

**CONTINUING AUTHORITIES PROGRAM - SECTION 14
FEASIBILITY STUDY
EMERGENCY STREAMBANK AND SHORELINE PROTECTION
SELMA, ALABAMA**



**Final Integrated Feasibility Report
and Environmental Assessment
May 2019**



**US Army Corps
of Engineers®**
MOBILE DISTRICT



**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
CONTINUING AUTHORITIES PROGRAM (CAP) - SECTION 14 EMERGENCY
STREAMBANK AND SHORELINE PROTECTION
SELMA, DALLAS COUNTY, ALABAMA
INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL ASSESSMENT
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT**

A. DESCRIPTION OF THE PROPOSED ACTION

The U.S. Army Corps of Engineers (USACE), Mobile District has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The USACE, Mobile District assessed the effects of the following actions in the Integrated Feasibility Report and Environmental Assessment, for the Continuing Authority Program's Section 14 Emergency Streambank and Shoreline Protection Project, Selma, Alabama. The proposed action (identified as the tentatively selected plan in this integrated document) consists of the placement of approximately 150 linear feet of articulated concrete mat along the Alabama River adjacent to the historic freight depot.

B. DESCRIPTION OF ALTERNATIVES

The "No action" alternative (Alternative 1) along with four additional alternatives with varying levels of streambank stabilization were evaluated, including the tentatively selected plan (TSP). Alternative 2 consists of the riprap revetment. For this alternative a stone toe would be placed on the top of the Mooreville Chalk layer, which comprises the bottom third of the riverbank. The upper two thirds of the riverbank would be re-graded to a 1V:2.5H slope, and covered with a 24-inch layer of riprap. Alternative 3 consists of the articulated concrete mat. For this alternative the upper two thirds of the riverbank would be re-graded to a 1V:2.5H slope and covered with articulated concrete mats. The graded and protected portion of the riverbank would approximately be between elevations 95 feet (ft) and 119 ft. The bottom edge of the mats would be on the Mooreville Chalk layer, which comprises the bottom third of the riverbank, and a stone toe would be placed above the transition. Alternative 4 consists of the gabion wall. The gabion wall would be set back from the toe, and then built up to the top of the bank around elevation 119 ft. The foundation of the wall would be on the top of the Mooreville Chalk layer between elevations 90 ft and 95 ft, with a stone toe along the bottom edge of the wall. Alternative 5 consists of a vegetated slope. For this alternative the upper two thirds of the riverbank would be re-graded to a 1V:3H slope and sodded. The graded and sodded portion of the riverbank would be between elevations 95 ft and 119 ft. The bottom of the vegetated slope would sit on the Mooreville Chalk layer. The proposed action (i.e. TSP) was identified as Alternative 3, the articulated concrete mat. The proposed action has a lower risk of failure during construction, a shorter construction duration, provides a grassed riparian zone, and will require less excavation at the site. Most of the project's objectives and constraints concern the protection and conservation of cultural resources, and this was a pivotal area for plan selection. The proposed action, articulated concrete mat, was considered the best solution because it requires the least ground disturbance of all the

alternatives, while protecting the cultural resources from potential future erosion events. The rip-rap alternative, while providing similar erosion protection, would cause notably more ground disturbance and potential impacts to cultural resources. All practicable means to avoid and minimize adverse environmental effects have been incorporated into the TSP.

C. COORDINATION

A 15-day Notice of Availability announced the Integrated Project Report and Environmental Assessment's availability to Federal, state and local agencies and interested parties and solicited comments on the proposed project. Any comments received during the public review process will be considered in the decision making process. Consultation with Alabama State Historic Preservation Office and Interested Federally Recognized Tribes was initiated.

D. FACTORS CONSIDERED IN DETERMINING THAT NO ENVIRONMENTAL IMPACT STATEMENT IS REQUIRED

The tentatively selected plan would not result in any impacts to federally-listed threatened or endangered species or their designated critical habitat, would have no impact to sites listed on or eligible for inclusion on the National Register of Historic Places (NRHP), and would not affect any wetlands or waters of the U.S., nor any vital wildlife habitat. A careful review of the environmental assessment shows that the proposed action would not have a significant adverse impact on the natural and human environment. The requirements of the National Environmental Policy Act and the Council of Environmental Quality regulation have been satisfied.

E. CONCLUSION

Technical and economic criteria used in the formulation of alternative plans were those specified in the Water Resource Council's 1983 Economic and Environmental Principles for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, and regulations were considered in the evaluation of the alternatives. It is my determination that the tentatively selected plan does not constitute a major Federal action that would significantly affect the human environment; therefore, preparation of an Environmental Impact Statement is not required.

DATE _____

Sebastien P. Joly
Colonel, U.S. Army
District Commander

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Appendix B: Real Estate Plan
Appendix C: Letters of Intent
Appendix D: Environmental (Sections: 1 – Coordination, 2 – Correspondence, 3 – Cultural, 4 – Tribal Consultation, if needed)

List of Acronyms

ADEM	Alabama Department of Environmental Management
APE	Area of Potential Effect
ASSF	Alabama State Site File
BGEPA	Bald and Golden Eagle Protection Act
CAA	Clean Air Act
CAP	Continuing Authorities Program
CWA	Clean Water Act
District	United States Army Corps of Engineers, Mobile District
EA	Environmental Assessment
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
HTRW	Hazardous, Toxic, and Radioactive Waste
LERRD	Lands, Easements, Rights-of-way, Relocations, and Disposal Areas
MBTA	Migratory Bird Treaty Act
NAA	No Action Alternative
NAAQS	National Ambient Air Quality Standards
NED	National Economic Development
NFS	Non-Federal Sponsor
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
PDT	Project Delivery Team
PM	Particulate Matter
SHPO	State Historic Preservation Office
T&E	Threatened and Endangered
TMDL	Total Maximum Daily Load
TSP	Tentatively Selected Plan
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

1.0 Introduction

This project was initiated because the City of Selma requested assistance with riverbank erosion concerns inside the city limits. After assessing the riverbank in Selma it was determined that the portion of the riverbank in the Historic Riverfront Park was the only portion that met the Continuing Authorities Program (CAP) Section 14 program requirements. This report details the analyses, comparisons, and assumptions made during the planning process.

CAP Section 14 projects protect public facilities and facilities owned by non-profit organizations that are used to provide public services open to all on equal terms. Eligible facilities include: highways, public works, churches, public and private non-profit hospitals, schools, other public or non-profit facilities offering public services, and known historic properties whose significance has been demonstrated by a determination of eligibility for listing on, or actual listing on, the National Register of Historic Places (NRHP). These facilities must be properly maintained, in imminent threat of damage or failure by natural erosion processes on streambanks or shorelines, essential, and important enough to merit Federal participation in their protection.

1.1 Study Authority

The study was performed under the CAP Section 14, of the 1946 Flood Control Act.

1.2 Study Sponsor

The non-Federal sponsor is the City of Selma, who requested the study in a letter dated July 24, 2017.

1.3 Location of Study Area and Vulnerable Facilities

The City of Selma is located on the Alabama River in south central Alabama, in the 7th Congressional District. The city is about one hour west of Montgomery, Alabama on US Highway 80. The location of Selma is shown in Figure 1**Error! Reference source not found.**

