DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVE
NEW ORLEANS LA 70118-3651

REPLY TO
ATIENTION OF

Regional Planning and Environment
Division South
Environmental Planning Branch

FINDING OF NO SIGNIFICANT IMPACTS (FONSI)

FINAL SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

WEST BANK AND VICINITY HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM FLOOD SIDE BLH-WET AND SWAMP MITIGATION

LAFOURCHE PARISH, LOUISIANA

SEA #572

Description of the Recommended Plan: The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Supplemental Environmental Assessment # 572 (SEA # 572) to evaluate changes to the Recommended Mitigation Plan (RMP) for mitigating the impacts associated with construction of the West Bank and Vicinity (WBV) 100-year Hurricane and Storm Damage Risk Reduction System (HSDRRS) as presented in the Supplemental Programmatic Individual Environmental Report #37a Mitigation for Protected Side Bottomland Hardwoods Dry, West Bank and Vicinity Hurricane and Storm Damage Risk Reduction System (HSDRRS) Jefferson Parish, Louisiana (SPIER #37a) with a Decision Record (DR) signed on March 4, 2016. This SEA #572 identifies substitute projects for the flood side (FS) bottomland hardwoods wet (BLH-Wet) and swamp features of the RMP found in SPIER #37a and provides an assessment of the revised compensatory mitigation plan for the WBV HSDRRS impacts using the selected replacement projects.

The impacts caused during construction of the WBV HSDRRS were originally assessed in PIER #37 and then SPIER #37a. The original projects to mitigate FS BLH-wet and swamp are not implementable and therefore must be substituted.

The recommended mitigation project is located in Lafourche Parish along Highway 307 between Raceland and Des Allemandes and would mitigate for 72.04 average annual habitat units (AAHUs) of FS BLH-Wet and 134.52 AAHUs of FS swamp impacted by the construction of the WBV HSDRRS. The entire footprint consists of approximately 521 acres of currently farmed or abandoned agricultural fields. The Draft SEA #572 states that within the 521 acres, approximately 150 acres would be used for FS BLH-wet and 360 acres for FS swamp restoration. However, final wetland value assessments (WVA) have been received from US Fish and Wildlife Service (USFWS) which show a higher than expected mitigation potential at the Hwy 307 site. Therefore, the acres needed for mitigation at the site have been reduced to 133 FS BLH-Wet and 287 FS swamp.

Elevations within the portion of the project area where BLH-Wet and swamp would be restored are either at or above the elevation conducive to BLH-Wet and swamp establishment, therefore no outside borrow would be required for this proposed restoration action. The entire project area is contained within a perimeter water retention dike which would be degraded to reconnect the restoration project with adjacent swamp/BLH habitat. Dikes would be degraded in such a way to ensure de minimis impacts. Internal ditches adjacent to the dikes would be filled during dike degrading. It is envisioned that the majority of the acres required could simply be planted at the existing elevation within the site once the water retention dikes have been degraded. As the vast majority of the potential project footprint is existing agricultural fields, little to no vegetative clearing is anticipated. Once any required earthwork is complete, the project site would be planted with BLH-Wet and swamp species.

Factors Considered in Determination: This U. S. Army Corps of Engineers, New Orleans District (CEMVN) has assessed the impacts of the "no action" and the recommended plan on important resources in the project area including: wetlands; wildlife; cultural resources; aesthetic resources; socio-economics; air quality; prime and unique farmlands; noise; and hazardous, toxic, and radioactive waste. No significant adverse impacts were identified for any of the relevant resources.

The risk of encountering HTRW is low. By a letter dated December 7, 2015, the Louisiana Department of Natural Resources (LDNR) concurred with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program. A modified coastal zone determination was submitted to LDNR on June 14, 2019 and LDNR concurred with the determination that the proposed action is consistent, to the maximum extent practicable with the Louisiana Coastal Resources Program on July 23, 2019 (C20140014 mod 05). A Water Quality Certificate nor a Section 404(b)(1) analysis was needed as this project will not discharge any material into wetlands. No comments were received from Louisiana Department of Environmental Quality on the air quality impact analysis documented in the EA. CEMVN determined that no listed species occur in the area and therefore there would be no effect on T&E species. Additional coordination under the ESA is not required. This office has concurred with, or resolved, all recommendations included in

the Final USFWS Coordination Act Report (CAR) dated May 31, 2019. A programmatic agreement has been developed through coordination with the LA State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation, Federally recognized Indian tribes and other interested parties for the HSDRRS Mitigation. The programmatic agreement was executed 18 June 2013 and CEMVN will comply with stipulations agreed to in the programmatic agreement for continuing consultation with the SHPO and Federally recognized Indian tribes.

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, CEMVN will reinitiate coordination with the USFWS to ensure that the proposed action would not adversely affect any federally listed threatened or endangered species, or their habitat.

2. If any unrecorded cultural resources are determined to exist within the proposed project site, then work will not proceed in the area containing those cultural resources until a CEMVN staff archeologist has been notified, and coordination with the Louisiana State Historic Preservation Officer (SHPO) and Tribal Historic Preservation Officer has been completed.

3. CEMVN will comply with stipulations agreed to in the programmatic agreement for continuing consultation with the SHPO and Federally recognized Indian tribes.

Public Involvement: The recommended plan has been coordinated with appropriate Federal, state, and local agencies and businesses, organizations, and individuals through distribution of Draft SEA #572 for a 30-day public review and comment period.

DECISION: The recommended plan would satisfy CEMVN requirements to mitigate for 72.04 AAHUs of FS BLH-Wet and 134.52 AAHUs of FS swamp habitat. The CEMVN Environmental Planning Branch has assessed the potential environmental impacts of the recommended plan as described in the SEA #572 and the "no action" alternative and has concluded that there would be no significant impacts.

I have reviewed the SEA #572 and have considered public and agency comments and recommendations. Based on the assessment conducted in SEA #572 which is attached hereto and made a part hereof, and the implementation of the environmental design commitments listed above, I have determined that the recommended plan would have no significant impact on the human environment.

The plan is justified and in accordance with environmental statutes. It is in the public interest to implement the Proposed Action/Recommended Plan in SEA #572.

24 JUL 19
Date

FOR: Pawn, Jordan MAJ, EN, ADC

STEPHEN F. MURPHY
COLONEL, U.S. ARMY
DISTRICT COMMANDER

FINAL SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

WEST BANK AND VICINITY HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM FLOOD SIDE BLH-WET AND SWAMP MITIGATION

LAFOURCHE PARISH, LOUISIANA

SEA #572

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1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Supplemental Environmental Assessment # 572 (SEA # 572) to evaluate changes to the Recommended Mitigation Plan (RMP) for mitigating the impacts associated with construction of the West Bank and Vicinity (WBV) 100-year Hurricane and Storm Damage Risk Reduction System (HSDRRS) as presented in the Supplemental Programmatic Individual Environmental Report # 37a Mitigation for Protected Side Bottomland Hardwoods Dry, West Bank and Vicinity Hurricane and Storm Damage Risk Reduction System (HSDRRS) Jefferson Parish, Louisiana (SPIER #37a) with a Decision Record (DR) signed on March 4, 2016. The term "100-year level of risk reduction," as it is used throughout this document, refers to a level of risk reduction that reduces the risk of hurricane surge and wave driven flooding that the New Orleans Metropolitan Area has a 1 percent chance of experiencing each year. The HSDRRS work consists of upgrading the existing system of levees, floodwalls and gates around the New Orleans Metropolitan Area to provide the 100-year level of risk reduction. The WBV portion of the HSDRRS is the work that is occurring on the west bank of the Mississippi River. A list of the abbreviations used in SPIER #37a is provided in appendix C.

SEA #572 has been prepared in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality's (CEQ) NEPA implementing regulations (40 Code of Federal Regulations [CFR] §1500-1508), as reflected in the USACE ER 200-2-2 (33 CFR §230).

The proposed actions are located in southeastern Louisiana (LA) and are part of the Federal effort to construct the HSDRRS in the New Orleans Metropolitan area after the destruction caused by Hurricanes Katrina and Rita.

This SEA #572 identifies substitute projects for the flood side (FS) bottomland hardwoods wet (BLH-Wet) and swamp features of the RMP found in SPIER #37a and provides an assessment of the revised compensatory mitigation plan for the WBV HSDRRS impacts using the selected replacement projects.

Construction impacts of the WBV HSDRRS are described in Individual Environmental Reports (IERs) 12-17 and 33, and their associated Supplemental IERs (SIERS). The IERs are available on https://www.mvn.usace.army.mil/Environmental/NEPA/.

Compensatory mitigation is an integral feature of the HSDRRS work. The CEMVN is required by the Water Resources Development Acts (WRDAs) of 1986 and 2007 to offset unavoidable habitat impacts through compensatory mitigation by replacing the lost habitat's functions and services in-kind to the extent possible. WRDA 1986, Section 906(d)(1), as amended by WRDA 2007, Section 2036(a), provides additional requirements of the Secretary to include in their reports to Congress a recommendation with a specific mitigation plan to mitigate fish and wildlife losses or a determination that such project will have negligible adverse impacts on fish and wildlife. Specific mitigation plans shall ensure that impacts to bottomland hardwood forests are mitigated in-kind and other habitat types are mitigated to not less than in kind conditions to the extent possible." Pursuant the Corps' Implementation Guidance for Section 2036(a) of the WRDA of 2007, compensatory mitigation should be located within the same hydrologic basin (watershed) as where the impacts occurred. The WIIN Act of 2016 (PL 114-322) states that all potential credits from mitigation banks and ILF progams with service areas that include the impacted areas should be considered as reasonable alternatives. The watershed used for SEA #572's mitigation planning is consistent with the WIIN Act as the service area of the banks that include the impacted areas is the same as the watershed. The Clean Water Act (CWA) Section 404(b)(1) Guidelines also require compensatory mitigation for unavoidable habitat losses.

