for the proposed repair such that the repair would not impact the pipeline. Relocation of the pipeline on a new alignment would remove the active pipeline from the construction footprint. The 3,000 foot repair would utilize the stone toe dike and backfill as indicated in the Alternative 1: General Construction Plan (Figure 3). Based on surveys completed in 2017, approximately 29,500 tons of stone, 8,200 cubic yards of earthen fill, and 22,000 square yards of geotextile separator fabric would be placed using this design option. The relocation of pipeline would be the responsibility of the pipeline owner.

Alternative Design Option 1.2 (Recommended Plan): Alternate Design at the Pipeline Crossing

Under this Design Option, the pipeline would not be relocated. This alternate design will include a different type of bank protection such as HPTRM or articulated concrete block bank paving for 200 feet on both sides of the pipeline, for a total of 400 feet of HPTRM or articulated concrete block. The remainder of the repair will utilize the stone toe dike and backfill as indicated in the Typical Repair Section above (Figure 3). Based on surveys completed in 2017, approximately 22,815 tons of stone, 6,500 cubic yards of earthen fill, and 19,070 square yards of geotextile separator fabric, and 4,000 square yards of HPTRM would be placed.

2.4 Alternative 3: No Action

Under the no-action alternative, the proposed action would not be constructed. Erosion of the streambank will continue, and the integrity of LA Highway 77 will be undermined. The No Action Alternative will, over time, result in restricted access for the approximately 20 houses on dead-end streets within the location of the anticipated future road compromise, which consists of approximately 3,000 feet of LA Highway 77

(Figure 1). This segment of LA Highway 77 currently allows relatively high speeds for through-traffic vehicles including large vehicles (e.g., tractor trailers). As this portion of LA Highway 77 degrades and the roadbed becomes unsupported, through-traffic would be re-routed to LA Highway 3066 to reach the evacuation route at LA Highway 1. It is anticipated that local traffic would be allowed low speed access. The local traffic access could consist of the remaining structurally sound roadway and the road's shoulder.

3.0 AFFECTED ENVIRONMENT

3.1 Environmental Setting

The climate of the area is humid subtropical. Annual average temperature in the area is 68°F, with monthly normal temperatures varying from 82°F in July to 53°F in January. Average annual precipitation over the area is 63 inches, varying from a monthly average of 7.7 inches in July to an average of 4.2 inches in November. Summer tropical storms are common, and hurricanes infrequently occur. (U.S. Climate Data 2020)

Soils consist of a substratum of sand and gravelly sand overlain by a top stratum that consists of meander belts of silty sands, silts, and loam clays and back swamp deposits of clay and organic material between meander belts. Major forest types in the area include early successional bottomland hardwood (BLH) forest, late successional bottomland hardwood forest, and cypress-tupelo swamp. Common tree species in the area include sweetgum, sycamore, cottonwood, as well as several oak species. Agricultural lands are used to grow soybeans, corn, rice, and pasture grasses.

3.1.1 Bayou Plaquemine

Bayou Plaquemine is what remains of the Morgan City to Plaquemine Alternate Route of the Gulf Intracoastal Waterway (GIWW). The channel consists of a 9 foot by 100 foot limit in Bayou Plaquemine from Indian Village to the Mississippi River at Plaquemine, Louisiana. As a result of the Plaquemine lock closure in 1961, water in Bayou Plaquemine is currently supplied by rainfall and drainage from the neighborhood, by inflows from Bayou Grosse Tete and Choctaw Bayou, and by the Port Allen Lock, which also provides limited flows from the Mississippi River into the GIWW.

This is a complex hydraulic system and various data sets such as, existing gage data, permits, surveys, Atchafalaya River basin models, and effective floodplain maps were examined to determine if fluctuations in water surface elevations along Bayou Plaquemine caused the bank failure. Based on the Hydrologic and Hydraulic assessment (Appendix C), it was determined that stream flow fluctuations in Bayou Plaquemine are caused by rainfall and that these fluctuations are the cause of the channel erosion. The Bayou Sorrel lock gates (south of the problem area) are closed the majority of the time acting as a dam and are only opened after a tropical storm or hurricane to drain the interior area or to control the flood pool under certain conditions. It does not appear that Bayou Sorrel or Port Allen lock operations are impacting the bank line erosion along Bayou Plaquemine.

Surveys were collected in 2017 along the failure reach (16 cross sections) and it was determined from the survey that the proposed repair reach should be the entire 3,000 feet along Bayou Plaquemine, paralleling LA Highway 77. The project reach has a fairly narrow width of existing bank line between the road and the waterway, ranging from approximately 40 feet to less than 20 feet. The embankment slope varies slightly, and ranges from 1:1 to 1:2. The water's edge in most areas is characterized by a near vertical bluff (generally 5 foot to 10 foot face).

3.2 RELEVANT RESOURCES

This section contains a description of relevant resources that could be impacted by implementation of the Recommended Plan. The important resources described are those recognized by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. Appendix A provides summary information of the institutional, technical, and public importance of these resources.

3.2.1 Wetlands

The wetland area associated with the bayou consists of a narrow, near vertical fringe running parallel to Bayou Plaquemine. Wetland value in the proposed project limits is minimal because the wetland fringe is impacted by erosion and is maintained along some segments by local residents and parish maintenance crews using recycled pavement, sheet-piles, wood revetment, and yard debris.

3.2.2 Aquatic Resources / Fisheries

Fishery resources are believed to fluctuate in response to the variations in Bayou Plaquemine water quality. Predominant freshwater fish expected to inhabit the project area during periods of suitable water quality include largemouth bass, white crappie, black crappie, bluegill, warmouth, yellow bass, channel catfish, blue catfish, flathead catfish, yellow bullhead, carp, gars, bowfin, freshwater drum, buffalo, and gizzard shad. Gar, carp, yellow bullhead, and bowfin are more prevalent in Bayou Plaquemine during the spring and summer months because of their tolerance to low dissolved oxygen (DO) levels. There is no Essential Fish Habitat or unique environment for fisheries in this segment of Bayou Plaquemine per coordination with Louisiana Department of Natural Resources and the National Marine Fisheries Service.

3.2.3 Wildlife

Wildlife habitat along most of the bayou is limited to a narrow, semi-contiguous riparian zone that is dominated by live and water oak, hackberry, bald cypress and sweetgum, elderberry, roughleaf dogwood, honeysuckle, trumpet creeper, greenbrier, and various grasses and sedges.
Resident and migratory waterfowl likely utilize the less developed reaches of the bayou and associated riparian zone for wintering, feeding, and/or brood rearing habitat. Other

water birds, including anhinga, double-crested cormorant, great blue heron, great egret, snowy egret, and green heron may use this area for feeding and roosting. Various raptors and songbirds also inhabit the area. The near vertical streambank is not suitable for wading birds. The narrow corridor between Bayou Plaquemine and LA Highway 77 provides little habitat for mammals, and the unstable soil of the bank is not conducive to burrows.

3.2.4 Bottomland Hardwood Forest

Mid to mature successional stage bottomland hardwood (BLH) is the most accurate description of the current state of vegetation within the proposed project limits. Erosion and land-use alteration are two major factors contributing to the existing disturbed condition of the BLH within the proposed project limits. According to the wetland value assessment (WVA), the impacted BLH area is approximately 2.4 acres (1.5 AAHU). The canopy is dominated by live and water oak, hackberry, bald cypress, and sweetgum. Water oak makes up more than 50% of the tree canopy. Mature trees assumed to be greater than 50 years old were identified in the project area. The BLH in the project area is part of a riparian corridor between 5 to 20 acres. There is a moderate to dense understory and ground cover including, but not limited to, hardwood saplings, bermuda grass, barnyard grass, goldenrod, greater ragweed, elderberry, pepper vine, wild grape, and poison ivy.

3.2.5 Threatened and Endangered Species and Other Protected Species

Bald eagles migrate through the area and winter in wetland habitats in the area and are protected under the Bald and Golden Eagle Protection Act (BGEPA). Pallid sturgeons (E) are expected to occur in riverine habitats from the Old River Control Structure to the Gulf of Mexico Currently, the American alligator (T) is listed as Threatened under the Similarity of Appearance to a Threatened Taxon clause to the Endangered Species Act of 1973 (as amended). Based on a parish search conducted on the US Fish and Wildlife Service (USFWS) endangered species website (http://www.fws.gov/endangered) on August 17, 2020, there are five Threatened and Endangered (T&E) species listed in Iberville Parish (Table 1). There is no defined critical habitat for T&E species, or other protected species, within this segment of Bayou Plaquemine or in the surrounding area, although monitoring will occur before and during construction to protect species of concern.

Table 1: Listed species found in Iberville Parish, LA

Species	Desired Habitat Type
** Whooping crane (Grus Americana)	Shallow wetlands and prairies
Gulf sturgeon (Acipenser oxyrinchus desotoi)	Open water
Pallid sturgeon (Scaphirhynchus albus)	Open water
Louisiana Black Bear (Ursus americanus	Woodlands
Sprague's pipit (Anthus spragueii)	Short-grass prairies

**This is a non-essential population which is considered "threatened". However, the ESA's Section 7 consultation regulations do not apply.

These species are not likely to be present within the affected area of the project due to the following reasons. Whooping crane are unlikely to be present on the site due to the steep streambank and lack of wading depth in Bayou Plaquemine near the affected area. Neither sturgeons are likely to utilize Bayou Plaquemine due to the low dissolved oxygen and turbid water. Sturgeons require good water quality to spawn. There is limited forage for Louisiana Black Bear within the affected area, but they may be drawn by improperly disposed food packaging from construction workers or local residents. Sprague's pipits require open grasslands or large areas of open ground, which are not present within the affected area. Candidate species, Monarch Butterfly (*Danaus plexippus*) are the only species to be indicated within the study area and are not likely to be affected. Therefore, the project is not likely to adversely affect Threatened and Endangered species, or other protected species.

Historically, there have been bald eagle sightings in the bayou complex surrounding the LA Highway 77 project area. The bald eagle was officially removed from the List of Endangered and Threatened Species on August 8, 2007. However, the bald eagle is protected under the Bald and Golden Eagle Protection Act (BGEPA), and the Migratory Bird Treaty Act ((MBTA) 40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). In southeastern Louisiana parishes, eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water from the months of October through mid-May. The site will be surveyed prior to construction to confirm that there is no active nesting in the area. If during pre-construction surveys or observation during construction, Bald Eagles are inhabiting the area, USACE will coordinate with USFWS under the guidelines found in Appendix B.

3.2.6 Socioeconomics

United States Census Bureau data with Moody's Analytics Forecast data were used to evaluate the current social and economic conditions in Iberville Parish. The most recent data are estimates of the population as of December 2019. The estimated median household income for Iberville Parish is $61,950, while the per capita income is $50,980. There are an estimated 8,850 total households in Iberville Parish. The estimated total population is 23,990. The estimated total labor force is 10,470 with an unemployment rate of 6.56%.

3.2.6.1 Transportation

LA Highway 77 runs parallel to Bayou Plaquemine. LA Highway 77 is an important thruway as it is used by approximately 1,610 vehicles daily, as of 2018 and serves as a collector road to access the evacuation route LA Highway 1. There is a parallel road south of Bayou Plaquemine, LA Highway 3066, which might be used as an alternate route.

3.2.7 Recreational Resources

Freshwater fishing from boat and from the bank occur along Bayou Plaquemine. Additionally, non-consumptive recreational resources along the bayou include boating and swimming while the bank habitat provides opportunities for wildlife viewing and photography. There is an Iberville Parish public boat launch approximately 2.5 miles northeast of the project area on Bayou Plaquemine.

3.2.8 Aesthetics

Visual resources related to this project area are not significant. The project location viewshed is not significant; there are no visually significant amenities either institutional, technical, or public.

3.2.9 Air Quality

The U.S. Environmental Protection Agency (USEPA), under the requirements of the Clean Air Act (CAA), has established NAAQS for six contaminants, referred to as "criteria" pollutants (40 CFR 50). These are 1) carbon monoxide (CO), 2) nitrogen dioxide (NO2), 3) ozone (03), 4a) particulate matter less than 10 microns in diameter (PM10), 4b) particulate matter less than 2.5 microns in diameter (PM2.5), 5) lead (Pb), and 6) sulfur dioxide (SO2). The NAAQS standards include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. Iberville Parish is in attainment for all 6 contaminates.

3.2.10 Water Quality

Surface waters near the site consist of bayous, ponds, wetlands, and canals. Many of the inputs are sources of pollution that degrade water quality. These sources include urban, commercial, industrial, and agricultural inputs. General criteria are expressed in a narrative form, and include aesthetics, color, suspended solids, taste and odor, toxic substances (in general), oil and grease, foam, nutrients, turbidity, flow, radioactive materials, and biological and aquatic community integrity. Numeric criteria are generally expressed as concentrations or scientific units, and include pH, chloride, sulfate, total dissolved solids, dissolved oxygen, temperature, bacteria, and specific toxic substances.

Bayou Plaquemine is located within the Bayou Plaquemine waterbody subsegment, which has the designated use of primary contact recreation (PCR; swimming), secondary contact recreation (SCR; boating), and fish and wildlife propagation (FWP; fishing). The subsegment was fully supporting all three of its designated uses in the 2010, 2012, 2014, 2016, and 2018 assessments (Louisiana Department of Environmental Quality (LDEQ) 2020).

Since the Plaquemine Lock was closed, Bayou Plaquemine has exhibited stagnation due to the lack of riverine inflow and associated flushing. Water quality monitoring studies indicate that high water temperatures and low dissolved oxygen (DO) levels occur in various sections of the bayou during the late spring and summer months.

Ambient water quality monitoring data was collected by LDEQ for Bayou Plaquemines (site 972 in Figure 4) in the years 2000, 2004, 2007, 2008, 2011, 2012, 2015, 2016, 2019, and 2020. Monitoring data suggests infrequent (3 of 54 samples) exceedances of fecal coliform criteria, and that water quality standards for fecal coliform are being attained (no more than one in four samples can exceed 400 COL/100 mL between the months of May and October, and 2,000 COL/100 mL between November and April). Total nitrogen consistently exceeds EPA criteria (0.57 mg/L), often by at least two times the criteria threshold (1.14 mg/L and higher concentrations). No other criteria exceedances have been observed for parameters included in field measurement and laboratory analysis. The full report can be found in Appendix E.

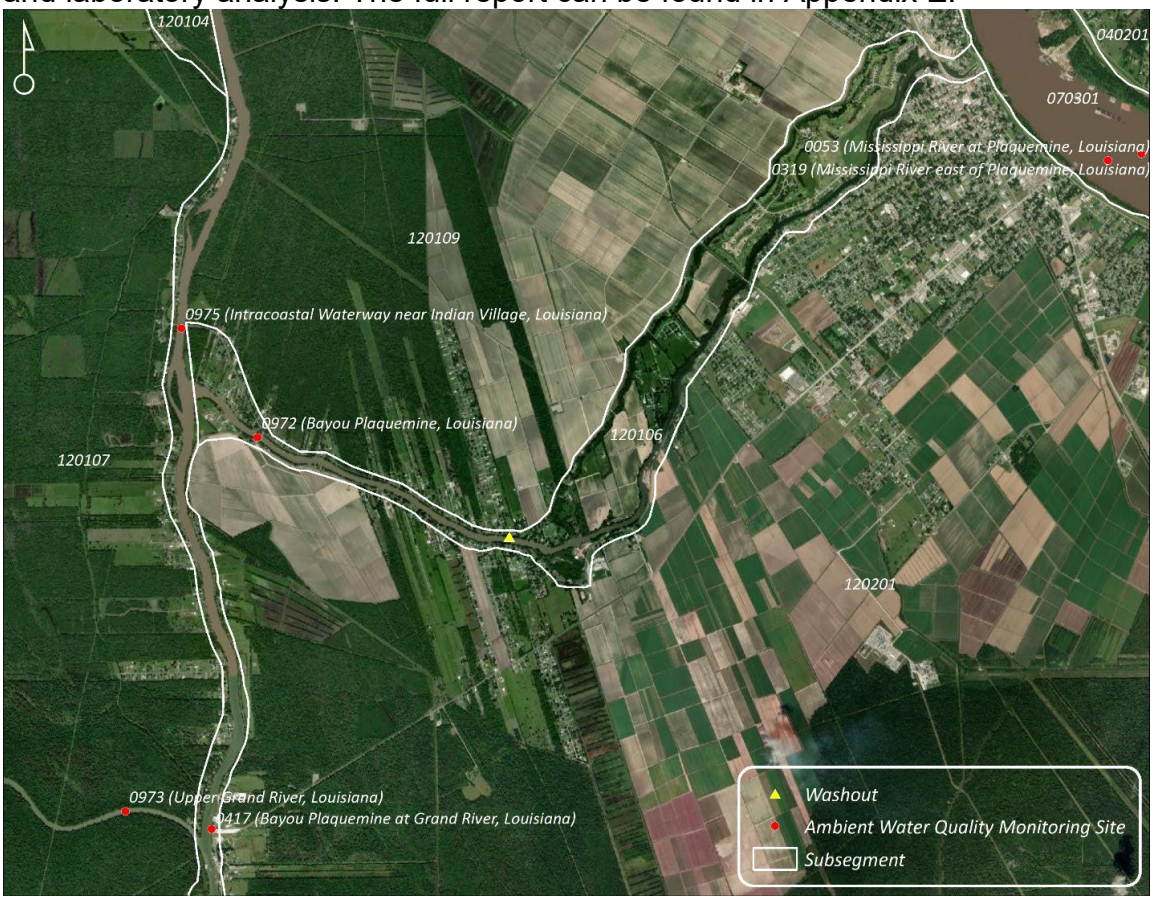

Figure 4: Water Quality monitoring sites near the requested repair. Repair location marked "Washout"

3.2.11 Cultural Resources

A background and literature review that included a review of the Louisiana Cultural Resources Map (on-line) indicates that there have been no previous cultural resources surveys and no known previously recorded cultural resources located in the immediate vicinity of the project area. There are six (6) mid-19th through mid-20th century historic scatters located within a one mile-wide search radius of the project area (16IV37,16IV41, 16IV164, 16IV175, 16IV184, and 16IV186). Five (5) of these sites are not eligible for the National Register of Historic Places (NRHP); the NRHP eligibility of 16IV41 is currently listed as Unknown. There seven (7) previously recorded cultural resources surveys located within the search radius (22-2266, 22-3453, 22-3559, 22-4006, 22-4041, 22-6231, and 22-6411). There are no standing structures recorded within the one-mile search radius.

Much of the riverbank in the Area of Potential Effect (APE) has eroded into the existing LA Highway 77 right-of-way (Figure 1). Examination of the remaining project ROW revealed previous disturbance from road construction, maintenance, and erosion-prevention measures that have been used to try and slow loss of the road. Due to the high degree of erosion and heavy disturbance, CEMVN has determined that there is no potential for the existence of intact cultural deposits, and thus, no potential effect to historic properties.

Additionally, there are no tribal lands, nor are there specific tribal treaty rights related to access or traditional use of the natural resources in Jefferson Parish. There are many protected tribal resources within the parish, but there is no evidence of them being in the study area. CEMVN offered the following federally-recognized Indian Tribes the opportunity to review and comment on the potential of the proposed action to significantly affect protected tribal resources, tribal rights, or Indian lands: the Alabama-Coushatta Tribe of Texas, Chitimacha Tribe of Louisiana, Coushatta Tribe of Louisiana, Choctaw Nation of Oklahoma, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Muscogee Creek Nation of Oklahoma, Seminole Nation of Oklahoma, and the Tunica-Biloxi Tribe of Louisiana.

3.2.12 Hazardous, Toxic and Radioactive Waste

The CEMVN is obligated under Engineer Regulation 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous Toxic and Radioactive Waste (HTRW) contamination within the vicinity of the proposed action. The survey discovered a barge, metal support pieces, and 55-gallon drums which are considered potential Recognized Environmental Conditions (RECs) given their age and degraded condition and should be addressed further and removed prior to construction. A HTRW Land Use History and a Phase I HTRW Initial Site Assessment (ISA) has been completed for the proposed action and is located in Appendix D.

3.2.13 Hydraulics and Hydrology

Based on the Hydrologic and Hydraulic assessment (Appendix C), it was determined that stream flow fluctuations in Bayou Plaquemine are caused by rainfall and that these fluctuations are the cause of the channel erosion. It does not appear that Bayou Sorrel or Port Allen lock operations or previous repairs on Bayou Plaquemine are impacting the bank line erosion along Bayou Plaquemine. There are no impacts associated with Hydraulics and Hydrology for the streambank protection proposed as it will not change these conditions under any of the alternatives.

4.0 ENVIRONMENTAL CONSEQUENCES

Table 2 presents a summary of relevant resources in the proposed project area that would or would not be affected by the project in either a positive or negative fashion. Resources listed in Table 2 that are not impacted by the proposed action are not assessed further in this EA. The impacts for Alternative Design Option 1.1 and 1.2 are environmentally equivalent, therefore the impacts of implementing Alternative Design Option 1.2 will only be discussed for Cultural Resources and for those resources where the impacts vary.

Table 2: Relevant Resources and their impact status, both adverse and beneficial

Important Resource	Impacted	Not Impacted
Wetlands		X
Aquatic Resources/Fisheries		X
Wildlife	X	
Bottomland Hardwoods	X	
Threatened, Endangered and Protected Species		X
Socioeconomics		X
Transportation	X	
Noise		X
Recreational Resources	X	
Aesthetics		X
Air Quality	X	
Water Quality	X	
Cultural Resources		X
Hazardous, Toxic and Radioactive Waste	X	
Hydraulics and Hydrology		X

4.1 Wildlife

Alternative 3: No Action Alternative – Direct, Indirect and Cumulative Impacts

With the No Action Alternative, the streambank will continue to erode, decreasing habitat over time. The streambank will still be usable by wildlife until the erosion reduces their habitat to unsuitable levels.

Alternative Design Option 1.2: Recommended Plan – Direct, Indirect and Cumulative Impacts

The Recommended Plan will preserve the remaining land between the streambank and the road. The remaining land will allow continued, but reduced, use by wildlife. Natural re-colonization of the area by plants and animals would be possible with the stabilization of the streambank.

4.2 Bottomland Hardwood Forest

Alternative 3: No Action Alternative – Direct, Indirect and Cumulative Impacts

Over the 50-year period of analysis (2022 to 2072) it is projected that the streambank will continue to erode toward the roadway. This ‘slumping’ of the streambank will disturb existing mature BLH and other foliage, but allow the growth of new vegetation/habitat on the newly exposed soils. The existing streambank would no longer provide lateral support for LA Hwy 77.

According to the WVA (Appendix D) approximately 1.50 Average Annual Habitat Units (AAHU) exist within the project area. The AAHU’s value is derived more from the scarcity of the resource, as compared to the extensive expanses of agricultural and suburban land in the area.

Alternative Design Option 1.2: Recommended Plan – Direct, Indirect and Cumulative Impacts

The installation of the streambank protection will require the thinning or removal of understory and some of the trees along the southern edge of the streambank, reducing or eliminating its suitability as habitat. The bottomland hardwoods between the road and the streambank will not be disturbed where it is appropriate and safe. The root systems will not be grubbed to preserve remaining bank structure. The streambank repair will not be replanted.

According to the WVA, approximately 1.48 AAHU will be impacted by implementation of the Recommended Plan leaving a remaining habitat value of 0.01 AAHU post project implementation. The value is derived from the reduced canopy and overhang at the streambank. Based on the WVA, compensatory mitigation is required for approximately 1.48 AAHU.

4.3 Socioeconomics

Alternative 3: No Action Alternative – Direct, Indirect and Cumulative Impacts

Under the No Action alternative, no change in socioeconomic parameters, other than Transportation which is discussed in section 4.3.1, would be anticipated.

Alternative Design Option 1.2: Recommended Plan – Direct, Indirect and Cumulative Impacts

Construction of the Recommended Plan is expected to have little effect on aesthetic values. No displacement of people or farms will occur, and no change in community cohesion is anticipated. No adverse impacts to community and regional growth, property values and tax revenues, or employment and labor force are expected to result from this action. No impacts to business and industrial development are anticipated. Noise levels will increase temporarily during construction. No long-term adverse effects would occur. Public facilities and services (i.e., road and traffic) will see a minor long-term benefit from protection from the Bayou. No impacts to life, health, and safety are expected to result from this action.

4.3.1 Transportation

Alternative 3: No Action Alternative – Direct, Indirect and Cumulative Impacts

Under the no-action alternative, the streambank reinforcement will not be constructed. Erosion of the streambank will continue, and the integrity of LA Highway 77 will be undermined. The No Action Alternative will, over time, result in restricted access for the approximately 20 houses on dead-end streets within the location of the anticipated future road compromise, which consists of approximately 3,000 feet of LA Highway 77 (Figure 1). This segment of LA Highway 77 currently allows relatively high speeds for through-traffic vehicles including large vehicles (e.g., tractor trailers). As this portion of LA Highway 77 degrades and the roadbed becomes unsupported, through-traffic would be re-routed to LA Highway 3066 to reach the evacuation route at LA Highway 1. It is anticipated that local traffic will be allowed low speed access based on the roadbed conditions. The local traffic access could consist of the remaining structurally sound roadway and the road's shoulder.

LA Highway 77 is an important thruway as it is used by approximately 1,610 vehicles daily, as of 2018 and serves as a collector road to access the evacuation route LA Highway 1. Transportation will be impacted once the roadbed deteriorates, and LA Highway 77 becomes impassible or restricted to local traffic. The No Action Alternative could endanger life, health, and safety during an evacuation as LA Highway 77 is a collector road for the evacuation route at LA Highway 1.

Alternative Design Option 1.1: Relocate Pipeline - Direct, Indirect and Cumulative Impacts

During the relocation of the pipeline road access and traffic would be under the auspices of the pipeline owner and LaDOTD, and may or may not have detours or obstructions to traffic. During the streambank repair, LA Highway 77 would have all lanes of traffic remain open during construction, as the work would be done from barges and watercraft on Bayou Plaquemine. After construction the road would continue to be used as it is currently.

Alternative Design Option 1.2: Recommended Plan — Direct, Indirect and Cumulative Impacts

LA Highway 77 will have all lanes of traffic remain open during construction, as the work will be done from barges and watercraft on Bayou Plaquemine. After construction the road would continue to be used as it is currently.

4.4 Recreational Resources

Alternative 3: No Action Alternative — Direct, Indirect and Cumulative Impacts

Without implementation of the 3,000 foot bank repair, the recreational value of Bayou Plaquemine would persist at present use levels.

Alternative Design Option 1.2: Recommended Plan — Direct, Indirect and Cumulative Impacts

With implementation of the 3,000-foot streambank stabilization, recreational use along the streambank of Bayou Plaquemine and adjacent to LA Highway 77 may decrease. Access to the streambank by the general public for fishing and wildlife viewing may be limited after implementation. Additionally, homeowners in the project area will have their recreational piers removed during construction. These piers will not be returned after construction is completed. There would be further short-term and temporary loss of recreational use in the project area during construction. Fishing quality may decrease due to barge traffic and equipment noise associated with construction activity. Fishing quality along the bank would likely return to the existing condition after the project area has recovered.

4.5 Air Quality

Alternative 3: No-Action Alternative — Direct, Indirect and Cumulative Impacts

With implementation of this alternative, no impacts to air quality would occur.

Alternative Design Option 1.2: Recommended Plan — Direct, Indirect and Cumulative Impacts

With the implementation of the proposed action there will be mildly adverse, short-term direct and indirect effects to air quality due to construction equipment operation. Additional effects may also arise from an increase in boat traffic required to deliver equipment, materials, and construction workers to the project area. However, due to the short duration of the proposed work and residential (non-industrial) location, any

adverse effects to ambient air quality are expected to be short-term and minor and are not expected to cause or contribute to a violation of, or impacts to, Federal or state ambient air quality standards. Once all construction activities associated with the proposed work cease, air quality within the vicinity is expected to return to pre-construction conditions. Thus, the ambient air quality in Iberville Parish would not change from current conditions, and the NAAQS attainment status of for the parish would not be altered.

4.6 Water Quality

Alternative 3: No-Action Alternative — Direct, Indirect and Cumulative Impacts

The No Action Alternative would allow for the continued erosion of the existing streambank. Continued streambank erosion will introduce streambank and roadbed materials into Bayou Plaquemine during erosion events, which will cause temporary increases in suspended particulates, turbidity, and may also include the introduction of constituents associated with the roadbed such as weathered asphalt, gravel, and residual automotive oil and grease into the Bayou. The majority of water quality impacts from continued erosion are expected to be transient, and will be dispersed, diluted, and experience weathering downstream following erosion events.

Alternative Design Option 1.1: Relocation of pipeline - Direct, Indirect and Cumulative Impacts

Oil pipeline relocation under alternative 1.1 is expected to contribute to temporary impacts to suspended particulate and turbidity levels. Although highly unlikely, it would be possible for a natural gas pipeline leak to impact Bayou Plaquemine during relocation. If this was to occur, containment and cleanup of spilled material will be required, and residual contamination of sediments and surface waters may be present over a longer time period until further cleanup and/or natural biodegradation fully remediate the area.

Alternative Design Option 1.2: Recommended Plan — Direct, Indirect and Cumulative Impacts

Construction activities from this alternative may cause temporary water quality disturbances as described in the 404(b)(1) evaluation for this study. The placement of fill materials for streambank repair may have minor, temporary impacts to channel suspended particulate and turbidity levels. During construction, the placement of materials is expected to generate turbidity plumes and introduce suspended particulates, as well as trace minerals from sand and limestone stone dust, creating minor, short-lived water column impacts. Depending on hydrologic conditions during construction, including whether any major rainfall events occur, the water quality impacts during construction may range from negligible to noticeable but transient. As construction materials settle and consolidate, and loose sediments and particulates are

carried downstream, the direct water quality effects of project features are expected to gradually diminish. The long-term water quality impacts of Alternative 1.2 would be less than the No Action Alternative as they would prevent future streambank erosion and the resulting siltation.

4.7 Cultural Resources

Alternative 3: No Action Alternative — Direct, Indirect and Cumulative Impacts

Without implementation of the 3,000-foot bank repair, erosion of the Bayou Plaquemine bank line will continue and any previously recorded or yet unidentified cultural resources would continue to be impacted and lost to the high degree of erosion.