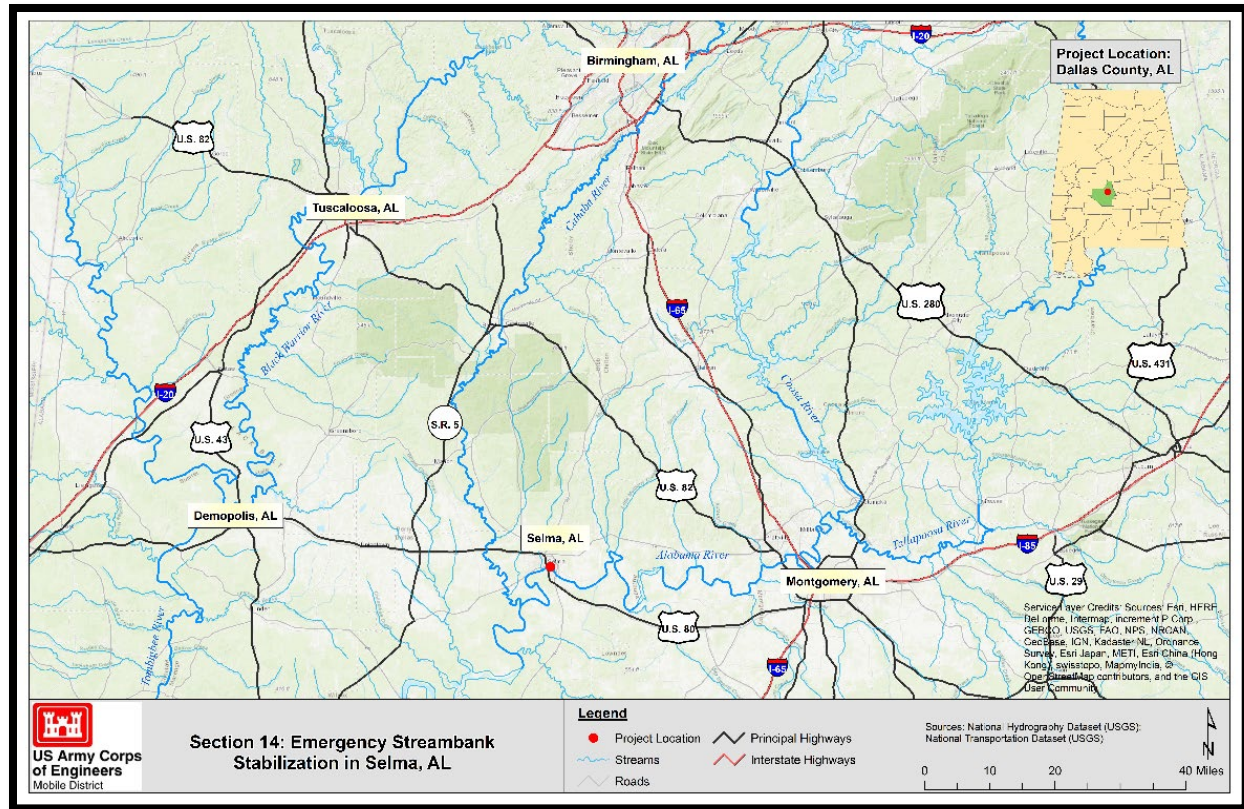


Figure 1: Selma Location Map

The impacted building was used as a freight depot for the Southern Railway in Historic Riverfront Park. The freight depot is a contributing structure to the Water Avenue Historic District in Selma, Alabama and the Southern Railroad Complex. This district is a 10-acre historic district that was added to the NRHP on July 7, 2005 by the National Park Service. The district is generally bounded by Old Town Historic District to the north and west, with the north side of Water Avenue between Broad and Washington Streets the southernmost point of Old Town Historic District, Martin Luther King Boulevard and Beech Creek to the east and the Alabama River to the south. Water Avenue Historic District encompasses the buildings that were central to the early development of Selma and the downtown commercial center. Figure 2 shows the study area runs along the Alabama River from the Historic Riverfront Park to Church Street downstream of the Edmund Pettus Bridge. Other portions of the study area were assessed but the eligible structures are not in imminent threat of damage or failure by natural erosion processes on the riverbank. The area considered is the portion of the study area that was determined to meet all the requirements of the CAP Section 14 program.



Figure 2: Study area and Project Area

1.4 Study Purpose and Need

The study purpose is to investigate the Federal interest and feasibility of identifying solutions to address streambank protection to stabilize the north bank of the Alabama River in Selma, Alabama and to reduce impacts to cultural resources found along the river and provide protection to the historic Southern Railroad Freight Depot along the riverbank.

There is a critical need to address frequent high river stages during rain and flood events that cause embankment failures due to cyclical wetting and drying periods that occur along the river shoreline. This wetting and drying reduces the soil's shear strength, producing slides along the face of the steep river bank. The erosion in some places also appears to be a result of the existing embankment being undermined at its toe allowing the slope above to erode into the river. By addressing the erosion along the river shoreline, the study would slow the erosion process which threatens one of the oldest structures within the National Register Listed Water Avenue Historic District, Figure 3: Southern Railroad Freight Depot.



Figure 3: Historic Train Depot

1.5 Prior Studies/Projects

The Federal Emergency Management Agency (FEMA) has done armoring work at a historic masonry stormwater outfall in the historical waterfront park. The project protected the outfall pipe and the surrounding area from erosion.

1.6 Public Involvement

The study and information were coordinated with the City of Selma. The report document along with appendices were made available to the public for a 15-day review and comment period.

1.7 National Environmental Policy Act Considerations

Environmental conditions evaluated during the study included physical, biological, socioeconomics, and cultural resources. Resources of concern in relation to this study centered on wetlands, Federally protected species and cultural resources. See Section 2.0 and Section 4.0 for details on the affected environment and impact assessment.

2.0 Affected Environment (Existing Condition) and Future Without Project Condition (No Action Alternative)

The affected environment are the resources in the project area that could potentially be affected by the proposed action. The Future Without Project condition (for this study) is the same as the No Action Alternative (NAA) and is Alternative 1 for this study. The NAA is based on the existing condition with assumptions based on current trends to determine a 50 year future period of analysis. The existing condition was established based on site visits made by the U.S. Army Corps of Engineers (USACE), Mobile District (District), and is a baseline from which all of the future conditions are based. Details on both the affected environment and the NAA are detailed in the following sections.

2.1 Physical Environment

2.1.1 Climate

The climate in the City of Selma is generally warm with some seasonal variations (Figure 4). The hottest month of the year tends to be August with an average high temperature of 92° Fahrenheit (F), and average low of 71°F. The coolest month of the year is January with an average high of 57°F and low of 35°F. Precipitation is plentiful in the project area, with 51.11 inches of average annual rainfall for the City of Selma, with March being the wettest month of the year and October the driest.

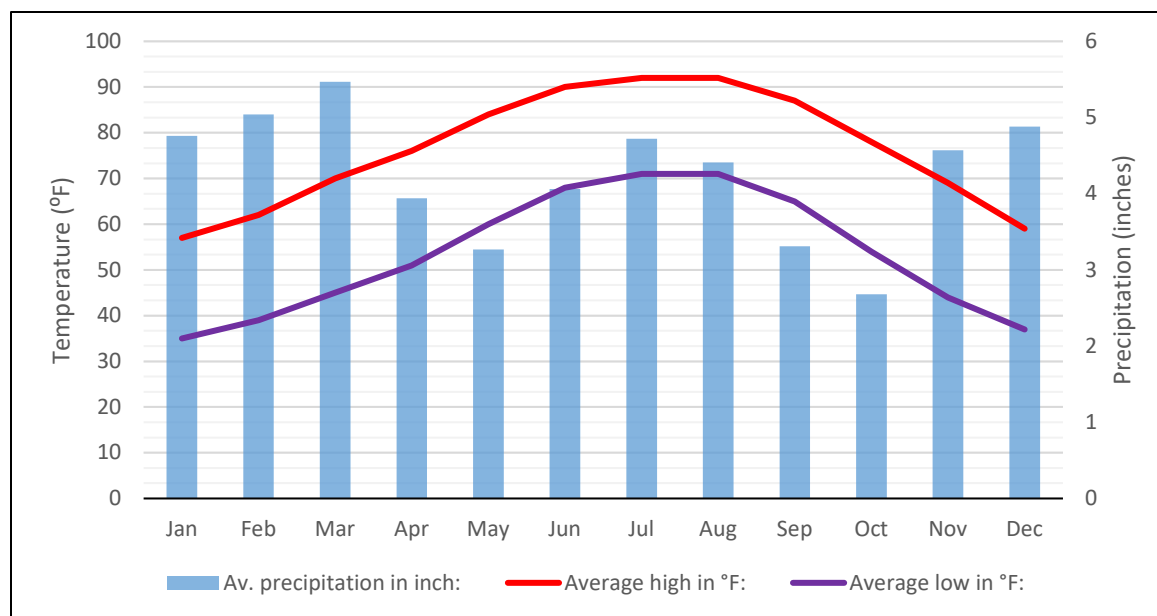


Figure 4: Selma, Alabama Climate Graph

Future Without Project

No changes to climate would occur under the NAA.

2.1.2 Climate Change

A literature review showed evidence that the southeast may experience more frequent and more intense flooding in the future as the result of climate change. However, using the climate assessment tools there is no past or significant projected change in streamflow on the Alabama River is suggested. The small forecasted changes over the next 100 years would be too small to have any effect on the erosion rate in the area of this study. Furthermore, the vulnerability assessment tool shows that the Alabama River Basin is not vulnerable to the Flood Risk Reduction business line with respect to other basins in the United States. At this time there is nothing to inform that climate change over the next 100 years would have an adverse impact on the project. Refer to the Engineering Appendix for more detail on the climate change analysis.

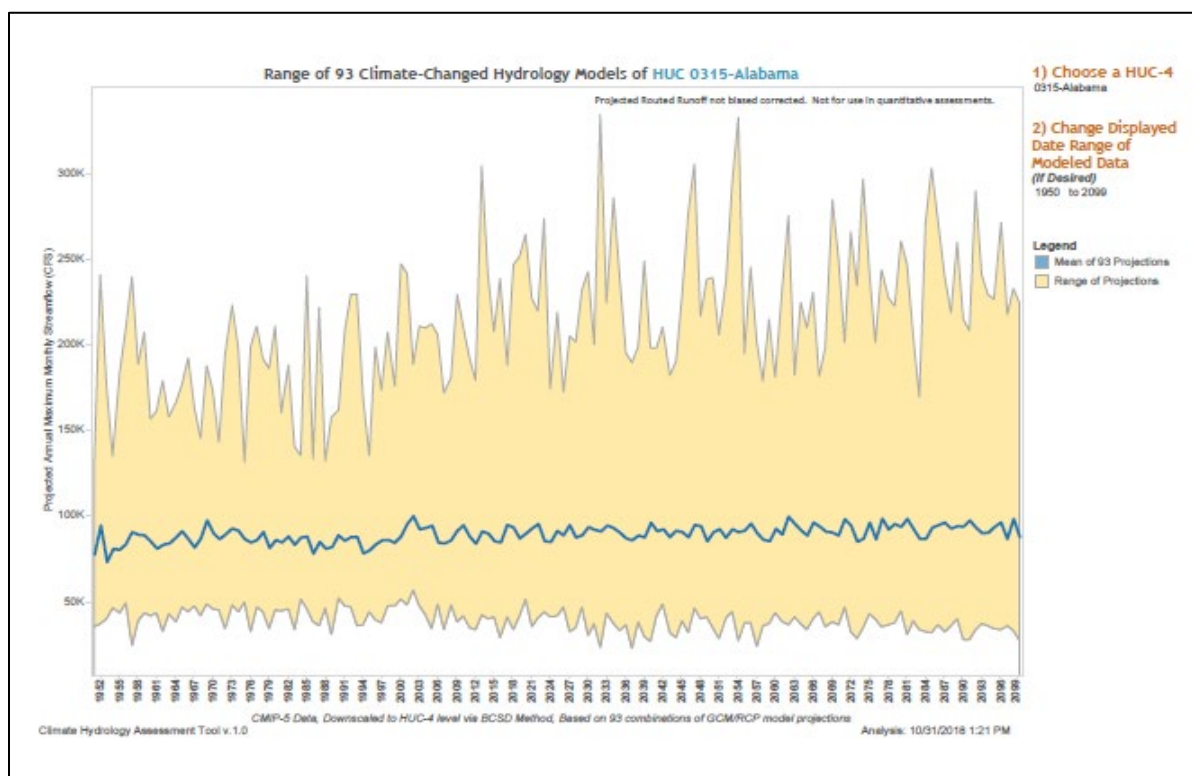


Figure 5: Projected hydrology for the Alabama HUC-4 from climate change analysis

2.1.3 Air Quality and Greenhouse Gasses

The U.S. Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS) in accordance with the Clean Air Act (CAA) “for pollutants considered harmful to public health and the environment.” The CAA identifies two types of NAAQS: primary and secondary. Primary standards provide public health protection and secondary standards provide public welfare protection. The USEPA has set NAAQS for six principal pollutants, which are called criteria air pollutants: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead, and particulate matter (PM) (PM10 and PM25).

