DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
P.O. BOX 60267
NEW ORLEANS LA 70160-0267

REPLY TO
ATTENTION OF:

Regional Planning and
Environment Division South

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT, MISSISSIPPI RIVER LEVEES

ST. GABRIEL LEVEE ENLARGEMENT

IBERVILLE PARISH, LOUISIANA

ENVIRONMENTAL ASSESSMENT #536

Description of the Proposed Action

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District proposes to raise the height of approximately 16,000 linear feet (3 miles) of the Mississippi River mainline levee (intermittently) to the authorized design grade on the east bank of the Mississippi River in Iberville Parish, Louisiana. The proposed St. Gabriel Levee Enlargement work would begin slightly upstream of East Iberville High School and extend down river for approximately 3 miles ending just downstream from the intersection of Martin Luther King Jr. Parkway (Louisiana Highway 75) and Point Clair Road (Louisiana Highway 141). Approximately 3 miles of the existing east bank levee in Iberville Parish has an average grade deficiency ranging from 2 to 3 feet. This reach of the St. Gabriel levee subsided and requires approximately 184,000 cubic yards of earthen borrow material to raise it to the authorized design grade. The earthen borrow material needed to complete the levee enlargement will be obtained from either a single borrow site or a combination of two borrow sites: the "Big Shake" borrow site which is located near Hester in St. James Parish, and the "Bocage" borrow site located near Burnside in Ascension Parish, Louisiana. These borrow sites were previously investigated and approved for use as contractor-furnished sources of clay material for constructing the Hurricane Storm Damage and Risk Reduction System (HSDDRS) in southeast Louisiana.

Big Shake Borrow Site. The 441-acre Big Shake borrow site was originally identified and approved by USACE as a HSDRRS contractor furnished borrow site in the September 2009 Individual Environmental Report (IER #30) titled, *Contractor-Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana, and Hancock County, Mississippi.* The Decision Record for IER #30 was signed on

September 28, 2009, and approved the use of suitable earthen borrow material from the Big Shake site. The Big Shake borrow site is classified as active agricultural lands with a current vegetative use of sugarcane farming. Approximately 184,000 cubic yards of borrow material would be excavated at the Big Shake site from an estimated 21-acre borrow pit with an assumed pit depth of -20.0 feet (North American Vertical Datum 1988). The boundaries of the 21-acre borrow pit would be identified in an agreement between the Non-Federal Sponsor and the Big Shake property owner. Pursuant to this agreement, the property owner would grant and convey certain real estate rights and interests to the Non-Federal Sponsor and its successors and assigns including USACE, which may include one or more of the following: a temporary work easement, a temporary staging area easement (for processing and stockpiling material), a temporary road access easement, a temporary borrow easement, and possibly a temporary drainage easement over certain designated lands of the property owner until completion of the levee enlargement work. The agreement would allow USACE contractors to borrow fill; process, stockpile and deposit fill, spoil and waste material; pump and drain excess groundwater; move, store and remove equipment and supplies; erect and remove temporary access roads and structures on the site; install temporary field office trailers and parking areas, and perform any other necessary and incidental work relating to the construction of the levee enlargement. Access to the borrow site would be via three existing 15 to 20-foot wide dirt access roads from Louisiana Highway 3125. It is anticipated that additional access roads would be constructed by the construction contractor around the perimeter of the borrow pit.

Bocage Borrow Site. The 57-acre Bocage borrow site was originally identified and approved by USACE as a HSDRRS contractor furnished borrow site in the January 2010 Individual Environmental Report (IER #32) 32 titled, Contractor-Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana. The Decision Record for IER #32 was signed on January 22, 2010, and approved the use of suitable earthen borrow material from this source. The Bocage borrow site is classified as maintained pasture land with variety of non-wetland herbaceous species of vegetation. For the proposed Bocage site, approximately 184,000 cubic yards of borrow material would be excavated at the Bocage site from a government delineated estimated 18-acre borrow pit within the boundaries of the previously approved 57-acre site. The borrow pit would be excavated to a pit depth of -12.0 feet (North American Vertical Datum 1988). The need to provide a government delineated borrow pit within the boundaries of the Bocage site is a result of known cultural sites located within the boundaries of the Bocage site. Because there are known cultural sites within the boundaries of the Bocage site, in IER #32, the USACE agreed to maintain a 200-foot buffer zone around an archeological site on the property and to require the contractor to avoid the archeological site and the 200-foot surrounding buffer zone. This requirement will be adhered to for this work and will be contained in the contract plans and specifications. The boundaries of the borrow pit, the road access from Louisiana Highway 942 to the pit, the perimeter road around the pit, and the stockpile, processing, and staging area would be identified in an agreement between the Non-Federal

Sponsor and the property owner. Pursuant to this agreement, the property owner would grant and convey certain real estate rights and interests to the Non-Federal Sponsor and its successors and assigns, including USACE, which may include one or more of the following: a temporary work easement, a temporary staging area easement (for processing and stockpiling material), a temporary road access easement, a temporary borrow easement, and possibly a temporary drainage easement, over certain designated lands of the property owner until completion of the levee enlargement work. The agreement would allow USACE contractors to use the lands to borrow fill; process, stockpile and deposit fill, spoil and waste material; move, store and remove equipment and supplies; pump and drain excess groundwater; erect and remove temporary access roads, construction trailers, and other temporary structures on the site; and perform any other necessary and incidental work relating to the construction of the levee enlargement. In order to access the borrow site, a temporary 50-foot wide access road consisting of approximately 3.89 acres would constructed by the USACE contractor from Louisiana Highway 942 to the borrow pit together with a 30 foot wide borrow access corridor to be constructed around the perimeter of the 18-acre borrow pit. A temporary 7.47 acre stockpile, processing, and staging area would will be located immediately adjacent to the borrow pit. Upon completion of the levee enlargement work, the temporary access roads and the staging, stockpile, and processing area would be removed by the USACE contractor. The Non-Federal Sponsor will be required to obtain a temporary driveway permit from the Louisiana Department of Transportation and Development for access to the borrow site.

The staging area(s) at the borrow sites(s) that would be provided to the construction contractor for field office trailers are a considerable distance from the levee construction site. The contractor would be given the option of locating a temporary staging area for the placement of construction office trailers and parking at the levee enlargement construction site in a location that is entirely within the existing project right-of-way and which would result in no environmental impacts. Any site work performed by the contractor to establish and use such a staging area would be removed prior to completion of the levee enlargement construction, and the staging area location would be restored by the contractor to the condition in which the site existed prior to use by the contractor.

Factors Considered in Determination

This office has assessed the impacts of the Federal action on important resources including: terrestrial resources; wildlife; threatened and endangered species; cultural resources; and air quality. A no-action alternative was also assessed. The USACE concluded that the proposed levee enlargement and borrow site excavation would not result in any significant adverse impacts to the previously listed resources. Additionally, the risk of encountering hazardous, toxic and radioactive waste is considered low.

Environmental compliance for the Federal action has been achieved based upon the following actions. On August 12, 2015, draft Environmental Assessment #536 and associated draft Finding of No Significant Impact were mailed out for the 30-day public review and comment period. No adverse comments were received during the review period. On August 14, 2015, the U.S Fish and Wildlife Service concurred with the USACE's determination that the proposed action is not likely to adversely affect any threatened or endangered species or critical habitat. In a letter dated August 27, 2015, the Louisiana Department of Natural Resources, Office of Coastal Management, determined that the proposed project was consistent with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended (Coastal Zone Consistency C20150146). All project areas discussed for the St. Gabriel levee enlargement project have been coordinated with the Louisiana State Historic Preservation Office (SHPO). The Louisiana SHPO concurred USACE's determination of "no adverse effect" with their official stamp of concurrence dated July 23, 2015. In accordance with responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, in letters dated August 7, 2015, and emails dated August 11, 2015, the USACE offered federally-recognized 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 USACE also provided a Section 106 finding of "no adverse effect" for review and comment. No adverse comments were received during the review period. In a letter dated September 9, 2015, the Coushatta Tribe of Louisiana concurred with the effect determination and requested that work stop and the tribe be contacted immediately in the event that archaeological properties or human remains are discovered.

Environmental Design Commitments

The following commitments are an integral part of the proposed action:

1 If the proposed action is changed significantly or is not implemented within one year, the USACE will reinitiate consultation with the U.S. Fish and Wildlife Service to ensure that the proposed action would not adversely affect any Federally-listed threatened or endangered species, critical habitat or trust resources.

2 The USACE will implement a 200 foot buffer around a potentially eligible National Register of Historic Places archaeological site located within the boundaries of the Bocage Plantation borrow site. If any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a New Orleans District staff archeologist has been notified and final coordination with the State Historic Preservation Officer and Tribal Historic Preservation Officer has been completed (New Orleans District standard operating procedure).

Conclusion

This office has assessed the potential environmental impacts of the proposed action. Based on this assessment (incorporated herein by reference), a review of the comments made on draft Environmental Assessment #536, 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.

18 September 2015
Date

Richard L. Hansen
Colonel, U.S. Army
District Commander

ENVIRONMENTAL ASSESSMENT

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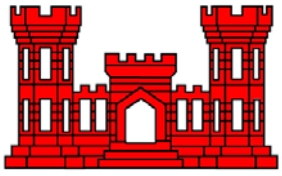

U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environment Division South
New Orleans District

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MISSISSIPPI RIVER AND TRIBUTARIES PROJECT, MISSISSIPPI RIVER LEVEES,

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IBERVILLE PARISH, LOUISIANA

EA #536

1. INTRODUCTION

1.0. The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, Regional Planning and Environmental Division South, has prepared this Environmental Assessment for the New Orleans District to evaluate the potential impacts of raising the height of approximately 16,000 linear feet (3 miles) of the Mississippi River mainline levee (intermittently), referred to herein as the St. Gabriel Levee Enlargement, to the authorized design grade on the east bank of the Mississippi River in Iberville Parish, Louisiana. The proposed work would be accomplished under authority for the Mississippi River and Tributaries Project. This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation ER 200-2-2. This Environmental Assessment provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, New Orleans District, to make an informed decision on the appropriateness of an Environmental Impact Statement or a Finding of No Significant Impact.

1.1. PROPOSED ACTION

1.1.1. The USACE proposes to raise the height of approximately 16,000 linear feet (3 miles) of the Mississippi River mainline levee (intermittently) to the authorized design grade on the east bank of the Mississippi River in Iberville Parish, Louisiana. The proposed St. Gabriel Levee Enlargement work would begin slightly upstream of East Iberville High School and extend down river for approximately 3 miles ending just downstream from the intersection of Martin Luther King Jr. Parkway (Louisiana Highway 75) and Point Clair Road (Louisiana Highway 141) (Figure 1). Approximately 3 miles of the existing east bank levee in Iberville Parish has an average grade deficiency ranging from 2 to 3 feet. This reach of the St. Gabriel levee subsided and requires approximately 184,000 cubic yards of earthen borrow material to raise it to the authorized design grade. The earthen borrow material needed to complete the levee enlargement will be obtained from either a single borrow site or a combination of two borrow sites: the "Big Shake" borrow site which is located near Hester in St. James Parish, and the "Bocage" borrow site located near Burnside in Ascension Parish, Louisiana. These borrow sites were previously investigated and approved for use as contractor-furnished sources of clay material for constructing the Hurricane Storm Damage and Risk Reduction System (HSDDRS) in southeast Louisiana.