Alternative Design Option 1.2: Recommended Plan — Direct, Indirect and Cumulative Impacts

Due to the high degree of erosion and heavy disturbance, it is unlikely that intact cultural deposits exist in the area of the Recommended Plan, and with implementation of the 3,000-foot bank repair there would be no direct or indirect impacts to cultural resources. CEMVN has determined that there would be no effect on cultural resources due to this project. Letters with a determination of No Potential to Affect Historic Properties for this undertaking and to request concurrence were sent to the SHPO and Federally-recognized Tribes on November 23, 2020. The SHPO concurred with the findings and effects determination on December 11, 2020. A copy of the concurrence letter is in Appendix D.

4.8 Hazardous, Toxic, and Radioactive Waste

Personnel from CEMVN-PDC-C performed a field inspection on November 17, 2020, in the proposed work areas within the Bayou Plaquemine area. Field inspection was done through permitted right-of-entry (ROE) and public access.

A dilapidated barge was located within the project area on the right descending bank of Bayou Plaquemine. The latitude and longitude of the barge is: 30.250170, -91.292008. On the barge was a crane, an industrial pump, a 55-gallon steel drum, and other small containers. In addition to the barge, large metal platforms and support pieces for the barge were located between Bayou Jacob Road and Bayou Plaquemine. A 55-gallon propylene drum was discovered near the barge as well. The contents of either drum are unknown. The discovery of the barge, the metal support pieces, and the 55-gallon drums are considered potential RECs given their age and degraded condition and should be addressed further and removed prior to construction.

A sunken structure was discovered within Bayou Plaquemine near the right descending bank. The structure can be seen from the northern bank of Bayou Plaquemine facing southeast near coordinates: 30.248445, -91.285058.

The discovery of the barge, the metal support pieces, and the 55-gallon drums are considered potential Recognized Environmental Conditions (RECs) given their age and

degraded condition and should be addressed further and removed prior to construction. If the proposed project site area changes significantly, the HTRW would need to be re-investigated under a new Phase I ESA. Aside from the RECs discovered, none of the other indicators were found during the site visit.

Alternative 3: No Action Alternative — Direct, Indirect and Cumulative Impacts

Without implementation of the 3,000-foot bank repair, erosion of the Bayou Plaquemine bank line will continue and the existing REC's, unless properly disposed, will be exposed and released to the environment.

Alternative Design Option 1.2: Recommended Plan — Direct, Indirect and Cumulative Impacts

The barge, the metal support pieces, and the 55 gallon drums are considered potential RECs given their age and degraded condition and should be addressed further and removed prior to construction.

5.0 MITIGATION

Direct impacts to 2.4 acres of BLH have been identified that will require compensatory mitigation for Alternative Design Option 1.2 (Recommended Plan). There will be permanent impacts to 1.5 AAHU of BLH as per the Wetland Value Assessment (Appendix D.) There are currently [December 2020] 99.7 available BLH mitigation bank credits in the Terrebonne Basin. Since permitted banks exist as reasonably foreseeable projects, no new direct, indirect, or cumulative impacts to any of the relevant resources will be incurred from the purchase of these credits.

6.0 COORDINATION AND PUBLIC INVOLVEMENT

A Public Notice for EA#587 announcing the 30-day public comment period was published on the CEMVN website and in social media.

Preparation of this EA and FONSI was coordinated with appropriate Congressional, Federal, State, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, received copies of this EA:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer

7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

There are many Federal and state laws pertaining to the enhancement, management, and protection of the environment. Federal projects must comply with environmental laws, regulations, policies, rules, and guidance. Compliance with laws was accomplished upon the conclusion of a 30-day public and agency review of this EA #587 and associated Finding of No Significant Impact (FONSI) on February 11, 2022.

Clean Air Act of 1972

The Clean Air Act (CAA) sets goals and standards for the quality and purity of air. It requires the Environmental Protection Agency to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Project Area is in Iberville Parish, which is currently in attainment of NAAQS. The Louisiana Department of Environmental Quality is not required by the CAA and Louisiana Administrative Code, Title 33 to grant a general conformity determination.

Clean Water Act of 1972 — Section 401 and Section 404

The Clean Water Act (CWA) sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification (WQC) from the Louisiana Department of Environmental Quality (LDEQ) that a proposed project does not violate established effluent limitations and water quality standards. A letter was received on December 9, 2021 from LDEQ with the determination that the requirements for a Water Quality Certification have been met. (AI No.: 92305, WQC: 211202-03)

As required by Section 404(b)(1) of the Clean Water Act (CWA), an evaluation to assess the short- and long-term impacts associated with the discharge of dredged and fill materials into waters of the United States resulting from this Project has been completed. The 404(b)(1) can be found in Appendix E.

Coastal Zone Management Act of 1972

The Coastal Zone Management Act (CZMA) requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, Louisiana Department of Natural Resources (LADNR) indicated that this project is outside of the coastal zone in a letter dated July 24, 2020, and via Coastal Zone Consistency permit received December 23, 2021 (C20210182). (Appendix D)

Endangered Species Act of 1973

The Endangered Species Act ("ESA") is designed to protect and recover threatened and endangered ("T&E") species of fish, wildlife, and plants. Based on a parish search conducted on the USFWS endangered species website (http://www.fws.gov/endangered) on August 17, 2020, there are five Threatened and Endangered (T&E) species listed in Iberville Parish. Based on a site specific search conducted on the USFWS website (https://ecos.fws.gov/ipac/location) on August 17,

2020, there are no T&E species or critical habitat within, or in the immediate vicinity of, the proposed project area and therefore the CEMVN has made a "no effect" determination under the Endangered Species Act (ESA). Due to the expiration of the species list, a new list was generated on November 17, 2021, resulting in Candidate species Monarch Butterfly (*Danaus plexippus*) being included in the study area. The Monarch Butterfly is not likely to be adversely affected by this project, although the repaired streambank is likely to support butterfly forage, having a potential positive affect on the population. No consultation under the ESA will be required for the proposed action.

Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act (FWCA) provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It requires Federal agencies that construct, license or permit water resource development projects to first consult with the USFWS, NMFS and state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Section 2(b) requires the USFWS to produce a Coordination Act Report (FWCAR) that details existing fish and wildlife resources in a project area, potential impacts due to a proposed project and recommendations for a project. On October 21, 2020 a WVA was conducted, and the project was assessed 1.48 AAHU of mitigation (Appendix D).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests. The project area is located in an area where colonial nesting waterbirds may be present, although no nesting is currently apparent so MVN finds that implementation of the proposed actions will have no effect on colonial nesting waterbirds. Colonial nesting waterbirds are generally considered all species of herons, egrets, night herons, ibis, roseate spoonbill, anhinga, and cormorants. To minimize disturbance to colonies containing nesting waterbirds (if present) all activity occurring within 1,000 feet of a rookery will be restricted to the non-nesting period.

Bald and Golden Eagle Protection Act

The bald eagle was removed from the List of Endangered and Threatened Species in August 2007 but continues to be protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act of 1918, as amended (MBTA). During nesting season, construction must take place outside of USFWS/LDWF buffer zones. A Corps Biologist and USFWS Biologist will survey for nesting eagles prior to the start of construction. To minimize disturbance to nesting eagles (if present), the guidelines found in Appendix B will be followed during construction.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act of 1966, as amended, requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The procedures in 36 CFR Part 800 define how Federal agencies meet these statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, including the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) and any Tribe that attaches religious or cultural significance to historic properties that may be affected by an undertaking. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

CEMVN Cultural Resources expect no effect on cultural resources due to this project. Letters with a determination of No Potential to Affect Historic Properties for this undertaking and to request concurrence were sent to the SHPO and Federally-recognized Tribes on November 23, 2020. The SHPO concurred with the findings and effects determination on December 11, 2020.

Tribal Consultation

NEPA, Section 106 of the National Historic Preservation Act, EO 13175 (Consultation and Coordination with Indian Tribal Governments), the American Indian Religious Freedom Act, and related statutes and policies have a consultation component. In accordance with CEMVN's responsibilities under NEPA, Section 106, and EO 13175, CEMVN offered the following federally-recognized Indian Tribes the opportunity to review and comment on the potential of the proposed action to significantly affect protected tribal resources, tribal rights, or Indian lands: the Alabama-Coushatta Tribe of Texas, Chitimacha Tribe of Louisiana, Coushatta Tribe of Louisiana, Choctaw Nation of Oklahoma, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Muscogee Creek Nation of Oklahoma, Seminole Nation of Oklahoma, and the Tunica-Biloxi Tribe of Louisiana. No comments were received from consulting Tribes within the regulatory consultation timeframe as specified per 36 CFR 800.4(d)(1)(i) and 36 CFR 800.5 (c) 1.

Hazardous, Toxic, and Radioactive Waste

The discharge of dredged material into waters of the United States is regulated under the Clean Water Act (CWA). In the absence of a known Hazardous, Toxic, and Radioactive Waste (HTRW) concern, the proposed action will not qualify for an HTRW investigation.

Engineer Regulation (ER 1165-2-132) provides that in the Planning, Engineering and Design Phase that, for proposed project in which the potential for HTRW problems has not been considered, an HTRW initial assessment, as appropriate for a reconnaissance

study, should be conducted as a first priority. If the initial assessment indicates the potential for HTRW, testing, as warranted and analysis similar to a feasibility study shall be conducted prior to proceeding with the project design. The NFS will be responsible for planning and accomplishing any HTRW response measures, and will not receive credit for the costs incurred.

An ASTM E 1527-05 Phase I Hazardous, Toxic, or Radioactive Waste Environmental Site Assessment (ESA), entitled "Bayou Plaquemine - CAP Section 14 Emergency Protection of LA Highway 77, Iberville Parish, Louisiana" (HTRW-20-09) was completed on November 30, 2020. A copy of the Phase I ESA is maintained on file at MVN. RECs were identified on the site and are listed in section 4.8 of this EA #587, and a copy of the report is in Appendix D.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Alternative 1 (Streambank stabilization) is the Recommended Plan. The Recommended Plan consists of restoring a severely eroded segment of streambank along Bayou Plaquemine to prevent the undermining of LA Highway 77. This office has assessed the environmental impacts of implementing the Recommended Plan and has determined that it will have no impact upon Bayou Plaquemine, Wetlands, Aquatic Resources/Fisheries, Threatened Endangered and Protected Species, Noise, Aesthetics, Air Quality, Cultural Resources, and Hydraulics and Hydrology. Approximately 1.48 AAHU of BLH will be required as compensatory mitigation. This will be accomplished through restoration or through the purchase of mitigation bank credits for the same habitat as impacted and within the same watershed as the impacts. Preconstruction surveys will be performed to confirm the absence of Threatened Endangered and Protected species, Bald and Golden eagles, and migratory birds.

9.0 LIST OF PREPARERS

The EA #587 and the associated FONSI were prepared by Mr. Eric Tomasovic - Biologist, with relevant resource sections prepared by; Mr. Joseph Musso - HTRW; Ms. Ashley Federoff - Cultural Resources Sections and coordination; and Mr. Kyle Burleigh - Project Manager.

10.0 REFERENCES

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Appendix A:
Relevant Resources and
Their Institutional Importance

Table 1: Relevant Resources and Their Institutional, Technical and Public Importance

Resource	Institutionally Important	Technically Important	Publicly Important
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968., EO 11988, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
Bottomland Hardwood Forest	Section 906 of the Water resources Development Act of 1986 and the Fish and Wildlife Coordination Act of 1958, as amended.	Provides necessary habitat for a variety of plant, fish, and wildlife species; it often provides a variety of wetland functions and values; it is an important source of lumber and other commercial forest products; and it provides various consumptive and non-consumptive recreational opportunities.	The high priority that the public places on its esthetic, recreational, and commercial value.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended; Clean Water Act of 1977, as amended; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968.	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Soils and Water Bottoms	Fish and Wildlife Coordination Act, Marine Protection, Research, and Sanctuaries Act of 1990	State and Federal agencies recognize the value of water bottoms for the production of benthic organisms.	Environmental organizations and the public support the preservation of water quality and fishery resources.
Essential Fish Habitat (EFH)	Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 104-297	Federal and state agencies recognize the value of EFH. The Act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."	Public places a high value on seafood and the recreational and commercial opportunities EFH provides.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NMFS, NRCS, EPA, LDWF, and LDNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value of the local, state, and national economies.	Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.
Aesthetics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's National and Scenic Rivers Act of 1988, and the National and Local Scenic Byway Program.	Visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a study area. State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.

Resource	Institutionally Important	Technically Important	Publicly Important
Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, EPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality and the national and state standards established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.
Prime and unique Farmland	Farmland Protection Policy Act	State and Federal agencies recognize the value of farmland for the production of food, feed and forage.	Public places a high value on food and feed production.
Noise Quality	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, Noise Control Act of 1972, Quiet Communities Act of 1978	Unwanted noise has an adverse effect on human beings and their environment, including land, structures, and domestic animals and can also disturb natural wildlife and ecological systems.	The EPA must promote an environment for all Americans free from noise that jeopardizes their health and welfare.
Socio-economics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969	When an environmental document is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental document will discuss all of these effects on the human environment.	Government programs, policies and projects can cause potentially significant changes in many features of the socioeconomic environment.
Navigation	Rivers and Harbors Act of 1899 and River and Harbor Flood Control Act of 1970 (PL 91-611).	The Corps provides safe, reliable, efficient, and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation.	Navigation concerns affect area economy and are of significant interest to community.

Appendix B:
National Bald Eagle Management Guidelines

NATIONAL BALD EAGLE MANAGEMENT GUIDELINES

U.S. Fish and Wildlife Service

May 2007

TABLE OF CONTENTS

INTRODUCTION

The bald eagle (*Haliaeetus leucocephalus*) is protected by the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). The MBTA and the Eagle Act protect bald eagles from a variety of harmful actions and impacts. The U.S. Fish and Wildlife Service (Service) developed these National Bald Eagle Management Guidelines to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the Eagle Act may apply to their activities. A variety of human activities can potentially interfere with bald eagles, affecting their ability to forage, nest, roost, breed, or raise young. The Guidelines are intended to help people minimize such impacts to bald eagles, particularly where they may constitute "disturbance," which is prohibited by the Eagle Act.

The Guidelines are intended to:

(1) Publicize the provisions of the Eagle Act that continue to protect bald eagles, in order to reduce the possibility that people will violate the law,

(2) Advise landowners, land managers and the general public of the potential for various human activities to disturb bald eagles, and

(3) Encourage additional nonbinding land management practices that benefit bald eagles (see Additional Recommendations section).

While the Guidelines include general recommendations for land management practices that will benefit bald eagles, the document is intended primarily as a tool for landowners and planners who seek information and recommendations regarding how to avoid disturbing bald eagles. Many States and some tribal entities have developed state-specific management plans, regulations, and/or guidance for landowners and land managers to protect and enhance bald eagle habitat, and we encourage the continued development and use of these planning tools to benefit bald eagles.

Adherence to the Guidelines herein will benefit individuals, agencies, organizations, and companies by helping them avoid violations of the law. However, the Guidelines themselves are not law. Rather, they are recommendations based on several decades of behavioral observations, science, and conservation measures to avoid or minimize adverse impacts to bald eagles.

The U.S. Fish and Wildlife Service strongly encourages adherence to these guidelines to ensure that bald and golden eagle populations will continue to be sustained. The Service realizes there may be impacts to some birds even if all reasonable measures are taken to avoid such impacts. Although it is not possible to absolve individuals and entities from liability under the Eagle Act or the MBTA, the Service exercises enforcement discretion to focus on those individuals, companies, or agencies that take migratory birds without regard for the consequences of their actions and the law, especially when conservation measures, such as these Guidelines, are available, but have not been implemented. The Service will prioritize its enforcement efforts to focus on those individuals or entities who take bald eagles or their parts, eggs, or nests without implementing appropriate measures recommended by the Guidelines.

The Service intends to pursue the development of regulations that would authorize, under limited circumstances, the use of permits if "take" of an eagle is anticipated but unavoidable. Additionally, if the bald eagle is delisted, the Service intends to provide a regulatory mechanism to honor existing (take) authorizations under the Endangered Species Act (ESA).

During the interim period until the Service completes a rulemaking for permits under the Eagle Act, the Service does not intend to refer for prosecution the incidental "*take*" of any bald eagle under the MBTA or Eagle Act, if such take is in full compliance with the terms and conditions of an incidental take statement issued to the action agency or applicant under the authority of section 7(b)(4) of the ESA or a permit issued under the authority of section 10(a)(1)(B) of the ESA.

The Guidelines are applicable throughout the United States, including Alaska. The primary purpose of these Guidelines is to provide information that will minimize or prevent violations only of *Federal* laws governing bald eagles. In addition to Federal laws, many states and some smaller jurisdictions and tribes have additional laws and regulations protecting bald eagles. In some cases those laws and regulations may be more protective (restrictive) than these Federal guidelines. If you are planning activities that may affect bald eagles, we therefore recommend that you contact both your nearest U.S. Fish and Wildlife Service Field Office (see the contact information on p.16) and your state wildlife agency for assistance.

LEGAL PROTECTIONS FOR THE BALD EAGLE

The Bald and Golden Eagle Protection Act

The Eagle Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." "Disturb'' means:

> "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle=s return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

A violation of the Act can result in a criminal fine of $100,000 ($200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony.

The Migratory Bird Treaty Act
The MBTA (16 U.S.C. 703-712), prohibits the taking of any migratory bird or any part, nest, or egg, except as permitted by regulation. The MBTA was enacted in 1918; a 1972 agreement supplementing one of the bilateral treaties underlying the MBTA had the effect of expanding the scope of the Act to cover bald eagles and other raptors. Implementing regulations define "take" under the MBTA as "pursue, hunt, shoot, wound, kill, trap, capture, possess, or collect."

Copies of the Eagle Act and the MBTA are available at: http://permits.fws.gov/ltr/ltr.shtml.

State laws and regulations
Most states have their own regulations and/or guidelines for bald eagle management. Some states may continue to list the bald eagle as endangered, threatened, or of special concern. If you plan activities that may affect bald eagles, we urge you to familiarize yourself with the regulations and/or guidelines that apply to bald eagles in your state. Your adherence to the Guidelines herein does not ensure that you are in compliance with state laws and regulations because state regulations can be more specific and/or restrictive than these Guidelines.

NATURAL HISTORY OF THE BALD EAGLE

Bald eagles are a North American species that historically occurred throughout the contiguous United States and Alaska. After severely declining in the lower 48 States between the 1870s and the 1970s, bald eagles have rebounded and re-established breeding territories in each of the lower 48 states. The largest North American breeding populations are in Alaska and Canada, but there are also significant bald eagle populations in Florida, the Pacific Northwest, the Greater Yellowstone area, the Great Lakes states, and the Chesapeake Bay region. Bald eagle distribution varies seasonally. Bald eagles that nest in southern latitudes frequently move northward in late spring and early summer, often summering as far north as Canada. Most eagles that breed at northern latitudes migrate southward during winter, or to coastal areas where waters remain unfrozen. Migrants frequently concentrate in large numbers at sites where food is abundant and they often roost together communally. In some cases, concentration areas are used year-round: in summer by southern eagles and in winter by northern eagles.

Juvenile bald eagles have mottled brown and white plumage, gradually acquiring their dark brown body and distinctive white head and tail as they mature. Bald eagles generally attain adult plumage by 5 years of age. Most are capable of breeding at 4 or 5 years of age, but in healthy populations they may not start breeding until much older. Bald eagles may live 15 to 25 years in the wild. Adults weigh 8 to 14 pounds (occasionally reaching 16 pounds in Alaska) and have wingspans of 5 to 8 feet. Those in the northern range are larger than those in the south, and females are larger than males.

Where do bald eagles nest?

Breeding bald eagles occupy "territories," areas they will typically defend against intrusion by other eagles. In addition to the active nest, a territory may include one or more alternate nests (nests built or maintained by the eagles but not used for nesting in a given year). The Eagle Act prohibits removal or destruction of both active and alternate bald eagle nests. Bald eagles exhibit high nest site fidelity and nesting territories are often used year after year. Some territories are known to have been used continually for over half a century.

Bald eagles generally nest near coastlines, rivers, large lakes or streams that support an adequate food supply. They often nest in mature or old-growth trees; snags (dead trees); cliffs; rock promontories; rarely on the ground; and with increasing frequency on human-made structures such as power poles and communication towers. In forested areas, bald eagles often select the tallest trees with limbs strong enough to support a nest that can weigh more than 1,000 pounds. Nest sites typically include at least one perch with a clear view of the water where the eagles usually forage. Shoreline trees or snags located in reservoirs provide the visibility and accessibility needed to locate aquatic prey. Eagle nests are constructed with large sticks, and may be lined with moss, grass, plant stalks, lichens, seaweed, or sod. Nests are usually about 4-6 feet in diameter and 3 feet deep, although larger nests exist.

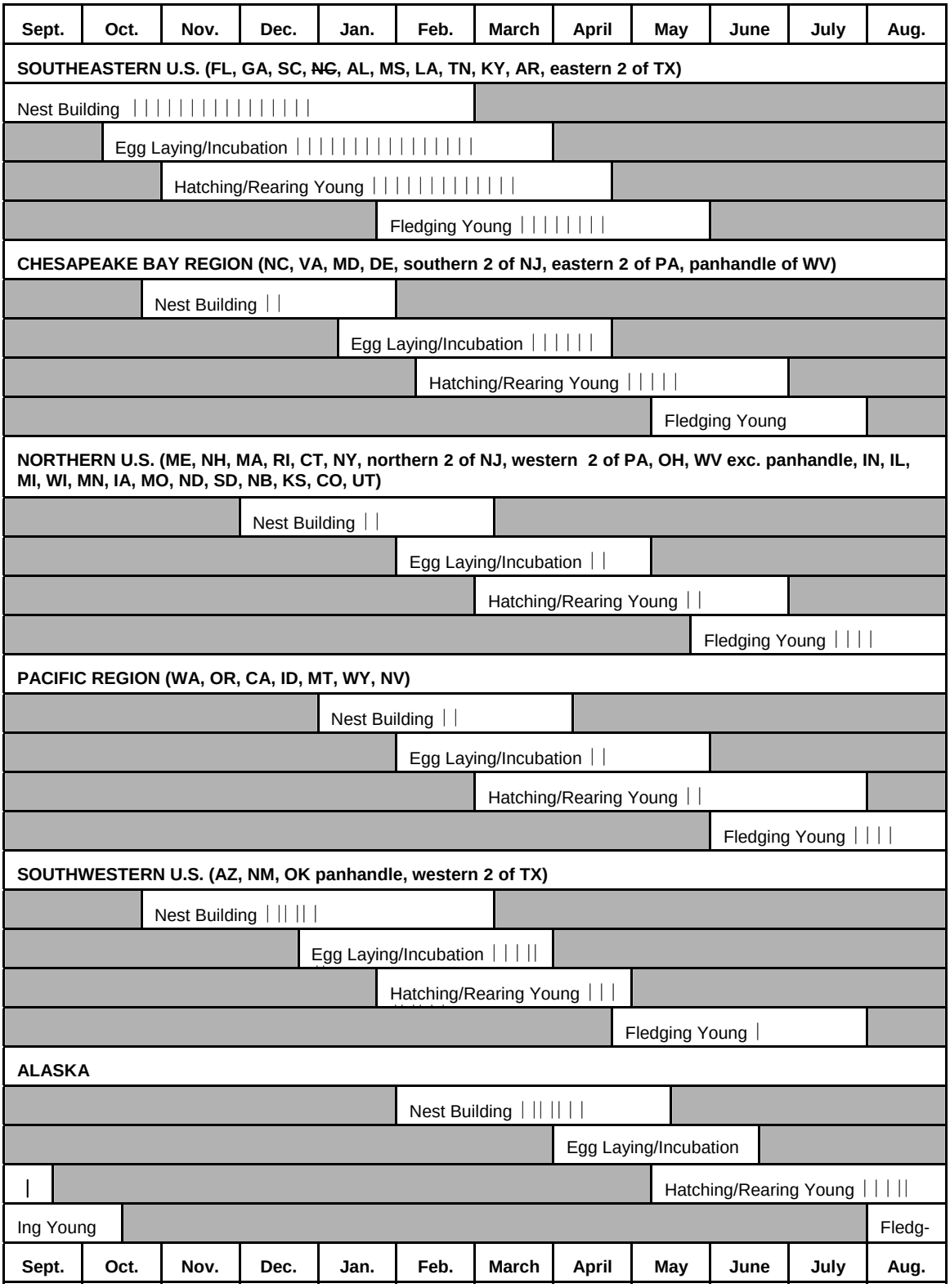
The range of breeding bald eagles in 2000 (shaded areas). This map shows only the larger concentrations of nests; eagles have continued to expand into additional nesting territories in many states. The dotted line represents the bald eagle's wintering range.

When do bald eagles nest?

Nesting activity begins several months before egg-laying. Egg-laying dates vary throughout the U.S., ranging from October in Florida, to late April or even early May in the northern United States. Incubation typically lasts 33-35 days, but can be as long as 40 days. Eaglets make their first unsteady flights about 10 to 12 weeks after hatching, and fledge (leave their nests) within a few days after that first flight. However, young birds usually remain in the vicinity of the nest for several weeks after fledging because they are almost completely dependent on their parents for food until they disperse from the nesting territory approximately 6 weeks later.

The bald eagle breeding season tends to be longer in the southern U.S., and re-nesting following an unsuccessful first nesting attempt is more common there as well. The following table shows the timing of bald eagle breeding seasons in different regions of the country. The table represents the range of time within which the majority of nesting activities occur in each region and does not apply to any specific nesting pair. Because the timing of nesting activities may vary within a given region, you should contact the nearest U.S. Fish and Wildlife Service Field Office (see page 16) and/or your state wildlife conservation agency for more specific information on nesting chronology in your area.

Chronology of typical reproductive activities of bald eagles in the United States.



How many chicks do bald eagles raise?
The number of eagle eggs laid will vary from 1-3, with 1-2 eggs being the most common. Only one eagle egg is laid per day, although not always on successive days. Hatching of young occurs on different days with the result that chicks in the same nest are sometimes of unequal size. The overall national fledging rate is approximately one chick per nest, annually, which results in a healthy expanding population.

What do bald eagles eat?
Bald eagles are opportunistic feeders. Fish comprise much of their diet, but they also eat waterfowl, shorebirds/colonial waterbirds, small mammals, turtles, and carrion. Because they are visual hunters, eagles typically locate their prey from a conspicuous perch, or soaring flight, then swoop down and strike. Wintering bald eagles often congregate in large numbers along streams to feed on spawning salmon or other fish species, and often gather in large numbers in areas below reservoirs, especially hydropower dams, where fish are abundant. Wintering eagles also take birds from rafts of ducks at reservoirs and rivers, and congregate on melting ice shelves to scavenge dead fish from the current or the soft melting ice. Bald eagles will also feed on carcasses along roads, in landfills, and at feedlots.

During the breeding season, adults carry prey to the nest to feed the young. Adults feed their chicks by tearing off pieces of food and holding them to the beaks of the eaglets. After fledging, immature eagles are slow to develop hunting skills, and must learn to locate reliable food sources and master feeding techniques. Young eagles will congregate together, often feeding upon easily acquired food such as carrion and fish found in abundance at the mouths of streams and shallow bays and at landfills.

The impact of human activity on nesting bald eagles
During the breeding season, bald eagles are sensitive to a variety of human activities. However, not all bald eagle pairs react to human activities in the same way. Some pairs nest successfully just dozens of yards from human activity, while others abandon nest sites in response to activities much farther away. This variability may be related to a number of factors, including visibility, duration, noise levels, extent of the area affected by the activity, prior experiences with humans, and tolerance of the individual nesting pair. The relative sensitivity of bald eagles during various stages of the breeding season is outlined in the following table.

Nesting Bald Eagle Sensitivity to Human Activities

Phase	Activity	Sensitivity to Human Activity	Comments
I	Courtship and Nest Building	Most sensitive period; likely to respond negatively	Most critical time period. Disturbance is manifested in nest abandonment. Bald eagles in newly established territories are more prone to abandon nest sites.
II	Egg laying	Very sensitive period	Human activity of even limited duration may cause nest desertion and abandonment of territory for the breeding season.
III	Incubation and early nestling period (up to 4 weeks)	Very sensitive period	Adults are less likely to abandon the nest near and after hatching. However, flushed adults leave eggs and young unattended; eggs are susceptible to cooling, loss of moisture, overheating, and predation; young are vulnerable to elements.
IV	Nestling period, 4 to 8 weeks	Moderately sensitive period	Likelihood of nest abandonment and vulnerability of the nestlings to elements somewhat decreases. However, nestlings may miss feedings, affecting their survival.
V	Nestlings 8 weeks through fledging	Very sensitive period	Gaining flight capability, nestlings 8 weeks and older may flush from the nest prematurely due to disruption and die.

If agitated by human activities, eagles may inadequately construct or repair their nest, may expend energy defending the nest rather than tending to their young, or may abandon the nest altogether. Activities that cause prolonged absences of adults from their nests can jeopardize eggs or young. Depending on weather conditions, eggs may overheat or cool too much and fail to hatch. Unattended eggs and nestlings are subject to predation. Young nestlings are particularly vulnerable because they rely on their parents to provide warmth or shade, without which they may die as a result of hypothermia or heat stress. If food delivery schedules are interrupted, the young may not develop healthy plumage, which can affect their survival. In addition, adults startled while incubating or brooding young may damage eggs or injure their young as they abruptly leave the nest. Older nestlings no longer require constant attention from the adults, but they may be startled by loud or intrusive human activities and prematurely jump from the nest before they are able to fly or care for themselves. Once fledged, juveniles range up to ¼ mile from the nest site, often to a site with minimal human activity. During this period, until about six weeks after departure from the nest, the juveniles still depend on the adults to feed them.