The *General Conformity Rule* published by the USEPA on November 30, 1993 designates and implements Section 176(c) of the CAA for geographic areas in CAA non-attainment areas for criteria pollutants and in those attainment areas subject to maintenance plans required by CAA Section 175(a). The CAA General conformity Rule applies to Federal actions.

The study area is not located in any designated non-attainment areas for any criteria air pollutants.

Future Without Project

No changes to air quality and greenhouse gasses would be expected under the NAA. The local air quality would continue fluctuating with natural trends, but overall would remain consistent with current levels.

2.1.4 Geology

Since 1987, the USEPA has defined ecoregions throughout the United States for the use of classifying habitat ecosystems based on physiological characteristics such as varying topography, geology, and soils (Omernik, et al, 2001). Selma, Alabama lies within the Southeastern Floodplains and Low Terraces portion of the Southeastern Plains Ecoregion of the State of Alabama. The Southeastern Plains Ecoregion is considered to be irregular plains with various areas of croplands, pastures, woodlands, and forests. Soils of the USEPA defined Southeastern Plains region are mostly Cretaceous or Tertiary-age sands, silts, and clays.

The geology in and around the City of Selma consists of alluvial deposits, underlain by various formations within the Selma Group, the most prevalent of these being the Mooreville Chalk. Alluvium deposits consist of a mixture of varicolored, fine to coarse sand with clay lenses and gravel. The Mooreville Chalk is generally characterized as a yellowish-gray to olive-gray clayey chalk or chalky marl. The chalk/alluvium interface can be viewed from the Alabama River, lining the north bank of the river in the Selma downtown area. Banks in the downtown area range in height between 30 to 50 ft above the water's surface (average water surface elevation at the Edmond Pettis Bridge is 84.30 ft). The interface of the overburden and the chalk is easily observed from the river, and this interface appears anywhere from 5 to 20 ft above the water's surface. For more detail on the study area geology and the analysis refer to the Engineering Appendix.

Future Without Project

No changes to geology would occur under the NAA.

2.1.5 Riverbank Erosion

Based on conversations with the City, and Google Earth imagery, it appears that the sloughing occurred sometime between the middle of 2012 to the beginning of 2013. Google Earth imagery shows erosion on an image dated January 19, 2013. In the image, the edge of the erosion is approximately 39 ft from the southern corner of the train depot (Figure 6). During the site visit in May of 2018, the distance from the southern corner to

the edge of the erosion was measured again, and the distance was approximately 35 ft. The change in distance shows that the erosion surface has cut back into the embankment approximately 4 ft since 2013. Extreme high water events, like those of the 100-year flood, can cause rapid erosion in locations where riverbank protection is minimal.



Figure 6: Progression of Erosion from 2013 to 2018

Future Without Project

If the rate of erosion continues linearly, the Historic Riverfront Park will continue to lose 0.8 ft per year in the area of the failure, the sidewalk will be impacted in 2-3 years, and the erosion would reach the train depot in approximately 40 years. Uncertainty which should be taken into consideration when attempting to determine failure likelihood and impacts include: the influence of the 12-foot wide concrete side walk on the erosion rate, at what angle the riverbank could stop eroding and self-vegetate, and at what location the erosion would begin to impact the stability of the depot's foundation.

2.1.6 Hydrology

The study area is less than one acre in size and is located directly on the riverbank of the Alabama River in Selma, Alabama. The Alabama River begins north of Montgomery, Alabama where the Coosa and Tallapoosa Rivers join. The Alabama River flows generally westward from Montgomery to Selma, and then follows a more southwesterly path to join the Tombigbee River. The river south of where the Alabama and Tombigbee Rivers merge is called the Mobile River. The river then flows south into the Mobile Bay and then into the Gulf of Mexico.

Future Without Project

No changes to the hydrology would occur under the NAA.

2.1.7 Hazardous Toxic Radioactive Waste (HTRW)

A limited preliminary assessment of the Selma project area using publicly available online databases (Alabama Department of Environmental Management (ADEM) and USEPA sponsored), has returned minimal to no concern for HTRW issues within the project boundaries. Although the property was known to house a train depot facility, that activity occurred in approximately the late 1800s to early 1900s. More recently, the property has served as a park, amphitheater and historical feature. Based on these database results and what is known about the property's usage history, it is determined that there are unlikely to be HTRW concerns within the limits of the project area.

Future Without Project

No changes to HTRW would occur under the NAA.

2.2 Biological Resources

2.2.1 Vegetation

The U.S. Forest Service (USFS) has defined ecological regions of the United States through a hierarchical assessment of domains, divisions, and provinces. Based on the USFS Ecoregion Map, the study area lies within the Subtropical Division, Southeastern Mixed Forest Province (Bailey, 1995). Vegetation native to this ecoregion is mostly oak, hickory, pine, and southern mixed forests. Large slow-moving rivers and backwaters with ponds, swamps, and oxbow lakes are also found in this region. River swamp forests and oak dominated bottomland hardwood forests provide important wildlife corridors and habitat. Within the study area, vegetation varies in age and density. There are few mature hardwood trees, but most are young saplings. Various shrubs, both native and invasive, along with plentiful low-lying herbaceous plants are also in the project area.

Future Without Project

Some vegetation loss would be expected with continued erosion; however, the vegetation itself could provide some stabilization of the riverbank.

2.2.2 Water Quality

Section 401 requires that the State issue water quality certification for any activity which requires a Federal permit and may result in a discharge to State waters. This certification must state that applicable effluent limits and water quality standards will not be violated. The USEPA delegates authority pursuant to the Clean Water Act (CWA) to the states for monitoring and maintaining clean water standards.

Section 303(d) of the CWA authorizes USEPA to assist states, territories and authorized tribes in listing impaired waters and developing Total Maximum Daily Loads (TMDLs) for these water bodies. A TMDL establishes the maximum amount of a pollutant allowed in a water body and serves as the starting point or planning tool for restoring water quality. States are required to submit their list for USEPA approval every two years. For each water body on the list, the state identifies the pollutant causing the impairment, when

known. In addition, the state assigns a priority for development of TMDL based on the severity of the pollution and the sensitivity of the uses to be made of the waters, among other factors (40 C.F.R. §130.7(b)(4)). There are no 303(d) listed bodies of water within or near the study area.

Future Without Project

Continued erosion would lead to decreased water quality as sediments and debris from the riverbank enter the water.

2.2.3 Fish and Wildlife Resources

Wildlife species vary throughout the Southern Mixed Forest Province. Their presence depends on age and thickness of timber stands, percent of deciduous trees, proximity to clearings, and bottom-land forest types (Bailey, 1995). Common species that could potentially be found within the study area include various small mammals such as rabbit, raccoon, nine-banded armadillos, gray squirrel, and opossums. A number of bird species are also common as well as various reptiles and amphibians. Common fish species found in the Alabama River near Selma include bass, catfish, carp, sunfish, perch, and others. A number of freshwater mussels, snails, and other small invertebrates can also be found in the Alabama River.

Future Without Project

Continued erosion of the riverbank would result in fragmented habitat with the potential for complete habitat loss.

2.2.4 Wetlands

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. The basic premise of the program is that no discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment (i.e. avoid) or (2) the nation's waters would be significantly degraded. Because of the sheer face of the Selma chalk, no wetlands were identified within the study area.

Future Without Project

No wetlands were identified within the study area, therefore no changes to wetlands would occur under the NAA.

2.2.5 Protected Species

The Endangered Species Act (ESA) “provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend.” The ESA makes it illegal to “take” a Federally-listed species, such as threatened and/or endangered species (T&E), without a permit. “Take” is defined by the ESA as “to harass, harm, pursue, hunt, shoot,

would, kill, trap, capture, or collect or attempt to engage in any such conduct.” The U.S. Fish and Wildlife Service (USFWS) has statutory authority for federally-listed or petitioned species on the land or in freshwater. According to the USFWS’s ESA Overview, “A species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range or threatened if it is likely to become an endangered species within the foreseeable future.”