This SEA was distributed for a 30-day public review and comment period. All comments received during that review period and public meeting were considered part of the official record. After the 30-day comment periodthe CEMVN Commander reviewed all comments received and made a determination that they do not rise to the level of being substantive. The CEMVN Commander's decision on the proposed actionis documented in the Finding of No Significant Impacts (FONSI).

Unless otherwise indicated, all figures cited can be found in appendix A and all tables in appendix B.

1.1 PURPOSE AND NEED

The purpose of the proposed action is to compensate for habitat losses incurred during construction of the WBV HSDRRS to FS swamp, and FS BLH-Wet which are the only features of the WBV HSDRRS Mitigation Plan proposed for revision by this SEA. All other features identified in the approved Modified Mitigation Plan (MMP) remain as stated in SPIER #37a and have been either purchased, built, or are under construction. The proposed compensatory mitigation would replace the lost functions and services of the impacted FS swamp and BLH-Wet habitat through restoration or enhancement activities designed to create/increase/improve the habitat functions and services at specific mitigation sites.

1.2 AUTHORITY

The authority for the proposed action was provided as part of a number of HSDRRS projects spanning southeastern LA, including the Lake Pontchartrain and Vicinity (LPV) project and the WBV project. Congress passed a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade the projects damaged by these storms.

The WBV project was authorized by the WRDA of 1986 (P.L. [Public Law] 99-662, Section 401(b)). The WRDA of 1996 modified the project and added the Lake Cataouatche Project and the East of Harvey Canal Project (P.L. 104-303, 101(b)(11) & P.L. 104-303, Section 101(a)(17)). The WRDA 1999 (P.L. 106-53, Section 328) combined the three projects into one project as the West Bank and Vicinity Hurricane Protection Project.

The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - PL 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized accelerated completion of the WBV project and restoration of project features to design elevations at full Federal expense. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - PL 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) and 6th Supplemental - PL 110-252, Title III, Chapter 3, authorizes modification to WBV to provide the level of protection necessary to achieve the certification required for participation in the National Flood Insurance Program; the replacement or reinforcement of floodwalls; and the construction of levee armoring at critical locations. Pursuant to PL 110-329 (7th Construction Supplemental) funds were appropriated, subject to deferred payment by CPRA over a period of 30 years.

1.3 PUBLIC CONCERNS

Throughout the WBV basin, the public has expressed concern that sufficient funding be allocated for the HSDRRS mitigation efforts, that the HSDRRS mitigation is completed in a timely manner. Concern has also been expressed that mitigation banks are given the opportunity to sell credits to satisfy the HSDRRS mitigation requirement.

1.4 PRIOR REPORTS

A number of studies and reports on water resources development in the project area have been prepared by CEMVN, other Federal, state, and local agencies, research institutes, and individuals. Pertinent studies, reports, and projects are discussed in the following sections. PIER #37 and SPIER #37a are incorporated into SEA #572 by reference.

1.4.1 WBV NEPA DOCUMENTS COMPLETED UNDER ALTERNATIVE ARRANGEMENTS

1.4.1.1 WBV HSDRRS IERs and Impacts

Impacts to the human and natural environment caused by construction of the WBV HSDRRS work were analyzed in IERs 12 – 17, and 33 and supplemental reports. Jurisdictional wetlands and non-jurisdictional bottomland hardwoods forest impacts were assessed in cooperation with an interagency mitigation team in accordance with the NEPA, the Fish and Wildlife Coordination Act, and Section 906(b) WRDA 1986 requirements. A summary discussion of impacts by IER can be found in appendix C-1 of PIER #37.

A "habitat-based methodology" in the form of the wetland value assessment (WVA) model was used to assess impacts from construction of the HSDRRS work and future benefits to be obtained through the compensatory mitigation projects. The WVA model computes the difference in the habitat value over the period of analysis between the future without and future with project conditions. The difference is expressed as net average annual habitat units (AAHUs). For example, if the net change between the future without project condition (FWOP) and future with project (FWP) over the 50-year period of evaluation is +0.2 over 100 acres, then that project would produce 20 AAHUs of ecological benefit. The same version of the model was used to calculate both the impacts from construction of the HSDRRS work and future benefits to be obtained through the implementation of the mitigation. For further information regarding WVA models please see section 2.7.

1.4.1.2 Government Furnished Borrow IERs and Impacts

Mitigation for Government Furnished Borrow Sites
Impacts to the human and natural environment caused by the use of government furnished borrow were analyzed in IERs 18, 22, 25, and 28. Of the government furnished borrow sites approved for use in the HSDRRS construction, the only site with environmental impacts requiring mitigation utilized to date is the Churchill Farms Site assessed in IER18. The total impact for the site is 29.9 acres (10.62 AAHUs) of Protected Side (PS) BLH-Dry, which would be mitigated with the other WBV HSDRRS impacts.

1.4.1.3 Contractor Furnished Borrow IERs and Impacts

Mitigation for Contractor Furnished Borrow Sites
To meet the extremely large need for borrow for the HSDRRS improvements, utilization of Contractor Furnished (CF) borrow was also employed by the CEMVN. Impacts to the human and natural environment caused by the use of CF borrow were analyzed in IERs 19, 23, 26, 29, 30, 31, 32, and 35. To date, no wetlands have been impacted by the excavation of borrow for the HSDRRS program.

1.4.2 MITIGATION REQUIREMENT

1.4.2.1 Revision of WBV HSDRRS Impacts

Because the IERs evaluating the HSDRRS risk reduction features were completed at the 35 percent level of design, the footprints stated in those IERs were, in many cases, a worst-case scenario footprint. Through advanced engineering and design, the CEMVN has made a concerted effort to avoid and minimize impacts to the environment to the maximum extent practicable. As such, in many cases, the predicted impacts anticipated in the HSDRRS IERs were significantly reduced as the projects proceeded to 100 percent design. Consequently, to accurately capture the impacts caused by construction of the HSDRRS, the mitigation PDT, in cooperation with the resource agencies, revised the original impact estimates utilizing the 95-100 percent design plans. Additionally, following identification of the tentatively selected mitigation plan alternative found in PIER #37, the revised impact estimates were again revisited and verified by the United States Fish and Wildlife Service (USFWS), some final as-builts were received, and correction of National Park Service (NPS) impacts based on the Omnibus Act occurred, which resulted in further adjustment to the estimated impacts. Details of these revisions can be found in PIER #37.

1.4.2.2 WBV Original Construction Impacts

Changes to the previously authorized WBV Hurricane Protection Project as assessed in EA 437 entitled "West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project, Lake Cataouatche Levee Enlargement Highway 90 to Cataouatche Pump Stations" and EA 439 entitled "West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project: Westwego to Harvey Canal Highway 45 Borrow Pits, Jefferson Parish, Louisiana" incurred impacts requiring mitigation. Because the impacts assessed in EAs 437 and 439 (Table 1.1) used a 100-year period of analysis and because the mitigation plan for those impacts was not fully developed in those EAs, a decision was made to re-assess those impacts using a 50 year period of analysis and to mitigate them along with the WBV HSDRRS impacts (which were also assessed using a 50 year period of analysis).

Table 1.1 WBV Original Construction Impacts

	PS BLH-Dry		FS BLH-Wet		FS Swamp	
EA	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs
439			21.50	15.10	88.5	50.71
437	162.10	58.95				
PS Total	162.10	58.95				
FS Total			21.50	15.10	88.50	50.71

1.4.2.3 WBV Original and HSDRRS Mitigation Requirement

Combining the WBV HSDRRS construction impacts, WBV HSDRRS government furnished borrow impacts and impacts from the original construction of the WBV hurricane protection system produced the following requirement for mitigation (see Table 1.2).

Table 1.2 WBV Original and HSDRRS Mitigation RequirementHabitat Type	**AAHUs Impacted**
General PS BLH-Wet/Dry	200.27 AAHUs
General FS BLH-Wet	72.04 AAHUs
General FS Swamp	134.52 AAHUs
General FS Fresh Marsh	65.92 AAHUs
Park/404(c) FS BLH-Wet	3.12 AAHUs
Park/404(c) FS Swamp	7.19 AAHUs

Park/404(c) FS Fresh Marsh	3.03 AAHUs

This SEA #572 evaluates the impacts of the MP with the substitute projects for the FS BLH-Wet and FS swamp features and proposes moving forward with construction of these features.

1.5 INTEGRATION WITH OTHER INDIVIDUAL ENVIRONMENTAL REPORTS

The CEMVN prepared the first phase of the Comprehensive Environmental Document (CED) that evaluated the cumulative effects of the HSDRRS work on a system-wide scale. The CED Phase 1 incorporated information from IERs completed by November 15, 2010 and public review of this document ended April 8, 2013. The next phase of the CED is under development and will include the HSDRRS mitigation plans, long-term monitoring and adaptive management commitments as well as IERs completed after November 15, 2010. A decision record will be executed following public review of the final phase of the CED.

2. ALTERNATIVE FORMULATION

The following sections walk the reader through the plan formulation process from identification of the approved mitigation plan (MP) in SPIER #37a to events that have led to the tentatively selected modified mitigation plan (TSMMP) presented in this supplemental document.

2.1 PIER #37 MITIGATION PLAN FORMULATION

Section 2.4.1 of PIER #37 provides background information on the alternative evaluation process (AEP) utilized to compare projects mitigating for the same habitat type in the final array. In PIER #37, section 2.8, Data Gaps and Uncertainties, under Implementation, it was stated that "If any of the TSMP projects (features of the MP) could not be implemented, then CEMVN would either fall back to one of the other projects evaluated in the AEP in order of ranking for that habitat type or would, in coordination with the resource agencies and the non-federal sponsor (NFS), explore other options to mitigate these impacts". Therefore, the projects in the final array for general FS BLH-Wet and FS swamp found in PIER #37 were re-evaluated in an effort to identify potential substitution projects for these features in the MP. Each of the projects in the final array were evaluated for their effect on the overall WBV HSDRRS Mitigation budget. Projects that were excessively expensive and jeopardized implementation/completion of the other features of the MP were eliminated from further consideration.