The impact of human activity on foraging and roosting bald eagles

Disruption, destruction, or obstruction of roosting and foraging areas can also negatively affect bald eagles. Disruptive activities in or near eagle foraging areas can interfere with feeding, reducing chances of survival. Interference with feeding can also result in reduced productivity (number of young successfully fledged). Migrating and wintering bald eagles often congregate at specific sites for purposes of feeding and sheltering. Bald eagles rely on established roost sites because of their proximity to sufficient food sources. Roost sites are usually in mature trees where the eagles are somewhat sheltered from the wind and weather. Human activities near or within communal roost sites may prevent eagles

from feeding or taking shelter, especially if there are not other undisturbed and productive feeding and roosting sites available. Activities that permanently alter communal roost sites and important foraging areas can altogether eliminate the elements that are essential for feeding and sheltering eagles.

Where a human activity agitates or bothers roosting or foraging bald eagles to the degree that causes injury or substantially interferes with breeding, feeding, or sheltering behavior and causes, or is likely to cause, a loss of productivity or nest abandonment, the conduct of the activity constitutes a violation of the Eagle Act's prohibition against disturbing eagles. The circumstances that might result in such an outcome are difficult to predict without detailed site-specific information. If your activities may disturb roosting or foraging bald eagles, you should contact your local Fish and Wildlife Service Field Office (see page 16) for advice and recommendations for how to avoid such disturbance.

RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT NEST SITES

In developing these Guidelines, we relied on existing state and regional bald eagle guidelines, scientific literature on bald eagle disturbance, and recommendations of state and Federal biologists who monitor the impacts of human activity on eagles. Despite these resources, uncertainties remain regarding the effects of many activities on eagles and how eagles in different situations may or may not respond to certain human activities. The Service recognizes this uncertainty and views the collection of better biological data on the response of eagles to disturbance as a high priority. To the extent that resources allow, the Service will continue to collect data on responses of bald eagles to human activities conducted according to the recommendations within these Guidelines to ensure that adequate protection from disturbance is being afforded, and to identify circumstances where the Guidelines might be modified. These data will be used to make future adjustments to the Guidelines.

To avoid disturbing nesting bald eagles, we recommend (1) keeping a distance between the activity and the nest (distance buffers), (2) maintaining preferably forested (or natural) areas between the activity and around nest trees (landscape buffers), and (3) avoiding certain activities during the breeding season. The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest trees and provide for alternative or replacement nest trees.

The size and shape of effective buffers vary depending on the topography and other ecological characteristics surrounding the nest site. In open areas where there are little or no forested or topographical buffers, such as in many western states, distance alone must serve as the buffer. Consequently, in open areas, the distance between the activity and the nest may need to be larger than the distances recommended under Categories A and B of these guidelines (pg. 12) if no landscape buffers are present. The height of the nest above the ground may also ameliorate effects of human activities; eagles at higher nests may be less prone to disturbance.

In addition to the physical features of the landscape and nest site, the appropriate size for the distance buffer may vary according to the historical tolerances of eagles to human activities in particular localities, and may also depend on the location of the nest in relation

to feeding and roosting areas used by the eagles. Increased competition for nest sites may lead bald eagles to nest closer to human activity (and other eagles).

Seasonal restrictions can prevent the potential impacts of many shorter-term, obtrusive activities that do not entail landscape alterations (e.g. fireworks, outdoor concerts). In proximity to the nest, these kinds of activities should be conducted only outside the breeding season. For activities that entail both short-term, obtrusive characteristics and more permanent impacts (e.g., building construction), we recommend a combination of both approaches: retaining a landscape buffer *and* observing seasonal restrictions.

For assistance in determining the appropriate size and configuration of buffers or the timing of activities in the vicinity of a bald eagle nest, we encourage you to contact the nearest U.S. Fish and Wildlife Service Field Office (see page 16).

Existing Uses

Eagles are unlikely to be disturbed by routine use of roads, homes, and other facilities where such use pre-dates the eagles' successful nesting activity in a given area. Therefore, in most cases *ongoing* existing uses may proceed with the same intensity with little risk of disturbing bald eagles. However, some *intermittent, occasional, or irregular* uses that pre-date eagle nesting in an area may disturb bald eagles. For example: a pair of eagles may begin nesting in an area and subsequently be disturbed by activities associated with an annual outdoor flea market, even though the flea market has been held annually at the same location. In such situations, human activity should be adjusted or relocated to minimize potential impacts on the nesting pair.

ACTIVITY-SPECIFIC GUIDELINES

The following section provides the Service=s management recommendations for avoiding bald eagle disturbance as a result of new or intermittent activities proposed in the vicinity of bald eagle nests. Activities are separated into 8 categories (A – H) based on the nature and magnitude of impacts to bald eagles that usually result from the type of activity. Activities with similar or comparable impacts are grouped together.

In most cases, impacts will vary based on the visibility of the activity from the eagle nest and the degree to which similar activities are already occurring in proximity to the nest site. Visibility is a factor because, in general, eagles are more prone to disturbance when an activity occurs in full view. For this reason, we recommend that people locate activities farther from the nest structure in areas with open vistas, in contrast to areas where the view is shielded by rolling topography, trees, or other screening factors. The recommendations also take into account the existence of similar activities in the area because the continued presence of nesting bald eagles in the vicinity of the existing activities indicates that the eagles in that area can tolerate a greater degree of human activity than we can generally expect from eagles in areas that experience fewer human impacts. To illustrate how these factors affect the likelihood of disturbing eagles, we have incorporated the recommendations for some activities into a table (categories A and B).

First, determine which category your activity falls into (between categories A – H). If the activity you plan to undertake is not specifically addressed in these guidelines, follow the recommendations for the most similar activity represented.

If your activity is under A or B, our recommendations are in table form. The vertical axis shows the degree of visibility of the activity from the nest. The horizontal axis (header row) represents the degree to which similar activities are ongoing in the vicinity of the nest. Locate the row that best describes how visible your activity will be from the eagle nest. Then, choose the column that best describes the degree to which similar activities are ongoing in the vicinity of the eagle nest. The box where the column and row come together contains our management recommendations for how far you should locate your activity from the nest to avoid disturbing the eagles. The numerical distances shown in the tables are the closest the activity should be conducted relative to the nest. In some cases we have included additional recommendations (other than recommended *distance* from the nest) you should follow to help ensure that your activity will not disturb the eagles.

Alternate nests

For activities that entail permanent landscape alterations that may result in bald eagle disturbance, these recommendations apply to both active and alternate bald eagle nests. Disturbance becomes an issue with regard to alternate nests if eagles return for breeding purposes and react to land use changes that occurred while the nest was inactive. The likelihood that an alternate nest will again become active decreases the longer it goes unused. If you plan activities in the vicinity of an alternate bald eagle nest and have information to show that the nest has not been active during the preceding 5 breeding seasons, the recommendations provided in these guidelines for avoiding disturbance around the nest site may no longer be warranted. The nest itself remains protected by other provisions of the Eagle Act, however, and may not be destroyed.

If special circumstances exist that make it unlikely an inactive nest will be reused before 5 years of disuse have passed, and you believe that the probability of reuse is low enough to warrant disregarding the recommendations for avoiding disturbance, you should be prepared to provide all the reasons for your conclusion, including information regarding past use of the nest site. Without sufficient documentation, you should continue to follow these guidelines when conducting activities around the nest site. If we are able to determine that it is unlikely the nest will be reused, we may advise you that the recommendations provided in these guidelines for avoiding disturbance are no longer necessary around that nest site.

This guidance is intended to minimize disturbance, as defined by Federal regulation. In addition to Federal laws, most states and some tribes and smaller jurisdictions have additional laws and regulations protecting bald eagles. In some cases those laws and regulations may be more protective (restrictive) than these Federal guidelines.

Temporary Impacts

For activities that have temporary impacts, such as the use of loud machinery, fireworks displays, or summer boating activities, we recommend seasonal restrictions. These types of activities can generally be carried out outside of the breeding season without causing disturbance. The recommended restrictions for these types of activities can be lifted for alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched (depending on the distance between the alternate nest and the active nest).

In general, activities should be kept as far away from nest trees as possible; loud and disruptive activities should be conducted when eagles are not nesting; and activity between the nest and the nearest foraging area should be minimized. If the activity you plan to undertake is not specifically addressed in these guidelines, follow the recommendations for the most similar activity addressed, or contact your local U.S. Fish and Wildlife Service Field Office for additional guidance.

If you believe that special circumstances apply to your situation that increase or diminish the likelihood of bald eagle disturbance, or if it is not possible to adhere to the guidelines, you should contact your local Service Field Office for further guidance.

Category A:
Building construction, 1 or 2 story, with project footprint of ½ acre or less.
Construction of roads, trails, canals, power lines, and other linear utilities.
Agriculture and aquaculture – new or expanded operations.
Alteration of shorelines or wetlands.
Installation of docks or moorings.
Water impoundment.

Category B:
Building construction, 3 or more stories.
Building construction, 1 or 2 story, with project footprint of more than ½ acre.
Installation or expansion of marinas with a capacity of 6 or more boats.
Mining and associated activities.
Oil and natural gas drilling and refining and associated activities.

	If there is no similar activity within 1 mile of the nest	***If there is similar activity closer than 1 mile from the nest***
If the activity will be visible from the nest	660 feet. Landscape buffers are recommended.	660 feet, or as close as existing tolerated activity of similar scope. Landscape buffers are recommended.
If the activity will not be visible from the nest	Category A: 330 feet. Clearing, external construction, and landscaping between 330 feet and 660 feet should be done outside breeding season. Category B: 660 feet.	330 feet, or as close as existing tolerated activity of similar scope. Clearing, external construction and landscaping within 660 feet should be done outside breeding season.

The numerical distances shown in the table are the closest the activity should be conducted relative to the nest.

Category C. Timber Operations and Forestry Practices

- Avoid clear cutting or removal of overstory trees within 330 feet of the nest at any time.

- Avoid timber harvesting operations, including road construction and chain saw and yarding operations, during the breeding season within 660 feet of the nest. The distance may be decreased to 330 feet around alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched.

- Selective thinning and other silviculture management practices designed to conserve or enhance habitat, including prescribed burning close to the nest tree, should be undertaken outside the breeding season. Precautions such as raking leaves and woody debris from around the nest tree should be taken to prevent crown fire or fire climbing the nest tree. If it is determined that a burn during the breeding season would be beneficial, then, to ensure that no take or disturbance will occur, these activities should be conducted only when neither adult eagles nor young are present at the nest tree (i.e., at the beginning of, or end of, the breeding season, either before the particular nest is active or after the young have fledged from that nest). Appropriate Federal and state biologists should be consulted before any prescribed burning is conducted during the breeding season.

- Avoid construction of log transfer facilities and in-water log storage areas within 330 feet of the nest.

Category D. Off-road vehicle use (including snowmobiles). No buffer is necessary around nest sites outside the breeding season. During the breeding season, do not operate off-road vehicles within 330 feet of the nest. In open areas, where there is increased visibility and exposure to noise, this distance should be extended to 660 feet.

Category E. Motorized Watercraft use (including jet skis/personal watercraft). No buffer is necessary around nest sites outside the breeding season. During the breeding season, within 330 feet of the nest, (1) do not operate jet skis (personal watercraft), and (2) avoid concentrations of noisy vessels (e.g., commercial fishing boats and tour boats), except where eagles have demonstrated tolerance for such activity. Other motorized boat traffic passing within 330 feet of the nest should attempt to minimize trips and avoid stopping in the area where feasible, particularly where eagles are unaccustomed to boat traffic. Buffers for airboats should be larger than 330 feet due to the increased noise they generate, combined with their speed, maneuverability, and visibility.

Category F. Non-motorized recreation and human entry (e.g., hiking, camping, fishing, hunting, birdwatching, kayaking, canoeing). No buffer is necessary around nest sites outside the breeding season. If the activity will be visible or highly audible from the nest, maintain a 330-foot buffer during the breeding season, particularly where eagles are unaccustomed to such activity.

Category G. Helicopters and fixed-wing aircraft.
Except for authorized biologists trained in survey techniques, avoid operating aircraft within 1,000 feet of the nest during the breeding season, except where eagles have demonstrated tolerance for such activity.

Category H. Blasting and other loud, intermittent noises.
Avoid blasting and other activities that produce extremely loud noises within 1/2 mile of active nests, unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area. This recommendation applies to the use of fireworks classified by the Federal Department of Transportation as Class B explosives, which includes the larger fireworks that are intended for licensed public display.

RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT FORAGING AREAS AND COMMUNAL ROOST SITES

1. Minimize potentially disruptive activities and development in the eagles' direct flight path between their nest and roost sites and important foraging areas.

2. Locate long-term and permanent water-dependent facilities, such as boat ramps and marinas, away from important eagle foraging areas.

3. Avoid recreational and commercial boating and fishing near critical eagle foraging areas during peak feeding times (usually early to mid-morning and late afternoon), except where eagles have demonstrated tolerance to such activity.

4. Do not use explosives within ½ mile (or within 1 mile in open areas) of communal roosts when eagles are congregating, without prior coordination with the U.S. Fish and Wildlife Service and your state wildlife agency.

5. Locate aircraft corridors no closer than 1,000 feet vertical or horizontal distance from communal roost sites.

ADDITIONAL RECOMMENDATIONS TO BENEFIT BALD EAGLES

The following are additional management practices that landowners and planners can exercise for added benefit to bald eagles.

1. Protect and preserve potential roost and nest sites by retaining mature trees and old growth stands, particularly within ½ mile from water.

2. Where nests are blown from trees during storms or are otherwise destroyed by the elements, continue to protect the site in the absence of the nest for up to three (3) complete breeding seasons. Many eagles will rebuild the nest and reoccupy the site.

3. To avoid collisions, site wind turbines, communication towers, and high voltage transmission power lines away from nests, foraging areas, and communal roost sites.

4. Employ industry-accepted best management practices to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. If possible, bury utility lines in important eagle areas.

5. Where bald eagles are likely to nest in human-made structures (e.g., cell phone towers) and such use could impede operation or maintenance of the structures or jeopardize the safety of the eagles, equip the structures with either (1) devices engineered to discourage bald eagles from building nests, or (2) nesting platforms that will safely accommodate bald eagle nests without interfering with structure performance.

6. Immediately cover carcasses of euthanized animals at landfills to protect eagles from being poisoned.

7. Do not intentionally feed bald eagles. Artificially feeding bald eagles can disrupt their essential behavioral patterns and put them at increased risk from power lines, collision with windows and cars, and other mortality factors.

8. Use pesticides, herbicides, fertilizers, and other chemicals only in accordance with Federal and state laws.

9. Monitor and minimize dispersal of contaminants associated with hazardous waste sites (legal or illegal), permitted releases, and runoff from agricultural areas, especially within watersheds where eagles have shown poor reproduction or where bioaccumulating contaminants have been documented. These factors present a risk of contamination to eagles and their food sources.

CONTACTS

The following U.S. Fish and Wildlife Service Field Offices provide technical assistance on bald eagle management:

Alabama	Daphne	(251) 441-5181
Alaska	Anchorage	(907) 271-2888
	Fairbanks	(907) 456-0203
	Juneau	(907) 780-1160
Arizona	Phoenix	(602) 242-0210
Arkansas	Conway	(501) 513-4470
California	Arcata	(707) 822-7201
	Barstow	(760) 255-8852
	Carlsbad	(760) 431-9440
	Red Bluff	(530) 527-3043
	Sacramento	(916) 414-6000
	Stockton	(209) 946-6400
	Ventura	(805) 644-1766
	Yreka	(530) 842-5763
Colorado	Lakewood	(303) 275-2370
	Grand Junction	(970) 243-2778
Connecticut	(See New Hampshire)	
Delaware	(See Maryland)	
Florida	Panama City	(850) 769-0552
	Vero Beach	(772) 562-3909
	Jacksonville	(904) 232-2580
Georgia	Athens	(706) 613-9493
	Brunswick	(912) 265-9336
	Columbus	(706) 544-6428
Idaho	Boise	(208) 378-5243
	Chubbuck	(208) 237-6975
Illinois/Iowa	Rock Island	(309) 757-5800
Indiana	Bloomington	(812) 334-4261
Kansas	Manhattan	(785) 539-3474
Kentucky	Frankfort	(502) 695-0468
Louisiana	Lafayette	(337) 291-3100
Maine	Old Town	(207) 827-5938
Maryland	Annapolis	(410) 573-4573
Massachusetts	(See New Hampshire)	
Michigan	East Lansing	(517) 351-2555
Minnesota	Bloomington	(612) 725-3548
Mississippi	Jackson	(601) 965-4900
Missouri	Columbia	(573) 234-2132
Montana	Helena	(405) 449-5225
Nebraska	Grand Island	(308) 382-6468
Nevada	Las Vegas	(702) 515-5230
	Reno	(775) 861-6300
New Hampshire	Concord	(603) 223-2541
New Jersey	Pleasantville	(609) 646-9310
New Mexico	Albuquerque	(505) 346-2525
New York	Cortland	(607) 753-9334
	Long Island	(631) 776-1401
North Carolina	Raleigh	(919) 856-4520
	Asheville	(828) 258-3939
North Dakota	Bismarck	(701) 250-4481
Ohio	Reynoldsburg	(614) 469-6923
Oklahoma	Tulsa	(918) 581-7458
Oregon	Bend	(541) 383-7146
	Klamath Falls	(541) 885-8481
	La Grande	(541) 962-8584
	Newport	(541) 867-4558
	Portland	(503) 231-6179
	Roseburg	(541) 957-3474
Pennsylvania	State College	(814) 234-4090
Rhode Island	(See New Hampshire)	
South Carolina	Charleston	(843) 727-4707
South Dakota	Pierre	(605) 224-8693
Tennessee	Cookeville	(931) 528-6481
Texas	Clear Lake	(281) 286-8282
Utah	West Valley City	(801) 975-3330
Vermont	(See New Hampshire)	
Virginia	Gloucester	(804) 693-6694
Washington	Lacey	(306) 753-9440
	Spokane	(509) 891-6839
	Wenatchee	(509) 665-3508
West Virginia	Elkins	(304) 636-6586
Wisconsin	New Franken	(920) 866-1725
Wyoming	Cheyenne	(307) 772-2374
	Cody	(307) 578-5939

National Office
U.S. Fish and Wildlife Service
Division of Migratory Bird Management
4401 North Fairfax Drive, MBSP-4107
Arlington, VA 22203-1610
(703) 358-1714
http://www.fws.gov/migratorybirds

State Agencies

To contact a state wildlife agency, visit the Association of Fish & Wildlife Agencies' website at http://www.fishwildlife.org/where_us.html

GLOSSARY

The definitions below apply to these National Bald Eagle Management Guidelines:

Communal roost sites – Areas where bald eagles gather and perch overnight – and sometimes during the day in the event of inclement weather. Communal roost sites are usually in large trees (live or dead) that are relatively sheltered from wind and are generally in close proximity to foraging areas. These roosts may also serve a social purpose for pair bond formation and communication among eagles. Many roost sites are used year after year.

Disturb – To agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

In addition to immediate impacts, this definition also covers impacts that result from human-caused alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle=s return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

Fledge – To leave the nest and begin flying. For bald eagles, this normally occurs at 10-12 weeks of age.

Fledgling – A juvenile bald eagle that has taken the first flight from the nest but is not yet independent.

Foraging area – An area where eagles feed, typically near open water such as rivers, lakes, reservoirs, and bays where fish and waterfowl are abundant, or in areas with little or no water (i.e., rangelands, barren land, tundra, suburban areas, etc.) where other prey species (e.g., rabbit, rodents) or carrion (such as at landfills) are abundant.

Landscape buffer – A natural or human-made landscape feature that screens eagles from human activity (e.g., strip of trees, hill, cliff, berm, sound wall).

Nest – A structure built, maintained, or used by bald eagles for the purpose of reproduction. An **active** nest is a nest that is attended (built, maintained or used) by a pair of bald eagles during a given breeding season, whether or not eggs are laid. An **alternate** nest is a nest that is not used for breeding by eagles during a given breeding season.

Nest abandonment – Nest abandonment occurs when adult eagles desert or stop attending a nest and do not subsequently return and successfully raise young in that nest for the duration of a breeding season. Nest abandonment can be caused by altering habitat near a nest, even if the alteration occurs prior to the breeding season. Whether the eagles migrate during the non-breeding season, or remain in the area throughout the non-breeding season, nest abandonment can occur at any point between the time the eagles return to the nesting site for the breeding season and the time when all progeny from the breeding season have

dispersed.

Project footprint – The area of land (and water) that will be permanently altered for a development project, including access roads.

Similar scope – In the vicinity of a bald eagle nest, an existing activity is of similar scope to a new activity where the types of impacts to bald eagles are similar in nature, and the impacts of the existing activity are of the same or greater magnitude than the impacts of the potential new activity. Examples: (1) An existing single-story home 200 feet from a nest is similar in scope to an additional single-story home 200 feet from the nest; (2) An existing multi-story, multi-family dwelling 150 feet from a nest has impacts of a greater magnitude than a potential new single-family home 200 feet from the nest; (3) One existing single-family home 200 feet from the nest has impacts of a lesser magnitude than three single-family homes 200 feet from the nest; (4) an existing single-family home 200 feet from a communal roost has impacts of a lesser magnitude than a single-family home 300 feet from the roost but 40 feet from the eagles' foraging area. The existing activities in examples (1) and (2) are of similar scope, while the existing activities in example (3) and (4) are not.

Vegetative buffer – An area surrounding a bald eagle nest that is wholly or largely covered by forest, vegetation, or other natural ecological characteristics, and separates the nest from human activities.

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Appendix C: Engineering Hydraulics and Hydrology

Mississippi Valley Division,
Regional Planning and Environment Division South

Appendix C: Engineering

November 2021

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Section 1
General

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division (MVD), Regional Planning and Environment Division South (RPEDS), New Orleans District has prepared this draft Engineering Appendix for the Continuing Authorities Program (CAP), Section 14, Emergency Streambank and Shoreline Erosion Feasibility Study for Louisiana Highway 77 at Bayou Plaquemine in Iberville Parish, Louisiana. This draft Engineering Appendix presents and documents the feasibility level engineering and design for the draft Feasibility Report The Non-Federal sponsor (NFS) is the State of Louisiana, acting through Louisiana Department of Transportation and Development (LADOTD).

Development of the Engineering Appendix was in accordance with Engineering Regulation (ER) 1110-2-1150, "Engineering and Design for Civil Works Projects," dated 31 August 1999. The comparative studies of alternatives, field investigations, designs, and costs estimates presented herein are in enough detail to substantiate the recommended plan and baseline estimate.

All elevations are referenced to North American Vertical Datum of 1988 (NAVD 88 (Epoch 2009.55)), unless otherwise noted.

Section 2
Hydraulics and Hydrology

2.1 INTRODUCTION

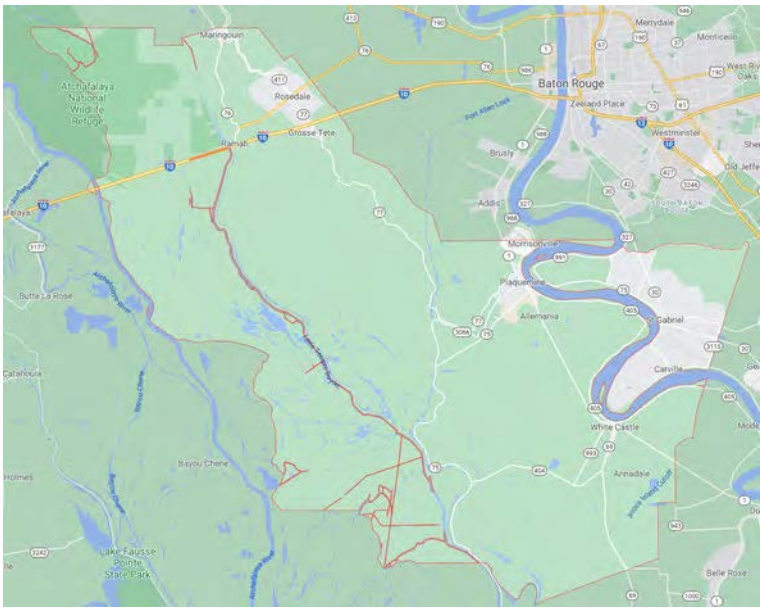
Bank erosion is occurring along an approximate 3,000 linear foot section of Bayou Plaquemine, a federally authorized navigation channel, and this erosion is threatening the structural integrity of a section of Louisiana Highway 77 which runs parallel to the Bayou. Several bank failures have occurred along the bankline of Bayou Plaquemine, and the NFS, LADOTD, has attempted to protect and repair the Highway, but the repairs have been temporary and have only lasted approximately 4 years. The cause of the failures is unknown, however, it is suspected the bank failure at Bayou Plaquemines along LA Hwy 77 may be caused by fluctuations in water surface elevations in Bayou Plaquemine, threatening the collapse of LA Hwy 77 which is a collector road to access the evacuation route, LA Hwy 1.

2.2 BACKGROUND

The purpose of this report is to document the analysis of available existing hydrologic and hydraulic data to determine the cause of bank failure near Jase Street and LA Hwy 77 locally referred to as Bayou Jacobs Rd in Iberville Parish, LA which occurred in 2010 and 2014. This report will also provide a description of the study area, project area, and other physical characteristics of the study area as described below.

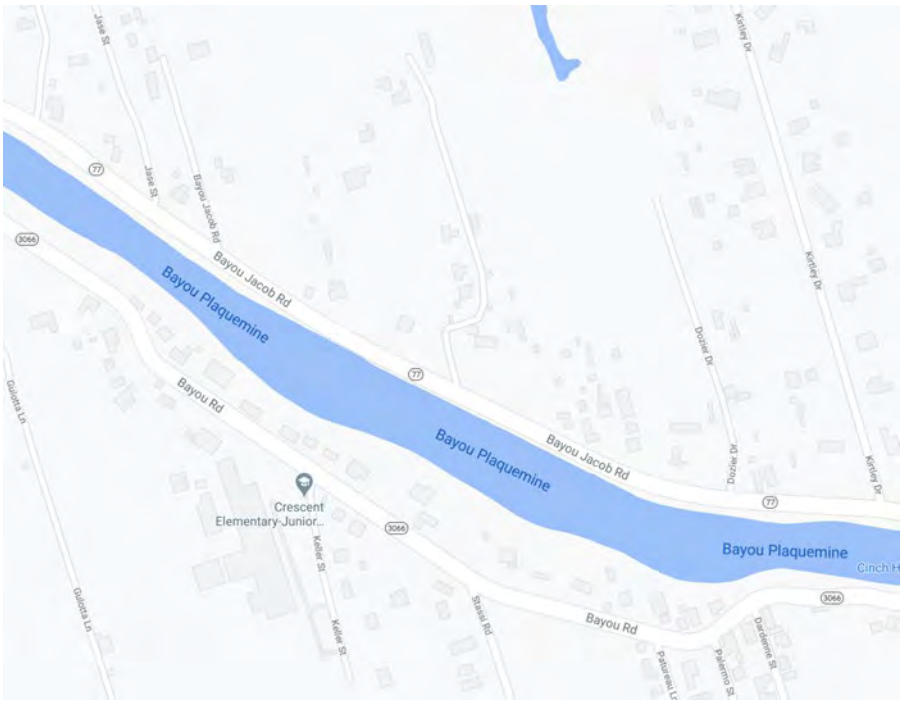
2.2.1 Study Area

The Study Area (Figure 1-3) focuses on the shoreline of Bayou Plaquemine and Louisiana Highway 77, which runs parallel to the Bayou in the city of Plaquemine, Iberville Parish, Louisiana. The city of Plaquemine is located approximately 15 miles from Baton Rouge and approximately 70 miles from New Orleans, Louisiana. Bayou Plaquemine is an approximately 7-mile-long channel that runs from the Plaquemine Historic Lock, located at the latitude of River Mile 209 of the Mississippi River to the Gulf Intracoastal Waterway (GIWW) – Port Allen to Morgan City Alternate Route (the GIWW Alternate Route). The Bayou intersects the GIWW Alternate Route channel at approximate channel mile 46. The Bayou Sorrel Lock is located to the south of the Study Area and the lock operations were considered in the evaluation of the Alternatives.



2.2.2 Project Location

The Project Area (Figure 1-4) is a 3,000 foot reach along Bayou Plaquemine, an authorized and navigable waterway. Bayou Plaquemine runs parallel to Highway 77, which is located approximately five miles from the city of Plaquemine, Louisiana. The 3,000 feet of repair is from Station 61+45 to Station 91+45.



2.2.3 Topography

The parish generally consists of low, flat land with elevations ranging from 5 ft above sea level in the southmost part of the parish to 25 ft above sea level in the northernmost part of the parish along the Mississippi River. The lowest elevations are at sea level in the southwestern part of the parish referred to as the Atchafalaya basin floodway. The floodway is located between the East Atchafalaya Basin protection levee and the West Atchafalaya Basin protection levee which contains the Atchafalaya River. The southwestern portion of the parish includes 120,000 acres that are within the floodway.

2.2.4 Geologic Characterization - Soils Classifications

The soil stratum in the parish was formed from sediments deposited by the major rivers within and surrounding the parish, the Mississippi and Atchafalaya rivers. The parish is completely located within the alluvial plain of the Mississippi River and has two major distinct physiographic features, natural levees of the Mississippi River and its distributaries at higher elevations consisting of loamy soils and distributaries of the river and swampland at lower

elevations consisting of clayey soils. The upland soils are characterized as Commerce and the lowland soils are Sharkey. Commerce soils are level somewhat poorly drained loamy soils with a highwater table. The Sharkey soil association are level poorly drained clayey soils with a seasonal highwater table. At the failure site the soils are a variation of the Sharkey class.

2.2.5 Geologic Characterization - Aquifers

The parish is located within the Mississippi River Alluvial Aquifer (MRAA) formerly referred to as the Plaquemine Aquifer as shown in Figure A:2-3. It is hydraulically connected to the Mississippi River and its tributaries and distributaries and flows to the west away from the Mississippi River. It is comprised of unconsolidated Pleistocene and Holocene sands, silts, and gravels and has a thickness of 500 ft to 800 ft. See Figure A:2-4. It is capped by clay that has a thickness of 70 ft to 125 ft. The MRAA is a confined aquifer characterized by a prominent hydraulic gradient. The hydraulic gradient is a function of the seasonal stage fluctuations due to rainfall in the basin. The MRAA also has a high permeability and flow rate.