Within the study area there are seven federally-listed T&E species. A list of federally-listed species is included in Table 1. All study efforts will consider the possible presence and protection of these species and their habitat. No species under the purview of the National Marine Fisheries Service, Protected Resources Division (i.e. lives in estuarine or marine waters) would be found within the proximity of the study area; therefore, no T&E aquatic marine species would be affected.

Table 1: Federally Listed Species within the Study Area

Common Name	Scientific Name	Status
Wood Stork	<i>Mycteria americana</i>	Threatened
Alabama Sturgeon	<i>Scaphirhynchus suttkusi</i>	Endangered
Heavy Pigtoe	<i>Pleurobema taitianum</i>	Endangered
Orangenacre Mucket	<i>Lampsilis perovalis</i>	Threatened
Southern Clubshell	<i>Pleurobema decisum</i>	Endangered
Tulotoma Snail	<i>Tulotoma magnifica</i>	Threatened
Georgia Rockcress	<i>Arabis georgiana</i>	Threatened

Critical habitat has been designated for the Orangenacre Mucket and Southern Clubshell mussels in the waters of the Alabama River adjacent to the project area. The USFWS has identified six primary constituent elements essential for the conservation of these mussel species. Unit 14, which includes the section of the Alabama River adjacent to the project area, has been identified as containing the primary constituent elements to a degree that allows the survival of these species. These elements are: (1) geomorphically stable stream and river channels and banks; (2) a flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary for normal behavior, growth, and survival of all life stages of mussels and their fish hosts in the river environment; (3) water quality, including temperature, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages; (4) sand, gravel, and/or cobble substrates with low to moderate amounts of attached filamentous algae, and other physical and chemical characteristics necessary for normal behavior, growth, and viability of all life stages; (5) fish hosts with adequate living, foraging, and spawning areas for them; and (6) few or no competitive or predaceous nonnative species present. All efforts will be made to avoid affecting the critical habitat during this project.

Future Without Project

Without the implementation of the project there would be continued riverbank erosion which would further contribute to minor impacts to water quality from turbidity and consequently negatively affect protected species and their designated critical habitat.

2.2.6 Migratory Birds

The Migratory Bird Treaty Act (MBTA) makes it illegal to “take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter” a species identified in 50 CF 10.13. The USFWS has statutory authority and responsibility for enforcing the MBTA under 16 U.S.C. 703-712. The USFWS recently proposed in the Federal Register (Vol. 83, No. 229, November 28, 2018) both adding and removing species. Migratory species protected by the MBTA are internationally protected through conventions between the United States and Canada, Mexico, Japan, and Russia. Any species protected through one or more of the four international conventions is qualified for protection under the MBTA.

The Selma Shoreline Stabilization project is located in the Mississippi Flyway zone. No stopover sites are known to occur within the study area; however migratory birds, such as the Common Ground-Dove (*Columbina passerine exigua*) occasionally utilize the study area as a resource.

Future Without Project

No effects to migratory birds are anticipated under the NAA.

2.2.7 Bald and Golden Eagles

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the “taking” of Bald Eagles (*Haliaeetus leucocephalus*) or Golden Eagles (*Aquila chrysaetos*) as defined in 16 U.S.C. 668-668c. “Take” is defined by the BGEPA as to “pursue, shoot, shoot at, poison, wound, kill capture, trap, collect, molest or disturb.” “Disturb” is further defined as “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.” The BGEPA extends to activities occurring near nests when eagles are not present.

According to the National Bald Eagle Management Guidelines dated May 2007, Bald Eagles primarily nest near aquatic habitat in mature or dead trees. Man-made structures such as power-poles and communication towers also serve as nesting sites for some Bald Eagles. Bald Eagle nests are distinctly large at four to six feet in diameter and three feet deep weighing more than 1,000 pounds. Nests are generally constructed with large sticks and lined with soft and pliable greenery such as moss, grass, or lichens.

There are no known Bald or Golden Eagle nests within the study area.

Future Without Project

No effects to Bald or Golden Eagles are anticipated with the NAA.

2.3 Historic and Cultural Resources

The property being threatened is a Southern Railroad freight depot (Figure 7), a contributing structure to the National Register Listed Water Avenue Historic District. This district is a 10-acre historic district, generally bounded by Old Town Historic District to the north and west, with the north side of Water Avenue between Broad and Washington Streets the southernmost point of Old Town Historic District, Martin Luther King Boulevard and Beech Creek to the east and the Alabama River to the south, that was added to the NRHP based on Criteria A and C on July 7, 2005 by the National Park Service. Water Avenue Historic District encompasses the buildings that were central to the early development of Selma and the downtown commercial center. Resources used to evaluate the existing conditions include, but are not limited to: site visits made by the District, Alabama State Site Files, and the NRHP. The Area of Potential Effect (APE) is composed of the project areas, laydown point, and any access points. The project area encompasses 150 ft. of the north embankment of the Alabama River, within the Historic Riverfront Park. The laydown and access points are within the Historic Riverfront Park. The APE is also shown in Figure 2.



Figure 7: Bankline Erosion near Train Depot

2.3.1 Historic Architecture

The Southern Railroad Freight Depot represents an excellent example of late 19th century railroad depot architecture constructed in the immediate post-Civil War era. The railroad was the primary means of transportation prior to the advent of the automobile, and this building played a significant role in the transportation network that contributed to the growth of Selma during the late 19th and through the first half of the 20th century. As such, it is considered eligible for the NRHP under Criterion C, and retains all seven qualities of location, design, setting, materials, workmanship, feeling, and association.

Construction for the first railroad in Selma began in 1851. Buildings and warehouses to accommodate this railroad were constructed by the Alabama Manufacturing Company through the 1850s including what is now referred to as the Southern Railway Freight depot. Originally, it most likely served as a warehouse. By the early 1860s there were four major railways traveling through Selma, all of them running through this industrial complex. Recognizing the potential of this manufacturing and distribution hub, the Confederate states purchased the land in the early 1860s and constructed the Selma Ordnance and Naval Foundry complex.



Figure 8: Perspective Map of Southern Railway (1887)

Upon completion of the construction of the Foundry, the northern bank of the Alabama River is reported to have encompassed nearly 100 buildings including a naval foundry, shipyard, army arsenal, and gunpowder works and employed more than 10,000 people at its height. At the time, it was second in size and production only to Tredegar Ironworks in Richmond, Virginia. The Foundry and shipyard primarily produced Brooke rifles and ironclad ships. Its centralized location created not only an ideal distribution center but its seat deep in the confederacy provided great defense. It also made the location a target of Union troops and in 1865, one of the last battles of the Civil War took place in Selma, particularly in and around the Water Avenue Historic District. The Union efforts destroyed the remaining army arsenal and naval ordnance works, leaving few buildings intact (Figure 9). The only remaining building from that era are the three buildings that make up the Confederate Foundry and one surviving warehouse, which is now recognized as the Southern Railway Freight Depot. Like the Confederacy, Southern Railroad saw the importance of Selma as a distribution center and began purchasing the remaining rail lines throughout Selma and the one surviving warehouse which was converted into the Southern Railway freight depot.

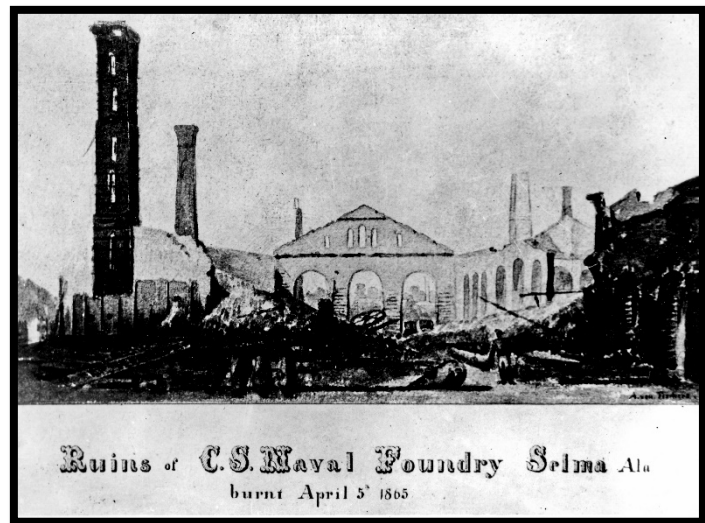


Figure 9: Naval Foundry Ruins

A small portion of Water Avenue District's inventory, including the freight depot, dates prior to the Civil War. Water Avenue Historic District has a high degree of integrity within the mid-nineteenth century to mid-twentieth century period. The project area and areas immediately around have been heavily surveyed for archaeological resources. Overall, much of the area has been disturbed due to heavy industrial and railroad use over time. Evidence indicates this area has primarily served as a rail yard since before the Civil War, and that two of the major river landings were located here as well. The City of Selma grew as a direct correlation to the major transportation systems being operated out of the area that is now the Water Avenue Historic District including water and rail transportation, as discussed in Section 1.4 .

The freight depot has undergone renovations in recent years to preserve the structure and make it safe and accessible for public use. Renovations included repairing the roof of the structure and reinforcing the center of the building with a concrete amphitheater section. It retains its integrity and remains an integral part of the community. A depiction of the historic freight depot is shown in Figure 3.

2.3.2 Cultural and Archeological Resources

A literature search for the project area included the Alabama State Site File (ASSF) and the National Register Listing of the Water Avenue Historic District. There are five known archeological sites within a mile radius of the project area. The subject area has been used as a rail yard and industrial area since before the Civil War. Site 5 consists of a historic/modern scatter. It was not recommended for further testing. Site 4 consists of the ruins of a complex of late 19th and early 20th century warehouses adjacent to the Alabama River bluff. It was recommended as ineligible. Site 1 is an eligible site outside of the project area consisting of a historic/modern artifact dump along the riverbank and waterline from approximately Franklin Street westward for over a mile. Site 2 (the St. James Hotel Site), is an eligible site located directly behind the St. James Hotel on the corner of Water Avenue and Washington Street. Site 3 is an eligible site consisting of a historic dump located on the left bank of the Alabama River, immediately east of the Edmund Pettus Bridge.