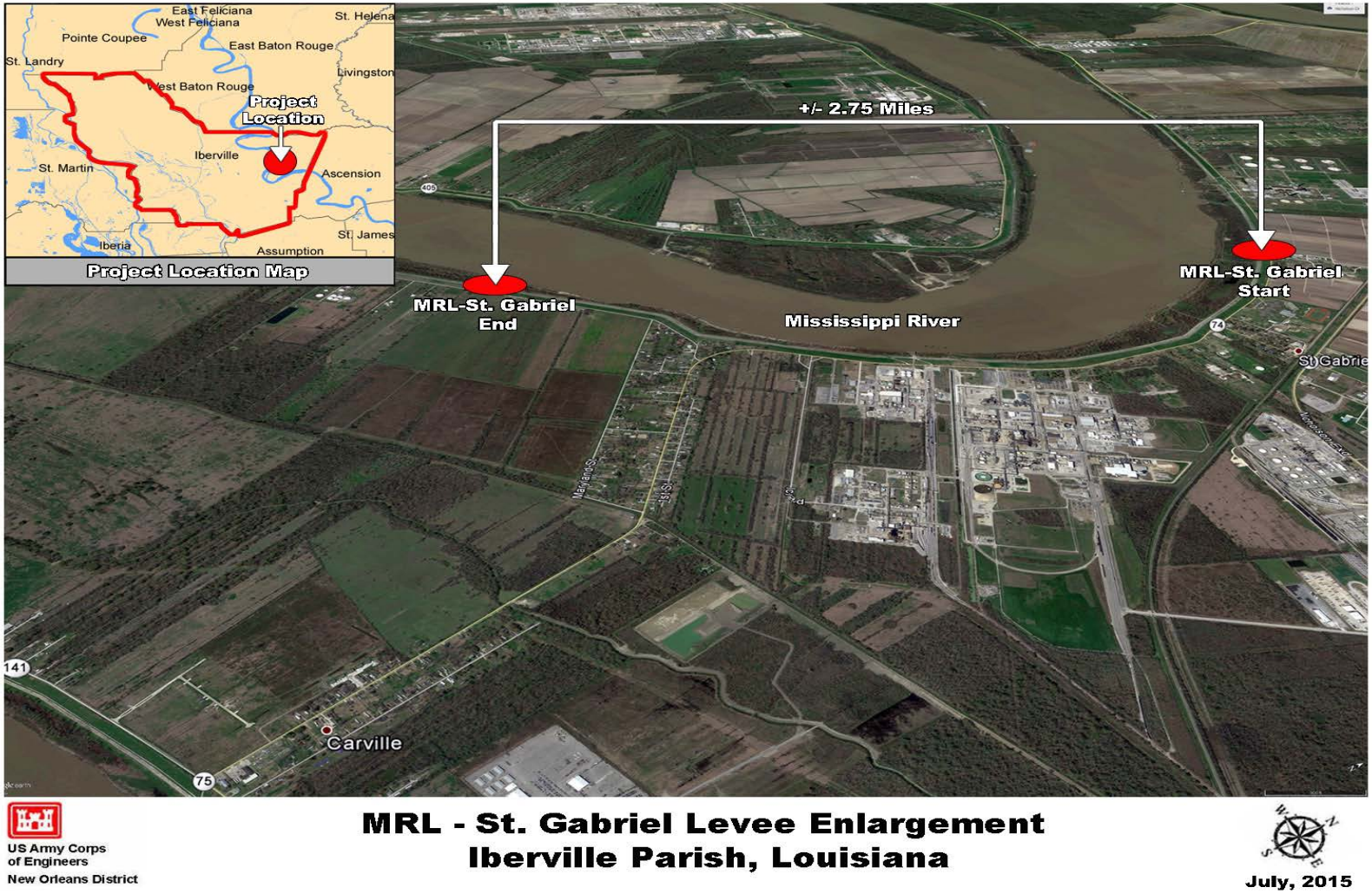

Figure 1. Mississippi River Levees, St. Gabriel Levee Enlargement Project Area, Iberville Parish, Louisiana.

1.1.2. *Big Shake Borrow Site*. The 441-acre Big Shake borrow site was originally identified and approved by USACE as a HSDRRS contractor furnished borrow site in the September 2009 Individual Environmental Report (IER #30) titled, *Contractor-Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana, and Hancock County, Mississippi*. The Decision Record for IER #30 was signed on September 28, 2009, and approved the use of suitable earthen borrow material from the Big Shake site. The Big Shake borrow site is classified as active agricultural lands with a current vegetative use of sugarcane farming. Approximately 184,000 cubic yards of borrow material would be excavated at the Big Shake site from an estimated 21-acre borrow pit with an assumed pit depth of -20.0 feet (North American Vertical Datum 1988). The boundaries of the 21-acre borrow pit would be identified in an agreement between the Non-Federal Sponsor and the Big Shake property owner. Pursuant to this agreement, the property owner would grant and convey certain real estate rights and interests to the Non-Federal Sponsor and its successors and assigns including USACE, which may include one or more of the following: a temporary work easement, a temporary staging area easement (for processing and stockpiling material), a temporary road access easement, a temporary borrow easement, and possibly a temporary drainage easement over certain designated lands of the property owner until completion of the levee enlargement work. The agreement would allow USACE contractors to borrow fill; process, stockpile and deposit fill, spoil and waste material; pump and drain excess groundwater; move, store and remove equipment and supplies; erect and remove temporary access roads and structures on the site; install temporary field office trailers and parking areas, and perform any other necessary and incidental work relating to the construction of the levee enlargement. Access to the borrow site would be via three existing 15 to 20-foot wide dirt access roads from Louisiana Highway 3125. It is anticipated that additional access roads would be constructed by the construction contractor around the perimeter of the borrow pit (Figure 2).

1.1.3. *Bocage Borrow Site.* The 57-acre Bocage borrow site was originally identified and approved by USACE as a HSDRRS contractor furnished borrow site in the January 2010 Individual Environmental Report (IER #32) 32 titled, Contractor-Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana. The Decision Record for IER #32 was signed on January 22, 2010, and approved the use of suitable earthen borrow material from this source. The Bocage borrow site is classified as maintained pasture land with variety of non-wetland herbaceous species of vegetation. For the proposed Bocage site, approximately 184,000 cubic yards of borrow material would be excavated at the Bocage site from a government delineated estimated 18-acre borrow pit within the boundaries of the previously approved 57-acre site. The borrow pit would be excavated to a pit depth of -12.0 feet (North American Vertical Datum 1988). The need to provide a government delineated borrow pit within the boundaries of the Bocage site is a result of known cultural sites located within the boundaries of the Bocage site. Because there are known cultural sites within the boundaries of the Bocage site, in IER #32, the USACE agreed to maintain a 200-foot buffer zone around an archeological site on the property and to require the contractor to avoid the archeological site and the 200-foot surrounding buffer zone. This requirement will be adhered to for this work and will be contained in the contract plans and specifications. The boundaries of the borrow pit, the road access from Louisiana Highway 942 to the pit, the perimeter road around the pit, and the stockpile, processing, and staging area would be identified in an agreement between the Non-

Federal Sponsor and the property owner. Pursuant to this agreement, the property owner would grant and convey certain real estate rights and interests to the Non-Federal Sponsor and its successors and assigns, including USACE, which may include one or more of the following: a temporary work easement, a temporary staging area easement (for processing and stockpiling material), a temporary road access easement, a temporary borrow easement, and possibly a temporary drainage easement, over certain designated lands of the property owner until completion of the levee enlargement work. The agreement would allow USACE contractors to use the lands to borrow fill; process, stockpile and deposit fill, spoil and waste material; move, store and remove equipment and supplies; pump and drain excess groundwater; erect and remove temporary access roads, construction trailers, and other temporary structures on the site; and perform any other necessary and incidental work relating to the construction of the levee enlargement. In order to access the borrow site, a temporary 50-foot wide access road consisting of approximately 3.89 acres would constructed by the USACE contractor from Louisiana Highway 942 to the borrow pit together with a 30 foot wide borrow access corridor to be constructed around the perimeter of the 18-acre borrow pit. A temporary 7.47 acre stockpile, processing, and staging area would will be located immediately adjacent to the borrow pit. Upon completion of the levee enlargement work, the temporary access roads and the staging, stockpile, and processing area would be removed by the USACE contractor (Figure 3). The Non-Federal Sponsor will be required to obtain a temporary driveway permit from the Louisiana Department of Transportation and Development for access to the borrow site.

1.1.4. The staging area(s) at the borrow sites(s) that would be provided to the construction contractor for field office trailers are a considerable distance from the levee construction site. The contractor would be given the option of locating a temporary staging area for the placement of construction office trailers and parking at the levee enlargement construction site in a location that is entirely within the existing project right-of-way and which would result in no environmental impacts. Any site work performed by the contractor to establish and use such a staging area would be removed prior to completion of the levee enlargement construction, and the staging area location would be restored by the contractor to the condition in which the site existed prior to use by the contractor.

1.1.5. The differences in the acreage sizes of the pits and the pit depths at these two sites are due to the need to excavate to a deeper level at the Big Shake site to obtain levee-grade clay borrow material. Within the 441-acre Big Shake site, the uppermost 10 feet of earthen soil has been determined to be unsuitable for use as earthen borrow material for this levee enlargement work based on geotechnical analysis of boring logs of site material.

1.1.6. At the levee enlargement construction site, a silt fence would be constructed along the protected-side levee right-of-way, which will be 5 feet from the land-side toe of the levee, in order to minimize erosion and sediment runoff. The silt fence would be designed to retain sediment from runoff during clearing and grubbing, excavation, embankment placement, and final grading. The existing limestone-surfaced access road located on the crown of the levee would be excavated and either removed from the work site or temporarily stored within the levee right-of-way for later use as re-surfacing. After removal of the limestone on the levee crown, site preparation would require stripping vegetation and topsoil. This vegetation and topsoil may be stockpiled within the levee right-of-way and later placed on the levee to spur the growth of

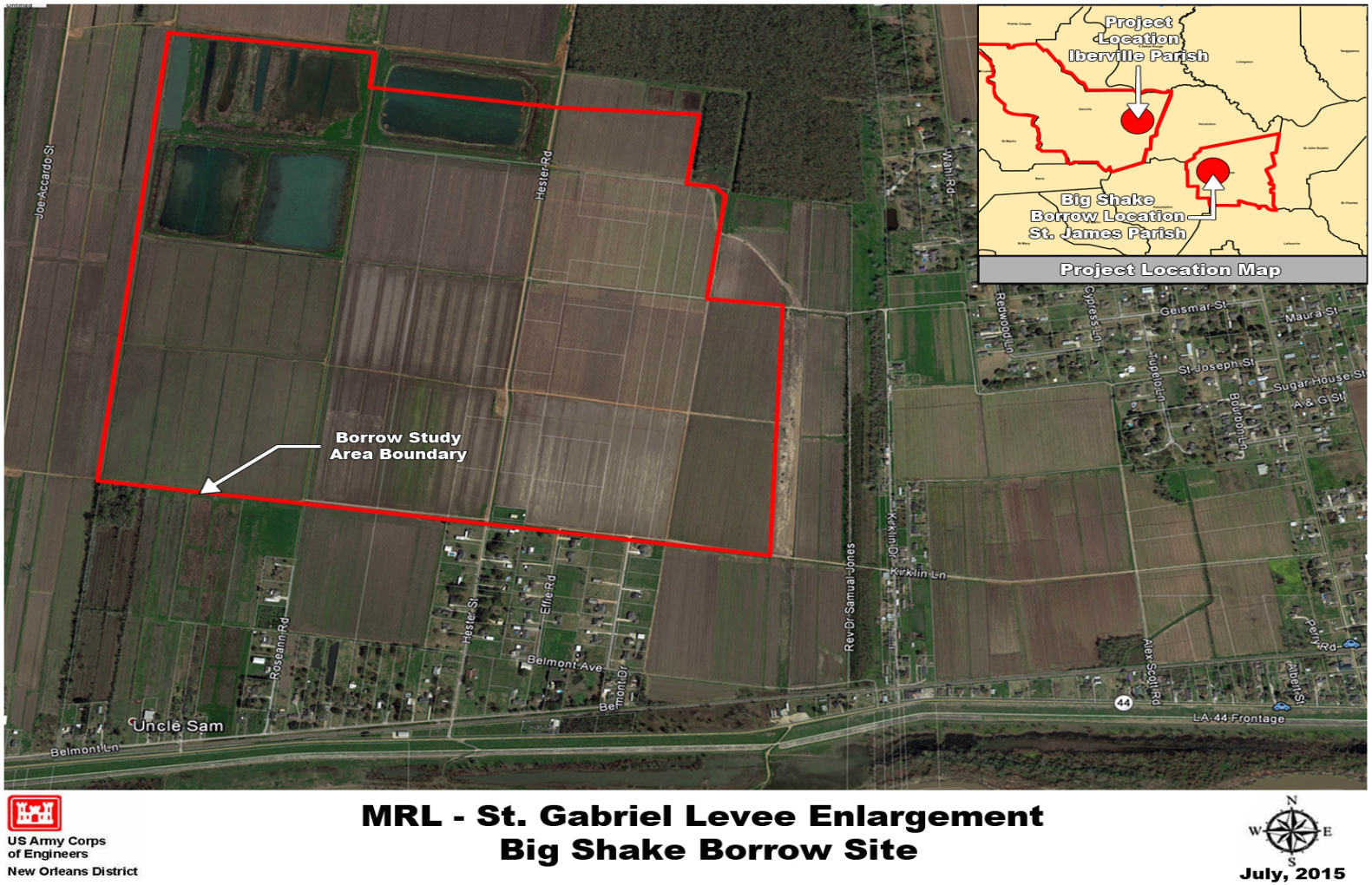

Figure 2. Big Shake borrow site located near the community of Hester in St. James Parish, Louisiana.