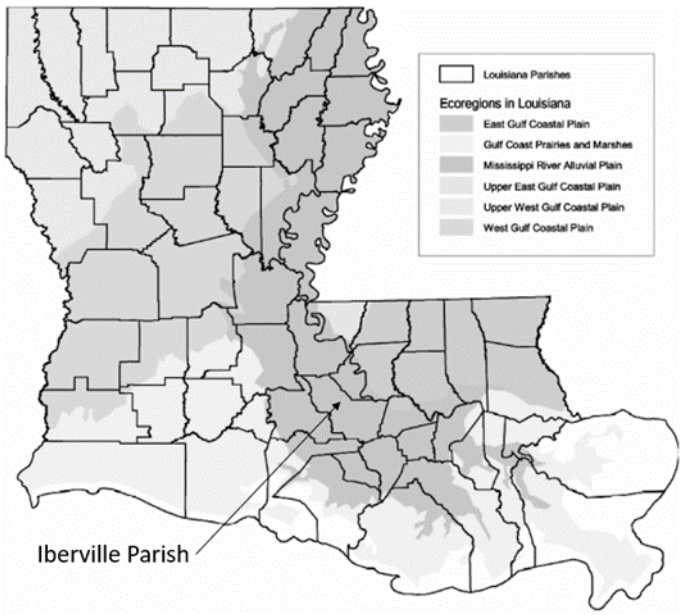


Figure A:2-3. Ecoregions in Louisiana (The Nature Conservancy)

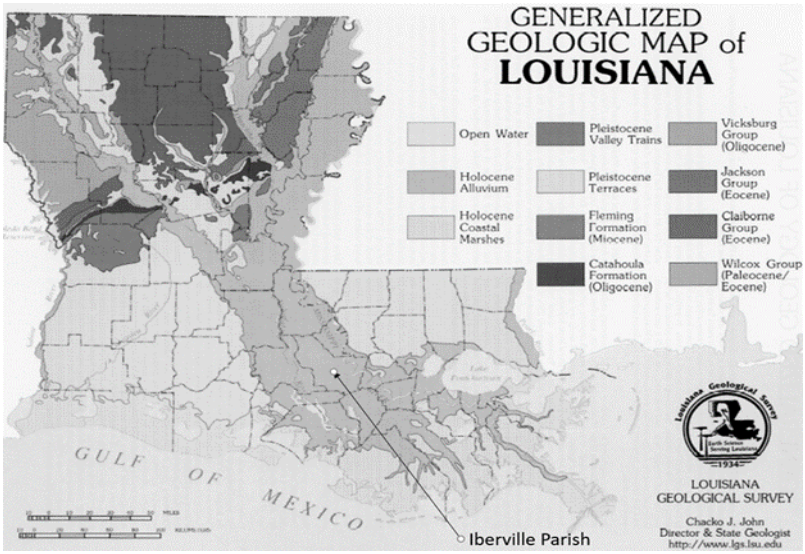


Figure A:2-4. Generalized Geologic Map of Louisiana (Louisiana Geological Survey)

2.2.6 Land Use

The land use in the parish falls under eight distinct categories which are largely undeveloped consisting primarily of forested wetlands, timber, private recreation, and pasture and row crop areas as shown in Table A:2-1. The developed parts of the parish are localized near the existing communities of Plaquemine, St. Gabriel, White Castle, Maringouin, Rosedale, Grosse Tete, Bayou Sorrel and Bayou Pigeon. The failure site is located southwest of the city of Plaquemine; the land use is a mix of pasture row crop and residential sites.

Table A:2-1. Iberville Parish Land Use Summary (2011)

Table 1- Iberville Parish Land Use Summary		
	Land Use Type	% of parish
1	Forested Wetland	32

2	Timber & Private Recreation	31
3	Pasture & Row Crop	21
4	Public Land	10
5	Residential	2
6	Mississippi River	2
7	Industrial	1
8	Commercial	1

2.2.7 Waterways and Lock Structures of Interest in the Study Area

The parish contains 34 square miles of water. Waterways of interest in the parish include – the Gulf Intracoastal Waterway (GIWW) – Port Allen to Morgan City Alternate Route, also known as the GIWW Alternate Route and Bayou Plaquemine. Brief descriptions of each water body are included below.

The GIWW Alternate Route runs north to south in Iberville Parish, LA and serves as a navigation route for vessel traffic. It connects the Bayou Sorrel and Port Allen Locks. Bayou Sorrel Lock provides navigation via the GIWW, and from Morgan City to Port Allen. The Port Allen Lock connects the Mississippi River to the Gulf Intracoastal Waterway.

Bayou Plaquemine was once a tributary of the Mississippi River. It served as one of the primary routes from the river to the interior basin, the Atchafalaya basin. After the construction of the Plaquemines Lock in 1909, it served as a major transportation route for several industries- agriculture, fishing, gas, lumber, and oil. After the closure of the lock in 1961, the bayou is now a distributary of the GIWW Alternate Route Intracoastal Waterway and has a nearly flat slope and consistent water surface elevation along the channel.

Due to its location in the basin which is upstream of the Bayou Sorrel Lock and downstream of the Port Allen Lock water surface elevations in the bayou are believed to be influenced by

the operation of Bayou Sorrel Lock and Port Allen Lock. It starts at the junction of the GIWW Alternate Route within the basin and runs east west to the City of Plaquemine.

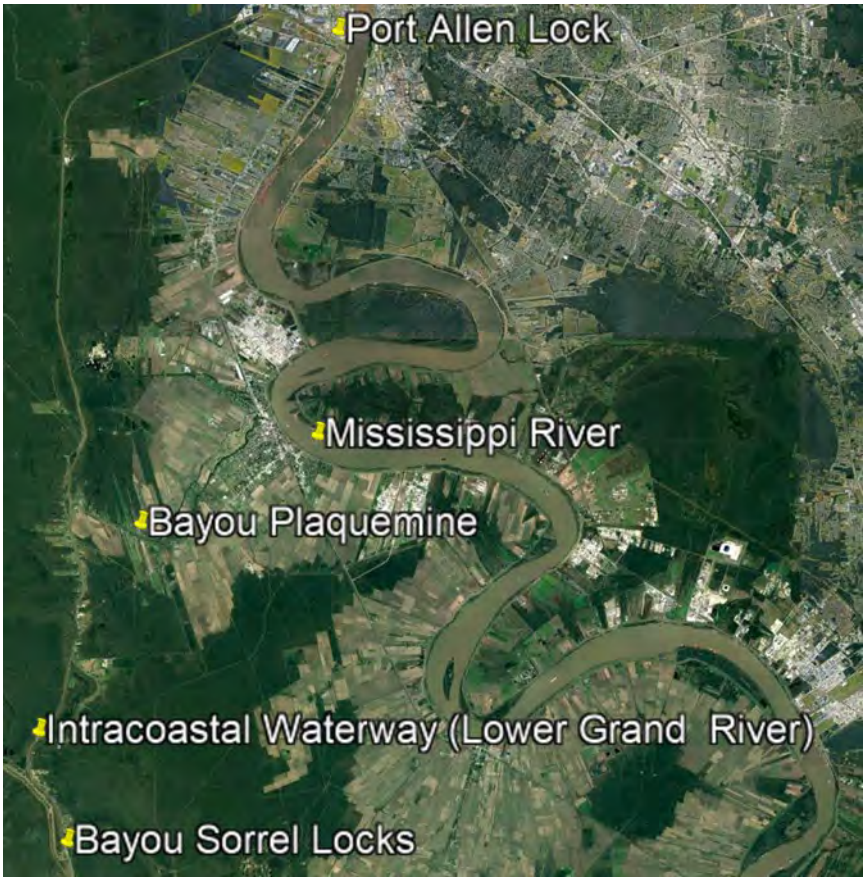


Figure A:2-5. Locks and Failure Location

2.2.8 Flood Risk

Approximately 78% of the parish has special flood hazard areas (SFHA) designated by the Federal Emergency Management Agency (FEMA) as depicted on the effective flood insurance rate maps dated 6 November 2013. The SFHA in the parish are delineated as Zone AE which is within the 1-percent annual chance (100 year) floodplain with published base flood elevations and Zone A, which is within the 1-percent annual chance (100 year)

floodplain but has no published base flood elevations; and Zone X, which are areas delineated within the 0.2-percent annual chance (500 year) floodplain and unmarked Zone X which is areas outside of the floodplain.

2.3 REVIEW OF EXISTING HYDROLOGIC AND HYDRAULIC DATA

The following data sets were examined to determine if fluctuations in water surface elevations along Bayou Plaquemine caused the bank failure. Existing gage data, permits, survey, Atchafalaya River basin models, and effective floodplain maps were reviewed to correlate stages in the Bayou Plaquemine based on stages in the GIWW Alternate Route to determine if the Bayou Sorrel Lock influenced the stage in the bayou along Hwy 77.

2.3.1 Existing Models

Several models within the Atchafalaya River basin were reviewed to determine the stage in Bayou Plaquemines at the failure location. During the review of the existing models, it was determined the models did not include detailed bathymetry at the study location or the study location was not included in the model domain. Given the limited funding available to complete the study, a new model was not completed.

2.3.2 Existing Flood Rate Insurance Maps

The floodplain maps were also reviewed to determine the base flood elevation in Bayou Plaquemines at the failure location. The bayou is located within a Zone A floodplain. It was determined that the associated 100-year floodplain elevation is approximately 10 ft as approximated on the effective Federal Emergency Management Agency (FEMA) flood rate insurance map (FIRM) panels 22047C0195D and 22047C0310D.

Figure A:2-6. FEMA FIRM Panels

2.3.3 Existing Permits

A review of U.S. Army Corps of Engineers (USACE) permits was also completed. The permits were reviewed to determine existing water surface elevations and observation date. Two permits 2015-00998 and 2017-00170 were approved and constructed along Bayou Plaquemine. The 2015 permit was located at Bayou Plaquemine along Highway 3066 and the 2017 permit was located downstream of the historical Plaquemines Lock. Water surface elevations in the bayou ranged from 3 ft to 5 ft.

Table A:2-2. Existing Permit Applications

Table 2- Existing Permit Applications				
	Permit #	Normal Water Surface Elevation	Description of Repair	Location

1	2015-00998	3	erosion repair on right descending bank	59225 Island Drive, Plaquemine, Louisiana
2	2017-00170	5	bulkhead and boathouse installation, erosion repair on left descending bank	58934 Bayou Road, Plaquemine, Louisiana

2.3.4 Existing Surveys

Surveys were collected in 2017 along the failure reach. The survey was completed by USACE New Orleans District (MVN) in-house crew (job no. 18-007S) on 14 November 2017. A total of 16 cross sections were taken in the channel every 200 ft over a length of 3,220 ft from survey station 59+27.28 to 91+47.68. The survey commences along Hwy 77 from just east of Jase St to just east of Kirtley Dr along Hwy 77.

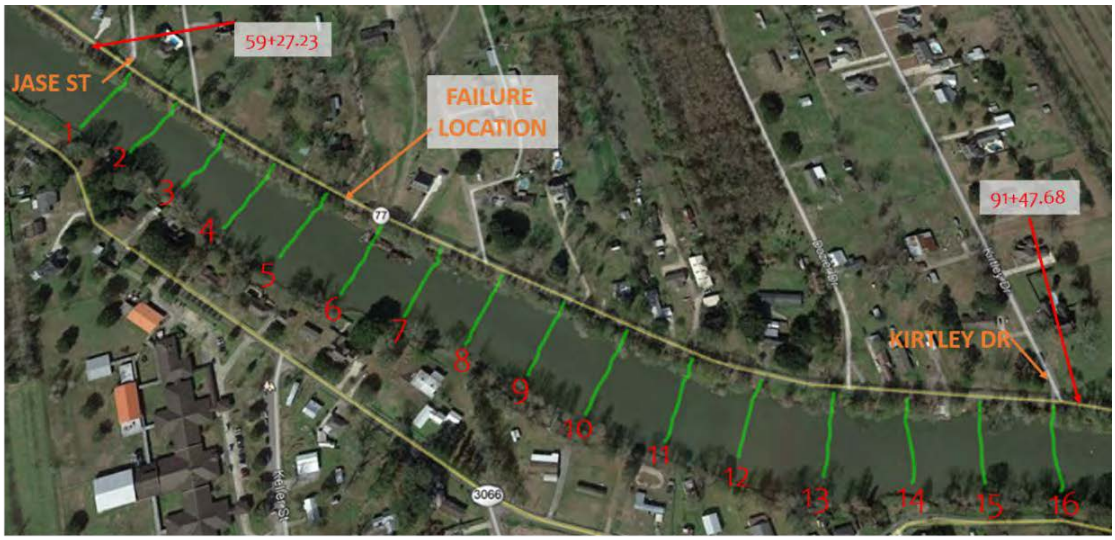


Figure A:2-7. 2017 Survey Cross Sections

The survey captured the water surface elevations in the channel; it varies along the reach from elevation 1.29 ft to 3.78 ft as shown in Table A:2-3.

Table A:2-3. 2017 Survey

Table 3 - 2017 Survey			
Cross Section	Station	Water Surface Elevation NAVD88 2009.55	Description
	59+27.28		Start of survey
1	61+24	3.56	Jase Street
2	63+24	3.61	
3	65+24	4.21	
4	67+24	1.29	Lowest water surface elevation
5	69+24	2.16	
6	71+24	3.78	Maximum water surface elevation
7	73+24	1.35	
8	75+24	3.67	
9	77+24	1.80	
10	79+24	1.87	
11	81+24	N/A	
12	83+24	N/A	
13	85+24	1.85	
14	87+24	N/A	
15	89+24	1.79	
16	91+24	1.54	Kirtley Dr
	91+47.68		End of Survey

2.3.5 Gage Analysis

The water surface elevations in Bayou Plaquemine are believed to be influenced by the operation of Bayou Sorrel Lock and Port Allen Lock. Existing gage data was reviewed in the basin to determine if a correlation between stages at the lock and stages in the bayou exists.

Table A:2-4 lists the summary of the gage analysis at two locations: Port Allen gage #52415 and Bayou Sorrel Lock floodside gage #52560. The period of record, maximum and minimum elevations are also provided in Table A:2-4. Stages from the gages from 2000 to 2018 were plotted and compared as well. See Figure A:2-8.

Table A:2-4. Gage Summary

Table 4 – Gage Summary (Water Surface Elevations referenced to NAVD 88)					
	Name (Gage ID)	Description	Period of Record	Max Wsel (Date)	Min Wsel (Date)
1	Lower Grand River at Bayou Sorrel (52560)	In north approach channel (GIWW, Morgan City-Port Allen Alternate Route), 1.9 miles south of Bayou Sorrel	1/1/80-2/27/20	8.40 (05/18/04)	-1.11 (01/13/81)
2	Port Allen Gulf Intracoastal Waterway at Port Allen Lock (52415)	Gulf Intracoastal Waterway at Port Allen Lock. Located on west end of lock (Morgan City - Port Allen route).	1/1/80-6/08/20	9.65 (04/14/80)	0.24 (08/08/08)

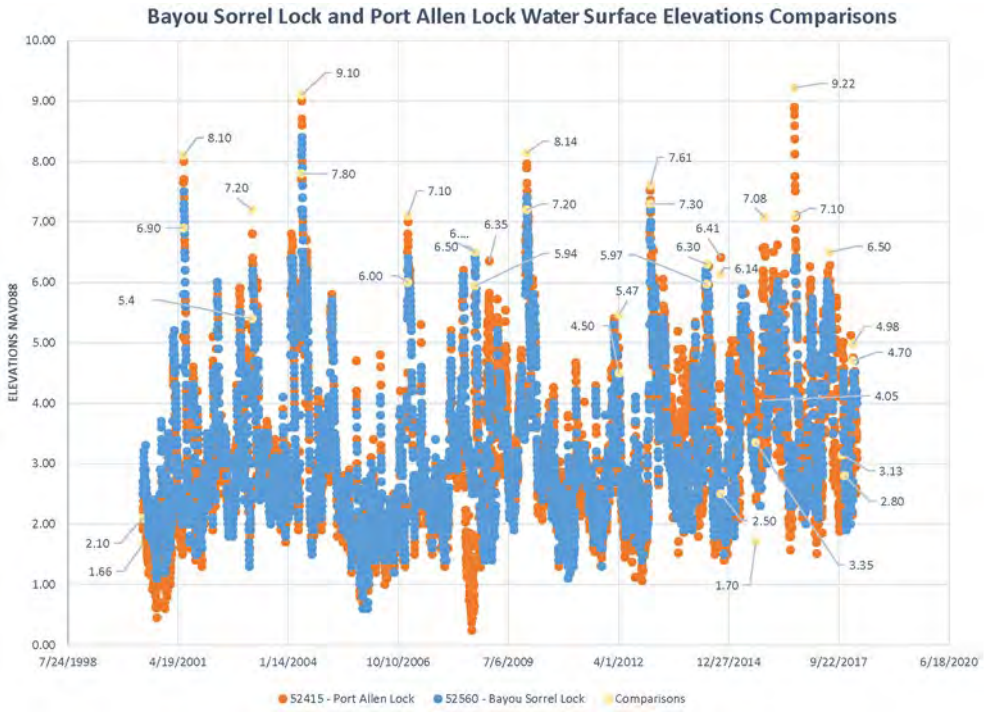


Figure A:2-8. Bayou Sorrel Lock Versus Port Allen Lock Stages

Table A:2-5 compares gages at the locks on the same date to determine a correlation between the upstream and downstream elevations along the GIWW Alternate Route to estimate a stage in Bayou Plaquemine over the 2000 to 2018 timeframe. The maximum differential in water surface elevation for the selected dates varies from 0.28 to 3.03 when the stages are higher in the upper basin.

Table A:2-5. Bayou Sorrel Lock

Table 5 – Bayou Sorrel Lock and Port Allen Lock Water Surface Elevations Comparisons				
	Date	Bayou Sorrel Lock	Port Allen Lock	Difference
1	6/9/2001	6.90	8.10	-1.20
2	02/22/2003	5.40	7.20	-1.80
3	5/15/2004	7.80	9.10	-1.30
4	1/5/2007	6.00	7.10	-1.10
5	09/05/2008	6.50	5.94	0.56
6	1/14/2009	4.50	6.35	-1.85
7	12/18/2009	7.20	8.14	-0.94
8	04/05/2012	4.50	5.47	-0.97
9	1/15/2013	7.30	7.61	-0.31

10	06/11/2014	6.30	5.97	0.33
11	10/16/2014	6.14	2.50	3.64
12	08/29/2015	1.70	3.35	-1.65
13	11/18/2015	4.05	7.08	-3.03
14	8/14/2016	7.10	9.22	-2.12
15	06/30/2017	-	6.50	-
16	1/28/2018	4.70	4.98	-0.28

Table A:2-6 compares surveyed water surface elevations in the bayou from surveys in 2000 and 2017 to the gages at the locks on the same date to determine a correlation between the stage in the bayou and water surface elevations at the gages as well.

Table A:2-6. Bayou Plaquemine Gage Correlation

Table 6 – Bayou Plaquemine Gage Correlation (NAVD88)					
	Bayou Plaquemine wsel	Observation Date	Source	Allen Lock	Bayou Sorrel Lock
1	1.80	06/03/00	Survey-00-031	1.66	2.10
2	2.84	11/14/17	Survey-18007S	3.13	2.80

The water surface elevations in the bayou and at the lock on the observed date of 14 November 2017 were nearly the same. The available data along Bayou Plaquemine was limited so no definitive correlation could be determined between the interaction of the two waterbodies, and it is unclear if the downstream stages at the lock influence the stage in the bayou. It is also apparent based on the comparisons that the stages in the upper basin near

Bayou Plaquemine and Port Allen Lock are sometimes lower than the downstream stage at Bayou Sorrel Lock.

Despite, the uncertainty the data was used to approximate the low, normal and highwater surface elevations within the bayou as summarized in Table A:2-7. The normal water surface elevation in the channel appears to be within the range of elevation 3 ft to 5 ft based on the permits; the surveys had a range of water surface elevations. The lowest elevation based on the survey from 2017 is 1.29 ft which could be adopted as the low water elevation. The stage of the 1% annual chance event (100 year) was approximated at 10 ft from the FIRM panels which was adopted as the highwater surface elevation. These estimated values were used to complete the conceptual design for the repair.

Table A:2-7. Bayou Plaquemine Estimated Water Surface

Table 7– Bayou Plaquemine Estimated Water Surface Elevations (NAVD88)			
	Design Case	Water Surface Elevations	Source
1	Low water elevation	1.29	2017 Survey
2	Normal elevation	3-5	2015, 2017 Permits
3	High water elevation	10	2013 FEMA FIRM

2.4 SUMMARY OF FINDINGS

Previous study documentation indicated the bank failure was due to fluctuations in water surface elevations and poor soil conditions. Although, there are several sites along the bayou with bank stability issues, there is no conclusive evidence fluctuations in water surface elevations caused the failure.

Figure A:2-9 shows the apparent failure location along the shoulder of the roadway within the elevation range of 14 ft - 18 ft and a depiction of a proposed repair. Failure repair was completed by the LADOTD; breadth and depth of repair is unknown. Based on the review of the available data, the stages in Bayou Plaquemine may not have reached the elevation of the shoulder along Hwy 77 where the apparent failure occurred. As noted above the highwater elevation is 10 and based on the water surface elevations from the 2000 to 2018 timeframe, the stages in GIWW Alternate Route did not exceed 9.22 ft. Rainfall in the basin

is not a significant source of flooding (Ramirez 2011). Propwash, boat wake, and waves are also not an issue at the failure location; boat and vessel traffic were not observed during various field visits by the design team. Maritime traffic is believed to be non-existent or negligible on the waterway.

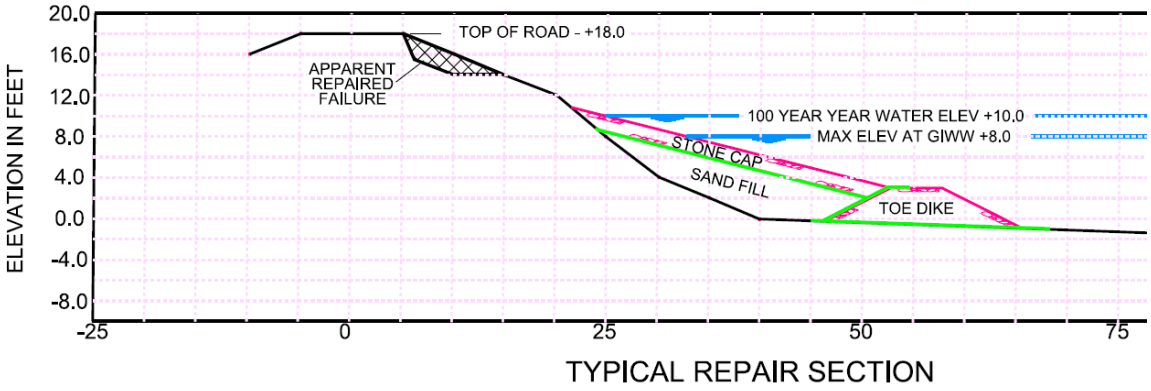


Figure A:2-9. 2017 Survey Cross Sections

2.5 RECOMMENDATIONS AND CONCLUSIONS

Detailed investigations and data collection should be completed to determine the cause of the failure.

2.6 REFERENCES

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Water Quality

2.7 REGULATORY OVERVIEW

The Clean Water Act (CWA) includes a process for states to assess surface water quality. Section 305(b) of the CWA requires states to develop a surface water quality monitoring program, and a report describing the water quality status of state waterbodies with respect to support of designated uses. Section 303(d) of the CWA requires states to develop and list Total Maximum Daily Loads (TMDLs) for impaired waterbodies (waterbodies with water quality unsupportive of one or more designated uses). A TMDL is the maximum amount of the pollutant(s) contributing to impairment that can enter a waterbody from all sources (including nonpoint sources) and still meet water quality criteria. Similar to agencies from other states, the Louisiana Department of Environmental Quality (LDEQ) implements a watershed-based approach to reduce pollutant loads in Louisiana waterbodies where TMDLs have been established, through the Louisiana Pollutant Discharge Elimination System (LPDES) and Louisiana Nonpoint Source (NPS) programs. For the purpose of state water quality assessment, Louisiana is divided into twelve major watersheds, which are further divided into sub-watersheds known as waterbody subsegments. The Louisiana Water Quality Inventory: Integrated Report is the biennial publication prepared by the Louisiana Department of Environmental Quality (LDEQ) on the status of Louisiana waters in accordance with Sections 305(b) and 303(d) (LDEQ 2020).

2.7.1 Designated Uses

Louisiana Surface Water Quality Standards (LAC 33:IX.11) define eight designated uses for surface waters: primary contact recreation; secondary contact recreation; fish and wildlife propagation; drinking water supply; oyster propagation; agriculture; outstanding natural resource; and limited aquatic life and wildlife use. Designated uses for each waterbody subsegment, and water quality criteria for each designated use, are included in the standards. Definitions for the designated uses common to most Louisiana waterbodies are as follows:

- *Primary Contact Recreation:* any recreational or other water contact activity involving prolonged or regular full-body contact with the water and in which the probability of ingesting appreciable amounts of water is considerable. Examples of this type of water use include swimming, skiing, and diving.

- *Secondary Contact Recreation*: any recreational or other water contact activity in which prolonged or regular full-body contact with the water is either incidental or accidental, and the probability of ingesting appreciable amounts of water is minimal. Examples of this type of water use include fishing, wading, and boating.

- *Fish and Wildlife Propagation*: the use of water for aquatic habitat, food, resting, reproduction, cover, and/or travel corridors for any indigenous wildlife and aquatic life species associated with the aquatic environment. This use also includes the maintenance of water quality at a level that prevents damage to indigenous wildlife and aquatic life species associated with the aquatic environment, and contamination of aquatic biota consumed by humans.

- The use subcategory of *limited aquatic life and wildlife* recognizes the natural variability of aquatic habitats, community requirements, and local environmental conditions. *Limited aquatic life and wildlife* use may be designated for waterbodies having habitat that is uniform in structure and morphology, with most of the regionally expected aquatic species absent, low species diversity and richness, and/or a severely imbalanced trophic structure. Aquatic life able to survive and/or propagate in such waterbodies includes species tolerant of severe or variable environmental conditions. Waterbodies that might qualify for the *limited aquatic life and wildlife* designated use subcategory include intermittent streams, and naturally dystrophic and man-made waterbodies with characteristics including, but not limited to, irreversible hydrologic modification, irreversibly degraded water quality, uniform channel morphology, lack of channel structure, uniform substrate, lack of riparian structure, and similar characteristics making the available habitat for aquatic life and wildlife suboptimal.

If a designated use is not fully supported, the waterbody subsegment is considered to be impaired, and suspected causes and sources of impairment are identified. A suspected cause of impairment is a water quality criteria violation associated with impairment (e.g., low dissolved oxygen, non-native aquatic plants), while a suspected source of impairment is an activity, event, or condition associated with a corresponding suspected cause of impairment (e.g., agriculture, chemical spills, natural conditions). A suspected cause of impairment can have one or more corresponding suspected sources of impairment.

2.7.2 Water Quality Criteria

Water quality criteria are elements of state water quality standards expressed as constituent concentrations, levels, or narrative statements representing the quality of surface waters supporting a particular designated use. When criteria are met for a designated use, surface water quality is expected to support the designated use. Louisiana has both general and numeric criteria (LAC 33:IX.1113). General criteria are expressed in a narrative form, and include aesthetics, color, suspended solids, taste and odor, toxic substances (in general), oil and grease, foam, nutrients, turbidity, flow, radioactive materials, and biological and aquatic community integrity. Numeric criteria are generally expressed as concentrations or scientific units, and include pH, chloride, sulfate, total dissolved solids, dissolved oxygen, temperature, bacteria, and specific toxic substances.

The U.S. Environmental Protection Agency (EPA) has published criteria guidance and recommendations for several substances, and states may incorporate these into their water quality standards without modification. Although states generally use EPA guidance and recommendations for developing and adopting their own criteria, they are allowed to develop their own methodology. EPA guidance and recommendations are continuously developed and revised.

National criteria recommendations have been established for the protection of both aquatic life and human health. Aquatic life criteria are designed to protect all aquatic life (plants and animals), and include acute criteria for short-term exposures (e.g., spills) and chronic criteria for long-term exposures. Separate criteria are available for fresh and salt waters. Criteria may be dependent upon other water quality characteristics such as pH, temperature, or hardness. Human health criteria are numerical guidelines for the potential risk of adverse effects to humans due to substances in water. Factors considered include body weight, risk level, fish consumption, drinking water intake, and incidental ingestion while swimming. Criteria are available for public drinking water supply and non-drinking water.

2.7.3 Louisiana Pollutant Discharge Elimination System

The LPDES Program administers permitted wastewater discharges into state surface waters, allowing the state to control the amounts and types of wastewaters discharged into its waters in order to meet water quality standards. The program began in 1996, when LDEQ adopted responsibility for administering the permitting, compliance, and enforcement activities of the National Pollutant Discharge Elimination System (NPDES) from the EPA.

2.7.4 Louisiana Nonpoint Source Program

The Louisiana NPS Program administers nonpoint source pollution management in accordance with Section 319(h)(11) of the CWA, as another measure for meeting water quality standards. It includes partnering with stakeholders and other statewide nonpoint source pollution management programs for the development and execution of watershed implementation plans for reducing nonpoint source pollution, as well as educational outreach with the same objective (LDEQ 2016).

2.8 HISTORIC AND EXISTING CONDITIONS

Ambient water quality monitoring data was collected by LDEQ for Bayou Plaquemines (site 972 in Figure A:2-10 in the years 2000, 2004, 2007, 2008, 2011, 2012, 2015, 2016, 2019, and 2020. Monitoring data suggests infrequent (3 of 54 samples) exceedences of fecal coliform criteria, and that water quality standards for fecal coliform are being attained (no more than one in four samples can exceed 400 COL/100 mL between the months of May and October, and 2,000 COL/100 mL between November and April). Total nitrogen consistently exceeds EPA criteria (0.57 mg/L), often by at least two times the criteria threshold (1.14 mg/L and higher concentrations). No other criteria exceedences have been observed for parameters included in field measurement and laboratory analysis.