Figure 10: Perspective Drawing of Cotton Being Loaded from the Alabama River

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The National Register listed district (particularly the Southern Railroad Freight Depot) is threatened by natural erosion processes along the bank. Two sites along the bank have lost integrity in part due to the loss of context due to the severe erosion. The erosion continues to threaten the structural integrity of the last remaining warehouse of this historic industrial complex.

Table 2: Cultural Site Eligibility

Site Number	Survey	Component(s)	Eligibility
1	Auburn University, 1980	19th Century and 20th Century nonaboriginal	Eligible
2	R.S. Webb and Associates , 1995	Big Sandy, LeCroy, Morrow Mountain, Sand tempered check stamped, 19th Century and 20th Century nonaboriginal	Eligible
3	Auburn University, 1980	19th Century nonaboriginal	Eligible
4	University of Alabama, 2004	19th Century and 20th Century Nonaboriginal	Ineligible
5	Panamerican Consultants, 1998	19th Century and 20th Century Nonaboriginal	Ineligible

2.4 Economic, Human, and Socioeconomic Resources

2.4.1 Noise

Ambient noise of the study area is consistent with urban and suburban zones. The project location, within the Historical Waterfront Park and the downtown area of Selma, is less than a mile away. Traffic, construction, and community events contribute to occasional higher levels of steady noise.

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Under the NAA, ambient noise levels within the study area would not be affected.

2.4.2 Aesthetics

Environmental aesthetics is a philosophical approach used to assign appreciation of natural environments. The general aesthetics of the study area are comprised of forested and riparian habitat surrounded by an urban recreational park.

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With the NAA, erosion of the riverbank would continue and threaten the integrity of the structures nearby.

2.4.1 Transportation

The Selma area is served by two railroad systems, a municipal airport, several motor freight lines, West Alabama Public Transportation, and Trailway Bus Service. Major arteries of Interstates 65 and 85 intersect in Montgomery, which is approximately 40 minutes away. U.S. Highway 80, a four-lane thoroughfare; and Alabama Highways 14, 22 and 41 serve the city.

Future Without Project

No changes would occur to local transportation with the NAA.

2.4.2 Socioeconomics

The population of the City of Selma is 18,370 according to the 2017 census. Since the 2010 census there has been an 11.5% decrease to the city's population (shown in Table 3: Selma Population Estimates 2010-2017). Of the 18,370 Selma residents, 81.5% percent are reported to be minorities. The mean income for households in Selma is \$37,272, and 33.4% of families and 41.4% of individuals live below the Federal poverty line. Of those below the poverty line, 63% of those are under 18, and 15.3% are 65 years or older (<http://world populationreview.com/us-cities/Selma-al-population/>).

Table 3: Selma Population Estimates 2010-2017

Geography	Census	Estimates Base	2010	2011	2012	2013	2014	2015	2016	2017
Selma city, Alabama	20,756	20,756	20,785	20,505	20,199	19,786	19,612	19,270	18,833	18,370

Note: Estimates based on April 2010 Census for 1 July of shown year

Future Without Project

No changes to the socioeconomics of the City of Selma would be expected under the NAA.

3.0 Plan Formulation and Evaluation of Alternatives

This section summarizes the plan formulation process used to formulate and identify a tentatively selected plan (TSP) to address the identified water resources problems and meet the study objectives. After the public, agency technical, and policy review of the draft report, the PDT will refine the design of the TSP with additional engineering and environmental investigations. Based on the feasibility level of design and public comments following publication of the draft report, portions of the TSP may be modified.

3.1 Problems and Opportunities

The study problems, opportunities, and constraints were identified based on the existing conditions and the future without project conditions (FWOP). Objectives were developed based on the identified problems and opportunities in the study area.

3.1.1 Problems

The river bank adjacent to the freight depot is part of the Riverfront Park located between Water Avenue and the Alabama River. This area is experiencing excessive erosion that occurs during high water periods and flood events. River flow velocities travel down the Alabama River at a high rate of speed during these events and erode the shoreline. There also appears to be a significant amount of construction debris, once buried but now is exposed, that may have also impacted the degree of erosion on the site.

The area experiencing active bankline erosion is approximately 200 feet in length and is in close proximity to where the city has recently renovated a historic warehouse/freight depot which is being undermined with erosion. The erosion also contributes to safety hazards to the public. Existing infrastructure located within the study area is subject to increased erosion. One of the park's historical buildings (freight depot) is only about 50-feet from the eroding bank. Continued erosion will impact the structural integrity of the building. The historical park boundary is just a few feet from a very steep and active eroding bank that slopes down to the river.

3.1.2 Opportunities

This study offers a unique opportunity to protect and enhance cultural and recreation (not quantified) resources through engineering solutions to address the view-shed and bank stabilization.

3.2 Objectives and Constraints

The Federal objective of water and related land resources project planning is to contribute to national economic development (NED) consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. CAP Section 14 projects contribute to NED by reducing the cost of relocating the structure through stream bank stabilization.

3.2.1 Planning Objectives

The planning objectives, from 2022 to 2052, for the study area are to:

1. Protect the historic Southern Railway Freight Depot; and
2. Maintain recreation access to historic freight depot and walkway.

3.2.2 Planning Constraints

The planning constraints for this study are:

1. Minimize impacts to cultural resources found in the Alabama River
2. Minimize impacts to cultural resources found in project area
3. Minimize likelihood of up and downstream erosion induced by the project
4. Avoid impacts to Orangenacre Mucket and Southern Clubshell mussels habitat

3.3 Management Measures

Management measures are different methods of achieving one or more study objectives. It was assumed that the bank erosion is being driven by surface sloughing and not be a deep seated slope failure. Deep seated failure solutions would also address surficial failure but all at higher cost than surficial failure only solutions. It was determined that the only eligible structure that is at risk from riverbank erosion is the freight depot in the Historic Riverfront Park.

3.3.1 Measures Considered

Many measures were identified that could address the riverbank erosion. The measures considered are shown in Table 4.

Table 4: Initial Measures Considered

Measure	Assessment	
	Address Building Risk	Constructible
Sheet Pile Wall	Yes	No
Riprap	Yes	Yes
Articulated Concrete Mat	Yes	Yes
Gabion Wall	Yes	Yes
Vegetated Slope	Yes	Yes
Building Relocation (base comparison)	Yes	Yes

Management measures were only screened on their ability to be constructed given the current soil conditions. A sheet pile wall would likely cause further bank failure during construction making construction infeasible. Management measures that were not screened from further consideration were carried forward as standalone alternatives. There was only a small area that is eligible for riverbank stabilization under Section 14 so only one measure could be used in an alternative.

3.4 Alternatives Considered (Initial Array of Alternatives)

From the combined measures, five (5) alternatives were identified that could be implemented inside the current riverbank slope. These were developed to ensure minimal impact to the cultural resources found in the Alabama River adjacent to the study area. Relocation of the structure was used as a baseline comparison for other alternatives.

3.4.1 No Action Alternative (Alternative 1)

Under the NAA as described in Section 2.0 the riverbank would continue to erode through slope failure. If the erosion and failure continue, it will result in the loss of the embankment, and could eventually threaten the integrity of the Southern Railroad Freight Depot's structural foundation.

3.4.2 Riprap Revetment (Alternative 2)

For this alternative a stone toe would be placed on the top of the Mooreville Chalk layer, which comprises the bottom third of the riverbank. The upper two-thirds of the riverbank would be re-graded to a 1V:2.5H slope, and covered with a 24-inch layer of riprap. The graded and protected portion of the riverbank would approximately be between elevations 95 ft and 119 ft. The stone revetment would protect the re-graded riverbank from high velocities during flood events, while also acting as a stabilizing counter weight to prevent small embankment sloughs. The stone toe would protect the revetment from scour and provide extra weight to prevent sloughing. The riprap layer will be placed on top of a layer of bedding/filter stone which will be designed during the design and implementation phase of the project. An example cross section, from a similar project, is shown in 11.

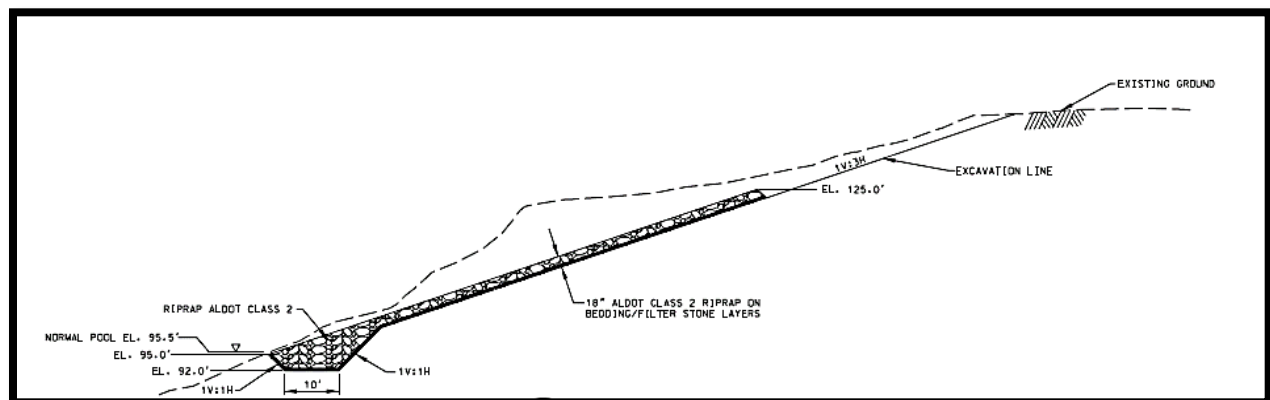


Figure 11: Alternative 2 typical cross section.