2.2 SPIER #37a MITIGATION PLAN RE-EVALUATION

SPIER #37a modified the MP presented in the PIER #37 by identifying a replacement project for the general PS BLH-Dry feature. The modified MP (MMP) as presented in SPIER #37a is now being modified in this SEA #572. The features of the plan and their respective projects that this SEA #572 is modifying are starred and in italics in the table below:

Habitat Type Impacted	Modified Mitigation Project (MMP)
General PS BLH-Wet	General Mitigation Bank (Purchased)
General PS BLH-Dry	Avondale Gardens (Under Construction)
*General FS BLH-Wet**	*Lake Boeuf FS BLH-Wet Restoration**
*General FS Swamp**	*Lake Boeuf FS Swamp Restoration**
General FS Fresh Marsh	Jean Lafitte FS Marsh Restoration (Constructed)
Park/404(c) FS BLH-Wet	Jean Lafitte FS BLH-Wet Restoration (Constructed)
Park/404(c) FS Swamp	Jean Lafitte FS Swamp Restoration (Constructed)
Park/404(c) FS Fresh Marsh	Jean Lafitte FS Marsh Restoration (Constructed)

2.3 RE-EVALUATION OF FINAL ARRAY PROJECTS BY HABITAT TYPE

2.3.1 GENERAL FS BLH-WET IMPACTS

The following projects evaluated in the PIER #37 AEP for this habitat type were re-evaluated in an effort to find a potential substitute project for the general FS BLH-Wet feature of the previously approved MP. None of these projects were found to be a feasible replacement project for the general FS BLH-Wet feature for the following reasons:

Table 2-2: Final Array Projects Evaluated in AEP for General FS BLH-Wet Impacts

AEP Rank	FS BLH-Wet Projects	Issue	Comments
2	Plaquemines, Alt. 2 FS BLH-Wet Restoration	Schedule	Right of entry (ROE) not granted for this location. Method of real estate (RE) acquisition would result in a project schedule that would incur unacceptable delays to the overall HSDRRS schedule.
3	Dufrene Ponds FS BLH-Wet Restoration	Schedule	ROE not granted for this location. Method of RE acquisition would result in a project schedule that would incur unacceptable delays to the overall HSDRRS schedule.

Since none of the projects evaluated in the AEP for this habitat type were determined to be implementable, five new projects were considered:

- Sunset Ridge
- Bayou Portuguese
- Hwy 23
- Hwy 307
- Mitigation Banks

FS BLH-Wet Projects	Issue	Comments
Sunset Ridge	Cost/Impacts	Unavoidable impacts to existing high quality BLH would be incurred with the construction of this project that would require additional mitigation.
Bayou Portuguese	Cost	Rerouting of existing levee and the need for fill material substantially increases the cost for this project.
Hwy 23	Schedule	Right of entry (ROE) not granted for this location. Method of real estate (RE) acquisition would result in a project schedule that would incur unacceptable delays to the overall HSDRRS schedule.
Hwy 307	none	This project has been carried forward as a proposed project for further analysis
Mitigation Banks	none	This project has been carried forward as a proposed project for further analysis

Sunset Ridge

The Sunset Ridge project is located in St. Charles Parish adjacent to Hwy 306, south of Paradis and east of Des Allemands (see figure A-6). This project offers approximately 250 acres of pasture land that would be available for FS BLH-wet mitigation. There are approximately 85 acres of BLH-Wet habitat and an existing local levee to the east and adjacent to the property. In order to restore the site's

hydrologic connection to other flood side habitats while maintaining storm risk reduction to the surrounding communities, this levee would need to be rerouted around the site and the current levee either gapped or degraded. The neighborhood adjacent to the mitigation site has an existing drainage system that goes through the property. Once hydrology is restored, the water surface elevations within the project area would increase and therefore would negatively impact the ability of drainage from the adjacent neighborhoods to enter the project area. Since the site is currently under the influence of forced drainage, the elevations within the site are too low to support BLH once the site is reconnected to other FS habitats. As such, up to several feet of material would need to be added to the site such that elevations conducive to BLH establishment could be obtained. Once the existing levee is gapped/degraded, the 85 acres of BLH-Wet between the mitigation site and the local levee would be flooded to such an extent that the existing trees could not survive. Executive Order (E.O.) 11990 states that "Each agency shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands." Additionally, EP 1165-2-502 states that projects should be formulated and designed to avoid any requirement for compensatory fish and wildlife mitigation. For these reasons, this alternative has been eliminated from further analysis.

Bayou Portuguese

The Bayou Portuguese project is located in Lafourche Parish near Larose and north of Hwy 308 and Bayou Portuguese Dr (see figure A-7). This project offers 200 acres of agricultural land that would be available for FS BLH-wet mitigation. There is an existing local levee to the north of the project that would need to be rerouted in order to restore hydrologic connectivity. In addition, the site is too low in elevation to sustain BLH and would require fill material to bring it up to an elevation conducive to BLH establishment. Locating a sufficient borrow source and either hauling in or dredging and pumping the material to the site would be necessary. These activities would substantially increase the cost and therefore this project has been eliminated from further analysis.

Hwy 23

The Hwy 23 project is located in Plaquemines Parish adjacent to and west of Hwy 23 just south of Belle Chasse (see figure A-8). This project offers approximately 1,050 acres of wet pasture land that would be available for FS BLH-wet mitigation. There is an existing local levee on the west side of the project that would need to be degraded in order to restore hydrologic connectivity. Once degraded, the remaining portion of that levee would need to be tied into the proposed NOV-NFL-W 05a.1 levee to maintain storm risk reduction to the surrounding communities. The landowner has not granted ROE for investigative activities and so it is assumed that acquisition would require real-estate instruments that would delay the project schedule to such an extent that the overall HSDRRS schedule would be unacceptably delayed. Therefore, this project has been eliminated from further analysis.

Hwy 307

The proposed project is located in Lafourche Parish along Highway 307 between Raceland and Des Allemandes. The entire footprint consists of approximately 521 acres of agricultural fields. Within the 521 acres, approximately 133 acres would be used for BLH-Wet restoration (Appendix A-5). The 133 acres includes additional acreage to account for any potential changes in project size due to the completion of final WVAs, final engineering design, and required maintenance corridors. Elevations within the portion of the project area where BLH would be restored are either at or above the elevation conducive to BLH-Wet establishment (+2.5 feet to 3.25 feet NAVD88), therefore no outside borrow would be required for this proposed restoration action. The entire project area is contained within a perimeter water retention dike, certain portions of which would be degraded to reconnect the restoration project with adjacent swamp/BLH habitat. The dikes would be degraded in such a way to ensure de minimis impacts. Ditches adjacent to the dikes would be filled or partially filled during dike degrading.

It is envisioned that the majority of the acres required for BLH-Wet restoration could simply be planted at the existing elevation within the site once the water retention dikes have been degraded. However, if portions of the site need to be degraded, the resulting material would either be moved to lower areas within the project footprint or hauled off site. All such earth moving efforts would be achieved with dozers, trucks, and backhoes. In general, the worst case scenario would require reducing the elevation in the higher areas by approximately 1.5' to 0.5'. As the vast majority of the potential project footprint is existing agricultural fields, little to no vegetative clearing is anticipated. What little woody or vegetative debris which requires removal would be stockpiled and burned on site. The project would then be planted with BLH species.

Once cultural surveys are complete, the exact footprint of the project features would be established based on existing LIDAR data, which can be clearly mapped to confirm existing elevations. In general the features would be designed (1) to avoid cultural sites, (2) to minimize required earth moving from high to low areas, (3) minimize the need for retention dike realignment to maintain the integrity of remaining agricultural fields, and (4) accommodate the potential for swamp restoration which is also being considered within this footprint.

Mitigation Bank Credit Purchase

This project assumes that the 72.04 AAHUs of general FS BLH-Wet impacts could be mitigated through the purchase of mitigation bank BLH credits and that purchase of mitigation bank credits from a bank with perpetual conservation servitude would yield a result similar to a mitigation project constructed by the Corps (Corps constructed).

If purchase of mitigation bank credits were included as the TSMP for the BLH-Wet feature of the TSMMP, all BLH-Wet FS impacts would be mitigated through the purchase of BLH-Wet credits equaling 72.04 AAHUs. The same version of the WVA model that was used to assess the impacts from constructing the WBV HSDRRS would be run on the mitigation banks to ensure that the assessment of the functions and services provided by the mitigation bank match the assessment of the lost functions and services at the impacted site.

2.3.2 GENERAL FS SWAMP IMPACTS

The following projects evaluated in the PIER #37 AEP for this habitat type were re-evaluated in an effort to find a potential substitute project for the general FS swamp feature of the previously approved MP. None of these projects were found to be a feasible replacement project for the General FS Swamp feature for the following reasons:

Table 2-4: Final Array Projects Evaluated in AEP for General FS Swamp Impacts

Rank	General FS Swamp Projects	Issue:	Comments:
1	Lake Boeuf FS Swamp Restoration Project (TSMP)	Schedule	ROE not granted for this location. Method of real estate (RE) acquisition would result in a project schedule that would incur unacceptable delays to the overall HSDRRS schedule.