Possible sources of elevated nitrogen in the watershed include sugarcane farming, pastureland, and low-intensity development which includes several subdivisions and a golf course (USDA 2021). Along some reaches of the bayou, there appears to be little vegetation capable of serving as a riparian buffer for removing nitrogen from runoff before it reaches bayou surface waters, and shallow groundwater from nearby farmland and pastureland may have levels of nitrogen capable of contributing to eutrophication in the bayou. Best Management Practices for cropland, pastureland, and developed land with respect to water quality in the watershed are unknown, but appear likely to be insufficient with respect to runoff of nitrogen fertilizer from land surfaces into Bayou Plaquemines via surface water and groundwater flows. Additionally, given the slack water nature of the stream, it appears water circulation in the bayou is limited, preventing nutrients from being flushed out of the bayou except during major rainfall events or when sustained strong winds coincide with the primary fetch orientations of the bayou.

Figure A:2-10. Project area with washout location, waterbody subsegments, and ambient water quality monitoring sites.

2.8.1 Louisiana Water Quality Inventory

Bayou Plaquemine is located within the Bayou Plaquemine waterbody subsegment, which has the designated used of primary contact recreation (PCR; swimming), secondary contact recreation (SCR; boating), and fish and wildlife propagation (FWP; fishing). The subsegment was fully supporting all three of its designated uses in the 2010, 2012, 2014, 2016, and 2018 assessments (LDEQ 2020).

2.9 FUTURE CONDITIONS

2.9.1 Alternatives 1.1, 1.2 (TSP), and 1.3

Construction activities from these alternatives may cause temporary water quality disturbances as described in the 404(b)(1) evaluation for this study. The placement of fill materials for bankline repair may have minor, temporary impacts to channel suspended particulate and turbidity levels. During construction, the placement of materials is expected to generate turbidity plumes and introduce suspended particulates, as well as trace minerals from sand and limestone rock dust, creating minor, short-lived water column impacts. Depending on hydrologic conditions during construction, including whether any major rainfall events occur, the water quality impacts during construction may range from negligible to noticeable but transient. As construction materials settle and consolidate and loose sediments and particulates are carried downstream, the direct water quality effects of project features are expected to gradually diminish.

Oil pipeline relocation under Alternative 1.1 is expected to contribute to temporary impacts to suspended particulate and turbidity levels. Although highly unlikely, it would be possible for an oil pipeline leak to impact Bayou Plaquemine during relocation. If this was to occur, containment and cleanup of spilled oil would be required, and residual contamination of sediments and surface waters may be present over a longer time period until further cleanup and/or natural biodegradation fully remediate the area.

The long-term water quality impacts of this alternative would be less significant than the no action alternatives that would not repair the bankline, as they would prevent future bankline erosion.

2.9.2 Alternatives 2 (Relocation of a Portion of Highway 77) and 3 (No Action)

These alternatives would allow for the continued erosion of the existing bankline. Continued bankline erosion would introduce bankline and roadbed materials into Bayou Plaquemine during erosion events, which would cause temporary increases in suspended particulates, turbidity, and may also include the introduction of constituents associated with the road bed such as weathered asphalt, gravel, and residual automotive oil and grease into the Bayou. Most water quality impacts from continued erosion are expected to be transient and would be dispersed and diluted downstream following erosion events.

Possible relocation of an oil pipeline and additional utilities under alternative 2A is expected to contribute to temporary impacts to suspended particulate and turbidity levels. Although highly unlikely, it would be possible for an oil pipeline leak to impact Bayou Plaquemine

during relocation. If this was to occur, containment and cleanup of spilled oil would be required, and residual contamination of sediments and surface waters may be present over a longer time period until further cleanup and/or natural biodegradation fully remediate the area.

Relocation of Highway 77 so that it is farther removed from Bayou Plaquemine may decrease the introduction of roadway runoff containing oil and grease into the bayou during rainfall events but may introduce roadway runoff containing oil and grease to other waterbodies which are likely hydraulically connected to Bayou Plaquemine.

2.10 REFERENCES

Louisiana Department of Environmental Quality (LDEQ). 2020. *Water Quality Integrated Report 305(b)/303(d)*. https://www.deq.louisiana.gov/page/water-quality-integrated-report-305b303d

Section 3
Geotechnical Investigations and Design

3.1 INTRODUCTION

This report contains the results of geotechnical investigations and analyses performed for LA Hwy 77 at Bayou Plaquemine. The project is located along the banks of Bayou Plaquemine which runs parallel with adjacent LA Hwy 77 near the city of Plaquemine, LA, which is about 15 miles southwest of Baton Rouge, in Iberville Parish, LA.

LA Hwy 77 extends from Station 59+27.28 to 91+47.68. See Figure A:3-1 in Annex 1 for a plan view of the site location.

3.2 BACKGROUND

Bank erosion is occurring along Bayou Plaquemine along the shoulder of LA Hwy 77 which runs parallel to the bayou and threatens the integrity of the highway. The highway is used by motorists traveling between Iberville Parish and the cities of Baton Rouge and Plaquemine, LA. The highway is the most direct route between Plaquemine and the villages of Rosedale and Grosse Tete, LA. Due to fluctuations in water elevation and poor soil conditions, soil along the bank erodes rapidly as water levels decrease. The bank may fail catastrophically with the next major rainfall causing imminent danger to the highway.

An emergency repair was performed in 2017 to stabilize multiple slide areas along the edge of highway by LADOTD. A total length of 900 linear ft OF PZ 27 sheet pile with minimum 40 ft embedment depth was driven at the edge of shoulder. A field visit was performed in July of 2020 to inspect the field conditions. When comparing photographs taken August 2017 after the repair was completed to photographs taken July 2020, the sheet piles and roadway do not appear to have experienced any lateral movement or settlement. However, the bank slope was visually identified to settle down 2 ft to 8 ft vertically. The design cross section was taken from the 2017 survey. Typical sections are included in Figure A:3-4 in Annex 1.

3.3 DESIGN CRITERIA

3.3.1 Hydraulic Design Criteria

Hydraulic data was provided by USACE MVN's Engineering Division's Hydrology, Hydraulics, and Coastal Engineering (HH&C) Branch for development of the initial slope stability analysis. Water surface elevations were approximated, and no model was completed. The water elevation in the bayou was approximated as 3.0 ft during low water and 10.0 ft during high water cases. Low water condition was considered in initial slope stability analysis.

3.3.2 Geotechnical Design Criteria

USACE MVN's Engineering Division's Geotechnical Engineering Branch (EDG) performed all geotechnical analyses according to the HSDRRS Design Guidelines, updated June 2012 and EM 1110-2-1902 (Slope Stability), dated 31 October 2003. A summary of the Factor of Safety (FOS) requirements is included in Table A:3-1.

Table A:3-1. Factor of Safety Requirements

Component	Analysis Type		Minimum Required FOS	Guideline
LA Highway Embankment	**Deep-Seated Global Stability (Spencer Method)**	Low Water (Q-case)	1.40	HSDRRS, Ch 3
		Low Water (S-case)	1.40	
	Deep-Seated Global Stability (Janbu Method)	Low Water (Q-case)	1.30	EDG - Management
		Low Water (S-case)	1.30	

3.4 SUBSURFACE INVESTIGATIONS

3.4.1 Field Exploration

No new borings or other subsurface investigation was conducted for this phase of study. Preliminary geotechnical assessment was performed based on boring and soil testing

performed by LADOTD. A total of five (5) borings are found within 1.5 miles of the project location. The soil borings data are presented in the Boring Logs section in Annex 1. The locations of the borings are shown in Figure A:3-2 in Annex 1. A list of borings is presented in Table A:3-2. Individual graphic logs of the soil borings are presented in Annex 1 along with a soil borings legend.

Table A:3-2. Borings

Boring	Latitude	Longitude	Ground el. (ft)	Depth (ft)
B-1	30° 14' 5.60" N	91° 18’ 53.24” W	12.2	60
B-2	30° 14’ 16.48” N	91° 18’ 55.26” W	12.6	60
B-3	30° 14’ 23.82” N	91° 18’ 58.96” W	15.1	60
B-4	30° 14’ 35.06” N	91° 19’ 2.14” W	14.6	60
B-5	30° 14’ 41.97” N	91° 19’ 4.28” W	14.8	60

3.4.2 Laboratory Tests

Visual classifications and water content determinations were performed for all cohesive samples from the borings. Unconsolidated undrained (Q) triaxial tests were performed for cohesive soils according to the American Association of State Highway and Transportation Officials (AASHTO) T296 and Standard Penetration Test (SPT) were performed for granular soils according to AASHTO T206. Atterberg limit determinations and sieve analyses were performed on selected samples.

3.4.3 Site Geology

Boring data does not exist in this area, so the geologic history explained here is a general description of what most likely exists in the subsurface of the study area. The immediate subsurface (15 ft to 10 ft above sea level) would most likely be composed of silts of silty sands of a distributary channel deposit. The distributary channel probably carved into any thin, shallow natural levee deposits (10 to (-) 5 ft below sea level) that might still exist in the study area. Below this, from approximately (-) 5 ft above sea level to (-) 80 ft below sea level would be predominately backswamp deposits composed of organic-rich clays. From

approximately (-) 80 ft to (-) 240 ft below sea level, substratum gravel deposits should dominate, then (-) 240 ft below sea level, Pleistocene silty-clay and clay deposits would begin and extend deep into the subsurface. For a better approximation of stratigraphy, borings would need to be provided.

3.5 DESIGN SOIL PARAMETERS

Design shear strengths were based on unconsolidated-undrained (Q) tests on representative soil samples of the undisturbed borings provided by LADOTD. The soil properties of silt were assumed to have a friction angle of 15 degrees, a cohesion of 200 psf, and unit weight of 117 pcf; the soil properties of the sand were assumed to have a friction angle of 30 degrees and a cohesion equal to 0 psf, and unit weight of 122 pcf. The strength line was created for this analysis based on 5 borings. A graphical representation of the soil design parameters is shown in Figure A:3-3 in Annex 1. The design soil parameters for Q-case is presented in Table A:3-3. Soil parameters of silts, sands, and embankment material used in the drained (S-Case) analysis were based upon typical values from HSDRRS.

Table A:3-3. Q-Case Soil Design Parameters

Layer Number	Layer Name	Layer Range (EL)		Unit Weight, γ (pcf)	Cohesion, c' (psf)	Angle of internal friction, φ' (deg)
		Top	Bottom			
1	Embankment Fill	16.9	7	115	600	0
2	CH	7	(-) 6.6	115	750	0
3	CH	(-) 6.6	(-) 18	105	900	0
4	CH	(-) 18	(-) 28	108	650	0
5	CH	(-) 28	(-) 38	100	700	0
6	CH	(-) 38	(-) 75	105	800	0

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3.6 ANALYSIS AND RESULTS

Stability analyses were performed using the computer program Slope/W with Spencer's Method of analysis. The results of the Spencer's Method were checked using the Janbu

method of analysis in Slope/W. For the Spencer's Method of analyses, both circular and noncircular optimized failure surfaces were considered. Both Q and S-cases with low water were considered in the analysis. Tension cracks were incorporated into the Spencer's analyses. Tension cracks were only used when tension occurred in the active zone of the slip surface. Tension cracks were assumed to be full of water in all analyses. According to AASHTO, a total of 240 psf traffic surcharge load was considered in analysis. A summary of stability results is presented in Table A:3-4. All slope stability FOS's and the resulting slip surfaces are included in the Stability Plates section in Annex 1. Full engineering analysis results are presented in the Stability Report section in Annex 1.

Table A:3-4. Summary of Stability Results

Component	Analysis Type		Critical FOS (without sheet pile)[1]	Critical FOS (with sheet pile)[2]	Plate No.
Levee Embankment	Deep-Seated Global Stability (Spencer Method)	Low Water (Q-case)	2.12	2.13	C1[1]/C2[2]
		Low Water (S-case)	1.35	1.58	C5[1]/C6[2]
	Deep-Seated Global Stability (Janbu Method)	Low Water (Q-case)	2.03	2.03	C3[1]/C4[2]
		Low Water (S-case)	1.21	1.43	C7[1]/C8[2]

Note: 1-Analysis was performed without sheet pile; 2-analysis was performed with sheet pile.

3.7 CONCLUSIONS AND RECOMMNEDATIONS

Based on the analysis, the FOS obtained for Q-case using both Spencer's and Janbu's procedures meet the minimum requirement. However, FOS's for S-case without sheet pile using Janbu's procedure do not meet minimum requirement. It is recommended that further sub-surface geotechnical investigation is required using site specific borings and lab testing on selected samples to develop soil design parameters. Initial HH&C input for water levels in the canal ranged from elevation 3 ft to 10 ft. After the completion of this geotechnical analysis and report, it became clear that low water conditions of canal elevation of 1.29 ft

were possible. Due to the large uncertainty of the geotechnical parameters and a lack of an HH&C model, further analysis of the design is not warranted at this time and will be deferred to the PED stage.

3.8 REFERENCES

The following design criteria and publications were referenced for geotechnical design:

(1) Hurricane and Storm Damage Risk Reduction System Design Guidelines (HSDRRS), June 2012.
(2) EM 1110-2-1902, Slope Stability, October 2003.
(3) Strength and Compressibility Correlations for New Orleans Area Soils, January 2011.
(4) Naval Facilities Engineering Command Soil Mechanics Design Manual 7.01 (NAVFAC), September 1986.

The following computer software was utilized for the geotechnical analyses documented in this report:

(1) Geostudio 2019 SLOPE/W and SEEP/W, Version 10.0.0, Geo-Slope International, Ltd.

Section 4
Civil Design

4.1 EMERGENCY PROTECTION OF BAYOU PLAQUEMINE BANKLINE

4.1.1 General

Bayou Plaquemine, Figure A:4-1, is a federally authorized waterway. However, the channel is no longer maintained, because of the closure of Plaquemine Lock. The Indian Village Bridge is located at the entrance of Bayou Plaquemine from the Gulf Intracoastal Waterway (GIWW) Alternate Route. The swing span bridge is used for local boat and barge traffic. Bayou Plaquemine is mostly used for personal recreation. Bayou Plaquemine parallels LA Hwy 77 near the city of Plaquemine, LA in Iberville Parish, LA. Hwy 77 is the primary route from the city of Plaquemine to agricultural areas along the GIWW Alternate Route. A segment of the Bayou Plaquemine bank line has experienced erosion. The erosion jeopardizes the integrity of Hwy 77, as the bank is a component of the base of the highway. For this study, design alternatives were looked at to stabilize the bank and protect the highway. These are alternatives are as follows: 1) Construct emergency repair of the entire proposed reach with alternate design placing high-performance turf reinforcement mat (HPTRM) over the pipeline, and 2) Construct emergency repair of entire reach. Two additional alternatives were evaluated to determine federal interest in the project. These are referred to as the Future Without Project (FWoP) alternatives. The FWoP alternatives are as follows: 1) Construct a local bypass road, and 2) Relocate Hwy 77.

Figure A:4-1. Location Map

4.1.2 Alternative 1.2: TSP: Emergency Repair – Entire Proposed Reach with Alternate Design over Pipeline

The proposed emergency repair reach crosses a 14-inch gas pipeline, Figure A:4-2 and Figure A:4-3. For this study, relocation must be avoided. Under the TSP, a combination of the typical repair section, Figure A:4-4, and installation of HPTRM is proposed to ease the existing bank slope and eliminate future bank line erosion at the Mean high-water line. The HPTRM would be placed over the pipeline, minimizing loading compared to the typical repair section. This placement will require authorization from the pipeline owner. Based on surveys completed in 2017, approximately 22,815 tons of rock, 6,500 cubic yards of earthen fill, 19,070 square yards of geotextile separator fabric, and 4,000 square yards of HPTRM would be placed.

The current proposed fix is approximately 3,000 linear ft, Figure A:4-5, 2,600 ft of typical repair rock sections and 400 ft of HPTRM. In general, the proposed solution is to construct a stone toe dike at the water's edge, backfill with earthen material, and armor the earthen fill with a layer of stone scour protection. A standard placement of geotextile separator fabric would be under the rock toe dike section. An additional layer of geotextile separator fabric would be placed between the earthen fill and stone cap to prevent earthen material from leaching into the armor section. Minimal strength separator fabric was assumed to be used for construction. However, future hydraulic analyses during design will consider runoff and wave wash and determine if geotextile separator fabric or a layer of crushed stone is necessary. In the area of the pipeline, HPTRM would be installed per manufacturer guidelines. The area to receive HPTRM would be graded and compacted to create a smooth, uniform surface. HPTRM would be installed using anchoring devices and by overlapping seams, where necessary. Installed HPTRM would receive seeding in areas above the water line. The rock section and HPTRM would overlap to provide a cohesive repair section. This alternative is the most desirable as it does not break the flow regime by allowing head-cut at the end of the armoring section along the channel reach. This proposed repair construction area is approximately 5.35 acres.

This alternative cannot be achieved by end dumping stone from the road, as the existing bank line slope below the ordinary high-water stage is near vertical and will not readily hold stone. Therefore, construction access would occur from Bayou Plaquemine. It is envisioned that all rock, mat, and fill material would be barged to the site from the GIWW Alternate Route. This would require light loading of barges. Based on 2017 surveys, no excavation or flotation dredging would be required. Staging areas would be located along Bayou Plaquemine.

Clearing of the water's edge, if performed, should be minimal. Most existing trees are located on the upper bank along the road and above the proposed armoring elevation. The bank slope may need to be graded and stumps removed in the area of HPTRM installation. If tree removal is required, trees would be cut and not pulled. Trees and debris would be hauled off-site and disposed of following all disposal regulations.

The preliminary assumptions are that the rock dike section would likely be constructed to a 5 ft crown with 1:2 side slopes to an elevation of approximately 3.0 ft. Standard 650# top size stone gradation was assumed to be used for construction, Figure A: 4-6. The dike section would be above normal low water elevations and should allow for backfilling with earthen material. The resultant bottom width of the rock dike would be approximately 27 ft. The placement of geotextile separator fabric would require 3 ft of extension beyond the dike toe resulting in a fabric width of approximately 33 ft. The inside face of the rock toe dike would

be blanketed by geotextile fabric, to be pinned on the rock dike crown. A 9 ft width of fabric should cover the entire face and provide adequate laps. The earthen backfill would require some sandy content (silty sand) to allow for compaction in open water. The sand backfill would initiate at approximately 1 foot below the toe dike crown elevation and proceed landward on an approximate 1:4 slope. This should achieve an inshore elevation of approximately 8.5 ft or 10.0 ft, such that the final rock armor is in the general range of normal high-water elevation. This should eliminate shoreline erosion resulting from stage differentials or localized wave wash. This rock should also be underlain with geotextile fabric. Standard 200# top size stone gradation was assumed to be used for the construction of the stone armor, Figure A: 4-7. The final layer of stone armor should be placed on the earthen fill 16 inches thick. All rock gradations and geotextile strengths will be finalized during the design phase.