3.4.3 Articulated Concrete Mat (Alternative 3)

For this alternative the upper two-thirds of the riverbank would be re-graded to a 1V:2.5H slope and covered with articulated concrete mats. The graded and protected portion of the riverbank would approximately be between elevations 95 ft and 119 ft. The bottom edge of the mats would be on the Mooreville Chalk layer, which comprises the bottom third

of the riverbank, and a stone toe would be placed above the transition. The articulated concrete mats would protect the re-graded river bank from high velocities during flood events, while also acting as a slope stabilizer by preventing small embankment sloughs. The stone toe would protect the revetment from scour and prevent the bottom edge of the mats from being snagged by passing debris. An example cross section is shown in Figure 12.

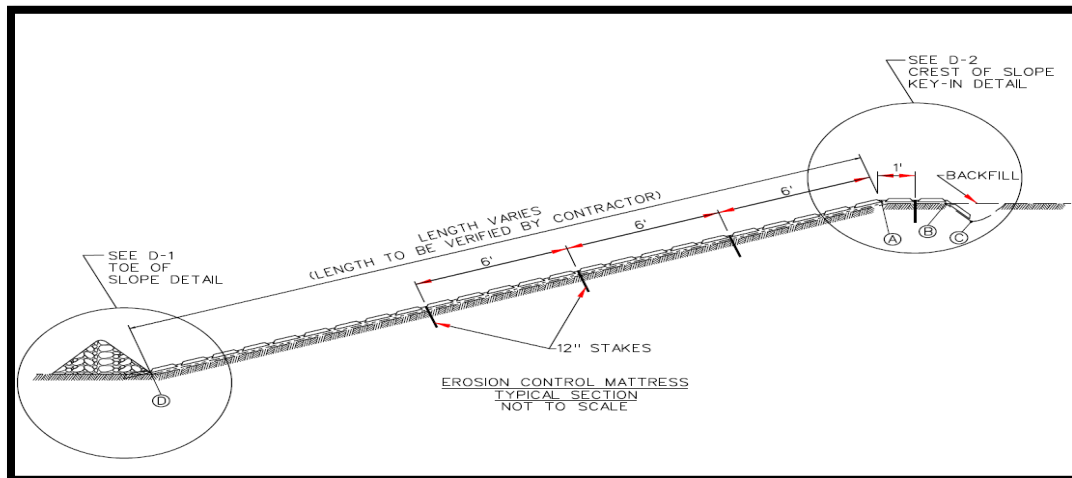


Figure 12: Example cross-section of an articulated concrete mat revetment.

3.4.4 Gabion Wall (Alternative 4)

The wall would be set back from the toe, and then built up to the top of the bank around elevation 119 ft. The foundation of the wall would be on/in the top of the Mooreville Chalk layer between elevations 90 and 95 ft, with a stone toe along the bottom edge of the wall. The gabion wall would protect the river bank from high velocities during flood events, while also acting as a slope stabilizer by preventing embankment sloughs. The stone toe would protect the gabion wall from scour and prevent the bottom of the baskets from being snagged by passing debris. An example cross section, from a similar project, is shown in Figure 13.

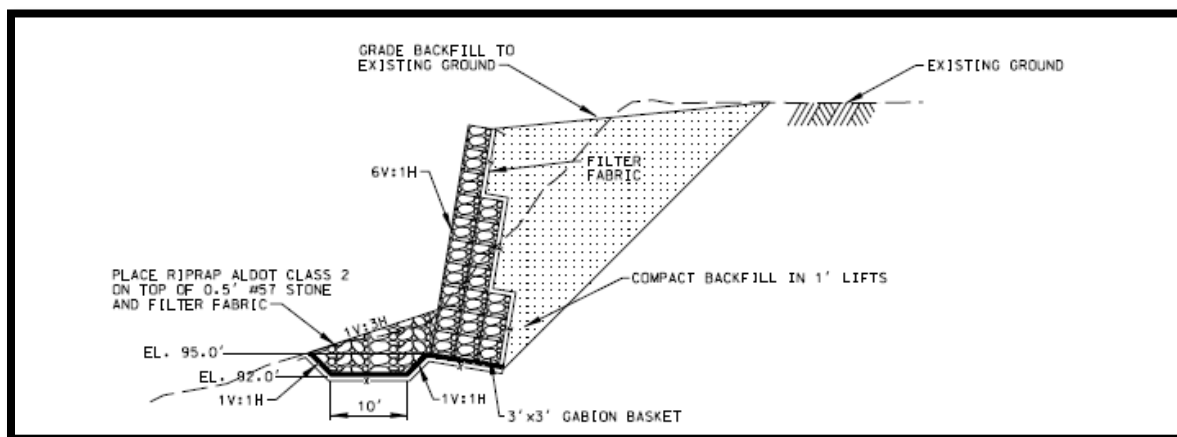


Figure 13: Example cross-section of gabion wall

3.4.5 Vegetated Slope (Alternative 5)

For this alternative the upper two thirds of the riverbank would be re-graded to a 1V:3H slope and sodded. The graded and sodded portion of the riverbank would approximately be between elevations 95 ft and 119 ft. The bottom of the vegetated slope would sit on the Mooreville Chalk layer. The vegetation could protect the bank from low river velocities during a storm event, and from un-concentrated overland flow. The laying back of the slopes and the binding action of the vegetation's roots could act as a stabilizer by preventing some small embankment sloughs.

3.4.6 Relocation Option

The team identified preliminary cost of relocating the historic structure based on similar cost as a baseline to establish minimum cost for alternative comparison. As with other relocation options, it would consist of moving the historic structure 100 ft from the current riverbank, into the park. It would require lifting the slab foundation and masonry structure, which has a high risk of not surviving the relocation process.

3.4.7 Alternative Evaluation, Comparison and Screening

To evaluate, compare and screen alternatives, screening criteria were developed to help the team identify the tentatively selected plan. The screening criteria used in the evaluation and comparison of the alternatives include:

Table 5: Screening Criteria

Screening Criteria	Criteria Purpose
Meet Study Objectives	Does it achieve objectives (purpose/need)?
Avoid Study Constraints	Does it avoid constraints?
Environmentally Acceptable	Is it environmentally acceptable?
Engineeringly Feasible	Can we design/build it?
Sustainability	Will it last and how long?
Induced Impacts	Will it cause problems elsewhere?
Cost (Design/Construction/O&M)	Are cost reasonable?

Alternative Evaluation: The District used an un-weighted ranking to determine the final array of alternatives that would be evaluated. All the alternatives would be able to achieve their benefits without any outside projects or work, making them complete. They would also follow all laws and regulations making them acceptable.

Constructability, or how efficient an alternative achieves objectives, evaluated how easily a project could be constructed and as well as duration of construction, where ease and shorter duration were better. Cultural Impacts evaluated how likely and what level of impacts a project would cause, where fewer and less significant impacts are better. Environmental Impacts evaluated how likely and what level of impacts a project would cause, where fewer and less significant impacts are better. Design and Construction evaluated costs to design and build the alternative, where lower costs were better. Sustainability evaluated the operation and maintenance (O&M) cost,

where lower costs were better. Induced Impacts evaluated the downstream erosion impacts of the alternatives, where less induces erosion was better. Table 6 demonstrates the results of the evaluation effort.

Table 6: Screening of Alternatives

Alternatives		Screening Criteria															Screening Results		
#	Description	Meets Purpose and Need		Constructability		Cultural Impacts		Environmental Impacts		Economic Feasibility				Induced Impacts					
		Ranking ¹	Uncertainty ²	Ranking ¹	Uncertainty ²	Ranking ¹	Uncertainty ²	Ranking ¹	Uncertainty ²	Design & Construction		Sustainability (O&M)							
										Ranking ¹	Uncertainty ²	Description	Ranking ¹	Uncertainty ²	Σ Ranking ³	Σ Uncertainty ³	Result		
1	No Action	6	5	1	1	4	2	3	1	1	1	1	1	Top 15 feet of bank will continue to slough.	5	1	21	12	Not acceptable, it does not meet purpose and need
2	Riprap Revetment placed on a 1V:2H slope with a stone toe	1	5	4	1	2	3	5	1	3	4	3	1	May induce minor d/s erosion.	3	4	21	19	Acceptable but not the highest rating
3	Articulated concrete mats placed on a 1V:2H slope with a stone toe	1	5	3	1	1	3	4	1	3	4	4	1	May induce minor d/s erosion during high flows.	1	2	16	17	Acceptable and preferred overall
4	Gabion Wall	1	3	5	1	3	5	6	1	5	1	2	1	May induce minor d/s erosion.	4	4	26	16	Acceptable but there are concerns with constructability and cost
5	1V:3H Vegetated Slope	4	5	2	1	6	1	1	1	2	1	5	1	May induce minor d/s erosion during high flows.	1	3	21	13	Not acceptable, it does not meet purpose and need (The slope would encroach on the building)
6	Relocation (base comparison)	3	5	6	1	5	1	1	1	5	1	5	1	Erosion will continue	5	1	30	11	Not acceptable as building could be lost
¹ The alternatives are ranked against the screening criteria with a 1 being the best and a 5 the worst at fulfilling the criteria. ² The Uncertainty column ranks the alternatives by the uncertainty the team had in the ability of the alternative to meet the criteria for that alternative; a 1 being the lowest uncertainty and a 5 the highest. ³ The sum of the Ranking and Uncertainty for each alternative was used to evaluate the alternative. A weighted sum was considered, but the outcome was considered too subjective to justify.																			