2	Plaquemines, Option 1 FS Swamp Restoration Project	Schedule	ROE not granted for this location. Method of real estate (RE) acquisition would result in a project schedule that would incur unacceptable delays to the overall HSDRRS schedule.
3	Salvador-Timken FS Swamp Restoration Project	Cost/Impacts	Further investigation showed that implementing a FS swamp would impact existing SAVs on the site. Creating a FS swamp would require additional mitigation actions to address the loss of the onsite existing SAV's.
4	Simoneaux Ponds FS Swamp Restoration Project	Schedule	ROE not granted for this location. Method of real estate (RE) acquisition would result in a project schedule that would incur unacceptable delays to the overall HSDRRS schedule.

Since none of the projects evaluated in the AEP for this habitat type were determined to be implementable, three new projects were considered:

- Hwy 23
- Hwy 307
- Mitigation Banks

FS Swamp Projects	Issue	Comments
Hwy 23	Schedule	Right of entry (ROE) not granted for this location. Method of real estate (RE) acquisition would result in a project schedule that would incur unacceptable delays to the overall HSDRRS schedule.
Hwy 307	none	
Mitigation Banks	none	

Hwy 23

The Hwy 23 project is located in Plaquemines Parish adjacent to and west of Hwy 23 just south of Belle Chasse. This project offers approximately 1,050 acres of wet pasture land that would be available for FS swamp mitigation. There is an existing local levee on the west side of the project that would need to be degraded in order to restore hydrologic connectivity. Once degraded, the remaining portion of that

levee would need to be tied into the new NOV-NFL-W 05a.1 levee to maintain storm risk reduction to the surrounding communities. The landowner has not granted ROE for investigative activities and so it is assumed that acquisition would require real-estate instruments that would delay the project schedule to such an extent that the overall HSDRRS schedule would be unacceptably delayed. Therefore, this project has been eliminated from further analysis.

Hwy 307

The proposed project is located in Lafourche Parish along Highway 307 between Raceland and Des Allemandes. The entire footprint consists of approximately 521 acres of currently farmed or abandoned agricultural fields (Appendix A-5). Within the 521 acres, approximately 287 acres would be used for FS swamp restoration. The 287 acres includes additional acreage to account for any potential changes in project size due to the completion of final WVAs, final engineering design, and required maintenance corridors. Elevations within the portion of the project area where swamp would be restored are at or above that desired for swamp restoration (+2.5 feet to 0.0 feet NAVD88), therefore no outside borrow is required for this proposed restoration action. The entire project area is contained within a perimeter water retention dike, certain portions of which would be degraded to reconnect the restoration project with adjacent swamp habitat and restore tidal connection. The dikes would be degraded in such a way to ensure de minimis impacts. Ditches adjacent to the dikes would be filled or partially filled during dike degrading. It is envisioned that the majority of the acres required for swamp restoration could simply be planted at the existing elevation within the site once the water retention dikes have been degraded. However, if portions of the site need to be degraded, the resulting material would either be moved to BLH-Wet feature within the project footprint or hauled off site. All such earth moving efforts would be achieved with dozers, trucks, and backhoes. In general, the worst case scenario would require reducing the elevation in the higher areas by approximately 1.5' to 0.5'. As the vast majority of the potential project footprint is existing agricultural fields, little to no vegetative clearing is anticipated. What little woody or vegetative debris which requires removal would be stockpiled and burned on site. The project would then be planted with swamp species as per the guidelines set forth in Appendix H.

Mitigation Bank Credit Purchase

This project assumes that the 134.52 AAHUs of general FS swamp impacts could be mitigated through the purchase of mitigation bank swamp credits and that purchase of mitigation bank credits from a bank with perpetual conservation servitude would yield a result similar to a mitigation project constructed by the Corps (Corps constructed).

If purchase of mitigation bank credits were included as the TSMP for the swamp feature of the TSMMP, all flood side swamp impacts would be mitigated through the purchase of swamp credits equaling 134.52 AAHUs. The same version of the WVA model that was used to assess the impacts from constructing the WBV HSDRRS would be run on the mitigation banks to ensure that the assessment of the functions and services provided by the mitigation bank match the assessment of the lost functions and services at the impacted site.

2.4 FINAL ARRAY OF MITIGATION PROJECTS BY HABITAT TYPE

General BLH-Wet Flood Side Impacts

- Hwy 307 FS BLH-Wet Restoration
- Mitigation Bank Credit Purchase

General Swamp Flood Side Impacts

- Hwy 307 FS Swamp Restoration
- Mitigation Banks Credit Purchase

2.5 MODIFIED MITIGATION PLAN (MMP)

Under SEA #572, the MP presented in SPIER #37a would be modified with the replacement of the recommended projects for the general FS BLH-Wet and FS Swamp features. The MMP with the new tentatively selected mitigation projects (TSMP) for FS BLH-Wet and FS Swamp features is as follows:

Table 2-5: WBV HSDRRS Modified Mitigation Plan

Habitat Type	TSMP Project	AAHUs Impacted	Mitigation Project Acres (including buffers)
General PS BLH-Wet/Dry	In Basin Mitigation Bank/ Avondale Gardens	200.27 AAHUs	920.00 in construction
General FS BLH-Wet (TSMP)	Hwy 307	72.04 AAHUs	133
General FS Swamp (TSMP)	Hwy 307	134.52 AAHUs	287
General FS Fresh Marsh	Jean Lafitte	65.92 AAHUs	138.00 in construction
Park/404(c) FS BLH-Wet	Jean Lafitte	3.12 AAHUs	12.16 constructed
Park/404(c) FS Swamp	Jean Lafitte	7.19 AAHUs	20.44 constructed
Park/404(c)FS Fresh Marsh	Jean Lafitte	3.03 AAHUs	20.40 in construction

2.6 SELECTION RATIONALE

General FS BLH-Wet Impacts

Currently there are insufficient mitigation bank credits available in the watershed to mitigate the FS BLH-Wet requirement. August 2009 Implementation Guidance for WRDA 2007, Section 2036 states that mitigation planning efforts should identify and prioritize natural resource restoration as well as preserve existing natural resources that are important for maintaining or improving the ecological functions of the watershed. WRDA 2014, Section 1040, requires use of a watershed approach for the design of mitigation projects. As such, the Hwy 307 project was selected as the TSMP for the FS BLH-Wet feature of the WBV HSDRRS TSMMP.

General FS Swamp Impacts

Currently there are insufficient mitigation bank credits available in the watershed to mitigate the FS swamp requirement. August 2009 Implementation Guidance for WRDA 2007, Section 2036 that states that mitigation planning efforts should identify and prioritize natural resource restoration as well as preserve existing natural resources that are important for maintaining or improving the ecological functions of the watershed. WRDA 2014, Section 1040, requires use of a watershed approach for the design of mitigation projects. As such, the Hwy 307 project was selected as the TSMP for the FS Swamp feature of the WBV HSDRRS TSMMP.

2.7 WVA MODEL AND SEA LEVEL RISE ANALYSES FOR THE MITIGATION PLAN

WVA Model Certification

The WVA Bottomland Hardwood and Swamp Community Models used for the HSDRRS Mitigation completed model were certified in accordance with EC 1105-2-412 and approved for regional use November 8, 2011.

Version 1.0 of the Coastal Marsh Community WVA model was also approved for use for the HSDRRS Mitigation project. For details on the model reviews please refer to Appendix F of the WBV HSDRRS Mitigation PIER #37.

WVAs

The WVA methodology operates under the assumption that optimal conditions for general fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum level to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: 1) a list of variables that are considered important in characterizing fish and wildlife habitat; 2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values; and 3) a mathematical formula that combines the Suitability Index for each variable into a single value for wetland habitat quality. That single value is referred to as the Habitat Suitability Index, or HSI. The following WVA models (version 1.0) were used for the WBV HSDRRS mitigation effort: 1) CWPPRA, WVA Methodology, Bottomland Hardwood Community Model; 2) CWPPRA, WVA Methodology, Swamp Community Model; 3) and CWPPRA, WVA Methodology, Coastal Marsh Community Model for Fresh/Intermediate Marsh.

The WVA models assess the suitability of each habitat type for providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. This standardized, multi-species, habitat-based methodology facilitates the assessment of project-induced impacts on fish and wildlife resources. The coastal marsh WVA models consists of six variables: 1) percent of wetland area covered by emergent vegetation; 2) percent of open water area covered by aquatic vegetation; 3) marsh edge and interspersion; 4) percent of open water area $\leq$ 1.5 feet deep in relation to marsh surface; 5) salinity; and 6) aquatic organism access. The swamp WVA model consists of four variables: 1) stand structure; 2) stand maturity; 3) water regime; and 4) salinity. The Bottomland Hardwood Community Model, which was used for BLH-Wet and BLH-Dry features, consists of seven variables: 1) stand structure; 2) stand maturity; 3) understory/midstory; 4) hydrology; 5) size of contiguous forests areas; 6) suitability and traversability of surrounding land uses; and 7) disturbance.

Values for variables used in the models are derived for existing conditions and are estimated for conditions projected into the future if no mitigation efforts are applied (i.e., FWOP), and for conditions projected into the future if the proposed mitigation project is implemented (i.e., FWP), providing an index of habitat quality, or habitat suitability, for the period of analysis. The HSI is combined with the acres of habitat to generate a number that is referred to as “habitat units.” Expected project impacts/benefits are estimated as the difference in habitat units between the FWP scenario and the FWOP scenario. To allow comparison of WVA benefits to costs for overall project evaluation, total benefits are averaged over a 50-year period, with the result reported as AAHUs. WVA assumptions used for the WBV HSDRRS MP area located in Appendix E of the WBV HSDRRS Mitigation PIER #37. WVA assumptions used for the Hwy 307 BLH and Swamp Restoration WVAs are located in Appendix F of this document.