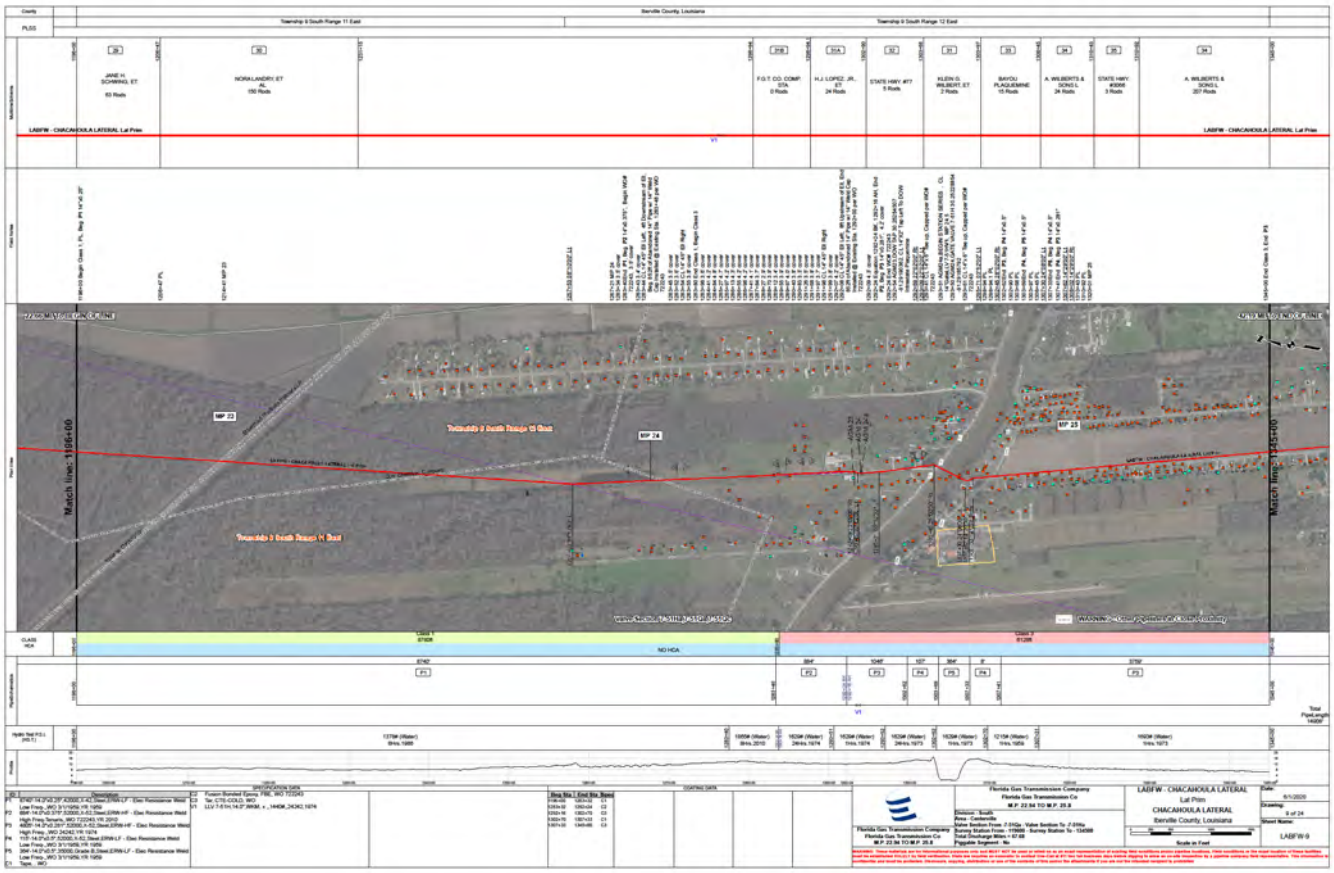


Figure A:4-2. 14 Inch Gas Pipeline Reference Drawing

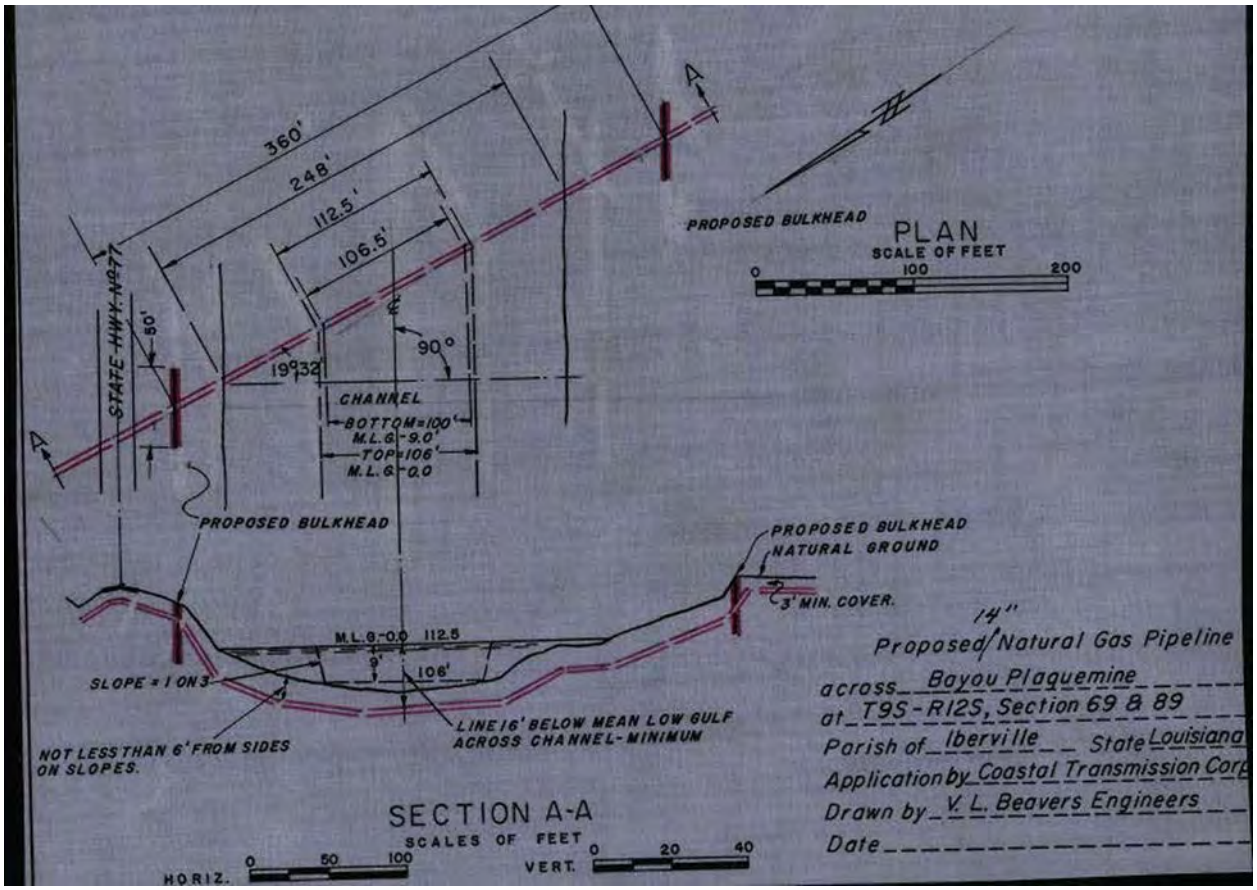


Figure A:4-3. 14 Inch Gas Pipeline Permit Reference Drawing

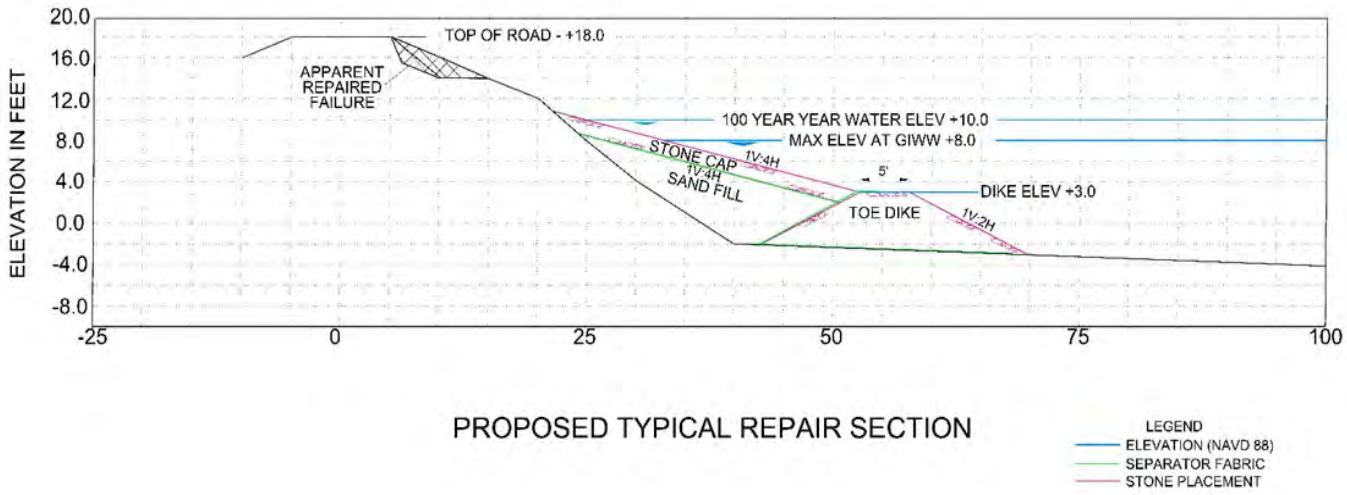


Figure A:4-4. Proposed Typical Repair Section

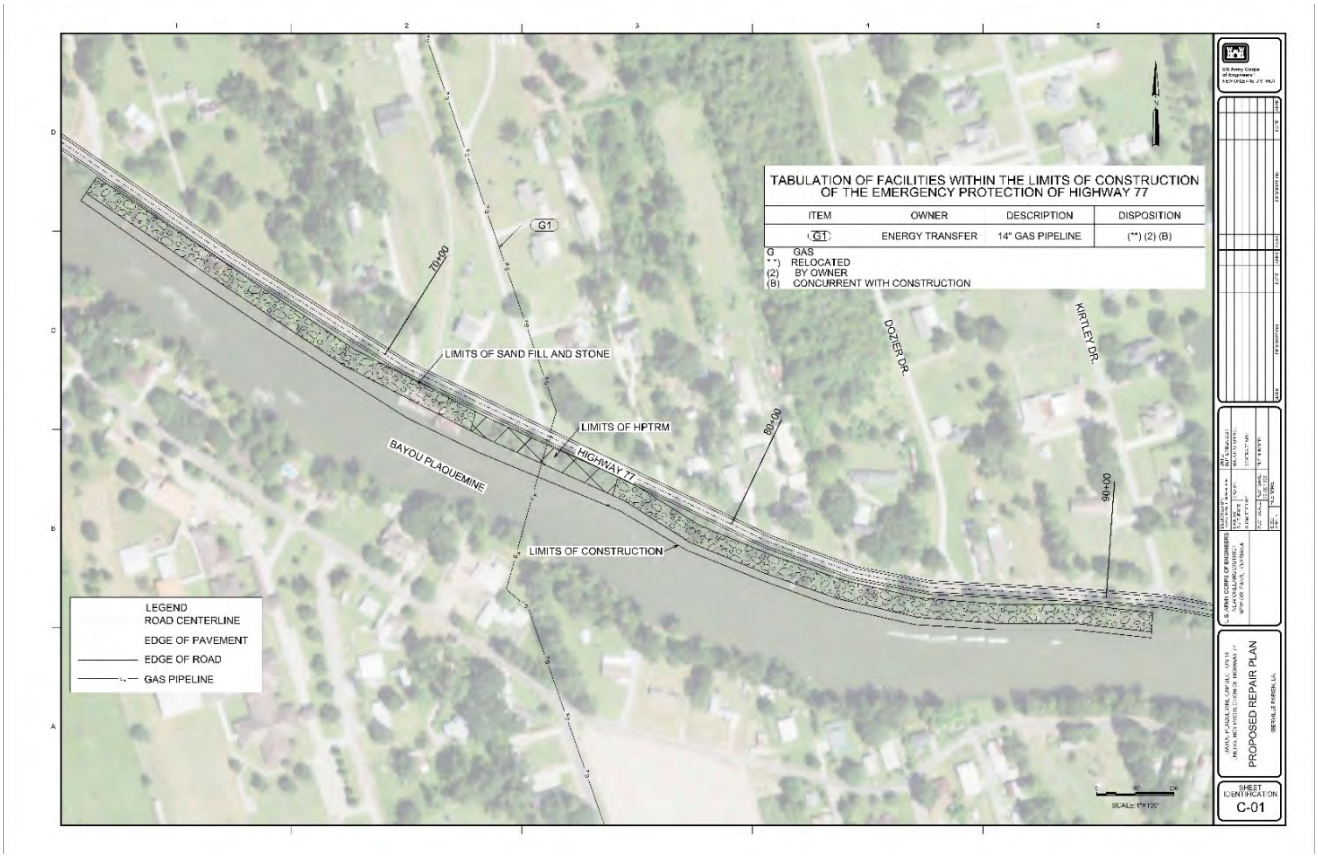


Figure A:4-5. Proposed Repair Plan

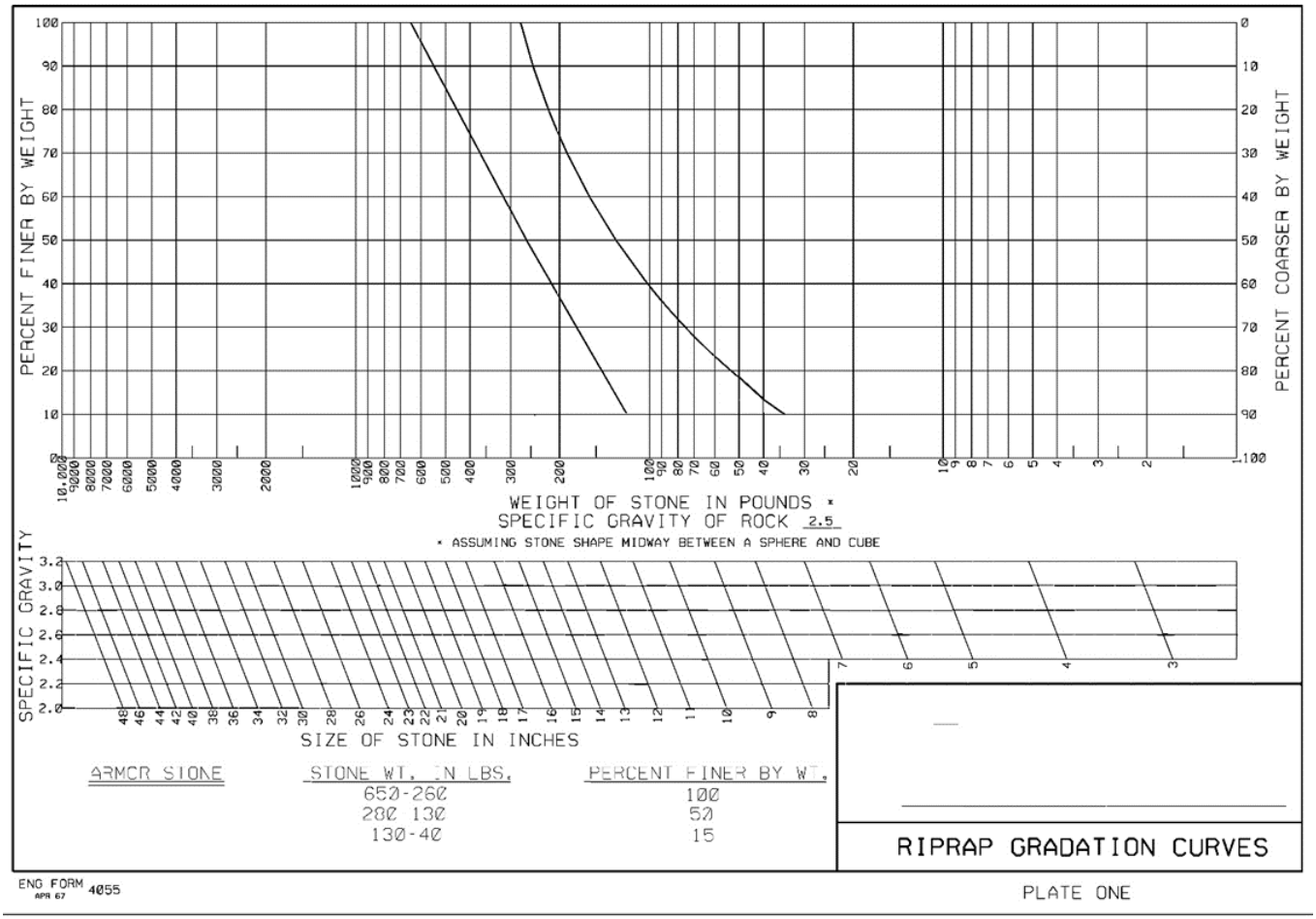


Figure A:4-6. Proposed Rock Dike Gradation Curve

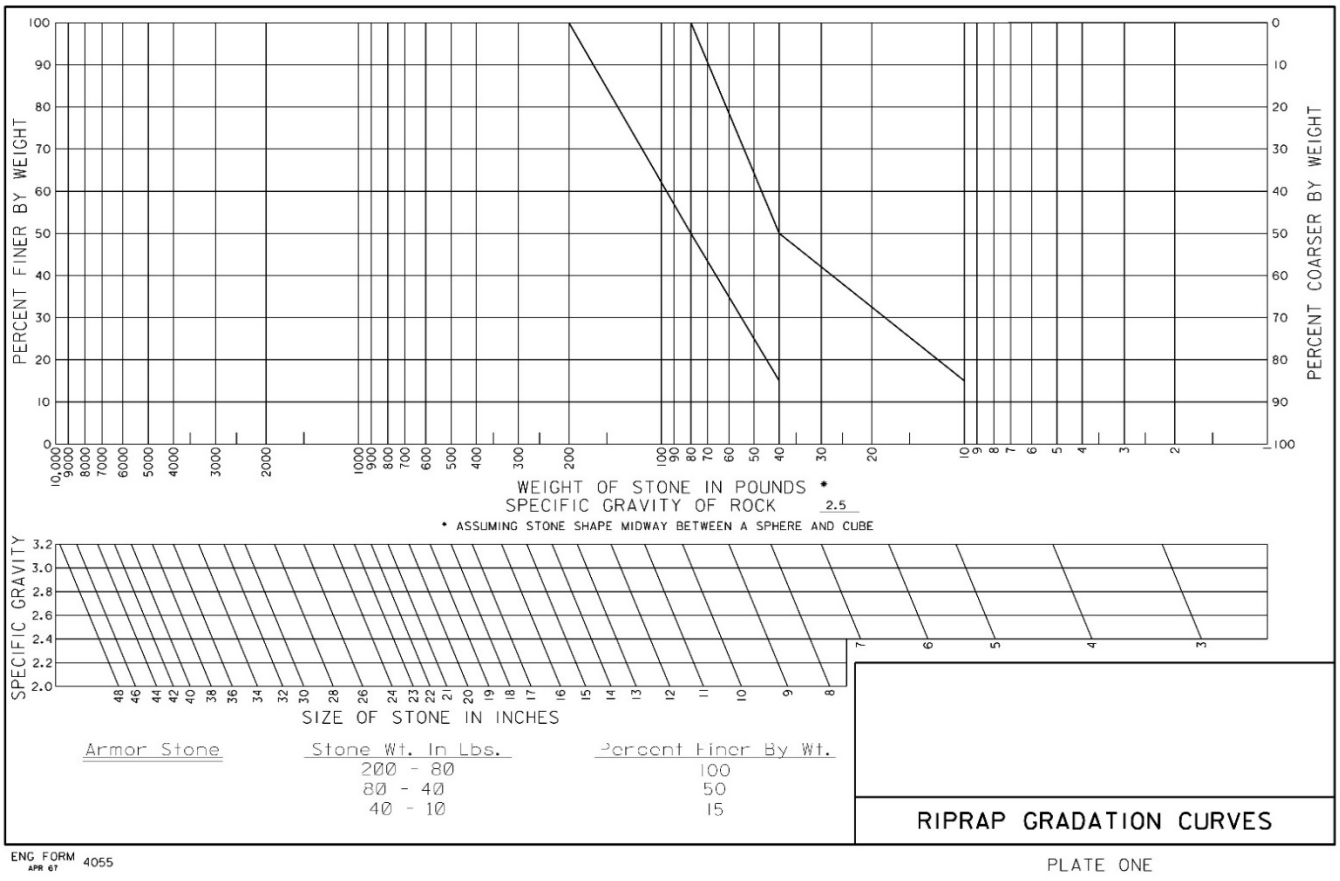


Figure A:4-7. Proposed Stone Armor Gradation Curve

4.1.3 Alternative 1.1: Emergency Repair – Entire Proposed Reach

The proposed emergency repair reach crosses a 14-inch gas pipeline. For this study, relocation must be avoided. Alternative 2 removes the option to place HPTRM over the pipeline and repair the entire 3,000 ft reach using the typical repair section. For alternative 2 to be selected, the pipeline owner would have to authorize the repair section to be placed

over the pipeline to ensure stability and safety of the line. Construction methodology would require minimal drop distance over the pipeline. Based on surveys completed in 2017, approximately 29,500 tons of rock, 8,200 cubic yards of earthen fill, and 22,000 square yards of geotextile separator fabric would be placed.

4.1.4 Future without Project

The proposed emergency repair reach along Hwy 77 is in an agricultural and residential area. The homes in this area are accessed via Hwy 77 and dead-end streets. If no repairs are made to stabilize the bankline of Bayou Plaquemine, future erosion may cause loss of the road. If this road is compromised, approximately 20 residents will lose access to their homes. If this occurs, LADOTD would have to either build a new bypass road or relocate the highway.

A bypass road would connect local roads to allow for access to these homes. This alternative may not be acceptable for large trucks and may be used for local traffic only. A relocation of the highway would be the most expensive alternative. This would provide a compatible level of service, newly constructed highway. Both roads would be designed and constructed by LADOTD. A location and plan are unknown and therefore, relocation requirements are unknown.

4.2 CONSTRUCTION AND OPERATIONS AND MAINTENANCE

4.2.1 Construction Schedule

Construction of the project will be contingent upon availability of funds. Construction schedule could be impacted by the stages in Bayou Plaquemine. Seasonal stage fluctuations will be determined further during design phase. Construction completion is estimated at six (6) months but subject to change as design is completed.

4.2.2 Operations and Maintenance (O&M)

O&M of the proposed emergency repair section would require approximately 25% of the stone to be replace every 15 years. Areas that received HPTRM will require periodic inspections and regular mowing.

4.3 RELOCATIONS

Construction of the proposed work will impact Florida Gas Transmission Company (Florida Gas) 14-inch diameter steel high pressure natural gas pipeline and Entergy's power poles and overhead power lines are located within the project area. Florida Gas pipeline crosses the Bayou Plaquemine at Lat. 30.24933 / Long. -91.29104. Entergy's power poles and overhead power lines are located along the embankment of Hwy 77.

Pursuant to the terms and conditions of the Section 10 Permit, Florida Gas assumed the risk that if future operations of the United States require an alteration in the position of their facility, that Florida Gas, upon due notice from the United States, shall be required to be partially removed and to relocate its facility concurrent with construction at the sole cost and expense of Florida Gas for the construction of this federal project.

With respect to Entergy's facilities, it is expected that the placement of rock along the embankment will occur within Entergy's right of way. However, the placement of rock will not impact to the power poles, thus not requiring them to be relocated.

Section 5
Cost Estimates

5.1 BASIS OF COST ESTIMATE

Detailed cost estimates for all alternatives studied are included in Annex 2. The final initial construction cost estimate for the selected plan was also finalized utilizing the Micro-Computer Aided Cost Estimating System (M-CACES) and is included in Annex 2. The cost estimate reflects current and applicable pricing and addresses specific construction procedures for the various line items in the estimate.

The estimated costs for stabilizing the bank of Bayou Plaquemine were based upon an analysis of each line item evaluating quantity, production rate, and time, together with the appropriate equipment, labor, and material costs. Cost were developed using actual in-house knowledge and experience by MVN cost engineers who have estimated similar projects. The TSP is to use a combination of earthen backfill, geotextile, armor stone and HPTRM turf reinforcing fabric to stabilize the bank and prevent further erosion. Work will be conducted using marine equipment and material will be delivered to the jobsite by barge. The earthen fill and geotextile materials will be trucked to a barge loading site assumed to be near Port Allen lock. Disposal of cleared debris we be barged to the same barge loading location and then loaded onto trucks for disposal.

All the construction and maintenance work are common to USACE MVN.

5.2 CONTINGENCIES

Contingencies for the cost estimates were based upon similar cost estimates that had a risk analysis performed using the Abbreviated Risk Analysis Software. The biggest uncertainty is scope growth resulting from further erosion of eh bank between now and the time of construction. Changes may also occur as more detailed field surveys and other information is gathered.

Contingencies for engineering and design are based on uncertainties involved in the preparation of plans and specifications, and in engineering during construction. These changes are expected to be proportional to the construction costs, so the same contingency is being used is the weighted average of the other project features.

These include cost of field data collection; unanticipated design problems; change in design based on the review of the report or changes in design criteria.

The Contingencies for construction management are also assumed to be proportional to the contingency for the other construction cost. If further erosion increases the size of the footprint, the construction duration will grow at the same rate as the materials needed. The time growth also includes additional duration for unusually severe weather and unknown changes to the contracts.

5.3 DETAILED ESTIMATE

The project cost estimate for the selected plan in M-CACES format is included in Annex 2. The project estimate of first cost, which included costs for lands and damages, and real estate costs during construction, as well as construction cost is included in Annex 2 and the Total Project Cost Summary (TPCS). The Abbreviated Risk analysis complete with the risk register is included in Annex 2.

5.4 DIRECT COSTS

5.4.1 Quantities

Major construction items are identified and quantified from typical sections and profile sketches developed by Project Delivery Team members. Quantity development was performed by USACE MVN's Engineering Division Civil Branch.

5.4.2 Labor

Prime and subcontractor labor (rates/costs) were developed from historical contract rates obtained from contractor payroll data from projects of similar size and scope.

5.4.3 Equipment

Equipment rates used are based have been priced using 2018 Engineer Pamphlet (EP) 1110-1-8-REVI Region III. Adjustments for fuel filters oils and grease prices and facility capital cost of money. Judicious use of owned equipment verses rental equipment was considered.

5.4.4 Sales Tax

State and county sales tax has been applied to direct cost of materials. The combined sales tax rate applied in the estimate is 9.45%.

5.4.5 Work Schedule and Overtime.

The estimate assumes a construction schedule of 10-hour workdays for 6 days per week. The schedule allows for adverse weather days. A 30% adjustment is allowed for labor to account for standby time due to weather and moving barges in and out.

5.5 INDIRECT COSTS

5.5.1 Contractor Markups

Contactor markups are estimated for both prime and subcontractors defined within M-CACES software. It is assumed that this will likely be a small business contract so both subcontractor and prime contractor markups are applied.

5.5.2 Escalation

The budget-level RP cost estimate uses the USACE Civil Works Cost and Programming Guidance standardized nomenclature, calculation, and reporting format for presenting a project's total costs. The standard reporting format is a TPCS. This TPCS presents total costs, including contingency, at a common base price level referred to as Total Project First Cost. The TPCS also presents a Total Project Cost (fully funded) including estimate of future inflation over the complete project period (design start thru project financial closeout).

5.6 NON-CONSTRUCTION LABOR EFFORT

It is assumed the design and construction administration will be staffed through the USACE. Specifics regarding the detailed activities and resourcing for these efforts will be captured within the PED Project Management Plan and associated PED resource-loaded schedule of activities. The USACE categorizes these costs into PED, Engineering During Construction, Construction Management (S&A). The costs for PED and S&A are shown on the Abbreviated Risk Analysis and the TPCS in Annex 2.

Appendix D: Agency Coordination

From: Paille, Ronald
To: MVN Environmental
Cc: Firmin, Brigette; Breaux, Catherine
Subject: [Non-DoD Source] Review of draft EA 587 - Bayou Plaquemines Emergency Bank Protection
Date: Tuesday, January 4, 2022 10:40:42 AM

I have reviewed the draft EA and have no comments to offer. Thanks for providing us the opportunity to review the subject draft EA!

RP

Ronny Paille
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Louisiana Ecological Services
200 Dulles Drive
Lafayette, LA 70506
337.291.3117
email: Ronald_Paille@fws.gov
Office Website / Follow us on Facebook

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Louisiana Ecological Services Field Office
200 Dulles Drive
Lafayette, LA 70506
Phone: (337) 291-3100 Fax: (337) 291-3139

In Reply Refer To:
Consultation Code: 04EL1000-2020-SLI-1718
Event Code: 04EL1000-2022-E-01283
Project Name: Hwy77 Sec14 Bank Protection

November 17, 2021

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

To Whom It May Concern:

***Due to the Louisiana Governor's mandatory quarantine order for the coronavirus (COVID-19), and in order to keep our staff and the public safe, we are unable to accept or respond in a timely manner to consultation request or project review/concurrence that we receive through the U.S. Mail. Please submit your request electronically to lafayette@fws.gov or call 337-291-3100.**

The enclosed species list identifies threatened, endangered and candidate species, as well as designated and proposed critical habitat that may occur within the boundary of your proposed project and may be affected by your proposed project. The Fish and Wildlife Service (Service) is providing this list under section 7 (c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Changes in this species list may occur due to new information from updated surveys, changes in species habitat, new listed species and other factors. Because of these possible changes, feel free to contact our office (337/291-3126) for more information or assistance regarding impacts to federally listed species. The Service recommends visiting the ECOS-IPaC site or the Louisiana Ecological Services website (www.fws.gov/lafayette) at regular intervals during project planning and implementation for updated species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to determine whether projects may affect Federally listed species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected (e.g. adverse, beneficial, insignificant or discountable) by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF or by contacting our office at the number above.

Bald eagles have recovered and were removed from the List of Endangered and Threatened Species as of August 8, 2007. Although no longer listed, please be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 *et seq.*). The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the BGEPA. A copy of the NBEM Guidelines is available at: http://www.fws.gov/southeast/es/baldeagle/NationalBaldEagleManagementGuidelines.pdf. Those guidelines recommend: (1) maintaining a specified distance between the activity and the nest (buffer area); (2) maintaining natural areas (preferably forested) between the activity and nest trees (landscape buffers); and (3) avoiding certain activities during the breeding season. On-site personnel should be informed of the possible presence of nesting bald eagles within the project boundary, and should identify, avoid, and immediately report any such nests to this office. If a bald eagle nest occurs or is discovered within or adjacent to the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary. The Division of Migratory Birds for the Southeast Region of the Service (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting any necessary consultation. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g. cellular, digital television, radio and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm ; http://www.towerkill.com; and http://fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

Activities that involve State-designated scenic streams and/or wetlands are regulated by the Louisiana Department of Wildlife and Fisheries and the U.S. Army Corps of Engineers, respectively. We, therefore, recommend that you contact those agencies to determine their interest in proposed projects in these areas.

Activities that would be located within a National Wildlife Refuge are regulated by the refuge staff. We, therefore, recommend that you contact them to determine their interest in proposed projects in these areas.

Additional information on Federal trust species in Louisiana can be obtained from the Louisiana Ecological Services website at: www.fws.gov/lafayette or by calling 337/291-3100.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

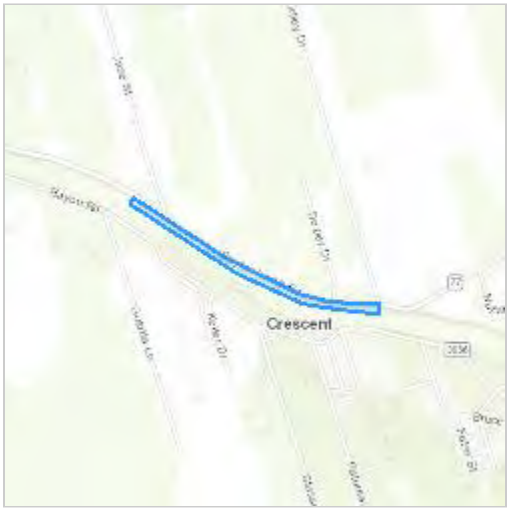
Louisiana Ecological Services Field Office
200 Dulles Drive
Lafayette, LA 70506
(337) 291-3100

Project Summary

Consultation Code: 04EL1000-2020-SLI-1718
Event Code: Some(04EL1000-2022-E-01283)
Project Name: Hwy77 Sec14 Bank Protection
Project Type: STREAM / WATERBODY / CANALS / LEVEES / DIKES
Project Description: Armoring the north bank of Bayou Plaquemine to protect LA Hwy 77, Bayou Jacob Road, in Plaquemine, Iberville Parish, Louisiana.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@30.250352772138086,-91.29254927477035,14z



Counties: Iberville County, Louisiana

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

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

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

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

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

Insects

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

Critical habitats

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

DATE: October 21, 2020

Location of files: F:\Digital_Records\Fed_Projects\NOD\Highway 77

FROM: USFWS, Louisiana Ecological Services Office

SUBJECT: Bottomland Hardwood Wetland Value Assessment (WVA) assumptions for Bayou Plaquemine CAP Section 14 Emergency Protection of Highway 77 Project

Overview: This assumption document presents information developed for use of the certified WVA in a standard format as requested by USACE NOD. This WVA was run using information from the Corps, including photographs and acres of impact (2.42 acres), as well as assumptions developed by the Hurricane and Storm Risk Reduction System (HSDRRS) Habitat Evaluation Team (HET) for BLH mitigation [LPV & WBV HSDRRS Mitigation: Wetland Value Assessment (WVA) Model Assumptions and Related Guidance (Revised/Updated: 3 March 2012)].

Impacts along Highway 77

NET CHANGE IN AAHUs DUE TO PROJECT	
A. Future Without Project AAHUs =	1.50
B. Future With Project AAHUs =	0.01
Net Change (FWP - FWOP) =	**-1.48**

V1 – Tree Species Association

FWOP – Based on information provided by the Corps (including photographs), water oak appears to make up more than 50% of the canopy.

TY 0 – TY 50; Class 5

FWP – After the trees are removed there is no longer an overstory consisting of edible seed producing trees.

TY 0 – Class 5
TY 1 – Class 1
TY 50 – Class 1

V2 – Stand Maturity

FWOP – The highway is older than 50 years old and mature trees were present in the 1998 aerial images on Google Earth. The most mature trees currently in the canopy are very large and likely greater than 50 years old. We just entered 50 years old for all target years since the SI maxes out at 50 years old.

TY 0-50 – Age 50

FWP – Trees are harvested at TY1 so age equals zero thereafter.
TY 0 – Age 50
TY 1 – Age 0
TY50 – Age 0

V3 – Understory / Midstory Coverage

HSDRRS assumptions used for 50-year old forest.

FWOP
TY 0-50 – 35% Understory, 30% Midstory

FWP
TY 0 - 35% Understory, 30% Midstory
TY1 - 0% Understory, 0% Midstory
TY50 - 0% Understory, 0% Midstory

V4 – Hydrology

FWOP and FWP TY0-50: "High" flow/exchange and "Temporary" flood duration.

V5 – Size of Contiguous Forested Area

The site is part of a riparian corridor between 5.1 and 20 acres (Class 2). For FWP TY1-50, the size of forest is zero acres (Class 1).

FWOP
TY0-50 – Class 2

FWP
TY 0 – Class 2
TY 1 – Class 1
TY 50 – Class 1

V6 – Suitability and Traversability of Surrounding Land Uses

Google Earth imagery was used to measure and calculate this variable.

FWOP and FWP TY 0 – TY 50

Forest / marsh	10
Abandoned Ag	0
Pasture / Hay	10
Active Ag	20
Development	60

V7 – Disturbance

The nearest disturbance is HWY 77 (Type 1) and it is less than 50 feet away (Distance 1).

FWOP and FWP TY 0 – TY 50

Disturbance	
	Class
Type	1
	Class
Distance	1

From: Craig Gothreaux - NOAA Federal
To: Tomasovic, Eric CIV USARMY CEMVN (USA)
Cc: Behrens, Elizabeth H CIV USARMY CEMVN (USA)
Subject: [Non-DoD Source] Re: Start of Coordination for CAP section 14 repairs (UNCLASSIFIED)
Date: Friday, July 24, 2020 2:35:23 PM

Eric,

Thanks for reaching out. That area is outside of NMFS jurisdiction, so there would be no need to consult with us.

Have a great weekend,
Craig

On Fri, Jul 24, 2020 at 2:31 PM Tomasovic, Eric CIV USARMY CEMVN (USA) <Eric.Tomasovic@usace.army.mil> wrote:

> CLASSIFICATION: UNCLASSIFIED
>
> Mr. Gothreaux,
> I am getting a head start on my next project and would like to know if I could get some assistance to see if we need to formally consult. The project is a Section 14 Continuing Authorities Program to protect Highway 77 from erosion along the Bayou Plaquemine, in Plaquemine, Iberville Parish. I have attached a Google Earth polygon of the area of concern. According to the wetlands mapper Bayou Plaquemine is an R2UBH at the site of the prospective repairs. I have more detail, but I just want to get the coordination ball rolling. I look forward to hearing from your representative.
>
> Thank you,
>
> Eric Tomasovic
> Biologist
> U.S. Army Corps of Engineers
> New Orleans District
> Office (504) 862-1266
> Cell (757) 749-6989
>
> CLASSIFICATION: UNCLASSIFIED

--
Craig Gothreaux
Fishery Biologist
Southeast Region, Habitat Conservation Division
NOAA Fisheries
5757 Corporate Blvd., Suite 375
Baton Rouge, LA 70808
Office: (225) 380-0078
Craig.Gothreaux@noaa.gov

Web *Blockedwww.nmfs.noaa.gov*
Facebook *Blockedwww.facebook.com/usnoaafisheriesgov*

JOHN BEL EDWARDS
GOVERNOR

CHUCK CARR BROWN, PH.D.
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

DEC 0 9 2021

Mr. Eric Tomasovic
US Army Corps of Engineers, New Orleans District
Regional Planning and Environment Division South
CEMVN-PDS-C
7400 Leake Ave.
New Orleans, Louisiana 70118-3651

AI No.: 92305
Activity No.: CER20210001

RE: Environmental Assessment #587, Continuing Authority Program Section 14 Emergency Stream Bank Protection, Louisiana Highway 77 at Bayou Plaquemine
Water Quality Certification WQC 211202-03
Iberville Parish

Dear Mr. Tomasovic:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has reviewed the application to place fill to stabilize the stream bank of Bayou Plaquemine adjacent to Louisiana Highway 77 approximately 4.8 miles west of Plaquemine, Iberville Parish.

The information provided in the application has been reviewed in terms of compliance with State Water Quality Standards, the approved Water Quality Management Plan and applicable state water laws, rules and regulations. LDEQ determined that the requirements for a Water Quality Certification have been met. LDEQ concludes that the discharge of fill will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues US Army Corps of Engineers, New Orleans District – Environmental Assessment #587, Continuing Authority Program Section 14 Emergency Stream Bank Protection, Louisiana Highway 77 at Bayou Plaquemine Water Quality Certification, WQC 211202-03.

Should you have any questions concerning any part of this certification, please contact Elizabeth Hill at (225) 219-3225 or by email at elizabeth.hill@la.gov. Please reference Agency Interest (AI) number 92305 and Water Quality Certification 211203-03 on all future correspondence to this Department to ensure all correspondence regarding this project is properly filed into the Department's Electronic Document Management System.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

c: IO-W

ec: Eric.Tomasovic@usace.army.mil

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

Regional Planning and Environment
Division South

Scott Guilliams
Louisiana Dept. of Env. Quality
Administrator of Water Permits Div.
P.O. Box 4313
Baton Rouge, LA 70821-4313

Dear Mr. Guilliams:

U.S. Army Corps of Engineers, New Orleans District (CEMVN) request a State Water Quality Certificate, for Environmental Assessment #582, Continuing Authority Program, Section 14 Emergency Stream Bank Protection, for Louisiana Highway 77 at Bayou Plaquemine, Iberville Parish, Louisiana (EA#582). The application is enclosed along with a project description and maps. The CEMVN staff request a water quality certification, pursuant to Section 401 of the Clean Water Act of 1977, as amended (33 U.S.C., Section 1341).

The proposed project consists of emergency stream bank restoration to protect Louisiana Highway 77 at Bayou Plaquemine, near Plaquemine, Iberville Parish, Louisiana. To the best of our knowledge, any dredge/fill material would be free of contaminants. This office request that the Public Notice for publication in the Advocate of Baton Rouge and your transmittal letter be e-mailed to Eric.Tomasovic@usace.army.mil.

Please address any questions or comments to Mr. Eric Tomasovic; U.S. Army Corps of Engineers; Regional Planning and Environmental Division South; CEMVN-PDS-C; 7400 Leake Avenue; New Orleans, Louisiana 70118, by phone (504) 862-1266, or by email to Eric.Tomasovic@usace.army.mil.