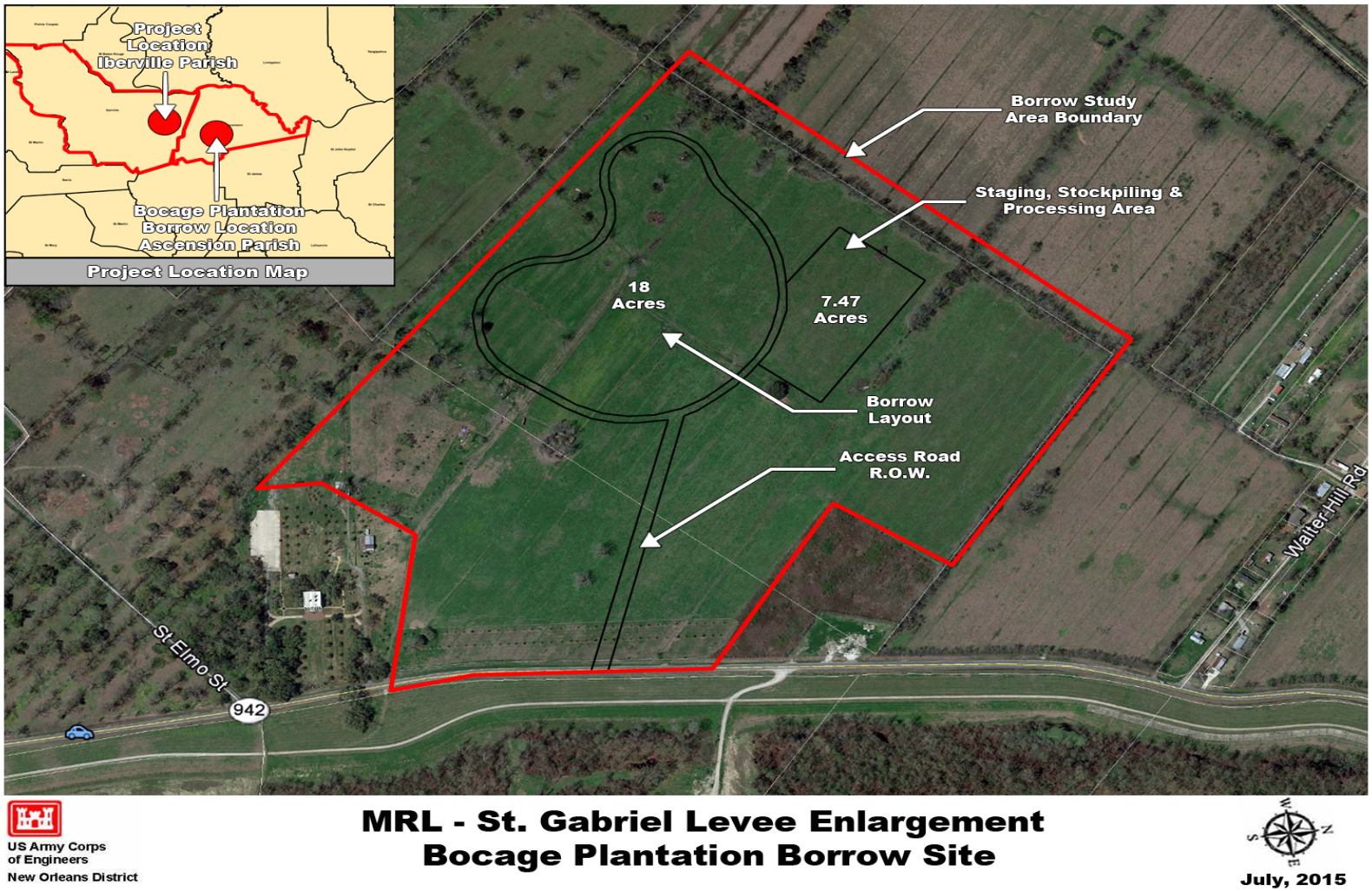

Figure 3. Bocage borrow site located near the community of Burnside in Ascension Parish, Louisiana.

new vegetation. Any excess material that cannot be reused would become property of the construction contractor who may dispose of the material in any legal manner.

1.1.7. Prior to excavation at the borrow site(s), bulldozers would be utilized to clear the areas of trees, scrub brush, other vegetation, and earthen material deemed not suitable for use in the levee enlargement work. The vegetation and unsuitable earthen material removed would be temporarily stockpiled at the borrow site. Groundwater seeping into the pit would be pumped into adjacent areas, and would drain into existing on-site drainage ditches. Excavators would remove the earthen material deemed suitable for the levee work, which would then be processed on-site to reduce the moisture content within the soil. Moisture content processing would be performed by mechanical methods such as utilizing bulldozers to stockpile materials and disks to further reduce the moisture content of the soil through evaporation. Once the moisture content has been reduced to acceptable levels, the borrow material would be hauled in trucks with secured binders on tailgates to the work areas. Transportation routes for trucks carrying borrow material would likely be along Martin Luther King Jr. Parkway and Point Clair Road using existing levee access ramps. After the earthen material is excavated from the pit(s), the trees, shrubs and other vegetation removed during clearing and grubbing operations would either be disposed of by the construction contractor in any legal manner, or be buried in the borrow pit(s).

1.1.8. Upon completion of the levee enlargement work, the levee crown will be re-surfaced with limestone. All levee embankments and areas disturbed by the construction activities would be seeded with Bermuda grass and fertilized. Removal of silt fence barriers would occur after construction is complete and the soil is stabilized to allow for sufficient grass growth.

1.2. PURPOSE AND NEED FOR THE PROPOSED ACTION

1.2.1. Prior to the 2011 Flood, the Mississippi River and Tributaries Project was approximately 89 percent physically complete with a remaining balance-to-complete cost of approximately $3 billion and an estimated date of completion of 2031. The priorities for the known deficiencies change over time are tracked and regularly reassessed for the Mississippi River Levee System and Channel Improvements Program. Before the 2011 Flood, some reaches of the mainline Mississippi River Levees could not safely convey the Project Design Flood, and other reaches were in need of work to prevent failures due to seepage or deficient cross sections. Additionally, channel improvements were needed to assure that alignment of the Mississippi River remained stable to provide a dependable navigation channel and to prevent the meander of the river from destroying Mississippi River and Tributaries Project features.

1.2.2 The deficiencies at the St. Gabriel reach were identified as high priorities prior to the 2011 Flood. The magnitude of the 2011 Flood further deteriorated the conditions, expanded the scope of the deficiency, and revealed unacceptable vulnerabilities thus elevating the need for repairs. USACE conducts levee screening risk assessments that consider the frequency of loading and performance data provided by USACE district personnel and consequence data obtained from the Federal Emergency Management Agency (FEMA) Hazus database to estimate the overall relative risk associated with a levee segment. USACE levee screenings result in a relative risk ranking for each levee segment, referred to as a Levee Safety Action Classification (LSAC). The April 2015 Strategic Investment Plan (SIP) process was developed based on the levee screening

process and resulted in a prioritization of the remaining authorized MR&T work. Prioritizations for MR&T construction items were developed by plotting a factor that represents the likelihood of poor performance at the construction item's locations versus an indicator of the magnitude of impacts due to a breach at the construction item's locations. The St. Gabriel Levee Enlargement is listed as a Tier 1 priority for the New Orleans District. As documented in the Mississippi River and Tributaries Project Strategic Investment Plan (April 2015), the St. Gabriel reach of the Mississippi River Levee has a Levee Safety Action Classification (LSAC) rating of 2, with a levee failure affecting over 140,000 structures and putting nearly 400,000 people at risk. This reach has a severe performance index determination with an elevation deficiency between 2-3 feet and an extensive Consequence Index Determination resulting in high impacts to life and property if failure were to occur. A copy of the 2015 Mississippi River and Tributaries Project Strategic Investment Plan is on file at the New Orleans District.

1.2.3 The St. Gabriel levee enlargement is also of extreme importance to the Non-Federal Sponsor, Pontchartrain Levee District. Due to the significant elevation deficiencies of the levee in this location, the Pontchartrain Levee District placed sandbags along the levee crown to prevent ship and wind driven waves from overtopping the levee during the 2011 Flood. It is anticipated that this levee reach will have to be flood fought during any major Mississippi River event until it is enlarged and restored to the required design grade elevation.

1.2.4. The purpose of the proposed action is to correct a severe levee elevation deficiency and performance index determination, improve the current poor LSAC rating, reduce the high risk of damage to property and loss of life in the event of a levee failure, and continue to provide flood risk reduction from Mississippi River high water events to valuable land uses including, but not limited to, residential, commercial, industrial, and municipal development, located on the east bank of the Mississippi River in and near Iberville Parish, Louisiana. As the levee is approximately 2-3 feet deficient along this reach of the Mississippi River levee, there exists a critical need to provide adequate flood risk reduction to the several large-scale industrial facilities and residential communities of Carville, St. Gabriel, and Geismar that are located directly landside of this levee reach.

1.2.5. There is widespread public support for the protection of environmental resources and flood control along the Mississippi River. The flood control plan of the Mississippi River and Tributaries Project is designed to reduce the risk associated with the "Project Design Flood," and includes several features that protect a large part of the alluvial valley from the Project Design Flood, with a major element of this plan being levees for the containment of flood flows.

1.3. AUTHORITY

1.3.1. The Mississippi River and Tributaries Project was authorized by the Flood Control Act of 1928 (PL 391-71), as amended, including but not limited to, the Flood Control Act of 1936 (PL 678-74 and PL 738-74), the Flood Control Act of 1938 (PL 671-75), the Flood Control Act of 1941 (PL 228-77), the Flood Control Act of 1944 (PL 534-78), the Flood Control Act of 1946 (PL 526-79), the Flood Control Act of 1950 (PL 516-81), the Flood Control Act of 1954 (PL 780-83), the Flood Control Act of 1962 (PL 85-874), the Flood Control Act of 1965 (PL 89-

298), the Flood Control Act of 1968 (PL 90-483), and the Water Resources Development Act of 1986 (PL 99-662).

1.3.2. The comprehensive Mississippi River and Tributaries Project has four major elements: (1) levees and floodwalls to contain flood flows; (2) floodways to pass excess flows past critical Mississippi River reaches; (3) channel improvement and stabilization to provide efficient navigation alignment, increased flood-carrying capacity and protection of the levee system; and (4) tributary basin improvements. The Mississippi River and Tributaries Project in the alluvial valley between Cape Girardeau, Missouri, and Head of Passes, Louisiana, provides protection from floods by means of levees, floodwalls, floodways, reservoirs (in Yazoo and St. Francis Basins), bank stabilization and channel improvements in and along the River and its tributaries and outlets, insofar as affected by backwater of the Mississippi River.

1.4. PRIOR REPORTS

1.4.1. The "*Mississippi River and Tributaries, Mississippi River Levees and Channel Improvement*" Environmental Impact Statement of 1976 (1976 EIS) was filed with the Council on Environmental Quality in April 1976 . The Statement of Findings was signed on April 4, 1976.

1.4.2. The "*Flood Control, Mississippi River and Tributaries, Mississippi River Mainline Levees, Enlargement and Seepage Control, Cape Girardeau, Missouri to Head of Passes, Louisiana*" Final Supplemental Environmental Impact Statement, July 1998 (1998 SEIS) was a joint effort of USACE Vicksburg, Memphis and New Orleans Districts. The 1998 SEIS was prepared to report the findings of studies conducted for the Mississippi River and Tributaries Project in the alluvial valley between Cape Girardeau, Missouri and Head of Passes, Louisiana based on environmental laws and regulations passed since 1976 to cover the remaining unconstructed Mississippi River mainline levees and seepage control projects that are part of the Mississippi River and Tributaries Project. A Record of Decision was signed on October 5, 1998. The 1998 SEIS identified twelve Mississippi River mainline levee projects in the New Orleans District that required additional work in order to complete the Mississippi River and Tributaries Project, as authorized by the Flood Control Act of 1928. While the proposed Federal action at St. Gabriel is part of the Mississippi River mainline levee system, it was not recognized in the 1998 SEIS as requiring additional improvements.