Sea Level Rise Analysis

Wetland Acreage Predictions Under Increased Sea Level Rise (SLR) Rates

In compliance with USACE policy (EC1165-2-212), the performance of the projects under all three SLR scenarios was analyzed to verify sustainability of the TSMPs. Potential increases in SLR could affect the performance and therefore ability of a mitigation project to achieve replacement of the services and functions of the impacted habitat types. Because the mitigation projects were designed based on the intermediate SLR scenario to account for potential uncertainties in future SLR impacts, the risk of the proposed projects not successfully meeting the mitigation requirement due to SLR has been minimized.

The intent of compensatory mitigation is to offset unavoidable habitat losses by replacing those impacted habitats by restoring (re-establishment or rehabilitation), establishing (creation), or enhancing a naturally functioning system. Once the project meets its long term success criteria, it will experience natural successional phases common to that habitat type. Once the functions and services of the affected habitat have been replaced and the mitigation project becomes a naturally functioning, self-sustaining system whose habitat is protected in perpetuity, the compensatory mitigation obligation is satisfied.

Using USACE-predicted future water levels under the SLR scenarios, those water levels were converted into relative sea level rise (RSLR) rates, incorporating sea level rise effects measured at the gauges and land loss experienced in the extended project area for each project. No operations and maintenance activities were planned for any of the projects in relation to future elevation changes. The WVA then utilized the RSLR rates and project design to predict FWP acres left at the end of the 50-year period of analysis. Long term sustainability (percent land left at the end of the period of analysis) was used to analyze the impact the different SLR scenarios had on the project areas. Comparison between the long term sustainability numbers experienced under the intermediate and high SLR scenarios for the projects in the final array supported the viability of the TSMPs, namely the TSMPs for all habitat types performed well under the influence of both the intermediate and high SLR scenarios. Details of the 3 SLR analyses can be found in Appendix B, Table 1.

2.8 DATA GAPS AND UNCERTAINTIES

Climate Change

Extreme changes in climate (temperature, rain, evaporation, wind) could result in conditions that cannot support the types of habitat restored, reducing the effectiveness of the mitigation plan. Extreme climate change could essentially eliminate the benefits of vegetative plantings, if the change resulted in plant mortality. The monitoring plan for all USACE constructed projects would monitor the success of any vegetative plantings and includes provisions for replanting if mortalities become such that meeting the required success criteria is in jeopardy.

Errors in Analysis

Future conditions are inherently uncertain. The forecast of future conditions is limited by existing science and technology. Future conditions described in this study are based on an analysis of historic trends and the best available information. Some variation between forecast conditions and reality is certain. Mitigation features were developed in a risk-aware framework to minimize the degree to which these variations would affect planning decisions. However, errors in analysis or discrepancies between forecast and actual conditions could affect plan effectiveness.

All of the models used in this study are abstract mathematical representations of reality. Models simulate complex systems by simplifying real processes into expressions of their most basic variables. These tools assist with finding optimal solutions to problems, testing hypothetical situations, and forecasting future conditions based on observed data. No model can account for all relevant variables in a system. The interpretation of model outputs must consider the limitations, strengths, weaknesses, and assumptions inherent in model inputs and framework. Inaccurate assumptions or input errors could change benefits predicted by models used in this study. The potential for significant changes due to errors has been reduced through technical review, sensitivity analyses, and quality assurance procedures. However, there is inherent risk in reducing complex natural systems into the results of mathematic expressions driven by the simplified interaction of key variables.

WVA Model Uncertainties

Results obtained from previous mitigation projects situated in agricultural fields provide a good indication that sufficient acreage exists at the Hwy 307 site to produce the mitigation benefits needed to mitigate the FS swamp mitigation requirement.

Implementation

The timing for implementation is an uncertainty that must be considered. If the plan is not implemented in the near future, the conditions in the study area could change. The impact of the uncertainties associated with the future condition of the study area could increase mitigation costs, decrease mitigation benefits, or both.

If a proposed project becomes infeasible due to difficulties in implementation or changed conditions, the CEMVN will take appropriate action to ensure satisfaction of its mitigation requirement. If any of the TSMMP projects could not be implemented, the CEMVN would default to the only other alternative evaluated in this SEA which is the purchase of mitigation bank credits. If insufficient in kind mitigation bank credits exist within the WBV Basin, then out of basin options to fully mitigate the outstanding mitigation requirement may be investigated.

Mitigation Bank Credit Availability

Those mitigation banks that may be capable of supplying the credits needed to meet any of the mitigation requirements at the time of solicitation is uncertain. Banks currently able to meet the mitigation requirements may not be able to do so at the time of solicitation. In addition, new banks able to meet the mitigation requirement may become approved by the time the solicitation is released. Accordingly, identification of particular banks that could be used to meet the mitigation requirement cannot occur with any degree of certainty and has not been done for this SEA. Since the bank(s) that may ultimately be selected to provide the necessary mitigation credits is unknown, the existing conditions present at the bank site(s) are similarly unknown. Existing bank habitat quality varies depending on the success criteria met, as specified in the bank's MBI. Typically, as mitigation success criteria are met and the quality of the habitat increases within the bank, more credits are released for purchase.

Mitigation for Coastal Zone Impacts

Louisiana Department of Natural Resources (LDNR) administers the Federal Coastal Zone Management Act in Louisiana through its Louisiana Coastal Resources Program (LCRP). Depending on the projects implemented, LDNR may determine that, in its view, such projects do not mitigate for

coastal zone impacts. If deemed necessary, additional mitigation for coastal zone impacts may be required and would be assessed and coordinated in subsequent NEPA documents.

2.9 PROPOSED ACTION

The proposed action in this SEA #572 consists of constructing approximately 287 acres of swamp at the Hwy 307 site to mitigate 134.52 AAHUs of FS swamp impacts and constructing approximately 133 acres of BLH-Wet at the Hwy 307 site to mitigate 72.04 AAHUs of FS BLH-Wet impacts.

2.10 ALTERNATIVES TO THE PROPOSED ACTION

NEPA requires that in analyzing alternatives to a proposed action, a Federal agency consider an alternative of "No Action." The No Action alternative evaluates not implementing the changes to the MP as proposed in this SEA #572 and represents the Future Without Project (FWOP) condition by which alternatives considered in detail are compared. Because a baseline is necessary for impact assessment and because the projects identified in SPIER #37a for the FS swamp and FS BLH-Wet features of the MP are not implementable, the No Action alternative in this document will be presented as if the approved projects identified in SPIER #37a for the FS swamp and FS BLH-Wet features of the MP would not be built. However, because compensatory mitigation for unavoidable habitat losses due to the construction of the HSDRRS is required by law (e.g. Clean Water Act, WRDAs of 1986 and 2007), the CEMVN does not consider the No Action Alternative to be a reasonable or legally viable alternative that could be chosen.

2.10.1 NO ACTION ALTERNATIVE

Under the no action alternative, the Barataria basin would continue a trend of land loss caused by both natural factors such as subsidence, erosion, tropical storms and sea level rise, and human factors such as flood risk reduction, canal dredging, development, interruption of accretion processes and oil and gas exploration. The No Action alternative would not provide for compensatory mitigation of all unavoidable impacts from the construction of the HSDRRS in compliance with WRDA 1986, 33 U.S.C. 2283(a) since the general FS swamp and FS BLH-Wet features of the approved SPIER #37a mitigation plan could not be implemented.

The analysis for the no Action alternative considers previous, current, and reasonably foreseeable future projects, which could impact the resources evaluated in the SEA. The corps is not aware of any non-state, non-federal or privately funded projects being constructed; however, there is the possibility of such projects coming onboard. For the purpose of this analysis, a project is considered "reasonably foreseeable" if it meets one of the following criteria:

- USACE authorized ecosystem restoration, flood risk reduction, and/or navigation project with an anticipated Tentative Selected Plan;
- CWPPRA project authorized at a Phase 2 – construction status;
- Coastal Impact Assistance Program (CIAP) ecosystem restoration or flood risk reduction project which is funded for construction;
- State of Louisiana Surplus-funded ecosystem restoration or flood risk reduction project funded for construction; or
- Louisiana Levee District permitted flood risk reduction project.

Appendices B-9 include a of list projects involving wetland or ecosystem restoration activities considered part of the no action alternative that could counter, to a degree, the current land loss trends

throughout the basin and progression of wetlands to open water. In addition to these ecosystem restoration projects, a number of flood risk reduction and navigation projects are listed that have been built or would be built within the Barataria basin that would continue to influence the hydrodynamics within the basin.

2.10.2 MODIFIED MITIGATION PLAN ALTERNATIVE 2 (MMPA 2)

This alternative replaces the constructible features with the purchase of mitigation bank credits. Purchase of credits would be dependent on receipt of an acceptable proposal and total purchase cost. No particular bank(s) is (are) proposed for use at this time. The bank(s) from which credits would be purchased would be selected through a solicitation process, through which any mitigation bank meeting eligibility requirements and having the appropriate resource type of credits could submit a proposal to sell credits. If appropriate and cost-effective, the Corps may choose to purchase mitigation bank credits from more than one bank to fulfill the compensatory mitigation requirements for a particular habitat type. Currently there are insufficient in-kind mitigation bank credits in the watershed to implement this alternative.

Since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to any of the resources would be incurred from the purchase of these credits for the HSDRRS mitigation.

2.10.3 MODIFIED MITIGATION PLAN ALTERNATIVE 3 (MMPA 3)

This alternative is made up of the same projects as those found in the TSMMP but with the substitution of the purchase of mitigation bank credits for one of the features. This alternative would be a combination of a Corps constructed project and the purchase of mitigation bank credits.

Purchase of credits would be dependent on receipt of an acceptable proposal and total purchase cost. No particular bank(s) is (are) proposed for use at this time. The bank(s) from which credits would be purchased would be selected through a solicitation process, through which any mitigation bank meeting eligibility requirements and having the appropriate resource type of credits could submit a proposal to sell credits. If appropriate and cost-effective, the Corps may choose to purchase mitigation bank credits from more than one bank to fulfill the compensatory mitigation requirements for a particular habitat type. Currently there are insufficient in-kind mitigation bank credits in the watershed to implement this alternative.
The Corps constructed project selected for this alternative would have the same impacts as those discussed in either section 2.3.1 or 2.3.2 for Hwy 307 depending on which project the purchase of mitigation bank credits would replace. Additionally, since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to any of the resources would be incurred from the purchase of these credits for the HSDRRS mitigation.