Alternative Comparison: To compare the alternatives the team determined that most of the project objectives and constraints address the protection and conservation of cultural resources, as this was a pivotal area for consideration. Cost were also used in the comparison and screening of the alternatives. The results of these consideration are discussed below.

The **No Action Alternative** was screened out as it would not meet any of the study objectives or avoid the study constraints. It would have an adverse impact to cultural resources by not providing protection for streambank erosion and would allow the historic structure to erode into the Alabama River.

Alternative 2 allows for riprap along the bankline and addresses most of the erosion issues, however it did not rank high during the screening analysis as it would cause notably more ground disturbance and potential impacts to cultural resources.

Alternative 3 includes articulated concrete and is considered the best solution because it required the least ground disturbance of all the alternatives, while protecting the resources from potential future erosion events.

Alternative 4 allows for the construction of a gabion wall, which would protect some of the cultural resources from future erosion; however, the excavation required to construct the gabion wall would result in a significant impact to the known archeological sites.

Alternative 5 allows for vegetative plantings only. Installing a vegetative slope would not protect the historic freight depot and would have additional significant impacts to known archeological sites. The NAA would provide no protection to any known cultural resource allowing them to be lost to future erosion; however it would not directly impact them as well.

After the initial screening of the riprap, articulated concrete mats, and relocation alternatives were carried forward for rough cost analysis.

The cost analysis utilized the relocation cost as a base comparison for the articulated concrete mat and riprap cost. Excluding relocation was determined to be the best approach due to the limited relocation options available, and the cost limitations within the CAP authority which would have been exceeded and would have caused damage to the structure and loss of locational integrity with relation to its historic proximity with the Alabama River. Additionally, relocation was discussed with AL SHPO as part of the coordination, who expressed support for the riverbank stabilization rather than relocation of the structure. It is included in Table 6 for comparison purposes only.

Table 7: Alternatives Cost

Alternative	Construction Costs	O&M Costs	Average Annual Cost
Relocation (base cost)	\$2,500,000+	\$0	Not Evaluated
Articulated Concrete Mat	\$555,980	\$5,400	\$24,743
Riprap	\$582,280	\$3,600	\$24,171

Given the lower costs associated with the revetment alternatives, Alternative 3 has been identified as the TSP. Alternative 3 has a lower first cost, lower risk of failure during construction, a shorter construction duration, provides a grassed riparian zone, and will require less excavation at the site which could affect additional cultural resources.

3.5 Tentatively Selected Plan

The TSP includes placing approximately 150 linear feet of articulated concrete mat along the Alabama River adjacent to the historic freight depot. Figure 14 demonstrates an example of the cross section for articulated concrete revetment.

4.0 Environmental Impacts

Pursuant to NEPA Section 1502.16, the Environmental Consequences section forms the scientific and analytic basis for the comparisons of alternatives, including the No Action (as defined by NEPA and described in Section 2) and the *proposed action* (as defined by NEPA and described below as the Recommended Plan).

4.1 Physical Environment

4.1.1 Climate

The Recommended Plan will not affect the climate of Selma.

4.1.2 Air Quality and Greenhouse Gasses

Construction activities would contribute to a localized temporary increase in dust particles within the immediate vicinity of the project. Equipment used for construction would be in accordance with state standards. Equipment emissions during implementation would be minor and localized.

Upon completion of all activities any localized minor increases in dust or emissions would revert to pre-construction levels. Therefore, the TSP would have no significant direct or indirect effects on air quality within the immediate or surrounding environment.

4.1.3 Geology

The articulated concrete mats would protect the re-graded river bank against erosion from high velocities during flood events and concentrated overland runoff, while also acting as a slope stabilizer by preventing small embankment sloughs. The stone toe would protect the revetment from scour and prevent the bottom edge of the mats from being snagged by passing debris.

4.1.4 Hydrology

No impacts to the hydrology of the Alabama River would occur under the Recommended Plan.

4.1.5 Hazardous Toxic Radiological Waste

No HTRW concerns were identified during a preliminary investigation of the proposed project area. However, prior to the construction of the TSP, a Phase I HTRW survey will be conducted. Discovery of any HTRW concerns during the survey are not anticipated.

4.2 Biological Resources

4.2.1 Vegetation

Construction of the TSP will remove debris, vegetation, and some soil within the project area. Installation of the articulated concrete mats will allow for some vegetation to grow through, but larger hardwoods should not be allowed to grow through to maintain the integrity of the mat.

4.2.2 Fish and Wildlife Resources

4.2.2.1 Fish

The TSP does not affect the waters of the Alabama River and will therefore not affect fish. In the long-term, stabilization of the riverbank will lessen the likelihood of sediments falling into the river by way of erosion and will consequently improve water quality over time.

4.2.2.2 Other Wildlife

Under the TSP wildlife would experience localized and short-term disturbances due to construction activity. The removal of the vegetation would decrease the amount of available cover; however, the affected area is small and the vegetation surrounding the project area would remain available.

4.2.1 Wetlands

Wetlands as defined by Section 404 of the CWA were not identified during an informal site evaluation by USACE employees.

4.2.2 Endangered Species Act

The Wood Stork, Tulotoma Snail, and Georgia Rockcress are not known to have populations that occur in the project area. The Alabama Sturgeon, Orangenacre Mucket, and Southern Clubshell are all aquatic species found in the Alabama River adjacent to the project area. The Orangenacre Mucket and Southern Clubshell mussels have designated critical habitat within the Alabama River adjacent to the project area.

This critical habitat will not be affected as the TSP will not occur in the waters of the Alabama River. Long-term positive effects to water quality can be expected to benefit all aquatic species. Pursuant to Section 7 of the Endangered Species Act, the USACE has made a no effects determination.

4.2.3 Migratory Bird Treaty Act

Migratory birds may pass through the area and utilize areas within or near the project area. There may be some short-term interruption of foraging and resting activities during construction; however, disturbances caused by construction will cease with project completion.

4.2.4 Bald and Golden Eagle Protection Act

There are no Bald or Golden Eagle nests near the project area, therefore there will be no impacts to Bald or Golden Eagles.

4.2.5 Water Quality

Water quality will not be affected by the TSP. The construction template does not go to the ordinary high water line and there will be no material discharged into the Alabama River. Long-term water quality is expected to improve due to the decrease in likelihood of erosion due to riverbank instability. As such, a water quality certification would not be sought by the USACE.

Section 402 of the CWA requires that all construction sites on an acre or greater of land, as well as municipal, industrial and commercial facilities discharging wastewater or stormwater directly from a point source (a pipe, ditch or channel) into a surface water of the United States (a lake, river, and/or ocean) must obtain permission under the National Pollutant Discharge Elimination System (NPDES) permit. All NPDES permits are written to ensure the Nation's receiving waters will achieve specified Water Quality Standards. During the design and implementation phase, the USACE will seek a NPDES permit from ADEM, if required.

4.3 Cultural Resources

The project area is located within a heavily surveyed and disturbed area. The project area has been previously surveyed and contains no known archaeological sites. The two sites on either side of, but not within, the project area along the embankment have been previously surveyed and determined ineligible. The project seeks to stabilize the bank underneath a Southern Railway Freight Depot, a structure contributing to a National Register Listed district. It has been determined that there is No Adverse Effect to historic properties.

4.4 Human Environment

4.4.1 Noise

Noise in the project area would increase due to construction of the TSP. The noise increases would be localized, minor, and short-term. Construction crews would be

required to comply with all applicable laws regarding noise, including any potential time of day restrictions and maximum decibel levels. All noise impacts associated with construction of the TSP would cease with completion of construction.

4.4.2 Aesthetics

With the implementation of the TSP, a temporary presence of heavy equipment may be seen by the public as “unsightly.” This would be temporary, and the overall effects to the aesthetics of the surrounding park and the historic train depot in the long-term would be beneficial.

4.4.3 Transportation

Local roads surrounding the project area may see an increase in traffic congestion due to construction equipment and materials being transported in and out of the area. These effects would be minor and short-term, and would cease with the completion of construction of the TSP.

4.4.4 Socioeconomics

The socioeconomics of Selma would not be affected by the implementation of the TSP.

4.5 Cumulative Effects

The Federal Executive Branch’s Council on Environmental Quality defines cumulative impacts as “...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7, National Environmental Policy Act of 1969, as amended).

Within the past five years (since 2013), there have been similar reported instances of imminent danger to existing infrastructure due to riverbank erosion. Within one mile downstream, there have been two instances of riverbank erosion which have been corrected by work by others. Shoreline protection efforts, similar to the proposed actions are not known to exist within a one mile radius of the proposed action area.

The TSP would have no adverse impact on environmental resources in the proposed project area or the Alabama River Watershed, and may provide environmental benefits by stabilizing the riverbank.

The construction of the TSP, when considered with past projects and potential future projects, has no significant cumulative effect on the environmental conditions of the project area.

4.6 Public Laws and Executive Orders

4.6.1 Environmental Justice (Executive Order 12898)

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations dated February 11, 1994 directs all Federal agencies to determine whether a proposed action would have a disproportionately high and adverse impact on minority and/or low-income populations.