1.4.3. Individual Environmental Report (IER #30), titled, *Contractor Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana and Hancock County, Mississippi*, designated three potential contractor furnished borrow areas, including the proposed Big Shake site, and assessed the environmental impacts for the use of each site as potential suitable material for levee and floodwall improvements for the Hurricane and Storm Damage Risk Reduction System. The Decision Record for IER #30 was signed on September 28, 2009.

1.4.4. Individual Environmental Report (IER #32) , titled, *Contractor Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana*, designated six potential contractor furnished borrow areas, including the proposed Bocage site, and assessed the environmental impacts for the use of each site as potential suitable material for levee and

floodwall improvements for the Hurricane and Storm Damage Risk Reduction System. The Decision Record for IER #32 was signed on January 22, 2010.

2. ALTERNATIVES TO THE PROPOSED ACTION

2.1. BORROW ALTERNATIVES ANALYSIS

2.1.1. The July 1998 SEIS was used to establish key evaluation criteria as well as to structure the borrow alternatives. Criteria specifically applicable to borrow sources include the following:

- Plans are formulated to the extent practicable that would first avoid, and then, if impacts are not avoidable, minimize adverse impacts to aquatic resources and aquatic habitat including wetlands. Avoidance of impacts to the aquatic environment is a restriction on dredged material discharge in that no discharge of dredged material can be permitted if there is a practicable alternative to the discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other adverse environmental consequences (40 CFR 230.10 (a)).
- Unavoidable adverse impacts to aquatic resources will be identified for appropriate and practicable compensatory mitigation.
- Unavoidable adverse impacts to aquatic resources will be mitigated concurrently with construction.

2.1.2. Raising and enlarging the Mississippi River levees to continue fulfilling the overall Mississippi River and Tributaries Project purpose is recognized as a non-water dependent activity because there are potential alternative sources of earthen material that will not cause aquatic ecosystem (wetland) impacts. Consequently, the proposed borrow areas were evaluated and selected in order to identify the alternative which is the least environmentally damaging alternative that is practicable, available and possible after considering cost, existing technology, and logistics relative to project purposes (40 CFR 230.10 (a) (2)).

2.1.3. In an effort to avoid and minimize environmental damages and considering the available environmental, economic and engineering solutions, two alternatives were evaluated in the screening of borrow sources: (1) landside borrow sources; and (2) riverside borrow sources. The USACE obtained detailed surveys, land use data, soil borings and coordinated with the Non-Federal Sponsor to determine the best course of action for obtaining suitable borrow material of sufficient quantity required for the work in a cost-effective manner while being environmentally and engineeringly viable. For the reasons set forth herein, the riverside borrow alternative was eliminated from consideration.

2.1.4. **Landside Borrow**. The landside borrow alternative consists of obtaining the necessary rights to use and acquire borrow material to construct the levee enlargement from areas located to the landside of the levee but as close to the construction site as is engineeringly feasible. The landside borrow alternative consists of two potential borrow locations which are currently used as farmland and pastureland. Both landside borrow sites are located a minimum of 1,500 feet from the centerline of the levee to prevent under-levee seepage problems. Under this alternative,

the non-Federal Sponsor would obtain temporary easements from the landowner(s) for access to, and excavation of, borrow areas. A pit depth of -20.0 feet North American Vertical Datum (NAVD) was assumed for all potential landside borrow areas based on the typical design depth for prior riverside borrow sources. These minimum distances are required because the geology of the area in the vicinity of the levee enlargement work is not uniform, and sand seams, organic material, relict watercourses and other discontinuities could become seepage pathways and undermine levee integrity. Although the landside borrow analysis in the July 1998 SEIS sets forth a minimum distance of 2,000 feet from the landside levee toe to the closest borrow area, since 1998, setback distances for landside borrow sites have been reduced to less than 1,500 feet, and may be reduced further, if detailed site-specific information indicates that seepage pathways would not be created (SEIS, July 1998, Volume I, p. 34). As noted earlier in this document, the New Orleans District previously identified and approved contractor-furnished borrow sites to provide clay material for the Hurricane Storm Damage Risk Reduction System in southeast Louisiana. The sites were proposed by landowners and were subjected to various investigations. Only those sites that had ease of access, low overall environmental impacts including complete avoidance of wetland impacts, and existing engineering and geotechnical determinations of borrow material suitability were approved. None of the approved sites were located on the riverside of Mississippi River Levees. No landside borrow areas in addition to the previously approved contractor-furnished borrow sites were investigated for the St. Gabriel work as it would have required considerable additional time and cost when compared to the two previously approved and readily available contractor-furnished borrow sites (Big Shake and Bocage), and in light of the urgent need to construct the enlargement to restore the levee to the required design grade for the protection of life and property.

2.1.5. **Riverside Borrow** (USACE preferred method). The riverside borrow alternative has historically been the USACE standard approach for selecting borrow sources for use in constructing Mississippi River levee enlargements and berms. Generally, USACE utilizes riverside borrow sources unless legitimate and justifiable reasons exist which warrant using a landside borrow source. Riverside borrow sites, are typically located on the riverside of the levee as close to the construction site as feasible from an engineering perspective and excavated as deep as soil layers allow. Previous use of riverside borrow sites in the jurisdiction of the New Orleans District has demonstrated that typical borrow sites permanently hold water, and are periodically flushed by normal river fluctuations, but do not fully refill with sediment. In addition, during periods of high water, riverside borrow areas are underwater and cannot be utilized.

2.1.5.1. Floral communities within riverside borrow areas consist primarily of bottomland hardwood forest. Trees typically include sweetgum, green ash, cottonwood, American elm, water oak, hackberry, sycamore, black willow and Chinese tallow. These areas have been extensively documented to support numerous faunal species including swamp rabbit, raccoon, opossum, gray squirrel, fox squirrel as well as various species of birds, reptiles and fish. Prior typical designs of riverside borrow sites have included constructing 1 vertical on 3 to 5 horizontal side slopes on the riverside of the pit, burying woody debris on the shallow side of the pit thereby resulting in a shallow shelf that produces desirable spawning habitat for several fish

species as well as foraging habitat for several species of wading birds, and leaving selected trees for shading and creating some sinuosity along the edges of the borrow pit.

2.1.5. The land between the River and the existing levee is very narrow along this reach of the River, and nearly all suitable material has already been excavated for other levee building work and to a lesser degree, for commercial use. Industrial development and numerous pipelines and utility crossings present further limitations on locations that could potentially contain both suitable and sufficient quantities of borrow material. Potentially suitable borrow areas downstream of the proposed work were subjected to geotechnical investigations, and the material was determined to be unsuitable for levee construction. The only other potentially available and suitable riverside site within a reasonable distance of the proposed work, which is located several miles downstream, was determined to have suitable material, but not enough to complete the St. Gabriel work. Since no adequate riverside borrow sources are available for this proposed work, this alternative was eliminated from further consideration in this environmental assessment.

2.2. ALTERNATIVE 1 – NO ACTION

2.2.1. The "no-action" alternative to the proposed action was considered. In the future without project condition (a.k.a. no-action), the proposed levee enlargement would not be constructed. Without the proposed levee enlargement to restore this levee reach to the design grade there is a significantly increased risk of damage to property and loss of life on the east bank Mississippi River levee in Iberville Parish during high River periods typically ranging from early March to June. If additional earthen material is not placed on the proposed levee reaches, it is likely that temporary flood risk reduction would be required during high water on the Mississippi River. Temporary flood risk reduction measures could include temporary placement of earthen fill, a cofferdam, Hesco® baskets, sheet pile, or other engineering methods. It is likely that during the periods that temporary flood risk reduction measures are enacted, these portions of the existing Mississippi River levee in Iberville Parish would be subject to restricted access.

3. AFFECTED ENVIRONMENT

3.1. ENVIRONMENTAL SETTING

3.1.2. Iberville Parish is located in the southeastern part of Louisiana to the south of Baton Rouge. The parish has a total area of 653 square miles, with approximately 619 square miles comprised of land and the remaining 34 square miles consisting of water. The parish is mostly agricultural and industrial, with some suburban development situated in the northern part of the parish. There are six incorporated areas situated along the eastern border of the parish (Plaquemine, St. Gabriel, Maringouin, White Castle, Grosse Tete and Rosedale). The Mississippi River meanders across the easternmost part of the parish and flows from northwest to southeast. Elevations within the parish range from about 25 feet above sea level on the Mississippi River natural levees in the eastern part to nearly sea level in the Atchafalaya Basin Floodway in the southwestern part. According to U.S. Census data, the parish had a population of 33,387 in 2010, and has remained relatively stable over the past two decades.

3.1.3. Ascension Parish is located in the southeastern part of Louisiana, approximately 15 miles southeast of Baton Rouge. The parish has a total area of 303 square miles, with approximately 292 square miles comprised of land and the remaining 11 square miles consisting of water. The parish contains a variety of suburban, agricultural and industrial development. Suburban areas are situated to the north and northwest portions of the parish bordering East Baton Rouge, while the agricultural and industrial developments exist primarily along the Mississippi River. The parish contains three incorporated areas, including the parish seat, located in the central and southern part of the parish (Donaldsonville, Gonzales and Sorrento). The Mississippi River meanders across the southwestern part of the parish and flows from northwest to southeast. Elevations within the parish range from about 30 feet above sea level in the northwestern part to less than 1 foot above sea level in the low, back swamp areas in the southeastern part. According to U.S. Census data, the parish had a population of 107,215 in 2010, and it is considered to be one of the fastest growing parishes in the state.

3.1.4. St. James Parish is located in the southeastern part of Louisiana, approximately 50 miles southeast of Baton Rouge. The parish has a total area of 258 square miles, with approximately 242 square miles comprised of land and the remaining 16 square miles consisting of water. The parish is mostly agricultural and industrial, with some smaller pockets of suburban development interspersed. There are eight communities, including the parish seat, located primarily along the Mississippi River (Convent, Gramercy, Lutcher, North Vacherie, Paulina, South Vacherie, St. James and Welcome). The Mississippi River bisects the parish and flows from west to east. Elevations within the parish range from about 20 feet above sea level near the river and slope gradually to about 5 feet near the swamps in the northern and southern most parts of the parish. According to U.S. Census data, the parish had a population of 22,102 in 2010, and has been relatively stable over the past two decades.

3.1.5. The levee enlargement work site is located within the Mississippi River deltaic plain, with the Mississippi River acting as the primary influence on geomorphic processes in the delta region. The Mississippi River levees are designed to protect the alluvial valley against the project flood by confining flow between the levees with the exception of areas where it enters the natural backwater areas or is diverted purposely into floodway areas. The Mississippi River Mainline Levee System consists of levees and floodwalls along the river, floodways and control structures. The levee on the west bank begins just south of Cape Girardeau, Missouri, and extends to Venice, Louisiana.

3.1.6. The proposed Big Shake and Bocage borrow sites are located on the landside of the Mississippi River levee. The Big Shake site is located in an area that is currently used for active sugarcane farming. The Bocage site is located within existing maintained pasture land. Vegetation occurring throughout the Big Shake site consists primarily of giant ragweed, Johnson grass, Brazilian vervain, dog fennel and dewberry. Various faunal species including swamp rabbit, raccoon, opossum, gray squirrel, fox squirrel and numerous species of birds and reptiles have been documented throughout the area.

3.2. DESCRIPTION OF THE WATERSHED

3.2.1. A watershed is an area of land drained by a particular set of streams and rivers. Of the twelve major watersheds within Louisiana, the proposed levee enlargement work, including the use of one or both of the Big Shake and/or Bocage borrow sites, is located within the Lake Pontchartrain Basin in Iberville Parish, Louisiana (Figure 4). The Lake Pontchartrain Basin is a 4,700 square mile watershed in southeast Louisiana and southwest Mississippi. The topography of the basin ranges from more than 300 feet above sea level in the rolling hills along the Louisiana and Mississippi state line to sea level throughout the coastal wetlands to more than 10 feet below sea level in some areas of New Orleans. Fresh water is introduced through regional drainage and diversion canals. Land use within this basin is varied, ranging from high-density urban areas that drain through metropolitan Baton Rouge and New Orleans drainage canals to rural pastures and dairies in the Florida Parishes (i.e., East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa, and Washington (LaCoast 2005).