3. AFFECTED ENVIRONMENT

3.1 ENVIRONMENTAL SETTING

WBV Basin

The WBV HSDRRS Mitigation Basin is bounded to the north by the Mississippi River starting west in Ascension Parish to east in Plaquemines Parish. In Plaquemines Parish, the boundary proceeds south then north and west bordering the southern portion of Lake Salvador before turning south again to Golden Meadow. It then turns northwest to Assumption Parish (Appendix A-2). Major features in the WBV Mitigation basin include: Lakes Cataouatche and Salvador and their adjacent wetlands; Lac des Allemands and its adjacent wetlands and the Mississippi River.

Geomorphic and Physiographic Setting

Most of the present landmass of southeast LA was formed by deltaic processes of the Mississippi River. The WBV Basin is bounded on each side by a distributary ridge formed by the present and a former channel of the Mississippi River. Several large lakes occur between these ridges. The WBV basin contains tidally influenced wetlands. Freshwater and sediment input into the basin is limited by the flood protection levees along the Mississippi River and the closure of Bayou Lafourche at Donaldsonville. Riverine input into the basin's wetlands occurs through the Davis Pond diversion and the Naomi and West Pointe a la Hache siphons.

Climate

The WBV basin is located within a subtropical latitude. The climate is influenced by the many water surfaces of the nearby wetlands, rivers, lakes, streams, and the Gulf of Mexico. Throughout the year, these water areas modify relative humidity and temperature conditions, decreasing the range between the extremes. Summers are long and hot, with an average daily temperature of 82° Fahrenheit (°F), average daily maximum of 91°F, and high average humidity. Winters are influenced by cold, dry polar air masses moving southward from Canada, with an average daily temperature of 54°F and an average daily minimum of 44°F. Annual precipitation averages 54 inches.

Wetlands and Other Surface Waters

Wet BLH forests in the WBV Basin are dominated by water oak, nuttall oak, green ash, red maple, and pignut hickory. Fresh marsh is dominated by cattail, water lily, iris, duckweed, cutgrass, wild rice, bullwhip and bulltongue. Swamps are dominated by bald cypress and water tupelo, which have regenerated, to varying degrees, since extensive logging of virgin forest more than 70 years ago. The Louisiana swamps generally lack a mature canopy as was present in the forests before logging occurred and have lower productivity where isolated from riverine influences (Shaffer et al., 2003). The greatest potential to restore and sustain coastal forests is near the Mississippi River where freshwater reintroductions may be implemented. Other local sources of freshwater may be municipal wastewater or storm water. Economically important natural resources associated with these swamps include fisheries of crawfish, blue catfish, and channel catfish, as well as logging. See Appendix A-1 for the habitats and their quantity found in the WBV Basin and Appendix B-2 for a list of plant species referenced in this document and their scientific names.

Wildlife

Louisiana's coastal wetlands support numerous neotropical and other migratory avian species, such as rails, gallinules, shorebirds, wading birds, and numerous songbirds. The rigors of long distance flight require most neotropical migratory birds to rest and refuel several times before they reach their final destination. Louisiana coastal wetlands provide neotropical migratory birds essential stopover habitat on their annual migration routes. The coastal wetlands in the WBV Basin provide important fish and wildlife habitats, especially transitional habitat between estuarine and marine environments, used for shelter, nesting, feeding, roosting, cover, nursery, and other life requirements.

Emergent fresh, intermediate, and brackish wetlands are typically used by many different wildlife species, including: seabirds; wading birds; shorebirds; dabbling and diving ducks; raptors; rails; coots; and gallinules; nutria; muskrat; mink, river otter, and raccoon; rabbit; white-tailed deer; and American alligator. Emergent saline marshes are typically utilized by: seabirds; wading birds; shore birds; dabbling and diving ducks; rails, coots, and gallinules; other saline marsh residents and migrants; nutria; muskrat; mink, river otter, and raccoon; rabbits; deer; and American alligator (LCWCRTF & WCRA, 1999).

Open water habitats such as Lakes Salvador and Cataouatche provide wintering and multiple use functions for brown pelicans, seabirds, and other open water residents and migrants. Open water habitats provide wintering and multiple use functions for brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants (LCWCRTF & WCRA, 1999).

The bald eagle is protected under the Bald and Golden Eagle Protection Act ((BGEPA), and the Migratory Bird Treaty Act ((MBTA) 40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). In southeastern Louisiana parishes, eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water.

Colonial nesting waterbirds are protected under the Migratory Bird Treaty Act ((MBTA) 40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). Colonial nesting waterbirds are generally considered all species of herons, egrets, night herons, ibis, roseate spoonbill, anhinga and cormorants. These birds typically nest and forage in wetlands and open water areas.

A list of common wildlife species found in the WBV basin and their scientific names are located in Appendix B-3.

Threatened and Endangered Species

Within the State of Louisiana there are 33 animal and three plant species (some with critical habitat) under the jurisdiction of the USFWS and/or the NMFS, presently classified as endangered or threatened. The USFWS and the NMFS share jurisdictional responsibility for sea turtles and the Gulf sturgeon. Other species that were listed on the Endangered Species List but have since been de-listed because population levels have improved are the bald eagle and the brown pelican. Currently, American alligators and shovelnose sturgeon are listed as threatened under the Similarity of Appearance clause in the Endangered Species Act (ESA) of 1973, as amended but are not subject to ESA Section 7 consultation. See Appendix B-4 for listed species in the WBV Basin.

Fisheries, Aquatic Resources, and Water Quality

Major water bodies within the basin include Lac des Allemands, Lake Boeuf, Bayou Gauche, Lake Salvador, Lake Cataouatche, and the Mississippi River. These water bodies and adjacent wetlands provide nursery and foraging habitats which support varieties of economically, recreationally, and ecologically important marine and freshwater fishery species, including shrimp, bay anchovy, gizzard shad, buffalo, yellow bass, largemouth bass, sunfish, catfish, spotted gar, bowfin, mosquitofish, least killifish, sailfin molly, striped mullet, Atlantic croaker, Gulf menhaden, spotted and sand sea trout, southern flounder, black drum, and blue crab (see Appendix B-5 for full list of species). Some of these species also serve as prey for other fish species managed under the MSFCMA by the Gulf of Mexico Fishery Management Council (e.g., mackerel, snapper, and grouper) and highly migratory species managed by NMFS (e.g., billfish and shark).

The WBV Basin encompasses parts of three U.S. Geological Survey (USGS) Cataloging Units: 08090301 – East Central Louisiana Coastal Watershed, 08070100 - Lower Mississippi - Baton Rouge and 08090100 – Lower Mississippi-New Orleans. Within each of these Cataloging Units, the state has delineated hydrologic units, or sub-segments, within the state.

Section 305(b) of the Clean Water Act requires each state to monitor and report on surface and groundwater quality, which the Environmental Protection Agency (EPA) synthesizes into a report to Congress. The Louisiana Department of Environmental Quality (LDEQ) produces a Section 305(b) Water Quality Report that provides monitoring data and water quality summaries for hydrologic units (sub-segments) throughout the state.

Water quality criteria are elements of state water quality standards that represent the quality of water that will support a particular designated use. These criteria are expressed as constituent concentrations, levels, or narrative statements. There are currently eight designated uses adopted for Louisiana's surface waters: Primary Contact Recreation, Secondary Contact Recreation, Fish and Wildlife Propagation ("subcategory" for Limited Aquatic life and Wildlife), Drinking Water Supply, Oyster Propagation, Agriculture, and Outstanding Natural Resource Waters. Appendix A-3 shows those hydrologic units or sub-segments in the WBV basin that contain water bodies that are considered "impaired" according to the 2010 Integrated Report.

Essential Fish Habitat

The MSFCMA (50 CFR 600) states that EFH is "those waters and substrate necessary for fish for spawning, breeding or growth to maturity" (16 United States Code [USC] 1802(10); 50 CFR 600.10). The 2005 amendments to the MSFCMA set forth a mandate for the NMFS of the National Oceanic and Atmospheric Administration, regional Fishery Management Councils (FMC), and other Federal agencies to identify and protect EFH of economically important marine and estuarine fisheries. A provision of the MSFCMA requires that FMCs identify and protect EFH for every species managed by a Fishery Management Plan (FMP) 16 USC 1853. The public places a high value on seafood and recreational and commercial opportunities provided by EFH. Specific categories of EFH include all estuarine waters and substrates (mud, sand, shell, rock, and associated biological communities), sub-tidal vegetation (sea grasses and algae), and adjacent intertidal vegetation (marshes and mangroves). The existing emergent wetlands and shallow open water within the WBV Basin provide important habitat that may be classified as EFH, including transitional habitat between estuarine and marine environments used by migratory and resident fish, as well as other aquatic organisms for nursery, foraging, spawning, and other life requirements. Historically and currently, the area provides valuable recreational and commercial fishing habitat, oyster culture, and nursery areas for a wide variety of finfish and shellfish.

Table 3-1 lists the expected salinity zones in the WBV basin and the abundance of the managed species expected (NOAA Mapper: http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html or download of datasets at http://www.habitat.noaa.gov/protection/efh/newInv/index.html). Table 3-2 shows the EFH for the managed species expected in those areas.