Sincerely,

Marshall K. Harper

Marshall K. Harper
Chief, Environmental Planning Branch

Enclosures
401 Application
Figures
Draft EA #582

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

(33 CFR 325)

OMB APPROVAL NO. 0710-003
Expires October 1996

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports., 1215 Jefferson Davis Highway, Suite 204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States, the discharge of dredged of fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses: Information provided on this form will be used in evaluating the application or a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	*2. FIELD OFFICE CODE*	*3. DATE RECEIVED*	*4. DATE APPLICATION COMPLETED:* 24 September 2021

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME US Army Corps of Engineers, New Orleans District Marshall K. Hamer, Environmental Planning Branch Chief	*8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)* Same as Applicant
6. APPLICANT'S ADDRESS Regional Planning and Environment Division South CEMVN-PDS-C 7400 Leake Ave. New Orleans, LA 70118-3651 ATTN: Eric Tomasovic	***9. AGENT'S ADDRESS***
7. APPLICANT'S PHONE NOS. W/AREA CODE	*10. AGENT'S PHONE NOS. W/AREA CODE*
a. Residence Eric.Tomasovic@usace.army.mil ***b. Business*** (504) 862-1266	*a. Residence* *b. Business*

11. STATEMENT OF AUTHORIZATION

APPLICANT'S SIGNATURE *DATE*

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Environmental Assessment #587, Continuing Authority Program, Section 14 Emergency Stream Bank Protection, Louisiana Highway 77 at Bayou Plaquemine, Iberville Parish, Louisiana (EA#587)

13. NAME OF WATERBODY, IF KNOWN (if applicable) Bayou Plaquemine	*14. PROJECT STREET ADDRESS (if applicable)*
15. LOCATION OF PROJECT Louisiana Highway 77 *COUNTY* *STATE* Plaquemine, Iberville Parish, Louisiana	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN, (see instructions)
Bayou Plaquemine Right Bank going downstream from the City of Plaquemine, Iberville Parish, LA.
Eastern edge; Latitude 30.248491, Longitude -91.286014
Western edge; Latitude 30.251568, Longitude -91.294741
WGS84.

17. DIRECTIONS TO THE SITE

Access to the site from Louisiana Highway 1 in the city of Plaquemine, Iberville Parish. Turn west on Louisiana Highway 77 and proceed for approximately 4.8 miles. The stream bank repair is on the left (south) side of the road, between Highway 77 and Bayou Plaquemine.

18. Nature of Activity (Description of project, include all features.)

The proposed action is to perform an emergency stabilization of the stream bank under the authority of Federal Continuing Authority Program, Section 14 Emergency Stream Bank Protection for Louisiana Highway 77, due to erosion of Bayou Plaquemine's right bank (north bank). See the attached Project Description for details.

19. Project Purpose (Describe the reason or purpose of the project, (see instruction.)

The purpose of this action is to stabilize the eroding stream bank of Bayou Plaquemine adjacent to Louisiana Highway 77 to prevent damage to Louisiana Highway 77.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20, Reason(s) for Discharge

To stabilize the stream bank of Bayou Plaquemine, a stone toe dike would be placed adjacent to the bank, underlain with geotextile fabric. A sandy-soil backfill would be placed behind the stone toe dike, compacted, covered with geotextile fabric on the water side. Stone armoring would be placed on the geotextile fabric.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards.

Two viable alternatives are still in consideration, dependent on the Pipeline Owner's decision to relocate the pipeline or not.
Alternative 1.1 would use 29,500 tons of rock, 8,200 cu yd of earthen fill, 22,000 sq yd of geotextile fabric.
Alternative 1.2 would use 22,815 tons of rock 6 500 cu yd of earthen fill, 19 070 sq yd of geotextile fabric and 4 000 sq yd of High Performance Turf Reinforced Mat.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

The proposed repair construction area is approximately 5.35 acres.

23. Is Any Portion of the Work Already Complete? Yes ____ No __X__ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list)

Bayou Plaquemine is a Louisiana State Waterway which abuts the Louisiana Department of Transportation Right of Way for Louisiana Highway 77.

25. List of Other Certifications or Approvals/Denials Received from other Federal, State or Local Agencies for Work Described in This Application.

AGENCY	*TYPE APPROVAL*	*IDENTIFICATION NO.*	*DATE APPLIED*	*DATE APPROVED*	*DATE DENIED*
SHPO/THPO	106/NHPA		November 24, 2020	December 11, 2020	
USACE	404(b)(1)		Pending		

To the best of my knowledge the proposed activity described in my permit application complies with and will be conducted in a manner that is consistent with the LA Coastal management Program.
**Would include but is not restricted to zoning, building and flood plain permits.*

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	*DATE*	*SIGNATURE OF AGENT*	*DATE*

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency The United States knowingly and willfully falsifies, conceals, or covers up by any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

JOHN BEL EDWARDS
GOVERNOR

THOMAS F. HARRIS
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

December 23, 2021

Eric Williams
Corps of Engineers- New Orleans District
7400 Leake Avenue
New Orleans, LA 70118
Via email: eric.m.williams@usace.army.mil
mvnenvironmental@usace.army.mil

RE: **C20210182,** Coastal Zone Consistency
New Orleans District, Corps of Engineers
Direct Federal Action
Draft EA # 587 and FONSI, Continuing Authority Program Section 14, Emergency streambank protection, Louisiana Highway 77 at Bayou Plaquemine
Iberville Parish, Louisiana

Dear Mr. Williams:

The Louisiana Department of Natural Resources, Office of Coastal Management (OCM) has reviewed the referenced documents. As noted in our e-mail of July 24, 2020, from Sara Krupa of OCM to Mr. Eric Tomasovic of your office, we agree that the referenced project falls outside the Coastal Zone and likely will have no significant effects on coastal resources. The project, therefore, requires no formal consistency review.

It should be noted that another project in the same area may be deemed to impact the Coastal Zone and require consistency review. For this reason we request that your agency continue to coordinate with OCM for any other projects in the area.

Thank you for the opportunity to review and comment on this Draft EA. If there are questions concerning these remarks please contact Mark Hogan of the Consistency Section at (225) 219-9530 or mark.hogan@la.gov.

Sincerely,

/S/ Charles Reulet
Administrator
Interagency Affairs/Field Services Division

CR/MH/jdh

cc: Eric Tomasovic, COE
Dave Butler, LDWF

From:	Sara Krupa
To:	Tomasovic, Eric CIV USARMY CEMVN (USA)
Cc:	Behrens, Elizabeth H CIV USARMY CEMVN (USA); Mark Hogan
Subject:	[Non-DoD Source] FW: Start of Coordination for CAP section 14 repairs (UNCLASSIFIED)
Date:	Friday, July 24, 2020 3:12:00 PM
Attachments:	Hwy77sec14_AoE.KMZ

Good afternoon, Eric. Jeff forwarded your email to me regarding the Highway 77 project. We do appreciate the advanced coordination efforts, but this area is outside of the coastal zone. As such our office does not need to be involved unless you all are anticipating impacts to coastal resources. Feel free to send updates to Mark and myself if there are potential coastal impacts.

Sara

From: Tomasovic, Eric CIV USARMY CEMVN (USA) <Eric.Tomasovic@usace.army.mil>
Sent: Friday, July 24, 2020 2:34 PM
To: Jeff Harris
Cc: Behrens, Elizabeth H CIV USARMY CEMVN (USA)
Subject: Start of Coordination for CAP section 14 repairs (UNCLASSIFIED)

EXTERNAL EMAIL: Please do not click on links or attachments unless you know the content is safe.

CLASSIFICATION: UNCLASSIFIED

Mr. Harris,

I am getting a head start on my next project and would like to know if I could get some assistance to see what level of involvement you would like to have in this project. The project is a Section 14 Continuing Authorities Program to protect Highway 77 from erosion along the Bayou Plaquemine, in Plaquemine, Iberville Parish sponsored by the LADOTD. I have attached a Google Earth polygon of the area of concern. I have more detail, but I just want to get the coordination ball rolling. I look forward to hearing from your representative.

Thank you,
Eric Tomasovic
Biologist
U.S. Army Corps of Engineers
New Orleans District
Office (504) 862-1266
Cell (757) 749-6989

CLASSIFICATION: UNCLASSIFIED

CONFIDENTIALITY NOTICE
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DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
7400 Leake Ave, New Orleans, LA 70118

November 24, 2020

No known historic properties will be affected by this undertaking. Therefore, our office has no objection to the implementation of this project. This effect determination could change should new information come to our attention.

Kristin P. Sanders
State Historic Preservation Officer
Date 12/11/2020

Regional Planning and
Environment Division, South
Environmental Planning Branch
Attn: CEMVN-PDS-N

Ms. Kristin Sanders
State Historic Preservation Officer
Louisiana Department of Culture, Recreation, and Tourism, Office of Cultural Development
PO Box 44247
Baton Rouge, Louisiana 70804

RE: Section 106, Consultation

Undertaking: Emergency Protection of Hwy 77 at Bayou Plaquemine, Iberville Parish, Louisiana (Center Point: Lat. 30° 14' 59.2764" N, Long. 91° 17' 28.8672" W).

Determination: **No Potential to Affect Historic Properties**

Dear Ms. Sanders:

The U.S. Army Corps of Engineers, New Orleans District (USACE MVN) is proposing a Continuing Authority Program (CAP) Section 14 project along Highway 77 in Iberville Parish, LA. A segment of the Bayou Plaquemine bank line has experienced erosion and jeopardizes the same bank as a component of the base of Highway 77. The No Action Alternative evaluated in the NEPA Documentation would be the lack of access for the approximately 20 houses on dead-end streets within the location of the repair, should the 3,000 feet of Louisiana Highway 77 erode. Through traffic would be re-routed to LA 3066, as would Local Traffic adjacent to the eroded LA 77. The Action Alternative includes the emergency repair of the existing bank slope along Highway 77 and Bayou Plaquemine. The typical repair section is proposed to ease the existing bank slope and eliminate future bank line erosion at the water line.

Description of the Undertaking

The project area is located within Section 80, Township 9 South, Range 11 East and Sections 69, Township 9 South, Range 12 East on the Addis, LA and Bayou Sorrel, LA 7.5 minute quadrangle. The project right of way (ROW) and area of potential effect (APE) is approximately 5.35 acres (2.17 hectares), or approximately 3,000 linear feet (Figures 1 and 2). The proposed action is to construct a minimal toe dike at the water's edge, backfill with earthen material, and cap the earthen fill with a minimal layer of stone scour protection. A standard placement of geotextile separator fabric will be

under the rock toe dike section. An additional layer of geotextile separator fabric will be placed between the earthen fill and stone cap to prevent material from leaching. This task cannot be achieved by end dumping stone from the road, as the existing bank line slope below the ordinary high-water stage is near vertical and will not readily hold stone. Therefore, construction access will occur from Bayou Plaquemine. All rock and fill material will be barged to the site by the construction contractor. This project does not include the construction of a borrow pit.

Clearing of vegetation along the water's edge, if performed, should be minimal. Most existing trees are located on the upper bank along the road and above the proposed elevation. If tree removal is required, trees will be cut and not pulled. Trees and debris will be hauled off-site and disposed of following all disposal regulations.

A gas pipeline runs perpendicular through the APE (Figure 3). A different type of bank protection, such as high-performance turf reinforcement mat (HPTRM) or articulated concrete block bank paving, will be used in the area of the pipeline in order to circumvent the need to relocate the pipeline.

Cultural Evaluation

Much of the river bank in the APE has eroded into the existing HWY 77 right-of-way (Figures 4-9). Examination of the remaining project ROW revealed previous disturbance from road construction, maintenance, and erosion-prevention measures that have been used to try and slow loss of the road. Due to the high degree of erosion and heavy disturbance, USACE MVN has determined that there is no potential for the existence of intact cultural deposits, and thus, no potential effect to historic properties.

Assessment of Effects

USACE MVN is making its determination of **No Potential to Affect Historic Properties** for this undertaking and submitting it to you for review and comment. In addition to the project specific conditions, this project will be subject to the standard change in scope of work, unexpected discovery, and unmarked human burial sites act provisions. USACE MVN requests your concurrence within 30 days, per 36 CFR 800.5(c).

If you have any questions or require additional information concerning this undertaking, please contact Ms. Ashley Fedoroff at (601) 631-5278 or via e-mail Ashley.M.Fedoroff@usace.army.mil, or Mr. Eric Williams at (504) 862-2862 or via e-mail Eric.M.Williams@usace.army.mil.

Sincerely,

MARSHALL K. HARPER
Chief, Environmental Planning Branch

List of Recipients:
Alabama Coushatta Tribe of Texas
Chitimacha Tribe of Louisiana
Choctaw Nation of Oklahoma
Coushatta Tribe of Louisiana
Jena Band of Choctaw Indians, Louisiana
Mississippi Band of Choctaw Indians
Muscogee (Creek) Nation
Seminole Nation of Oklahoma
Tunica Biloxi Tribe of Louisiana
Louisiana State Historic Preservation Office

HTRW 20-09

PHASE I
ENVIRONMENTAL SITE ASSESSMENT

FOR

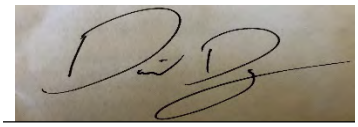
Bayou Plaquemine - CAP Section 14
Emergency Protection of Hwy 77, Iberville Parish, Louisiana

December 2020

Prepared by
U.S. Army Corps of Engineers
New Orleans District

U.S. Army Corps of Engineers
New Orleans District
7400 Leake Ave.
New Orleans, LA 70118-3651

Prepared by:



David Day
Environmental Compliance Branch
New Orleans District

Date: 24 November 2020

Approved by:

Landon Parr
Environmental Compliance Branch
New Orleans District

Date: 30 November 2020

Table of Contents

Executive Summary

The purpose of the proposed action is for emergency repair of the existing bank slope along Highway 77 and Bayou Plaquemine. The proposed action is located within Iberville Parish, Louisiana.

Personnel from CEMVN-PDC-C performed a field inspection on 17 November 2020 in the proposed work areas within the Bayou Plaquemine area. The area was inspected for the presence of pipes, containers, tanks or drums, ponds or lagoons, car bodies, tires, refrigerators, trash dumps, electrical equipment, oil drilling equipment, gas or oil wells, discoloration of vegetation or soils, water sheens, out-of-place dirt mounds or depressions in the landscape, evidence of fire, stressed soils with lack of vegetation, animal remains, unusual animal behavior, biota indicative of a disturbed environment, and odors indicative of poor water quality or chemical presence. During the site visit, a pipeline was discovered within Bayou Plaquemine on the right descending bank (Photograph 1). In addition to the pipeline, a dilapidated barge (Photographs 16-18) and a sunken structure (Photograph 19) were located on the right descending bank of Bayou Plaquemine. On the dilapidated barge, a 55-gallon steel drum was located and a 55-gallon propylene drum was located between the barge and Bayou Jacob Road (Photograph 16-18). No other indicators above were found during the site visit.

The objective of the Phase I Environmental Site Assessment (ESA) is to identify, to the extent feasible pursuant to the process described herein, RECs in connection with a given property. This assessment revealed RECs in connection with the project site and caution should be practiced if construction were to occur.

I. Introduction

1.1 Purpose

The USACE regulations (ER-1165-2-132) and District policy require procedures be established to facilitate early identification and appropriate consideration of potential hazardous, toxic, or radioactive waste (HTRW) in reconnaissance, feasibility, preconstruction engineering and design, land acquisition, construction, operations and maintenance, repairs, replacement, and rehabilitation phases of water resources studies or projects by conducting a Phase I ESA. These assessments follow the process/standard practices for conducting Phase I ESAs published by the American Society for Testing and Materials (ASTM).

This assessment was prepared using the following ASTM Standard:
E 1527-13: Standard Practice for Environmental Site Assessments – Phase I Environmental Site Assessment Process.

The purpose of a Phase I ESA is to identify, to the extent feasible, in the absence

of sampling and analysis, the likelihood for the presence of contaminants (i.e., RECs) within the scope of the United States Environmental Protection Agency's (USEPA's) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and petroleum products.

The scope of this Phase I ESA consists of the following four components:

a. Records review,

b. Site reconnaissance,

c. Interviews, and

d. Report.

II. Project/Site Description

2.1 Location Description

The Bayou Plaquemine - CAP Section 14 site located in Iberville Parish, Louisiana, is an approximately 3,000 linear feet bank along Bayou Plaquemine. This section of bank provides the general region protection from flooding and ecological benefits.

2.2 Site/Vicinity Characteristics

The site vicinity is within Bayou Plaquemine right descending bank. This area is developed land used by the general public for both professional and recreational usage.

III. User Provided Information

A site visit and records search revealed reported HTRW issues. Aerial photographs depicting the site were provided by Environmental Data Resources, Inc. (EDR). For further detail on findings please see section 4.1.3 Results for file review findings and section V. Site Reconnaissance for site visit findings.

IV. Records Review

For the purpose of this ESA, the following standard records sources were obtained and reviewed to assist in the identification of RECs in connection with this proposed project site and adjacent areas:

- Environmental Sources (Federal, State and Local, Tribal, and Proprietary)
- Historical Use (topographic maps and aerial photographs)

4.1 Environmental Sources

Publicly available environmental records were obtained and reviewed from available resources on the internet or in correspondence with the managing institution. Not all databases are publicly available with the most recent data that can be referenced as meeting the ASTM 1527-13 standard, and unavailable information must be considered as a data gap.

4.1.1 Federal Records

The following information sources (databases) were searched as a part of the federal agency review process:

a. USEPA National Priorities List (NPL database – current and deleted sites);

b. USEPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS);

c. USEPA Superfund Enterprise Management System Archive (SEMS-ARCHIVE);

d. USEPA Emergency Response Notification System (ERNS);

e. USEPA Corrective Action Report (CORRACTS);

f. USEPA Biennial Reporting System (BRS);

g. USEPA Superfund (CERCLA) Consent Decrees (CONSENT);

h. USEPA Facility Index System/Facility Identification Initiative Program Summary Report (FINDS);

i. United States Department of Transportation (USDOT) Hazardous Materials Information Reporting System (HMIRS);

j. United States Nuclear Regulatory Commission (USNRC) Material Licensing Tracking System (MLTS);

k. USEPA Federal Superfund Liens (NPL LIENS);

l. USEPA PCB Activity Database System (PADS);

m. USEPA Land Use Control Information System (LUCIS)

n. USEPA RECRA Administrative Action Tracking System (RAATS);

o. USEPA Toxic Chemical Release Inventory System (TRIS); and

p. USEPA Toxic Substances Control Act (TSCA).

A search of available environmental records was conducted by EDR. These records assist in meeting the requirements of USEPA's Standards and Practices for All Appropriate Inquiry (40 CFR Part 312), and the ASTM Standard Practice for Environmental Site Assessments: ASTM 1527-13 Phase I Environmental Site Assessment Process. For properties that contained inadequate address information for mapping purposes, reasonable efforts were made to identify the approximate location of the sites in relation to the target properties as part of the review process. In addition, the physical setting of the target properties was assessed by reviewing topographic maps, to identify conditions in which hazardous substances or petroleum products could migrate.

4.1.2 State and Local Records

The following information sources were searched as a part of the state and local agency review process:

a. Solid and Hazardous Waste Sites (SHWS);

b. Solid Waste Facilities/Landfill Sites (SWF/LF);

c. LDEQ Approved Debris Sites (DEBRIS);

d. Leaking Underground Storage Tanks (LUST);

e. Leaking Underground Storage Tanks on Indian Land (INDIAN LUST);

f. Historic Leaking Underground Storage Tanks (HIST LUST);

g. Underground Storage Tank Listing (FEMA UST);

h. Louisiana Underground Storage Tank Database (UST);

i. Underground Storage Tanks on Indian Land (INDIAN UST);

j. Conveyance Notice Listing (AUL);

k. Environmental Liens (LIENS);

l. Spills and Releases (SPILLS);

m.Voluntary Remediation Program Sites (VCP);

n. Voluntary Cleanup Priority Listing (INDIAN VCP);

o. Dry Cleaner Facility Listing (DRYCLEANERS); and

p. Louisiana Pollutant Discharge Elimination System (LPDES) Permits Database.

4.1.3 Results

Several pipelines (i.e., petroleum, natural gas, and nitrogen) and oil/gas wells were noted to be in the Bayou Plaquemine area (figure 3). Pipelines and wells are considered potential RECs and should be avoided if encountered during construction of the project.

4.2 Historical Use Information

The following historic information sources were obtained and reviewed:

Historical aerial photographs from 1952 to 2017 were reviewed and historical topographic maps from 1935 to 2012 were also reviewed as part of this investigation.

4.2.1 Aerial Photograph Review

1952 Aerial Photographs
The project site is mostly undeveloped rural land.

1962 Aerial Photographs
Since 1952, housing development is more prevalent.

1968 Aerial Photographs
No significant changes appear to have occurred since the 1962 photograph.

1978 Aerial Photographs
No significant changes appear to have occurred since the 1968 photograph.

1985 Aerial Photograph
No significant changes appear to have occurred since the 1978 photograph.

1989 Aerial Photographs
No significant changes appear to have occurred since the 1985 photograph.

1998 Aerial Photographs
No significant changes appear to have occurred since the 1998 photograph.

2004 Aerial Photographs
No significant changes appear to have occurred since the 1998 photograph. It appears that a road was developed from the barge within the bayou to 1000 feet northwest.

2007 Aerial Photographs
No significant changes appear to have occurred since the 2004 photograph.

2010 Aerial Photographs
No significant changes appear to have occurred since the 2007 photograph.

2013 Aerial Photographs
No significant changes appear to have occurred since the 2010 photograph.

2017 Aerial Photographs
No significant changes appear to have occurred since the 2017 photograph.

4.2.2 Topographical Map Review

1935-1940 Topographic Map
The project site is mostly undeveloped, swamp land.

1953 Topographic Map
No significant changes appear to have occurred since the 1940 topographic map other than the appearance of a water body developing between map marker 68 and 90.

1969-1971 Topographic Map
No significant changes appear to have occurred since the 1953 topographic map other than the water body between map marker 68 and 90 is no longer on the map.

1980 Topographic Map
No significant changes appear to have occurred since the 1969-1971 topographic map other than a landing strip is labeled between map marker 88 and 89.

1992 Topographic Map
No significant changes appear to have occurred since the 1980 topographic map other than roads were outlined throughout the map.

2012 Topographic Map
No significant changes appear to have occurred since the 1992 topographic map.

4.2.3 City Directory Search

City directories were requested from EDR, but given the distance and remoteness of this project there are no residential developments within the project area.

4.2.4 Sanborn Maps Search

Sanborn maps were available for the project site and the adjacent areas. The maps provided information regarding the remnants of the oil/gas well located within a quarter mile of the work area.

V. Site Reconnaissance

Personnel from CEMVN-PDC-C performed a field inspection on 17 November 2020 in the proposed work areas within the Bayou Plaquemine area. Field inspection was done through permitted right-of-entry (ROE) and public access.

The project site was visually inspected for the presence of pipes, containers, tanks or drums, ponds or lagoons, car bodies, tires, refrigerators, trash dumps, electrical equipment, oil drilling equipment, gas or oil wells, discoloration of vegetation or soils, water sheens, out-of-place dirt mounds or depressions in the landscape, evidence of fire, stressed soils with lack of vegetation, animal remains, unusual animal behavior, biota indicative of a disturbed environment, and odors indicative of poor water quality or chemical presence.

A dilapidated barge was located within the project area on the right descending bank of Bayou Plaquemine (Photographs 16-18). The latitude and longitude of the barge is: 30.250170, -91.292008. On the barge was a crane, an industrial pump, a 55-gallon steel drum, and other small containers (Photographs 16-18). In addition to the barge, large metal platforms and support pieces for the barge were located between Bayou Jacob Road and Bayou Plaquemine (Photographs 12-15). A 55-gallon propylene drum was discovered near the barge as well (Photograph 18). The contents of either drums' are unknown. The discovery of the barge, the metal support pieces, and the 55-gallon drums are considered potential RECs given their age and degraded condition and should be addressed further and removed prior to construction.

A sunken structure was discovered within Bayou Plaquemine near the right descending bank (Photograph 19). The structure can be seen from the northern bank of Bayou Plaquemine facing southeast near coordinates: 30.248445, -91.285058.

Aside from the RECs discovered, none of the other indicators above were found during the site visit.

VI. Interviews

Property owners were not interviewed. This is considered a data gap.

VII. Findings

This assessment did reveal potential RECs in connection with the project site. The findings from the site visit are outlined within section V titled "Site Reconnaissance".

VIII. Opinion

A Phase I ESA was conducted in conformance with the scope and limitations of ASTM Practice E 1527-13 for the Bayou Plaquemine area. If found, pipelines should be avoided during construction of the project. No other environmental concerns were identified in the data base search besides the UST. Based on the environmental records review and site visit, there is a high probability of encountering HTRW during the course of the project at the abandoned barge site.

IX. Conclusions

A Phase I ESA was conducted in accordance with the scope and limitations of ASTM Practice E 1527-13 for the Bayou Plaquemine area. The discovery of the barge, the metal support pieces, and the 55-gallon drums are considered potential RECs given their age and degraded condition and should be addressed further and removed prior to construction. If the proposed project site area changes significantly, the HTRW would need to be re-investigated under a new Phase I ESA.

X. Limitations

USACE Environmental Planning Branch and Environmental Compliance Branch should be contacted with any known or suspected variations from the conditions described herein. If future development of the area indicates the presence of hazardous or toxic materials, USACE should be notified to perform a re-evaluation of the environmental conditions.

The scope of this assessment did not include any additional environmental investigation not outlined herein or analyses for the presence or absence of hazardous or toxic materials in the soil, ground water, surface water, or air, in, on, under, or above the subject tract.

This Phase I ESA was performed in accordance with generally accepted practices of environmental professionals undertaking similar investigations at the same time and in the same geographical area, and USACE personnel observed the degree of care and skill generally exercised by environmental professionals under similar circumstances and conditions. The findings and conclusions stated herein must be considered not as scientific certainties, but rather as professional opinions concerning the significance of the limited data gathered during the course of the environmental site assessment. No other warranty, expressed or implied, is made.

Specifically, USACE does not and cannot state that the site contains no hazardous waste or material, petroleum products, or other latent conditions beyond those observed by USACE during the site assessment.

The observations described in this report were made under the conditions stated

herein. The conclusions presented in the report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services. Furthermore, such conclusions are based solely on site condition, and rules and regulations which were in effect at the time of the assessment.

In preparing this report, USACE relied on certain information provided by state and local officials and other parties referenced therein, and on information contained in the files of state and/or local agencies available to USACE at the time of the site assessment. Although there may have been some degree of overlap in the information provided by these various sources, no attempt was made to independently verify the accuracy or completeness of all information reviewed or received during the course of this site assessment.

Observations were made of the site, as indicated within the report. Where access to portions of the site was unavailable or limited, USACE renders no opinion as to the presence of indirect evidence relating to hazardous waste or petroleum products, in that portion of the site or structure.

Unless otherwise specified in the report, USACE did not perform testing or analyses to determine the presence or concentration of asbestos, radon, formaldehyde, lead-based paint, lead in drinking water, or electromagnetic fields at the site or in adjacent areas.

The purpose of this report was to assess the physical characteristics of the subject site with respect to the presence in the environment of hazardous, toxic, or radioactive waste or material, or petroleum products. No specific attempt was made to check on the compliance of present or past owners or operators of the site with federal, state, or local laws and regulations, environmental or otherwise.

XI. References

E 1527-13: Standard Practice for Environmental Site Assessments – Phase I Environmental Site Assessment Process. American Society for Testing and Materials, West Conshohocken, Pennsylvania.

XII. Qualifications of the Environmental Professionals

Landon Parr
Environmental Resource Specialist
US Army Corps of Engineers
New Orleans District
New Orleans, LA

Work Experience:

Mr. Parr has over 20 years of experience as an environmental specialist/manager in both the private and public sector. He has actively participated in projects related to toxic and hazardous waste site evaluation, hydrocarbon site assessments, surface water quality projects, Solid and Hazardous Waste management programs, and Pollution Prevention Plans over the course of his career. He is experienced in a wide range of environmental applications, including environmental management at the state and federal levels, compliance of facilities for industrial, domestic, and storm water regulations, and requirements for groundwater monitoring plans. He has also directed multi-disciplinary environmental projects for private industry and the public sector.

Mr. Parr has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject site and declares that, to the best of his professional knowledge and belief, he meets the definition of an Environmental Professional as defined under 40 CFR 312.

Academic Background:

B.A. Journalism
Auburn University
1996

M.S. Fisheries
Louisiana State University
2002

David Day
Environmental Resource Specialist
US Army Corps of Engineers
New Orleans District
New Orleans, LA

Work Experience:

Mr. Day has over 6 years of experience as an environmental specialist in both the private and public sector. He has actively participated in projects related to toxic and hazardous waste site evaluation, hydrocarbon site assessments, surface water quality projects, Solid and Hazardous Waste management programs, and Pollution Prevention Plans over the course of his career. He is experienced in a wide range of environmental applications, including environmental management at the state and federal levels, compliance of facilities for industrial, domestic, and storm water regulations, and requirements for groundwater monitoring plans. He is experienced with both state and federal regulations regarding to radiation specifically Naturally Occurring Radioactive Material (NORM).

Mr. Day has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject site and declares that, to

the best of his professional knowledge and belief, he meets the definition of an Environmental Professional as defined under 40 CFR 312.