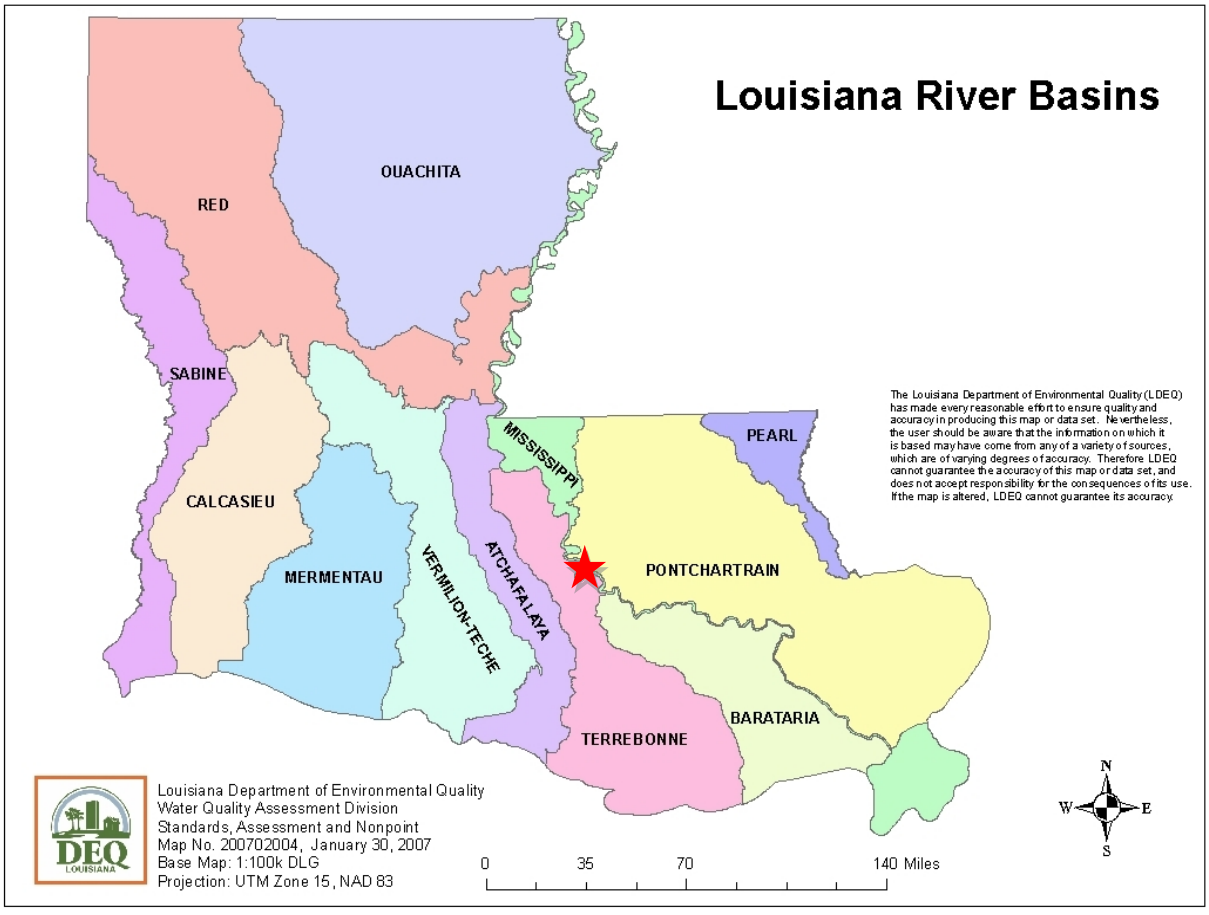

Figure 4. Louisiana River Basins (Map provided by Louisiana Department of Environmental Quality. The Lake Pontchartrain Basin is shown in yellow. The location of the St. Gabriel Levee Enlargement work is represented by a red star.

3.3. CLIMATE

3.3.1. The climate of southeast Louisiana, which encompasses Iberville, Ascension and St. James Parishes, is humid subtropical. Warm, moist southeasterly winds from the Gulf of Mexico prevail throughout most of the year, with occasional cool, dry fronts dominated by northeast high pressure systems. The influx of cold air occurs less frequently in autumn and only rarely in summer. Extremely severe weather conditions are associated with thunderstorms, squall lines, and hurricanes, but the frequency of serious damage at any one location within these parishes is very low. Hail and tornadoes occur infrequently during severe thunderstorms. Tropical storms and hurricanes are likely to affect theses areas in about 3 years in 10. The average annual temperature in the area is 68° (F), with monthly temperatures varying from the low-90°'s (F) in July and August, to the mid-40°'s (F) between December and February. Average annual precipitation is 57 inches, varying from a monthly average of 6 inches in July, to an average of 2 inches in October (Spicer et al. 1977; Cockerham et al. 1973).

3.5. RELEVANT RESOURCES

3.5.1. This section contains a description of relevant resources that could be impacted by the proposed levee enlargement work. The important resources described in this section 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. Table 1 provides summary information of these resources.

Table 1: Relevant Resources

Resource	Institutionally Relevant	Technically Relevant	Publicly Relevant
Terrestrial Resources	Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981; the Fish and Wildlife Coordination act of 1958, as amended.	The habitat provided for both open and forest-dwelling wildlife, and the provision or potential provision of forest products and human and livestock food products.	The present economic value or potential for future economic value.
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, USEPA, LDWF, and LADNR 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.
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.

3.5.2. The following resources were considered and found not to be affected by the proposed levee enlargement work and the use of the two proposed borrow sites under consideration: wetlands; aquatic resources/fisheries; estuarine water bodies; Gulf water bottoms; beaches; estuarine or marine fisheries resources, including essential fish habitat; recreation; aesthetics; socio-economic resources; environmental justice; and hydrology and water quality. These resources would not be affected since the proposed levee enlargement work will be confined to the existing levee right-of-way, and the borrow site(s) are located in non-wetland areas. Additionally, since no impacts to any wetlands or water bodies are expected, a Clean Water Act Section 404(b)(1) evaluation and public notice, and a Section 401 State Water Quality Certificate are not required for this work.

3.6. TERRESTRIAL RESOURCES

3.6.1. General Existing Conditions. The proposed levee enlargement area is categorized as a developed, maintained site. Vegetation within this area consists primarily of mowed Bermuda grass (Figure 5). The Big Shake borrow site is classified as active agricultural lands with a current vegetative use of active sugarcane farming. (Figure 6). The Bocage borrow site is classified as maintained pasture land with variety of non-wetland herbaceous species of vegetation occurring throughout. Dominant woody vegetation interspersed at the Big Shake site consists primarily of live oak trees (Figure 7).

Figure 5. Mississippi River levee – St. Gabriel levee site existing conditions.

Figure 6. Big Shake borrow site existing conditions.

Figure 7. Bocage borrow site existing conditions.

3.6.2. Within National Environmental Policy Act evaluations, USACE must consider the protection of the Nation's significant/important agricultural lands from irreversible conversion to uses that result in their loss as an environmental or essential food production resource. The Farmland Protection Policy Act, 7 USC 4201 et seq., and the U.S. Department of Agriculture's implementing procedures (7 CFR § 658) require Federal agencies to evaluate the adverse effects of their actions on prime and unique farmland, including farmland of statewide and local importance. A farmland conversion impact rating form (AD 1006) was developed for each borrow site and sent to the Natural Resources Conservation Service with information on those lands that could be converted by the proposed levee enlargement work.

3.7. WILDLIFE

3.7.1. General Existing Conditions. The levee enlargement work area, including the levee reach and the two proposed borrow areas, contains a great variety of mammals, birds, reptiles, and amphibians. Species inhabiting the area likely include raccoon, white-tailed deer, skunks, rabbits, squirrels, armadillos, and a variety of smaller mammals.

3.7.2. Various raptors such as barred owls, red-shouldered hawks, northern harriers (marsh hawks), American kestrel, and red-tailed hawks may be present. Passerine birds in the areas may include sparrows, vireos, warblers, mockingbirds, grackles, red-winged blackbirds, wrens, blue jays, cardinals, and crows. Many of these birds are present primarily during periods of spring and fall migrations.

3.7.2. Reptiles and amphibians that likely inhabit the levee enlargement work area and borrow sites include cottonmouth, rat snake, western and southern water snake, snapping turtle, eastern box turtle, eastern mud turtle, green frog, squirrel tree frog, and Gulf coast toad.

3.8. THREATENED AND ENDANGERED SPECIES

3.8.1. General Existing Conditions. Six federally threatened, endangered, or candidate species are either known to or may possibly occur in Iberville, Ascension and St. James Parishes, Louisiana: West Indian manatee (*Trichechus manatus*) (endangered); Louisiana black bear (*Ursus americanus luteolus*) (threatened); pallid sturgeon (*Scaphirhynchus albus*) (endangered); Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) (threatened); Alabama heelsplitter mussel (*Potamilus inflatus*) (endangered); and Sprague's pipit (*Anthus spragueii*) (candidate) (USFWS 2013).

3.8.2. West Indian manatees can be found in shallow, slow-moving rivers, estuaries, salt-water bays, canals, and coastal areas (LDWF, 2012a). West Indian manatees are typically found in waters with dense submerged aquatic beds or floating vegetation where the species grazes on a variety of aquatic plants. This species has been known to occasionally enter Lake Pontchartrain and associated coastal waters from June through September. Manatees have been reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of Louisiana. They have also been occasionally observed elsewhere along the Louisiana Gulf coast. The manatee has declined in numbers due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

3.8.3. The Louisiana black bear typically inhabits forested and swamp type habitats throughout large areas of Louisiana and Mississippi (BA 1996; LDWF 2005). The habitat range for this species is dependent upon the resources available to support its lifestyle (Hamilton 1978). This species has been known to occupy areas of approximately 8 – 10 square miles, with the home range of the male (8 – 15 square miles) usually being double the size of the female (Whitaker 1996). The Louisiana black bear's activities occur mostly in a nocturnal setting, although on occasion it has been visible in its environment during the daylight hours. Healthy Louisiana black bear populations exist with the support of various environmental factors, of which include: remoteness and seclusion; low human population densities; limited access, thick shrub coverage; and rugged topography (Black Bear Conservation Committee 1992). The Louisiana black bear's diet is incredibly diverse in that it will generally eat any available food source, which is why it is commonly referred to as an opportunistic feeder. It has been known to wade into streams or lakes to trap fish with its paws, forage for berries, twigs, buds and other vegetation, and break open rotting logs to scavenge for beetles, grubs and other various insects (LDWF 2005; Whitaker 1996). The mating season of this species occurs during the summer months (June to July) with a gestation period of approximately 7 to 8 months long eventually producing a litter of about 1 to 5 cubs (Whitaker 1996). As fall approaches, the Louisiana black bear will retire to den sites, which in Louisiana has typically been located within bottomland hardwood forests. The standard den sites within the Louisiana bottomland hardwood forests usually consist of bald cypress (*Taxodium distichum*) and water and swamp tupelo (*Nyssa sp.*) trees with a diameter breast height of 36 inches or greater. However, if these "den trees" are not readily available, other suitable den sites may consist of shallow burrows or depressions within dense vegetation (USFWS 2009). A major threat to this species is the continual loss of bottomland hardwood forests and the fragmenting of remaining forested areas (USFWS 2009). In Louisiana, specifically in the northeastern part of the state, the conversion of bottomland hardwood forests to agricultural lands has significantly impacted the Louisiana black bear population (LDWF 2005). Other threats include illegal hunting and accidental death via automobile collisions and other incidental human-bear encounters (USFWS 2009).