Table 3-1: Salinity Zones and Abundance for Federally Managed Species In WBV Basin

Salinity Zone	Life Stage	Brown Shrimp	White Shrimp	Red Drum	Coastal Migratory Pelagic	Reef Fish
0 -0.5 ppt.	Adults		R	R		
	Eggs					
	Juveniles	C to HA	R to C	R		
	Larvae					
	Spawners					
0.5 - 5 ppt.	Adults	R	R	R to C		
	Eggs					
	Juveniles	C to HA	C to A	C	R	R
	Larvae					
	Spawners					
Relative Abundance: Blank - Not Present A – Abundant R – Rare HA - Highly Abundant C – Common (Variation in abundance due to seasonality) (NMFS, 1998)						

Table 3-2: Essential Fish Habitat For Life Stages

Species	Life Stage	Essential Fish Habitat
Brown Shrimp	Adults	Gulf of Mexico <110 m, Silt sand, muddy sand
	Juvenile	Marsh edge, SAV, tidal creeks, inner marsh
White Shrimp	Adults	Gulf of Mexico <33 m, Silt, soft mud
	Juvenile	Marsh edge, SAV, marsh ponds, inner marsh, oyster reefs
Red Drum	Adults	Gulf of Mexico & estuarine mud bottoms, oyster reef
	Juvenile	SAV, estuarine mud bottoms, marsh/water interface
Coastal Migratory Pelagic	Juvenile	Beaches, estuaries, inlets, Coastal & shelf, Gulf, pelagic
Reef fish	Juvenile	SAV, mangroves, sand, mud, reefs, hard bottom

Cultural Resources

Historic and prehistoric sites in the WBV Basin tend to be located along the natural levees of waterways that were used as transportation routes. The Mississippi River was the main means of transportation and its natural levees were the choice location for settlement. The surrounding coastal lakes and areas were gradually explored for natural resources and utilized as well. As the population along the Mississippi River increased, land along its natural levees became scarce. Settlers began to move further outward following waterways such as Bayou Lafourche, Bayou Segnette, Bayou Verret, Bayou des Allemands, and other bayous and rivers in the coastal area. Borrow sources located in Lakes Salvador and Cataouatche also have the potential to contain submerged cultural resources.

Prehistoric sites include hunting and food processing camps, hamlets, and village sites. Native Americans relied on hunting, fishing, and gathering of plants. Discovered archeological sites in the basin represent the continuous span of human occupation in Louisiana's Mississippi River Delta region, from the Tchefuncte period (600-200 B.C.) to the Plaquemine period (a.d. 1000-1200).

Types of historic sites include domestic buildings, plantation sites, farmsteads, military sites, commercial sites, industrial sites, boat landings, and hunting and fishing camps along the coast. In addition to terrestrial historic sites, the project area has the potential to contain historic shipwrecks. Bayou Lafourche, Bayou Segnette, Bayou des Allemands, as well as the other bayous in the area, have been a major means of transportation in the Louisiana "bayou country" since prehistoric times. The smaller bayous that fill the basin connecting larger bayous and lakes were also used by the local Native Americans as well as by trappers, hunters, and fishermen. Watercraft from all time periods could be present in the area. Most of the vessels used historically in this area were vernacular watercrafts.

In the early 1900s, various subsistence activities that were initially developed prior to the 20th century became more commercial in nature. Moss, first gathered for the making of beds and as filler in the construction of houses, was commercially processed and sold to the upholstery business as stuffing for furniture and car seats. Following World War II, the moss industry declined as the result of the wide availability of foam rubber and the increased cost of gathering moss. The lumber industry that had flourished in the late 1800s continued to grow with the harvesting of cypress throughout south Louisiana. Lumber towns and sawmills dotted the landscape until most of the virgin cypress forests were cut and the lumber companies moved westward.

The trapping of animals in south Louisiana began with Native Americans and continued on into the 1900s. Otter, muskrat, and nutria were trapped in the marshes and provided furs for the garment industry all over the world. Hunting camps and processing stations were located throughout the marsh. The demand for furs has declined over the years. Nutria are trapped today for food and bounties, to keep the population from expanding and destroying the marsh, or from causing problems in municipal canals.

Seafood, one of the most important natural resources in south Louisiana, has continued to become more important to the economy of Louisiana. In the middle of the 19th century, methods of preservation (such as the drying of shrimp and canning of oysters) made it possible to export seafood. The introduction of the gasoline motor and refrigeration allowed fishermen greater access to markets in New Orleans and the larger towns inland from the coast. Seafood processing camps that had been established all over the coast in the 1800s, including Manila Village, Bayou St. Malo, and the Isle de Caminada, were abandoned after being hit by numerous tropical storms and hurricanes. In the 1900s, many of these fishermen established new settlement and seafood processing businesses along the major waterways leading away from the coast. Fishing remains a major economic activity in south Louisiana.

Rice and sugar remained major cash crops across the coastal parishes. By the eve of World War II, bad weather, plant diseases, and economic policies had almost destroyed sugar production in south Louisiana. Truck farming of vegetables and citrus to towns and cities provided fresh vegetables at local markets. Other industries developed in south Louisiana in the 1900s that have shaped the economy of the state. The oil industry began in the early 1900s and continues to be a major industry. Large oil fields are located in the marshy areas of south Louisiana and offshore. Pockets of sulfur and salt are located across south Louisiana. The extraction of these natural resources became major industrial activities.

All of these economic activities have contributed to the constructed environment of south Louisiana. In addition to the residential homes, public buildings, and commercial buildings, these industries have contributed to the south Louisiana landscape and to the heritage of the area. Historic standing structures, archaeological sites, and landscape features associated with man's activities in the coastal area may be significant cultural resources. The State of Louisiana, Office of Cultural Development's Division of Archaeology maintains information on over 12,000 archaeological sites and thousands of historic standing structures.

Recreational Resources

Recreation areas in the WBV Basin include Salvador Wildlife Management Area (WMA), Timken WMA, JELA, Bayou Segnette State Park, and Lake Boeuf Wildlife Management Area. Other recreational features are provided by parishes and historic communities that attract visitors to a variety of heritage and cultural festivals, historical sites, parks offering opportunities for passive and active recreation that include tennis courts, soccer and softball fields, swimming pools, and golf courses. There are 37 boat launches throughout the WBV Basin. Appendix B-7 shows the number of fishing licenses, hunting licenses and boat registrations as well as the percent of state licenses and boat registrations in the WBV Basin.

The Louisiana Statewide Comprehensive Outdoor Recreation Plan (SCORP) provides a statewide inventory of recreation resources and identifies recreational needs. While regions defined in the SCORP do not fit perfectly within the WBV Basin, SCORP Region 1 and 3 and includes the WBV Basin. The state- and Federally-managed areas described previously represent just a portion of the more than 282,000 acres of recreational facilities inventoried for SCORP Region 1. Federal, state, parish, and municipal public recreational facilities within Region 1 provide more than 196,000 acres for hunting, 123 boat ramps, 1,833 picnic tables, 10 beaches, and 320-acres for camping with 263 tent sites and 1,739 trailer sites. Region 3 includes more than 107,000-acres for hunting, 194 boat lanes at 105 boat ramps; 131-acres with 365 tables for picnicking; 1 beach of 37-acres; and 71-acres for camping, 34 tent-sites and 422 trailer-sites. In a 2008 Residents Survey, most important activities for residents in Region 1 are visiting natural places, fishing, and visiting botanic gardens. Residents in Region 3 are identified fishing, visiting natural places, and public access to state waters as most important. Within the same survey, Region 1 residents had the highest participation rates in the following activities: driving for pleasure, fishing, and camping. Region 3 residents participated most in driving for pleasure, fishing, swimming, and camping.

Funds from the Land and Water Conservation Fund (L&WCF) have supported 65 different recreational projects within the same parishes as the WBV Basin since 1964. L&WCF provides funding for numerous boat ramps, other facilities or lands that enhance opportunities for recreation.

The following is a description of the federal and state recreation areas within the WBV Basin:

Salvador Wildlife Management Area

Salvador WMA is 31,520 acres and is located in St. Charles Parish, along the northwestern shore of Lake Salvador about 12 miles southwest of New Orleans. Access is limited to boat travel via three major routes: Bayou Segnette from Westwego into Lake Cataouatche, then west to area; Sellers Canal to Bayou Verrett into Lake Cataouatche, then west to area; or via Bayou Des Allemands. Accessibility into the interior marshes is excellent via the many canals, bayous, and ditches on the area.

Game species include waterfowl, deer, rabbits, squirrels, rails, gallinules, and snipe. Furbearing animals present are mink, nutria, muskrat, raccoon, opossum, and otter. Salvador supports a large population of alligators and provides nesting habitat for the bald eagle.

Excellent freshwater fishing is available on Lake Salvador. Bass, bream, crappie, catfish, drum, and garfish are abundant. Commercial fishing is prohibited on the WMA. Non-consumptive forms of recreation available are boating, nature study, and picnicking.

Timken Wildlife Management Area

The Timken WMA is a 3,000-acre marsh island that is leased by the City Park Commission of New Orleans. The area is identified as Couba Island on maps; however, it has been named the Timken WMA after the former landowner who donated it to the City Park Commission of New Orleans. The area is located immediately east of the Salvador Wildlife Management Area and can be accessed by Lake Cataouatche. Like the Salvador WMA, Timken WMA consists of fresh to intermediate marsh and provides excellent habitat for waterfowl, furbearers, and alligators. Game species include waterfowl, deer, rabbits, squirrels, rails, gallinules, and snipe. Furbearing animals present are mink, nutria, muskrat raccoon, opossum, and otter.

Jean Lafitte National Historical Park and Preserve

JELA consists of six physically separated sites, including the Acadian Cultural Center; Prairie Acadian Cultural Center; Wetlands Acadian Cultural Center; Barataria Preserve; Chalmette Battlefield and National Cemetery; and French Quarter Visitor Center. Only the Barataria Preserve Unit is within the project area. The Barataria Preserve features trails and waterways through bottomland hardwood forests, swamps, and marsh. Additionally, there is an Education Center providing curriculum-based programming for school groups and a visitor center providing a film and exhibits. Hunting; trapping; and fishing, including commercial fishing, is permitted by the NPS at the preserve.