The TSP would not impact populations protected by Environmental Justice regulations as there does not appear to be an unfair distribution of benefits or adverse impacts, nor any disproportionately high and adverse impacts on minority or low-income populations associated with the proposed action.

4.6.2 Protection of Children (Executive Order 13045)

Executive Order 13045, The Protection of Children from Environmental Health Risks and Safety Risks, was issued April 23, 1997. Executive Order 13045 applies to significant regulatory actions that concern an environmental health or safety risk that could disproportionately adversely affect children. Environmental health risks or safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.

The TSP would not impact the health and safety of children. Barriers, site workman, and other measures would be implemented to provide protection to non-project workers.

5.0 Environmental Compliance

5.1 National Environmental Policy Act of 1969

The Final Integrated Detailed Project Report and Environmental Assessment have been prepared pursuant to NEPA and its implementing regulations. A 30-day Public Notice announced the Integrated Detailed Project Report and Environmental Assessment's availability to Federal, state and local agencies and interested parties and solicited comments on the proposed project. Any comments received during the public review process were considered in the decision making process. The project will be in compliance with the NEPA of 1969, as amended, 42 U.S.C. §4321, et seq. Public Law 91-190.

5.1.1 Public and Agency Coordination

Consistent with NEPA regulations and guidance, a Public Notice announced the Integrated Detailed Project Report and Environmental Assessment's availability.

5.1.2 Endangered Species Act

For species under the jurisdiction of the USFWS, the USACE has determined that the project will have no-effect on any listed T&E species and their associated critical habitat, therefore, no consultation with USFWS is required.

5.1.3 State Historic Preservation Office

The USACE initiated consultation with the Alabama State Historic Preservation Office (SHPO) in accordance with Section 106 of the NHPA on 21 Sep 2018. This allows Alabama SHPO to comment on findings in Section 4.3. Alabama SHPO submitted comments on 24 October 2018. USACE, Mobile District responded to these comments on 14 December 2018. Consultation with Alabama SHPO is on-going.

5.1.4 Tribal Consultation

The USACE initiated consultation with Interested Federally Recognized Tribes in accordance with Section 106 of the NHPA on 21 Sep 2018. The APE is an area of limited tribal concern and no comments were received regarding the undertaking.

5.2 Views of Federal, State, and Regional Agencies

Formal consultation with other Federal, state, and regional agencies will be conducted during the public and agency comment period. This section will be updated with the results of the coordination when completed.

6.0 Significant Effects

As described in Section 5.0 there are no significant effects to the environment anticipated at this time.

7.0 Risk and Uncertainty

The most critical design assumption is that the bank erosion is being driven by surface sloughing and not by a general slope failure. The risk that this assumption is incorrect is estimated to be medium, however the consequences, if the risk were realized, would be high. The likelihood of the assumption being wrong was considered to be low based on following discussions/observations from two site visits: the steep riverbank was de-vegetated around the time of failure, displaced material collected at the base of the slope gives the appearance of surface sloughing, the lower portion of the failure slope has reached some level stability and has re-vegetated with brush and small trees, and the upper 4-5 feet of the bank had a shear face that was in tension and had sections that were actively sloughing off. Also, no signs of rotation were observed in the physical geometry or the vegetation surrounding the eroded portion of the bank. The consequences associated with this assumption being false were considered to be high based on engineering knowledge that a solution to a general slope failure would be much more invasive and costly than the recommended solution to the surface sloughing. If further geotechnical data reveals that the failure is a general slope failure rather than a surficial failure, the Recommended Plan would change from Alternative 3 to Alternative 4 (gabion wall). Alternative 4 consists of a gabion wall being built on the Mooreville Chalk layer adjacent to the Southern Railroad Freight Depot, and would have a rough order of magnitude cost of \$950,000.

8.0 Real Estate

The requirements for Lands, Easements, Rights-of-Way, Relocations, and Disposal and/or Borrow Areas (LERRD) should include the rights to construct, operate, maintain, repair, replace, rehabilitate, and monitor the proposed bank stabilization and shoreline protection project. The project area is specifically located along the bank of the Alabama River in the southern portion of the parent parcels and exclusively within the boundaries of the park. The conceptual project construction footprint is approximately 0.65 of an acre in size with additional access and staging requirements, and is located in the Southeast Quarter, Section 36, Township 17 North, Range 10 East and the Southwest Quarter, Section 31, Township 17 North, Range 11 East.

The parent parcels to be impacted by the proposed construction footprint are currently owned by the City of Selma, Alabama, and operated by the non-Federal Sponsor (NFS) as the Southern Freight Depot & Historic Riverfront Park. In addition, a portion of the proposed plan stretches into the public right-of-way for Sylvan Street (aka Martin Luther King Street).

The NFS will be required to provide without cost to the United States the aforementioned lands, access routes for ingress/egress, and staging areas, necessary for project construction and subsequent operation and maintenance of the project. A Right-of-Entry for Authorization for Entry for Construction will be provided by the NFS to USACE prior to solicitation for a construction contract in order to identify and validate that sufficient real property interests are available.

In accordance with ER 1105-2-100, Appendix F, the NFS will not receive credit for the value of LERRD being provided for this Section 14 project since the lands being provided and protected are owned by the NFS prior to the PPA execution. The estimated Real Estate administrative cost for the project is approximately \$18,000.

See Appendix B, Real Estate Plan for additional information.

9.0 Plan Implementation

The TSP consists of re-grading the upper two thirds of the riverbank to a 1V:2.5H slope and covering it with articulated concrete mats. The graded and protected portion of the riverbank would fall between approximate elevations 95 ft and 119 ft. The bottom edge of the mats would be on the Mooreville Chalk layer, which comprises the bottom third of the riverbank, and a stone toe would be placed above the transition. The articulated concrete mats would protect the re-graded river bank against erosion from high velocities during flood events and concentrated overland runoff, while also acting as a slope stabilizer by preventing small embankment sloughs. The stone toe would protect the revetment from scour and prevent the bottom edge of the mats from being snagged by passing debris. A plan view of the project area is shown in Figure 14. Because of the high, steep riverbanks, construction access will have to occur from the landside, with access being obtained through the park. The Construction sequence would began with clearing the upper portion of the bank, placing erosion control measures, excavating the 1V:2.5H slope, seeding, placing the articulated concrete mat, and placing the stone toe.

The City of Selma will be responsible for providing all required lands, easements, and rights-of-way required to implement and maintain the TSP. Although HTRW is not anticipated, if remediation is required, it will be the responsibility of the City of Selma. They will also be responsible for 35% of the implementation costs, \$195,593.

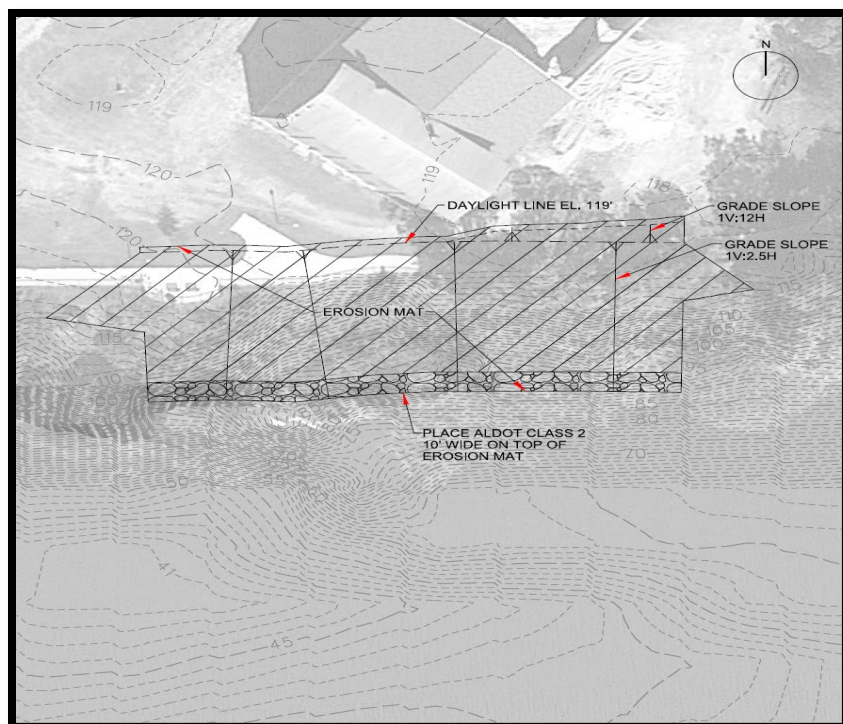


Figure 14: Plan View of the Tentatively Selected Plan

9.1 Monitoring and Operations and Maintenance

The City of Selma will be responsible for all of the routine O&M of the TSP. The O&M costs are comprised of mowing. This includes monthly mowing and trimming of light brush for nine months each year.

10.0 Recommendation

The recommendations contained herein reflect the information available at this time and current departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels writing the Executive Branch. Consequently, the recommendations may be modified before they are transmitted as proposals for implementation funding. However, prior to transmittal the NFS, the States, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

There has been no controversy concerning this study or the proposed project and the City of Selma is in support of the proposed action, as described in Section 9.0. The plan complies with all seven of the USACE environmental Operating Principles.

The first project costs are \$555,980 and \$5,400 estimated for annual O&M costs to maintain the articulated concrete mat. Operating and maintaining requires seasonal mowing of the mat and the maintenance of riprap toe. The O&M will be completed by the City of Selma, Alabama.

11.0 References

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