3.8.4. The pallid sturgeon only occurs in large rivers within the Mississippi and Missouri River Basins from Montana to Louisiana. This includes the Mississippi River and Atchafalaya River in south Louisiana. The pallid sturgeon tends to select main channel habitats in the Mississippi River (LDWF 2012b, USFWS 1990). Aquatic habitats in the Mississippi River have been modified though the construction of flood control levees and channel modification through time, and some changes resulting from those modifications have likely been detrimental to pallid sturgeon. Although the River flows unobstructed for about 2,000 river miles from Gavins Point Dam in the middle Missouri River to the Gulf of Mexico, tributary impoundments, bendway cutoffs and dike and levee construction have each changed localized patterns of channel erosion and deposition in the Mississippi River. Collectively, they have resulted in a channel degradation trend throughout most of the system. Effects of these changes on pallid sturgeon are unknown, because there are no historical data for comparison. The Pallid Sturgeon Lower Basin Recovery Workgroup has identified information gaps essential to the consultation and recovery processes in the Lower Mississippi River Basin. These include: relative abundance of pallid sturgeon; demographics; feeding habits; habitat use; hybridization ratios; presence of fish diseases in the wild; population anomalies; and reliable separation and identification of pallid

sturgeon, shovelnose sturgeon, and hybrids. While recent publications have contributed to filling many of these data gaps (e.g., Killgore et al. 2007), there are still concerns on the degree of hybridization and introgression of pallid and shovelnose sturgeon, which may be a naturally occurring process for these two sympatric species. As noted in the November 2013 Entrainment Studies of Pallid Sturgeon Associated with Water Diversions in the Lower Mississippi River Study, field sampling of sturgeon in the lowermost reach of the Mississippi River between river miles 0 and 320 has been ongoing since 2001. Results of that study indicated that a total of 51 pallid sturgeon, 319 shovelnose sturgeon, and 84 young-of-year sturgeon were collected between 2001 and 2010 below river mile 320 (ERDC-EL 2013). Under general direction provided by Section 7(a)(1) of the Endangered Species Act, the USACE prepared a Conservation Plan in 2013 which addresses effects of the Mississippi River and Tributaries, Channel Improvement Program on pallid sturgeon and on two other endangered species that occur upriver from the proposed work (Killgore et al. 2014). The Conservation Plan documented that river engineering actions and restoration activities of the USACE have significantly benefitted the habitat baselines of endangered species associated with the Lower Mississippi River channel, and it incorporates strategies and actions to continue and further improve endangered species habitat in the Lower Mississippi River. Based on the outcome of the Conservation Plan, the USFWS issued a non-jeopardy Biological Opinion in December of 2014 for pallid sturgeon in the Lower Mississippi River under Section 7(a)(2) of the Endangered Species Act. USACE agreed to continue working with partners to diversify habitat using innovative river engineering practices techniques and monitor the status and trends of the endangered species

3.8.5. The Gulf sturgeon is an anadromous fish that occurs in many rivers, streams, and estuarine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida (USFWS 2003). In Louisiana, the Gulf sturgeon has been reported at Rigolets Pass, rivers and lakes of the Pontchartrain Basin, and adjacent estuarine areas, including the Mississippi River Gulf Outlet inland reach. Spawning occurs in coastal rivers between late winter and early spring (*i.e.*, March to May). Gulf sturgeon are more likely to be in the inland reach of the Mississippi River Gulf Outlet during the winter months, (i.e., November 1 through March 31). Gulf sturgeon less than 2 years old appear to remain in riverine habitats and estuarine areas throughout the year, rather than migrate to marine waters. Habitat alterations, poor water quality, hurricanes, toxic spills and over-fishing, have negatively affected this species.

3.8.6. The Alabama heelsplitter, which is referred to as the inflated heelsplitter in the species recovery plan (Hartfield 1988), is a large (sometimes reaching over 140 mm in length) freshwater mussel with a brown to black shell with green rays in young individuals (Hartfield 1988). Like other freshwater mussels, the Alabama heelsplitter feeds by filtering food particles from the water column. In Louisiana, the Alabama heelsplitter has been reported in the Amite and Tangipahoa Rivers. This species prefers soft, stable substrata in slow to moderate currents. It has been found in sand, mud, silt and sandy-gravel, but not in large or armored gravel (Hartfield 1988).

3.8.7. The Sprague's pipit is a relatively small passerine endemic to the North American grasslands. It has a plain buff colored face with a large eye-ring. The Sprague's pipit is a ground nester that breeds and winters on open grasslands (Jones 2010). It feeds mostly on

insects and spiders and some seeds. The Sprague's pipit is closely tied with native prairie habitat and breeds in the north-central United States in Minnesota, Montana, North Dakota and South Dakota as well as south-central Canada. Wintering occurs in the southern states of Arizona, Texas, Oklahoma, Arkansas, Mississippi, Louisiana, and New Mexico (Jones 2010). The project area location places it within the wintering area of the pipit. Therefore, consideration should be given to the forage habits of the Sprague's pipits. They typically forage alone throughout the day in all seasons. They walk or run while gleaning food from the ground surface or grasses, typically in grass that is several centimeters tall.

3.9. CULTURAL RESOURCES

3.9.1. General Existing Conditions. The proposed levee enlargement will take place within existing Mississippi River levee right-of-way. There are residential properties and roadways, as well as commercial businesses on the land side of the levee. There are variable contexts of mixed vegetation on the riverside of the levee. A cultural resources survey of an area encompassing the St. Gabriel Levee Enlargement was undertaken in 1984 (Shafer et al. 1984; State Report 22-955). Three cultural resources have been recorded that overlap or abut portions of the St. Gabriel Levee. Site 16IV42 is on the unprotected side of the levee, and has been determined ineligible for National Register of Historic Places (NRHP) according to the Louisiana State Historic Preservation Officer's database. Site 16IV146 contains remains of the Virginia Plantation that exist on both sides of the current levee, and therefore probably also exist beneath the levee and adjacent Louisiana Highway 141. The remains on the riverside were described as probably destroyed, while the land side remains were described as deserving of more research. However, because the proposed levee enlargement will not affect the levee toe on either side but will be limited to the levee slope and levee crown, it will not disturb any unidentified cultural remains that may exist below the levee. Lastly, Site 16IV215 contains remains of the Lorrett Plantation. Several separate loci of apparently intact cultural features were identified on the land side of the levee, and therefore may indicate the presence of more remains underneath the levee and highway or on the riverside of levee. However, since no subsurface disturbance or redefinition of levee toe is proposed with this levee enlargement, no impacts will occur to cultural remains that may exist.

3.9.2. Borrow sites will be necessary to provide the earthen material used to complete the levee enlargement. Two potential borrow sources have been examined. One of these is the 57 acre Bocage borrow area, which was previously investigated for use in IER #32. A previously identified cultural resources site (16AN82) is located within the Bocage Plantation boundary, and underwent a cultural resources survey in 2008 (Shuman 2008; State Report 22-3288). This survey and the 16AN82 site form identified a requirement that a 200 foot radius buffer be maintained around potentially eligible NRHP remains of the Bocage Plantation. Previous coordination between USACE and the State of Louisiana SHPO dated June 8, 2009 and June 30, 2009, concluded that the remainder of the Bocage Property could be utilized for borrow if this 200 foot buffer was implemented. The USACE would implement the buffer for the levee enlargement work.

3.9.3. The other proposed 21 acre borrow area will come from a currently undefined location within the 441 acre Big Shake site. Under IER #30, the entirety of the Big Shake site was surveyed for the Hurricane and Storm Damage Risk Reduction System, by Nolan et al. (2008; Report 22-3275), and did not locate any cultural resources.

3.10. AIR QUALITY

3.10.1. General Existing Conditions. The U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards for six principal pollutants, called "criteria" pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of 10 microns or less in size (PM-10 and PM-2.5), and sulfur dioxide. Ozone is the only parameter not directly emitted into the air but forms in the atmosphere when three atoms of oxygen (03) are combined by a chemical reaction between oxides of nitrogen and volatile organic compounds in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of nitrogen and volatile organic compounds, also known as ozone precursors. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air. The Clean Air Act General Conformity Rule (58 FR 63214, November 30, 1993, Final Rule, Determining Conformity of General Federal Actions to State or Federal Implementation Plans) dictates that a conformity review be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more National Ambient Air Quality Standards. A conformity assessment would require quantifying the direct and indirect emissions of criteria pollutants caused by the Federal action to determine whether the proposed action conforms to Clean Air Act requirements and any State Implementation Plan.

3.10.2. The general conformity rule was designed to ensure that Federal actions do not impede local efforts to control air pollution. It is called a conformity rule because Federal agencies are required to demonstrate that their actions "conform with" (i.e., do not undermine) the approved State Implementation Plan for their geographic area. The purpose of conformity is to (1) ensure Federal activities do not interfere with the air quality budgets in the State Implementation Plans; (2) ensure actions do not cause or contribute to new violations, and (3) ensure attainment and maintenance of the National Ambient Air Quality Standards.

3.10.3. St. James Parish is currently in attainment of all National Ambient Air Quality Standards, and operating under attainment status. This classification is the result of area-wide air quality modeling studies.

3.10.4. Iberville and Ascension Parishes are two of five Baton Rouge area parishes that were designated by the Environmental Protection Agency as ozone non-attainment areas under the 8-hour standard effective June 15, 2004. Currently none of the five parishes are in attainment of National Ambient Air Quality Standards for ozone. The five parish area has been classified as marginal, which is the least severe classification. This classification is the result of area-wide air quality modeling studies, and the information is readily available from Louisiana Department of Environmental Quality, Office of Environmental Assessment and Environmental Services.

3.10.5. Federal activities proposed in both Iberville and Ascension Parishes may be subject to the State's general conformity regulations as promulgated under LAC 33:III.14.A, Determining Conformity of General Federal Actions to State or Federal Implementation Plans. A general conformity applicability determination is made by estimating the total of direct and indirect volatile organic compound (VOC) and nitrogen oxide (NO_X) emissions caused by the construction of the project. Prescribed *de minimis* levels of 100 tons per year per pollutant are applicable in both Iberville and Ascension Parishes. Projects that would result in discharges below the *de minimis* level are exempt from further consultation and development of mitigation plans for reducing emissions.

4. ENVIRONMENTAL CONSEQUENCES

4.1. TERRESTRIAL RESOURCES

4.1.1. Future Conditions with No Action Alternative. With no action, land-based resources would not immediately change from current conditions. There would be no impact to wildlife or conversion of active farmland or pasture lands. The potential exists for the proposed borrow lands to eventually experience some development over time from residential, commercial, industrial or agricultural interests.

4.1.2. Future Conditions with Proposed Action. With the proposed levee enlargement action, temporary direct impacts to the existing levee site would result from the placement of additional fill material. As described in the proposed action section of this Assessment, this impact would be offset as all levee embankments and areas disturbed by the construction activities would be seeded with Bermuda grass, fertilized, and ultimately returned to pre-construction conditions.

4.1.3. Excavation of the Big Shake borrow pit would result in a direct impact to approximately 21 acres of active farmland and the conversion of those 21 acres to a shallow open water environment. The excavation of earthen borrow material at this site would constitute a permanent loss of farmland and prime farmland soils. It is anticipated that additional temporary direct impacts would result from construction of any required access roads, staging area, and borrow stockpile and processing areas. It is expected that any access roads, staging area, and stockpile/processing areas would be returned to preexisting conditions upon completion of the work. Based on the abundant amount of remaining farmlands both at the Big Shake site and the surrounding area, it is not anticipated that there would be any significant adverse effect on farmland resources in this area. As required by the Farmland Protection Policy Act (FPPA), USACE completed the site assessment criteria portion of the Farmland Conversion Impact Rating form and determined that the proposed conversion of the previously mentioned prime and unique farmland soils to nonagricultural uses is consistent with the FPPA and that no additional evaluation is required.

4.1.4. Similarly, excavation of the Bocage borrow pit would result in a direct impact to approximately 18 acres of pasture lands and conversion of those 18 acres to a shallow open water environment. The excavation of earthen borrow material at this site would constitute a permanent loss of pasture lands and prime farmland soils. Temporary direct impacts would result from construction of the access road and 4 acre borrow stockpile and processing area.

Both the access road and stockpile/processing area would be returned to preexisting conditions upon completion of the work. Based on the abundant amount of remaining pasture lands both at the Bocage site and the surrounding area, it is not anticipated that there would be any significant adverse effect on farmland resources in this area. As required by the Farmland Protection Policy Act (FPPA), USACE completed the site assessment criteria portion of the Farmland Conversion Impact Rating form and determined that the proposed conversion of the previously mentioned prime and unique farmland soils to nonagricultural uses is consistent with the FPPA and that no additional evaluation is required.