Academic Background:

B.S. Environmental Science
University of New Orleans
2012

M.S. Environmental Science
Louisiana State University
2021 (In progress)

XIII. Appendices

Appendix A – Site Maps
Appendix B – Photographs
Appendix C – Environmental Data

APPENDIX A

SITE MAPS

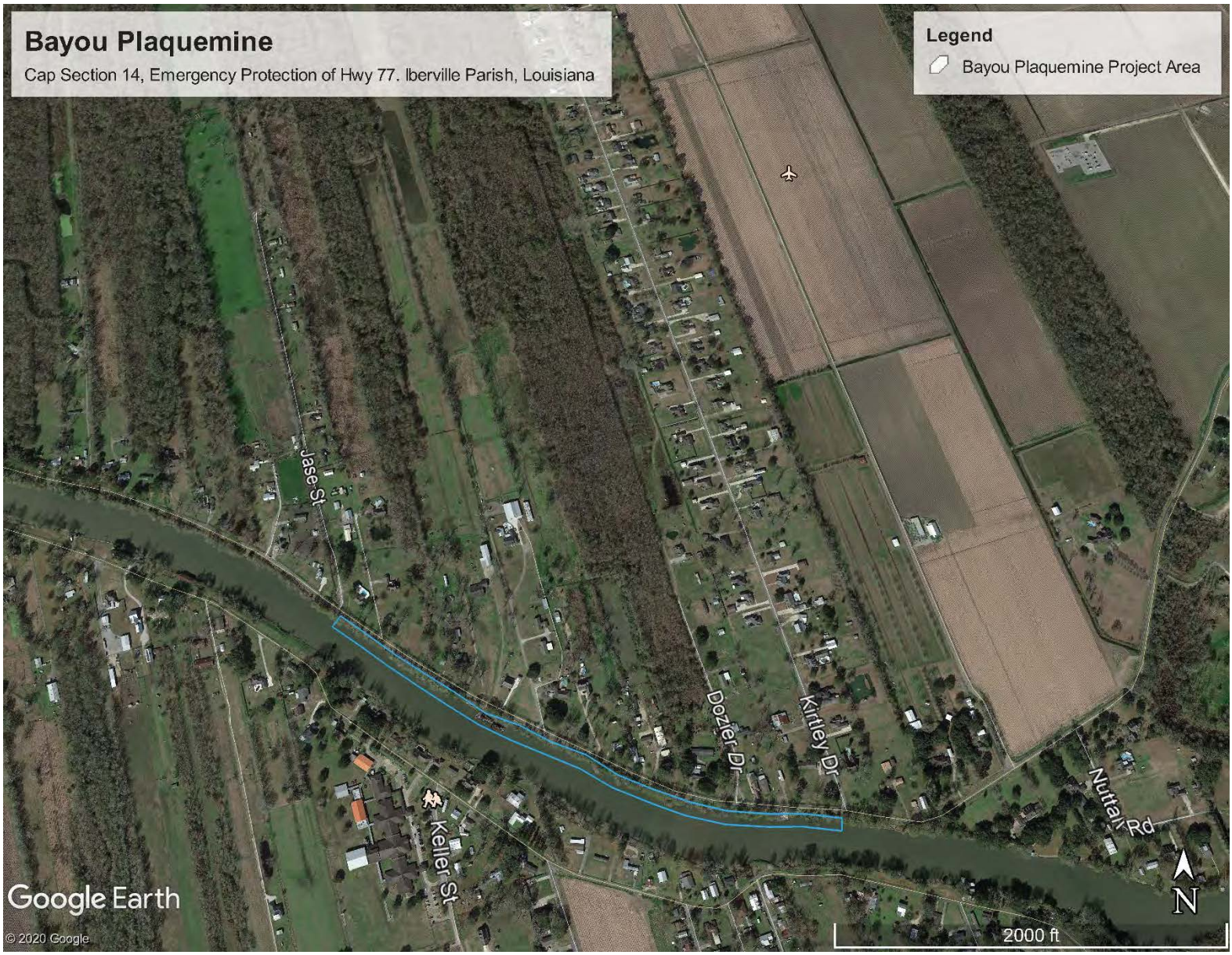


Figure 1: Bayou Plaquemine - CAP Section 14: Google Earth.

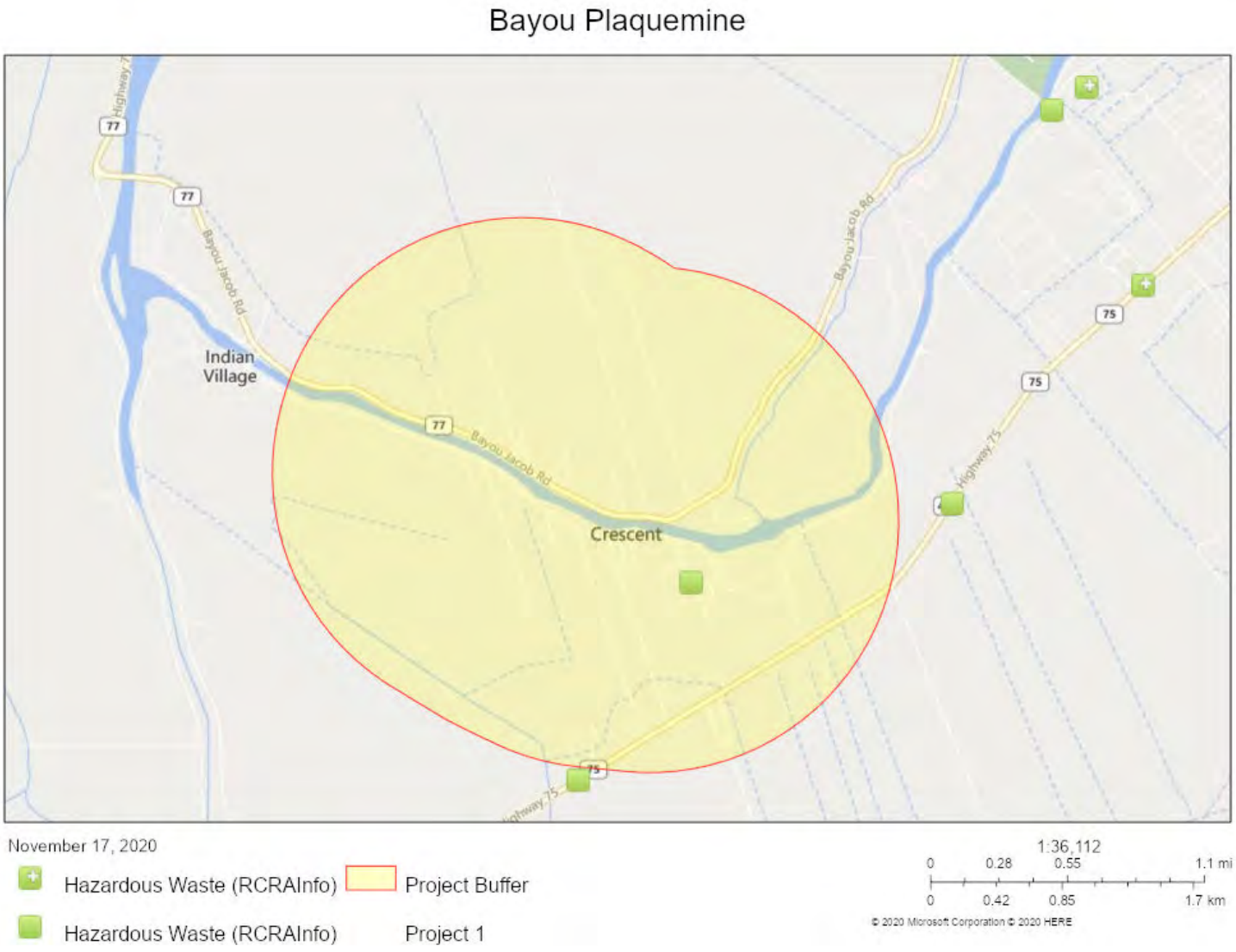


Figure 2: Bayou Plaquemine - CAP Section 14: NEPAssist with one-mile coverage area.

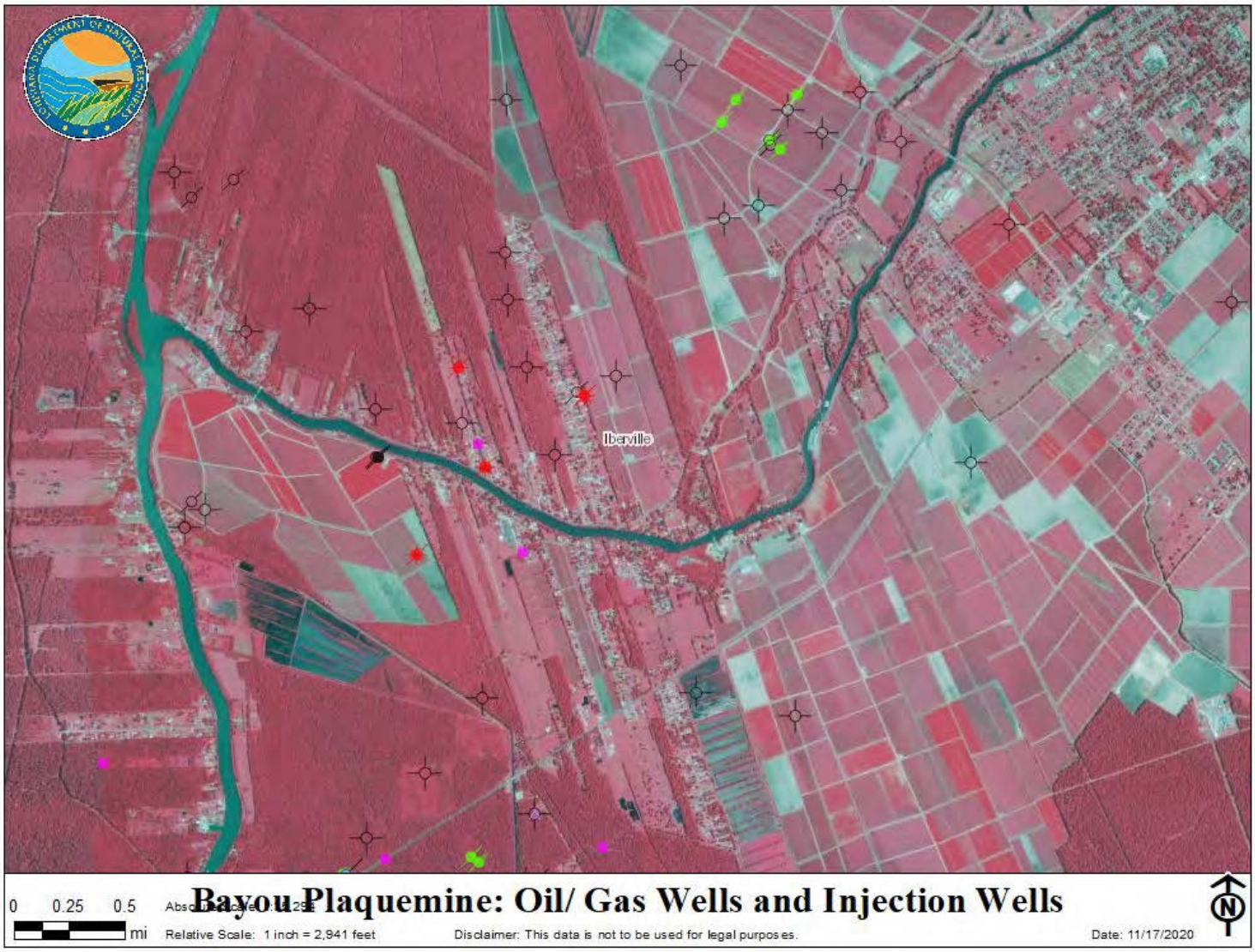


Figure 3: Bayou Plaquemine - CAP Section 14: Louisiana Department of Resources Oil/Gas wells database.

APPENDIX B

PHOTOGRAPHS

Photograph 1. Facing north. Photograph taken on the southern portion of Bayou Plaquemine (Left descending bank) located on the most eastern portion of the ROW.

Photograph 2. Facing north. Photograph taken on the southern portion of Bayou Plaquemine (Left descending bank) located on the most eastern portion of the ROW.

Photograph 3. Facing northeast. Photograph taken on the southern portion of Bayou Plaquemine (Left descending bank) located on the most eastern portion of the ROW.

Photograph 4. Facing northwest. Photograph taken on the southern portion of Bayou Plaquemine (Left descending bank) located on the most eastern portion of the ROW. The dilapidated barge can be seen within the middle of the photograph.

Photograph 5. Facing northeast. Photograph taken on the southern portion of Bayou Plaquemine (Left descending bank) located on the most western portion of the ROW. The dilapidated barge can be seen within the middle of the photograph.

Photograph 6. Facing northeast. Photograph taken on the southern portion of Bayou Plaquemine (Left descending bank) located on the most western portion of the ROW.

Photograph 7. Facing north. Photograph taken on the southern portion of Bayou Plaquemine (Left descending bank) located on the most western portion of the ROW.

Photograph 8. Facing southwest. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank) located on the most western portion of the ROW.

Photograph 9. Facing east. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank) located on the most western portion of the ROW.

Photograph 10. Facing southeast. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank).

Photograph 11. Facing south. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank).

Photograph 12. Facing southeast. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank). Metal support pieces for the dilapidated barge located between Bayou Jacob Road and Bayou Plaquemine.

Photograph 13. Facing southwest. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank). Metal support pieces for the dilapidated barge located between Bayou Jacob Road and Bayou Plaquemine.

Photograph 14. Facing southwest. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank). Metal support pieces for the dilapidated barge located between Bayou Jacob Road and Bayou Plaquemine.

Photograph 15. Facing southeast. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank). Metal support pieces for the dilapidated barge located between Bayou Jacob Road and Bayou Plaquemine. The dilapidated barge can be seen within the right side of this photograph.

Photograph 16. Facing south. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank). Dilapidated barge located within Bayou Plaquemine. A 55-gallon steel drum and other canisters can be seen on the barge. Machinery can be seen on the bank as well.

Photograph 17. Facing south. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank). Dilapidated barge located within Bayou Plaquemine. A 55-gallon steel drum and other canisters can be seen on the barge.

Photograph 18. Facing southeast. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank). Dilapidated barge located within Bayou Plaquemine. A 55-gallon propylene drum and other canisters can be seen on the barge and on land.

Photograph 19. Facing southeast. Photograph taken on the northern portion of Bayou Plaquemine (right descending bank) located on the most eastern portion of the ROW. Unknown metal structure within Bayou Plaquemine.

APPENDIX C

ENVIRONMENTAL DATA (SEE DIGITIZED FILES)

Appendix E:
404(b)(1)

CEMVN-ED-H 2 November 2021

MEMORANDUM FOR Environmental Planning Section (CEMVN-PDS-C/ Eric Tomasovic)

SUBJECT: Request for Water Quality, Hydraulics, and Hydrology Sections for the 404(b)(1) Evaluation for the Highway 77 at Bayou Plaquemine Project located in Iberville Parish, Louisiana.

1. As requested, attached are the completed sections of the 404(b)(1) evaluation relating to impacts to water quality from the proposed bank repair for the subject project (Encl 1). Also included is a memorandum of explanation for these completed sections (Encl 2).

2. An electronic copy is available in Microsoft Word.

3. Point of contact is Eric Glisch/Ext. 2066.

2 Encls

JEAN S. VOSSEN, P.E.
Chief, Engineering Division

The following short form 404(b) (1) evaluation follows the format designed by the U.S. Army Corps of Engineers, New Orleans District, Office of the Chief of Engineers (CEMVN-OCE). As a measure to avoid unnecessary paperwork, and to streamline regulation procedures, while fulfilling the spirit and intent of environmental statues, CEMVN is using this format for all proposed project elements requiring a 404(b)(1) evaluation, but involving no adverse significant impacts.

PROJECT DESCRIPTION. The proposed project consists of emergency repair of the existing bank slope along Highway 77 and Bayou Plaquemine in Iberville Parish, Louisiana.

The repair section proposed for this project reach is approximately 3,000 linear feet in length. Repair would include the construction of a rock toe dike on the bottom of the channel near the eroded bank, and placement of silty sand fill overlain by rock between the toe dike and the failed bank slope (Figure 1). The toe dike would have 1v:2h side slopes, a 5 ft crown, bottom width of 27 ft, and elevation of approximately +3.0 ft NAVD88. Silty sand would be used to backfill between the toe dike and eroded bank to create a new bankline with a slope of 1v:4h, and 12-18" of rock would be placed on the earthen fill for scour protection, resulting in a bankline that extends to an elevation of approximately +8.5 to +10 ft NAVD88 down to the crown elevation of the toe dike.

In addition, 400 linear feet of high performance turf reinforcement mat (HPTRM; a type of geotextile) or articulated concrete block would be placed over the reach of pipeline crossing within the project footprint, with 200 linear feet covering the ground surface over each side of the pipeline.

Repairs would require approximately 22,815 tons of rock, 6,500 cubic yards of earthen fill, 19,070 square yards of geotextile separator fabric, and 4,000 square yards of HPTRM.

1. Review of Compliance (§230.10 (a)-(d))

A review of this project indicates that:

	Preliminary[1]		Final[2]	
	Yes	No	Yes	No
a. The discharge represents the least environ-mentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative)	X		X	
b. The activity does not appear to: **i.** violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act; **ii.** jeopardize the existence of Federally listed endangered or threatened species or their habitat; and **iii.** violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies)	x[4]		X	
c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values (if no, see section 2)	X		X	
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5)	X		X	

2. Technical Evaluation Factors (Subparts C-F)

a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)

	N/A	Not Significant	Significant [3,5]
i. Substrate impacts		x	
ii. Suspended particulates/turbidity impacts.		x	
iii. Water column impacts		x	
iv. Alteration of current patterns and water circulation		x	
v. Alteration of normal water fluctuations/ hydroperiod		x	
vi. Alteration of salinity gradients	x		

b. Biological Characteristics of the Aquatic Ecosystem (Subpart D)

i. Effect on threatened/endangered species and their habitat	X		
ii. Effect on the aquatic food web		X	
iii. Effect on other wildlife (mammals, birds, reptiles, and amphibians)		X	

c. Special Aquatic Sites (Subpart E)

i. Sanctuaries and refuges	X		
ii. Wetlands	X		
iii. Mud flats	X		
iv. Vegetated shallows	X		
v. Coral reefs	X		
vi. Riffle and pool complexes		X	

d. Human Use Characteristics (Subpart F)

i. Effects on municipal and private water supplies	x		
ii. Recreational and commercial fisheries impacts		X	
iii. Effects on water-related recreation.	X		
iv. Esthetic impacts	X		
v. Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves	X		

3. Evaluation of Dredged or Fill Material (Subpart G)

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material.

i.	Physical characteristics	x
ii.	Hydrography in relation to known or anticipated sources of contaminants	
iii.	Known, significant sources of persistent pesticides from land runoff or percolation	
iv.	Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances	
v.	Other public records of significant introduction of contaminants from industries, municipalities, or other sources	
vi.	Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	
vii.	Other sources (specify)	x

Appropriate references: See Encl 2

b. An evaluation of the appropriate information in 3.a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria.[6]

Yes	No[3]
x	

4. Disposal Site Delineation (§230.11(f))

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

i. Depth of water at disposal site	x
ii. Current velocity, direction, and variability at disposal site	x
iii. Degree of turbulence	x
iv. Water column stratification	x
v. Discharge vessel speed and direction	x
vi. Rate of discharge	x
vii. Dredged or fill material characteristics (constituents, amount, and type of material, settling velocities)	x
viii. Number of discharges per unit of time	
ix. Other factors affecting rates and patterns of mixing (specify)	

Appropriate references: See Encl 2

	Yes	No[3]
b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable	x	

5. Actions to Minimize Adverse Effects (Subpart H)

	Yes	No[3]
All appropriate and practicable steps have been taken, through application of the recommendations of §230.70-230.77, to ensure minimal adverse effects of the proposed discharge	X	

Actions taken:

6. Factual Determination (§230.11)

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

	Yes	No[3]
a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above)	x	
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5)	x	
c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5)	x	
d. Contaminant availability (review sections 2a, 3, and 4)	x	
e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5)	X	
f. Disposal site (review sections 2, 4, and 5)	X	
g. Cumulative impact on the aquatic ecosystem	X	
h. Secondary impacts on the aquatic ecosystem	X	

[1] Negative responses to three or more of the compliance criteria at this stage indicates that the proposed projects may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2a-d, before completing the final review of compliance.

[2] Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.

[3] A negative, significant, or unknown response indicates that the project may not be in compliance with the Section 404(b)(1) Guidelines.

[4] For 1.b., review is for i. only (i.e., The activity does not appear to violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act)

[5] Where a check is placed under the significant category, the preparer has attached explanation.

[6] If the dredged or fill material cannot be excluded from individual testing, the "short form" evaluation process is inappropriate.

7. Evaluation Responsibility

a. Prepared by:

Eric Glisch
Environmental Engineer
U.S. Army Corps of Engineers, New Orleans District
November 3, 2021

b. Reviewed by:

Jerry Shih
Supervisor Hydraulic Engineer
U.S. Army Corps of Engineers, New Orleans District
November X, 2021

8. Findings

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines	X
b. The proposed disposal site for discharge of dredged or fill material complies with the	
c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):	
i. There is a less damaging practicable alternative	
ii. The proposed discharge will result in significant degradation of the aquatic ecosystem	
iii. The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem	

Date: 17 Nov 2021

Eric M. Williams - acting
Chief, Environmental Planning and
Compliance Branch

US Army Corps of Engineers,
New Orleans District

To: File

From: Eric Glisch, CEMVN-EDH

CC:

Date: 17 December 2020

Re: Highway 77 at Bayou Plaquemine Project

A short form 404 (b)(1) evaluation of the Federal actions for the subject project was performed by ED-H for water quality impacts. Existing data were used to make factual determinations for the subject actions. The following summarizes the review process and comments noted:

I. Subpart B – Review of Compliance

a. *230.10 (b) (1)*: After consideration of disposal site dilution and dispersion, there are no expected violations of State water quality standards from the proposed Federal actions. The study area waterbody, subsegment 120106, includes Bayou Plaquemine from the Mississippi River to Bayou Richard. It is a former tributary of the Mississippi River that has been cut off from the river by river levee construction, with a watershed comprised largely of residential area and farmland. It has the designated uses of primary contact recreation (PCR; swimming), secondary contact recreation (SCR; boating), and fish and wildlife propagation (FWP; fishing). The subsegment was fully supporting all three of its designated uses in the 2010, 2012, 2014, 2016, and 2018 assessments (LDEQ 2020).

Project construction includes the placement of fill materials, including rock, sand, concrete, and geotextile fabric. Rock, sand, and concrete are comprised of inert earth materials, and may have low concentrations of contamination from pollution sources present in the areas materials were originally mined, levels expected to be well below those associated with adverse effects on aquatic life. Geotextiles, being comprised of polymers such as polypropylene, will slowly release small amounts of microplastics into the environment as they deteriorate, providing a minor contribution to a collectively large problem of microplastics pollution in global surface waters. Placement of materials during construction may cause minor, temporary elevation of oxygen demand in Bayou Plaquemine, which could temporarily depress dissolved oxygen levels. However, the long-term water quality effects from the proposed project

are generally expected to be insignificant, and would prevent the episodic introduction of suspended sediments, roadbed materials, and road surface pollution such as oil and grease to Bayou Plaquemine by preventing further bankline erosion.

II. Subpart C – Physical and Chemical Characteristics of the Aquatic Ecosystem

a. *230.20 - Substrate Impacts*: Placement of fill materials is expected to alter substrate characteristics. It is likely that placement of materials would alter the physical, chemical, and biological characteristics of waterbottoms, which would include hard substrate atypical of smaller natural drainages in south Louisiana. Bayou Plaquemine is in an urbanized area, its channel and watershed have already been highly modified by humans. The proposed project features would have minor effects on the chemical, physical, or biological characteristics of waterbottoms. The project features will permanently alter 5.35 acres of waterbottoms in the bayou.

b. *230.21 – Suspended Particulates/Turbidity Impacts*: The placement of fill materials during construction may have minor, temporary impacts to channel suspended particulate and turbidity levels. The placement of materials may generate turbidity plumes and release suspended particulates. Elevated turbidity and suspended particulates may cause minor, temporary elevation of oxygen demand in Bayou Plaquemine, which could temporarily depress dissolved oxygen levels. As materials settle and loose sediments are carried downstream, the construction-related effects of project features on turbidity, suspended particulates, and oxygen demand are expected to gradually diminish. The project would prevent the continued introduction of suspended particulates and turbidity due to ongoing bankline erosion.

c. *230.22 – Water Column Impacts*: During construction, the placement of materials is expected to generate releases of trace minerals from sand and limestone rock dust, which would likely create minor, short-lived water column impacts. Under the expected range of hydrologic conditions, impacts during construction would be transient and would likely be insignificant or minor. As materials settle and loose sediments are carried downstream by channel flows, the direct water column effects of project features are expected to diminish. The project would prevent continued water quality impacts due to ongoing bankline erosion, including introduction of suspended particulates, turbidity, roadbed materials, and pollution on eroded road surface.

d. *230.23 – Alteration of Current Patterns and Water Circulation*: Given the low flow conditions in the bayou and the footprint of the proposed project relative to the overall channel cross-section, the proposed toe dike and widening of the levee toe would likely have only minor effects on current patterns and water circulation during high flow conditions (for example, after a larger rainfall event). These features are intended to help maintain channel dimensions, and therefore will prevent future alteration of current patterns and water circulation due to bankline erosion.

e. *230.24 – Alteration of Normal Water Fluctuations/Hydroperiod*: Given the low flow conditions in the bayou and the footprint of the proposed project relative to the overall

channel cross-section, the proposed toe dike and widening of the levee toe would likely have only minor effects on on flows during high flow conditions.

f. *230.25 – Alteration of Salinity Gradients:* N/A. The project is located in a freshwater waterbody that is far removed from saline waters.

III. Subpart F – Human Use Characteristics

a. *230.50 – Effects on Municipal and Private Water Supplies*: N/A. The closest drinking water intake, the Iberville Water Works District #3 raw water intake on Bayou Richard, is five miles downstream from the proposed project.

IV. Subpart G – Evaluation of Dredged or Fill Material

a. *230.61 (a) – Considerations in Evaluating the Biological Availability of Possible Contaminants in Dredged or Fill Material:* Sand is expected to largely be comprised of silica, and is commonly formed by the weathering of rocks by streams. Rock is likely to be limestone gravel, a rock created by the slow compression of marine organisms under the weight of overlying rock and soil. Limestone is largely comprised of calcium carbonate with lesser amounts of dolomite, chemicals which can provide a carbonate buffer to surface waters, which can to some degree help to maintain a neutral to slightly basic pH favorable for aquatic life in south Louisiana waters. Sand and limestone are expected to be comprised of elements that commonly occur in the earth's crust, and are not expected to be carriers of contaminants or negatively affect water quality.

   Appropriate references: See references

b. An evaluation of the appropriate information in VI(a) above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria: Yes

V. Disposal Site Delineation

a. *230.11 (f) – Considerations in Evaluating the Disposal Site:* The proposed project is located in smaller drainage features in East Baton Rouge Parish, Louisiana. The materials being placed for channel stability are not expected to include appreciable amounts of any contaminants that would adversely affect local aquatic life.

b. An evaluation of the appropriate factors in V(a) above indicates that the disposal site and/or size of mixing zone are acceptable: Yes

VI. Subpart H - Actions to Minimize Adverse Effects

All appropriate and practicable steps have been taken, through application of the recommendations of *230.70 – 230.77* to ensure minimal adverse effects of the proposed discharge: N/A

VII. Factual Determinations

A review of appropriate information as identified in items I - VI above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge:

a. Physical substrate at the disposal site (review sections II, IV, V, and VI above): Yes

b. Water circulation, fluctuation and salinity (review sections II, IV, V, and VI): Yes

c. Suspended particulates (review sections II, IV, V, and VI): Yes

d. Contaminant availability (review sections II, IV, and V): Yes

VIII. References

a. Lamar, J.E. and H.B. Willman. 1938. A Summary of the Uses of Limestone and Dolomite. Report of Investigations—No. 49. Urbana, IL: Illinois State Geological Survey. https://core.ac.uk/download/pdf/17354971.pdf

b. Louisiana Department of Environmental Quality (LDEQ). 2020. Louisiana Water Quality Integrated Report (Clean Water Act Sections 305(b)/303(d)). https://deq.louisiana.gov/page/louisiana-water-quality-integrated-report

Appendix F:
Public Comment

John Bel Edwards
GOVERNOR

Dr. Courtney N. Phillips
SECRETARY

State of Louisiana

Department of Health and Hospitals
Office of Public Health

January 4, 2022

Eric Tomasovic
U.S. Army Corps of Engineering; Regional Planning and Environment Division South
New Orleans Environmental Branch, CEMVN-PDN
7400 Leake Avenue
New Orleans, Louisiana 70118-3651

Re: Environmental Assessment (EA #587)
Continuing Authority Program, Section 14 – Emergency Streambank Protection, Louisiana Highway 77 at Bayou Plaquemine, Iberville Parish, Louisiana

This office is in receipt of a Solicitation of Views regarding the above referenced project(s).

Based upon the information received from your office we have no objection to the referenced project(s) at this time. The applicant shall be aware of and comply with any and all applicable Louisiana State Sanitary Code regulations (LAC 51, as applicable). Furthermore, should additional project data become available to this office that in any way amend the information upon which this office's response has been based, we reserve the right of additional comments on the referenced project(s).

In the event of any future discovery of evidence of non-compliance with the Louisiana Administrative Code Title 51 (Public Health-Sanitary Code) and the Title 48 (Public Health-General) regulations or any applicable public health laws or statutes which may have escaped our awareness during the course of this cursory review, please be advised that this office's preliminary determination on this Solicitation of View of the project(s) shall not be construed as absolving the applicant of responsibility, if any, with respect to compliance with the Louisiana Administrative Code Title 51 (Public Health-Sanitary Code) and the Title 48 (Public Health-General) regulations or any other applicable public health laws or statutes.

Sincerely,

Yuanda Zhu, P.G., Ph.D.
Louisiana Department of Health and Hospitals, Office of Public Health
Engineering Services
Telephone: (225) 342-7432
Electronic mail: yuanda.zhu@la.gov

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MIKE STRAIN DVM
COMMISSIONER

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January 4, 2022

USACE - ATTN: Mr. Eric Tomasovic
Regional Planning and Environment Division South
New Orleans Environmental Branch
7400 Leake Avenue
New Orleans, LA 70118

Ref: Draft EA #587 – Emergency Streambank Protection, LA HWY 77

Dear Mr. Tomasovic,

The LA Department of Agriculture & Forestry/Office of Soil & Water Conservation has reviewed the attached Project, and has no objection.

If this office may be of any further assistance, please do not hesitate to contact us.

Sincerely,

Joey Breaux
Assistant Commissioner,
LDAF/Office of Soil & Water Conservation
Director, LA Soil & Water Conservation Commission
225-922-1269