4.2. WILDLIFE

4.2.1. Future Conditions with No Action Alternative. With no action, wildlife that presently occupies the existing levee site and proposed borrow areas would continue to inhabit those areas. It is expected that there would be no direct or indirect impacts to existing wildlife resources with the no action alternative.

4.2.2. Future Conditions with the Proposed Action. With the proposed action, wildlife would be temporarily displaced from the existing levee site during the construction period. Impacts as a result of displacement would be considered minor, and would be offset by adjacent suitable habitat.

4.2.3. Excavation of the Big Shake borrow pit would result in a direct impact to approximately 21 acres of active farmland and conversion of those acres of farmland to a shallow open water environment. It is expected that any land-based wildlife habitat value would be directly lost due to the conversion. It is anticipated that additional temporary direct impacts that would result in the displacement of any wildlife occupying the area would result from construction of any required access roads and borrow stockpile and processing areas. It is expected that any access roads and stockpile/processing areas would be returned to preexisting conditions upon completion of the work. Indirectly, the excavated borrow area may be converted to ponds and small lakes, which could potentially increase wildlife habitat value for various aquatic species within the vicinity of the open water area.

4.2.4. Similarly, excavation of the Bocage borrow pit would result in a direct impact to approximately 18 acres of pasture lands and the conversion of those acres of pasture lands to a shallow open water environment. The excavation of earthen borrow material at this site would constitute a permanent loss of any land-based wildlife habitat. Wildlife would also be temporarily displaced from the construction of the access road and borrow stockpile and processing area. Indirectly, the excavated borrow area may be converted to ponds and small lakes, which could potentially increase wildlife habitat value for various aquatic species within the vicinity of the open water area.

4.2.5. While the overall loss of land-based wildlife habitat at either borrow site would be considered adverse, there remains an abundant amount of terrestrial habitat in the immediate vicinity that would allow for the continued movement and existence of any displaced wildlife species.

4.3. THREATENED AND ENDANGERED SPECIES

4.3.1. Future Conditions with No Action Alternative. With no action, threatened and endangered species and their habitats would not be affected. The proposed levee enlargement would not be constructed, and any impacts to threatened and endangered species in the area would not likely change from current conditions.

4.3.2. Future Conditions with the Proposed Action. With the proposed action, it is anticipated that there would be no direct or indirect impacts to any threatened or endangered species. No critical habitat for any threatened, endangered, or candidate species has been designated within the proposed borrow areas, the existing levee (including the proposed levee enlargement area), or the adjacent water body (Mississippi River), and none of these species are known to breed within the proposed work area. In a letter dated July 28, 2015, the USACE requested concurrence from the U.S. Fish and Wildlife Service (USFWS) that the proposed action is not likely to adversely affect any threatened, endangered, or candidate species or critical habitat. The USFWS concurred with the USACE's not likely to adversely affect determination in a letter dated August 14, 2015.

4.3.3. The USACE has concluded that no threatened or endangered species or critical habitat under the purview of the National Marine Fisheries Service, Protected Resources Division, have been designated within the proposed levee enlargement work area and the two proposed borrow sits, and that the levee enlargement work would result in no effect to any listed threatened or endangered species or critical habitat.

4.4. CULTURAL RESOURCES

4.4.1. Future Conditions with No Action Alternative. If the levee enlargement work is not undertaken, then chances increase that flooding of land area could occur. This increases the chance that a known or undiscovered cultural resource could be damaged by flood waters.

4.4.2. Future Conditions with the Proposed Action. The proposed action will decrease the future potential that flooding of land area could occur. No impact to known or unknown cultural resources is expected to occur as a result of the proposed action. USACE has concluded that there will be no adverse effect to historic properties by the proposed levee enlargement work. This conclusion was coordinated with the state of Louisiana SHPO in a letter July 2, 2015. The state of Louisiana SHPO concurred with the with the USACE determination of "no adverse effect," and returned a copy of the USACE's letter with their official stamp of concurrence dated July 23, 2015.

4.5. AIR QUALITY

4.5.1. Future Conditions with No Action Alternative. With no action, the status of attainment of air quality for St. James Parish, and non-attainment for Iberville and Ascension Parishes would remain unchanged from current conditions.

4.5.2. Future Conditions with the Proposed Action. With implementation of the proposed action, it is expected that there would be minimal short term direct impacts to air quality surrounding the immediate levee enlargement work areas during construction activities. For the proposed borrow site excavations, it is expected that movable equipment such as bulldozers, excavators, dump trucks, cranes, and tractors would likely be responsible for the bulk increase in air pollution temporarily directly impacting the surrounding work areas.

4.5.3. St. James Parish is currently in attainment of all National Ambient Air Quality Standards, and is operating under attainment status. Calculations previously performed on fairly large construction projects indicate that volatile organic compound emissions from typical USACE , New Orleans District construction projects would be well below the 100-ton per year *de minimis* limit; therefore, it is expected that there would be no adverse impacts to air quality with the implementation of the proposed levee enlargement. The status of attainment for St. James Parish would not be altered from current conditions, and there would be no lasting direct or indirect impacts resulting from the associated construction activities.

4.5.4. With implementation of the proposed action in Iberville and Ascension Parishes, on-site construction activities are expected to produce less than 5 ton per year of VOC emissions and less than 50 tons per year of NOx emissions (less than the *de minimis* level of 100 tons per year per pollutant). Thus, the ambient air quality in both parishes would not noticeably change from current conditions, and the status of attainment for the parishes would not be altered.

4.6. HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

4.6.1. USACE is obligated under Engineer Regulation (ER) 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 proposed actions. ER 1165-2-132 identifies that HTRW policy is to avoid the use of project funds for HTRW removal and remediation activities. ASTM E 1527-05 Phase 1 Environmental Site Assessments (ESA), HTRW 15-05 dated May 14, 2015, HTRW 15-06 dated May 18, 2015, HTRW 15-08 dated July 28, 2015, and HTRW 15-09 dated July 29, 2015, have been completed for the work areas. Copies of the Phase 1 ESAs are maintained on file at the USACE New Orleans District. The probability of encountering HTRW for the proposed action is low based on the initial site assessments. If a recognized environmental condition is identified in relation to the work site, the New Orleans District would take the necessary measures to avoid the recognized environmental condition so that the probability of encountering or disturbing HTRW would continue to be low.

4.7. CUMULATIVE IMPACTS

4.7.1. The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)". Cumulative Effects can

result from individually minor but collectively significant actions taking place over a period of time."

4.7.2. The direct, indirect, and cumulative impacts from associated projects were previously addressed in the Prior Reports Section, above. These reports also provided an evaluation of the direct, indirect, and cumulative impacts associated with the levee enlargement and borrow pit construction in the work areas. The discussions of potential cumulative impacts contained in the cited documents are incorporated herein by reference.

4.7.3. With the potential for future levee work to occur within the New Orleans District, it is reasonable to assume a continued need for additional borrow lands. As discussed in the borrow alternatives section above, borrow sites utilized for previous New Orleans District, Mississippi River Levees projects have typically been located on the riverside of the existing levee. For prior New Orleans District Mississippi River Levee projects, off-site compensatory mitigation for impacts to bottomland hardwoods has resulted in the replacement of less than ideal wildlife habitat afforded by the black willow or black willow/cottonwood assemblages found in previous borrow sites with high quality bottomland hardwoods.

4.7.4. While the proposed action would result in relatively minor adverse impacts, it is expected that no significant adverse cumulative impacts would occur as a result of implementation of the levee enlargement. Overall, the proposed action, in comparison to past, present, and reasonably foreseeable future USACE actions, would not incrementally contribute adversely to the general area. This flood risk reduction feature is part of an overall comprehensive plan for the Mississippi River and Tributaries Project. The proposed action would accomplish flood risk reduction objectives, which are of great importance in the Lower Mississippi Valley, and provide for the preservation and enhancement of the very significant fish, wildlife, and other natural resources of the basin. Enlarging the east bank Mississippi River Levee in Iberville Parish would enhance the ability of the levee to prevent flood damage to the natural and human environment on the land side of the levee.

5. COORDINATION

5.1. Environmental Assessment #536 and Finding of No Significant Impact have been coordinated with appropriate Congressional, Federal, state, local interests, and Indian Tribes, as well as environmental groups and other interested parties. The following Federal and state agencies, non-governmental organizations, as well as other interested parties received copies of the draft Environmental Assessment and Finding of No Significant Impact:

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
U.S. Department of Homeland Security, Federal Emergency Management Agency
Advisory Council on Historic Preservation
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources (LADNR), Coastal Management Division

Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer

6. MITIGATION

6.1. WORK ITEMS ADDRESSED IN THE 1998 MISSISSPPI RIVER AND TRIBUTARIES, MISSISSIPPI RIVER LEVEES SEIS

6.1.1. The 1998 SEIS identified twelve (12) Mississippi River Levees (MRL) work items remaining to be constructed within the New Orleans District. Analyses conducted during preparation of the SEIS determined that 16.6 acres of borrow pits and access roads would be required for the remaining MRL construction projects in the New Orleans District. The total borrow site and access road acreage was rounded to 17 in the 1998 SEIS. The total acreage of mitigation required for these 12 projects was estimated at 24 acres of land to be reforested.

6.1.2. Of the 12 work items, the Jefferson Heights, Carrollton Bend, and Lower Venice work are all within the Louisiana Coastal Zone boundary, requiring any impacts to be mitigated within the Coastal Zone. The Jefferson Heights work item is currently under construction with borrow material coming from a contractor-furnished borrow source that does not require any compensatory wetlands mitigation since there are no wetlands, woodlands, or other fish and wildlife habitats affected from its usage. The Carrollton Bend work item was constructed with borrow material hauled from the Bonnet Carré Spillway. Part of the Bonnet Carré Spillway was environmentally cleared as a source of borrow material through prior documentation and no mitigation is required. The Lower Venice work item was built by non-Federal interests and no mitigation is required. Table 2 provides a summary of the actual and estimated impacts of the 12 construction projects as they were identified in the 1998 SEIS. Additionally, there have been additional work items constructed that were not addressed in the 1998 SEIS. Those work items are discussed in the following section 6.2.

Table 2: MVN Construction Projects Identified in the 1998 SEIS

Project	Borrow Acres in 1998 SEIS	Mitigation Acres in 1998 SEIS	Borrow Acres (2015)	Acres of Mitigation Required[1]
5th LA Levee District	5.9	8.5	5.1 – estimate[2]	7.4
Baton Rouge Front	0.7	1.0	0.0 – actual[4,5]	0.0
Reveille to Point Pleasant	3.3	4.8	3.0 – actual[3]	4.4
Alhambra to Hohen Solms	0.0	0.0	0.2 – estimate	0.3
Carville to Marchand	2.1	3.0	1.9 – actual[3]	2.8
Hohen Solms to Modeste	1.1	1.6	1.1 – actual[3]	1.6
Jefferson Heights	0.0	0.0	0.0 – actual[3,6]	0.0
Carrollton Bend	3.5	5.1	0.0 – actual[3,7]	0.0
New Orleans District Floodwall	0.0	0.0	0.0 – estimate	0.0
Gap Closures West	0.0	0.0	3.5 – actual[3]	5.0

(Edgard Ferry Landing)[8]	0.0	0.0	7.6 – actual[3]	11.0
Gap Closures East	0.0	0.0	0.0 – actual[3,5]	0.0
Lower Venice	0.0	0.0	0.0 – actual[3]	0.0
Total	**16.6**	**24.0**	**22.4**	**32.5**

[1]Ratio of mitigation to borrow acreage is 1:1.45 (1998 MRL FSEIS).
[2]Borrow estimate for this work item may increase considerably due to a change in levee slope design from 1V:3H to 1:4.
[3]Completed/Constructed Item.
[4]This work item was partially completed. The remaining work would not require borrow.
[5]Borrow material came from a commercial source that did not require mitigation.
[6]Borrow material came from a contractor-furnished source that did not require mitigation.
[7]Borrow came from the Bonnet Carré Spillway. No mitigation required.
[8] Edgard Ferry Landing was separated out for the Gap Closures West work item.

6.1.3. The following three environmental assessments (EAs) were prepared to address changes in the work items that were included in the 1998 SEIS:

- EA 422 – West Bank Gaps, Borrow Area Designation for Concrete Slope Pavement, St. Charles. 2005. Project Change – 1998 SEIS stated that work item was slope paving only with no fill required. Reanalysis and redesign resulted in 3.5 acres of borrow required; 5.0 acres of mitigation was required.
- EA 438 – Edgard Ferry Landing Borrow and Disposal Area Designation. 2006. (Note: This work item was separated out from the West Bank Gaps work item in the 1998 SEIS due to complexity of the work involved.) Project Change – No borrow required according to 1998 SEIS. Reanalysis and redesign resulted in 7.6 acres of borrow required; 11.0 acres of mitigation was required.
- EA 519 – Jefferson Heights Levee Enlargement, Jefferson Parish, Louisiana. 2013. As described in the 1998 SEIS this work item consisted of only slope paving, with no borrow material required. Project Change – During detailed design it became apparent that a intermittent levee enlargement would be necessary. Wooded, flood side borrow sources were identified and addressed in the EA, and mitigation was proposed. After the construction contract was awarded, the contractor proposed to use a contractor-furnished borrow source. The proposed source was a site that had been previously addressed through NEPA Alternative Arrangements to provide borrow material for the Greater New Orleans Hurricane and Storm Damage Risk Reduction System. Use of this borrow source would not adversely affect valuable environmental habitats, including wetlands or forested lands, and the contractor-furnished borrow source was approved. Riverside borrow was not utilized, and no mitigation is required for this work item.

6.2. WORK ITEMS NOT ADDRESSED IN THE 1998 SEIS THAT REQUIRED BORROW

6.2.1 The following are constructed Mississippi River and Tributaries Project work items that were not addressed in the 1998 SEIS. These work items were identified as critical need projects subsequent to the finalization of the 1998 SEIS. Some of the work items listed below were constructed pursuant to the Disaster Relief Appropriations Act of 2012 and the Operation Watershed – Recovery Flood Repair Plan which provided supplemental funding for Mississippi River and Tributaries Project repairs following the flood of 2011.

- EA 369 – Lower Algiers Lock Forebay Levee Repairs. 2004. This work item raised the west bank Mississippi River Levee immediately downstream from the Algiers Lock. Borrow material was obtained from a riverside borrow source. In the EA, it was estimated that the borrow site needed to be 5.1 acres. During the coordination of the EA, with the proposed 5.1-acre borrow source, no compensatory mitigation for impacts at the borrow source was proposed. Neither the EA, nor the FONSIs mention any need for mitigation. At the time that the Finding of No Significant Impact (FONSI) was signed, the estimated acreage of borrow was revised to 0.5 acres. Subsequently, additional levee work was determined to be necessary, and the acreage for borrow was again revised and determined to be 2.0 acres. A second FONSI was signed to document this change. The actual, constructed footprint of the borrow pit is 1.2 acres. All required environmental clearances were obtained for the work item. This work preceded Operation Watershed.
- EA 462 – Hermitage Seepage Control, Point Coupee Parish, Louisiana. 2007. This was a seepage well work item constructed within a mowed area next to the Mississippi River levee. No borrow material was necessary and no compensatory mitigation required. This work preceded Operation Watershed.
- EA 504 – Duncan Point Seepage Control Berm, East Baton Rouge Parish, Louisiana. 2011. This work item consisted of constructing a seepage control berm. Borrow material was obtained from a stockpile of material generated by construction of the Comite River Diversion project, which is a USACE project, but not a Mississippi River and Tributaries Project. The non-Federal sponsor of the Mississippi River Levee work negotiated an agreement with the non-Federal sponsor of the Comite River Diversion project to obtain borrow material. No wetlands, woodlands, or other fish or wildlife habitats were impacted by this work and therefore, no compensatory mitigation was required. This was an Operation Watershed work item.
- EA 516 – Old River Seepage, Pointe Coupee and Concordia Parishes, Louisiana. 2012. This work item consisted of constructing a seepage control berm on the protected side of the levee just downstream from Old River Lock. Borrow material was obtained from a riverside borrow source, which had been designated in the 1998 SEIS for construction of the 5th Levee District work item (See Table 2.2 above). The construction of the seepage berm impacted 4.2 acres of bottomland hardwoods and the excavation of riverside borrow impacted 5.24 acres of bottomland hardwoods. The impacts to the 4.2 acres of bottomland hardwoods from building the berm and 3 of the 5.24 acres of bottomland hardwoods that were impacted from the excavation of borrow material, were mitigated in March 2013 through the purchase of credits from a commercial mitigation bank. Due to a calculation error in the quantity of mitigation acres required, the remaining 2.24 acres of bottomland hardwood impacted from the excavation of the borrow have yet to be mitigated. It is important to note that the 5th Louisiana Levee District work and some of the other work items identified in the 1998 SEIS have not been implemented. This was an Operation Watershed work item.
- Categorical Exclusion – Black Hawk Levee Slide Repair, Concordia Parish, Louisiana. 2012. Levee slides occurred during the flood of 2011 along the reach of levee that was identified in the 1998 SEIS as the 5th Louisiana Levee District work item. At the time of the 2011 levee slides, the 5th Louisiana Levee District work item was under detailed

design and scheduled for construction. A 3.35 acre section of the borrow source identified in the 1998 SEIS for the 5th Louisiana Levee District work item was used for the Black Hawk Levee Slide Repair under a categorical exclusion since the borrow source was addressed in the 1998 SEIS. No mitigation for the use of the borrow source was included in the categorical exclusion. As previously stated, if the 5th Louisiana Levee District work is constructed, it will add to the mitigation requirements for the overall Mississippi River Levee work within the New Orleans District. This was an Operation Watershed work item.

- EA 521 – Point Pleasant Relief Wells, Iberville Parish, Louisiana. 2013. This work item consists of installing 64 passive relief wells placed approximately 90 feet apart near the toe of the existing levee. The roadside ditch alongside the levee will be reconfigured to collect well outflow. A combination of permanent and portable pumping systems will convey the water discharged from the relief wells, back over the levee and into the River. There are no impacts from this work item that require compensatory mitigation. The work item is under construction in mid-2015. This is an Operation Watershed work item.
- EA 522 – Pointe Coupee Relief Wells, Pointe Coupee Parish, Louisiana. 2013. This work item consists of installing 59 passive relief wells in 4 reaches along the existing levee. In 3 reaches, water discharged from the wells will flow to collection points and then be pumped over the levee and into the River. In the other reach, ditches will be improved and constructed to convey the well discharge to larger drainage ditches and natural waterways. The ditch improvement and construction will impact 26.6 acres of BLH with a corresponding loss of 20.71 average annual habitat units (AAHUs) as calculated using the Wetland Value Assessment methodology. In addition, 3.1 acres of marsh would be impacted. The proposed compensatory mitigation for the loss of bottomland hardwoods is to acquire sufficient credits from a commercial mitigation bank. Other options were left open in the event that insufficient mitigation bank credits are not available. Natural re-vegetation and fencing to exclude livestock will mitigate for the impacts to the marsh. This is an Operation Watershed item of work.
- EA 523 – Algiers Forebay Stability Berm, Orleans Parish, Louisiana. 2013. This work item consisted of constructing a stability berm on the protected side of the Mississippi River Levee near the Algiers Lock. Approximately 0.8 acres of BLH forest was converted to a mowed stability berm. This represents a loss of 0.35 AAHUs as determined through application of the USACE certified Wetland Value Assessment methodology for BLH. The mitigation plan recommended in the EA is to acquire sufficient credits in a commercial mitigation bank. The mitigation has not been acquired. This was not an Operation Watershed work item.

6.3. STATUS OF MITIGATION FOR MISSISSIPPI RIVER LEVEES IN THE NEW ORLEANS DISTRICT (2015)

6.3.1. As of mid-2015, 17.1 acres of borrow pits have been utilized for the Mississippi River Levee construction projects in the New Orleans District that were addressed in the 1998 SEIS. The total acreage required to mitigate for those impacts is 24.8 acres, based on the habitat analyses conducted for the 1998 SEIS. According to the 1998 SEIS, mitigation would be accomplished by reforestation of land owned in fee by USACE at the Old River Control

Complex. Twenty acres of land have been reforested on USACE property adjacent to the Old River Lock near Torras, Louisiana, to mitigate for Mississippi River Levee construction projects. There is currently a 4.8 acre deficit in mitigation for the work items addressed in the 1998 SEIS. No other USACE-owned lands at the Old River Control Complex have been determined to be suitable for mitigation. Table 3 summarizes the acres of impact that have occurred, and the mitigation required, for all Mississippi River Levee work since the completion of the 1998 SEIS.

Table 3: MRL Impacts and Mitigation Summary

Work Item	Acres of Impact	Mitigation Required	Mitigation Acquired
All Work Items in the 1998 SEIS	17.1[1]	24.8 acres	20.0 acres
Lower Algiers Lock Forebay	1.2	0.0	-
Hermitage Seepage Control	0.0	0.0	-
Duncan Point Seepage Control	0.0	0.0	-
Algiers Forebay Stability Berm	0.8	0.35 AAHUs	0.0 AAHUs
Old River Seepage	9.44[2]	5.84 AAHUs[3]	4.76 AAHUs
Black Hawk Levee Slide	3.35	1.62 AAHUs	0.0 AAHUs
Point Pleasant	0.0	0.0	-
Pointe Coupee	26.6	20.71 AAHUs	0.0 AAHUs

[1] Sum of "'actual" acres from Table 1.
[2] 4.2 acres from berm construction and 5.24 acres from borrow pit construction.
[3] Includes 2.53 AHHUs from borrow and 3.31 AAHUs from berm.

7. COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

7.1. Environmental compliance for the Federal action has been achieved based upon the following actions. On August 12, 2015, draft Environmental Assessment #536 and associated draft Finding of No Significant Impact were mailed out for the 30-day public review and comment period. No adverse comments were received during the review period. On August 14, 2015, the U.S Fish and Wildlife Service concurred with the USACE's determination that the proposed action is not likely to adversely affect any threatened or endangered species or critical habitat. In a letter dated August 27, 2015, the Louisiana Department of Natural Resources, Office of Coastal Management, determined that the proposed project was consistent with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended (Coastal Zone Consistency C20150146). All project areas discussed for the St. Gabriel levee enlargement project have been coordinated with the Louisiana State Historic Preservation Office (SHPO). The Louisiana SHPO concurred USACE's determination of "no adverse effect" with their official stamp of concurrence dated July 23, 2015. In accordance with responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, in letters dated August 7, 2015, and emails dated August 11, 2015, the USACE offered federally-recognized 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 USACE also provided a Section 106 finding of "no adverse effect" for review and comment. No adverse

comments were received during the review period. In a letter dated September 9, 2015, the Coushatta Tribe of Louisiana concurred with the effect determination and requested that work stop and the tribe be contacted immediately in the event that archaeological properties or human remains are discovered.

8. CONCLUSION

8.1. The Proposed Action consists of the excavation of fill material from either a single or a combination of two landside borrow sites and subsequent enlargement of a portion of the existing east bank Mississippi River levee in Iberville Parish, Louisiana. This Office has assessed the environmental impacts of the Proposed Action and has determined that the Proposed Action would have no impact upon cultural resources and no impact would occur to threatened or endangered species.

8.2. The proposed levee enlargement has been found to have an overall beneficial effect on the human environment by insuring adequate flood protection along the flood prone lower Mississippi River. While there would be some impacts to terrestrial and wildlife resources, these impacts would not be considered a significant adverse impact as there remains an abundance of comparable terrestrial resources and wildlife habitat in the immediate of the impacted areas. The overall result of the proposed work would result in no loss of wetland resources. Additionally, viable aquatic habitat for fish and waterfowl could indirectly be created by the excavation of the borrow sites.

9. PREPARED BY

9.1. Environmental Assessment #536 and the associated Finding of No Significant Impact were prepared by Mr. Mark Lahare, Environmental Protection Specialist, with relevant sections and contributions prepared by: Mr. Joseph Musso (HTRW and Air Quality); Dr. Paul Hughbanks (Cultural Resources); Mr. Kelly McCaffrey (Visuals); and Mr. Richard Boe (Mitigation). The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Regional Planning Division South, Environmental Compliance Branch, Coastal Environmental Compliance Section, CEMVN-PDC-CEC; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

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