Bayou Segnette State Park

Bayou Segnette State Park offers recreational opportunities including, boating, fishing, canoeing, picnicking, playgrounds, a one mile nature trail, boat launches and a wave pool. Bass, catfish, bream, perch, redfish and trout are common in the area. Twenty waterfront cabins are available for overnight rental, as well as, 98 locations for RV and tent camping. The park also includes comfort stations with showers and laundry, an RV dump station, and a group camp with kitchen and dormitories for up to 120 people.

Lake Bouef WMA

The Lake Boeuf WMA is located east of Louisiana Highway 308, north of Raceland, Louisiana. The area includes approximately 800 acres of fresh marsh/swamp habitat and is accessible only by boat via Theriot Canal, Foret Canal, or Lake Boeuf. Hunting opportunities include archery, small game, waterfowl, and unmarked hogs.

Aesthetic Resources

The WBV Basin is a large area that includes an abundance of water resources, landscape types, terrain, historical and culturally significant features. In terms of public and institutional significance, the area boasts the Great River Road, which runs adjacent to the Mississippi River Road, the Louisiana Scenic Bayou Byway, which runs from Donaldsonville south towards Houma, and the Wetlands Cultural Trail, which is made up of a plethora of roadways crisscrossing the area around Houma and southeast towards Larose and Golden Meadow. The byways in the basin range from state designated roads to All American Roads.

Land use varies across the spectrum, but the majority of uses include residential, agricultural and some light highway and commercial. There are a great number of urban areas including that of southern New Orleans (including Algiers, Harvey, Gretna, Westwego, Estelle, Timberlane, a.k.a. "the West Bank), and other smaller communities such as Larose, Raceland, and Donaldsonville, just to name a few. The majority of communities throughout the basin are cloistered along the banks of major waterways and roadways where natural levees and ridges can be found.

With the variety of land uses present, user activity is relatively high throughout the region. The region is filled with commuters going to and from the New Orleans Metro Area for work, hunters and fishermen, and shrimping and shipping, just to name a few.

Access throughout is abundant with major U.S. Highways and State Highways crisscrossing the region. This being said, there are still many areas and thousands of acres that are remote; where access can only be attained via watercraft.

Air Quality

The EPA, under the requirements of the Clean Air Act of 1970 (CAA), has established National Ambient Air Quality Standards (NAAQS) for seven contaminants, referred to as criteria pollutants (40 CFR 50). These are carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM) less than 10 microns in diameter (PM_{10}), PM less than 2.5 microns in diameter ($PM_{2.5}$), lead, and sulfur dioxide. The NAAQS standards include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. The primary and secondary standards are presented in Table 3-5.

Areas that meet the NAAQS for a criteria pollutant are designated as being "in attainment;" areas where a criteria pollutant level exceeds the NAAQS are designated as being "in nonattainment." Currently, all parishes in the WBV Basin are in attainment of NAAQS standards.

Noise

The Noise Control Act of 1972 both regulates and promotes an environment for all Americans free from noise that jeopardizes their health or welfare. The Occupational Safety and Health Standards (29 CFR, part 1910) set standards regarding protection against the effects of noise exposure. Noise levels exceeding sound pressure levels are technically significant because noise can negatively affect the physiological or psychological well-being of an individual (Kryter, 1994). These effects can range from annoyance to adverse physiological responses, including permanent or temporary loss of hearing, and other types of disturbance to humans and animals, including disruption of colonial nesting birds. Noise is publicly significant because of the public's concern for the potential annoyance and adverse effects of noise on humans and wildlife.

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by EPA and has been adopted by most Federal agencies (USEPA 1974). A DNL of 65 weighted decibels (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by EPA as a level below which there is no adverse impact (USEPA 1974).

Most parishes in the WBV Basin have noise ordinances addressing loud machinery. Noise is typically associated with human activities and habitations, such as the operation of commercial and recreational boats; water vessels; air boats, and other recreational vehicles; aircraft; machinery and motors; and human residential-related noise (air conditioner, lawn mower, etc.).

Socioeconomics/Land Use, Transportation, Navigation, and Commercial Fisheries

The WBV HSDDRS construction impacts would be mitigated in the Barataria Basin, between Bayou Lafourche and the Mississippi River. These resources are institutionally significant because of the NEPA of 1969; the Estuary Protection Act; the Clean Water Act; the River and Harbors Acts; the Watershed Protection and Flood Protection Act; and the Water Resources Development Acts. Of particular relevance is the degree to which the proposed action affects public health, safety, and economic well-being and the quality of the human environment. These resources are technically significant because the social and economic welfare of the Nation may be positively or adversely impacted by the proposed action. These resources are publicly significant because of the public's concern for health, welfare, and economic and social well-being from water resources projects.

Major water bodies within the basin include Lac des Allemands, Lake Boeuf, Bayou Gauche, Lake Salvador, Lake Cataouatche, and the Mississippi River. These water bodies and adjacent wetlands provide nursery and foraging habitats which support varieties of economically important marine and freshwater fishery species including but not limited to shrimp, bay anchovy, catfish, and blue crab (see Appendix B-5 for full list of species). Additionally, the nearby lower section of the Mississippi River is a major deep draft navigation channel that supports four of the largest U.S. ports which are the Ports of Baton Rouge, South Louisiana, New Orleans and Plaquemines. All of these ports service liquid and dry bulk cargo ships with the Port of New Orleans also servicing container and ships, bulk cargo ships and cruise ships.

A portion of Interstate 310 (I-310) and several state highways fall within the WBV basin. I-310 and many of the state highways serve as major commercial transport routes and also as evacuation routes during hurricane events. There are numerous local roads that support more localized traffic.

The WBV basin supports agricultural lands of which 27 percent of the soils are considered prime farmland. The primary agricultural productions within the basin are sugar cane and soy bean.

Prime and Unique Farmlands

In 1980, the CEQ directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS). Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops *and that is available for these uses* [emphasis added]. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops.

There are no unique farmlands present within the WBV basin. However, prime farmlands are present and make up approximately 227,241.7 acres, or 27 percent of the soils; breakdown by parish is as shown in Appendix B-6. There are map units designated as prime farmlands at the Barataria Preserve of Jean Lafitte (JELA). However, these areas are unavailable for agricultural uses because of their incorporation into JELA. There are no map units designated as unique farmlands at the Barataria Preserve.

Natural & Scenic Rivers

In 1970, the Louisiana Legislature created the Louisiana Natural and Scenic Rivers System under the Wild and Scenic Rivers Act of 1968 (16 USC 1271-1287). The System was developed for the purpose of preserving, protecting, developing, reclaiming, and enhancing the wilderness qualities, scenic beauties, and ecological regimes of certain free-flowing Louisiana streams.

Certain activities are prohibited on designated Natural and Scenic Rivers because of their detrimental ecological impacts on the streams. These include, but are not limited to; channelization, clearing and snagging, channel realignment, reservoir construction, the commercial cutting of trees within 100 feet of the ordinary low water mark and the use of motor vehicles or other wheeled or tracked vehicles on a designated system stream. Scenic River Permits are required for all activities on or near System Rivers that may detrimentally impact the ecological integrity, scenic beauty or wilderness qualities of those rivers.

The only Natural and Scenic River in the WBV Basin is Bayou Des Allemands which is over six miles from the project area.

3.2 SIGNIFICANT RESOURCES

This section contains a list of the significant resources located in the vicinity of the proposed mitigation projects, and describes in detail those resources that would be impacted, directly or indirectly, by construction of them. Navigation and Commercial Fisheries Resources are not considered relevant resources for the project. Navigation and Commercial Fisheries resources are not located in the immediate vicinity of the site.

Since the projects mitigating the general FS Swamp impacts and FS BLH-Wet impacts are located on the same site or at an unknown site (for mitigation banks), documentation of the affected environment for these projects has been done by site instead of by habitat type requiring mitigation. Habitat specific impacts are explained in the analysis for any situations where impacts would differ based on habitat type.

The resources described in this section are those recognized as significant 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. Further detail on the

significance of each of these resources can be found by contacting the CEMVN, or on www.nolaenvironmental.gov, which offers information on the ecological and human value of these resources, as well as on the laws and regulations governing each resource. Search for "Significant Resources Background Material" in the website's digital library for additional information. See Appendix A-1, for the habitats found in the WBV Basin. See Appendices B-2, B-3, B-4 and B-5, for scientific names of species identified throughout the document.

3.2.1 MITIGATION FOR GENERAL FS SWAMP and FS BLH IMPACTS

Mitigation Bank

Various mitigation banks within the WBV basin may be capable of supplying credits needed to meet the FS Swamp and BLH-Wet mitigation requirements. Since the bank(s) that may ultimately be selected to provide the necessary mitigation credits is unknown, the existing conditions present at the bank site(s) are similarly unknown. Existing bank habitat quality varies depending on the success criteria met, as specified in the bank's MBI. Typically, as mitigation success criteria are met and the quality of the habitat increases within the bank, more credits are released for purchase.

Hwy 307 Restoration Project

3.2.1.1 Wetlands and other Surface Waters

This area is primarily bare land consisting mainly of agricultural lands. Therefore, there are no known wetlands or other surface waters currently existing at the Hwy 307 site.

3.2.1.2 Wildlife

Possible animals that could be found within this area would be skunks, rabbits, deer, and various species of birds including eagles and other raptors, red-winged blackbirds and swallows. There are currently no documented bald eagle nests in the project area. Prior to construction, a nest survey would be conducted. If a nest is found the National Bald Eagle Management Guidelines (Appendix G) would be followed.

3.2.1.3 Threatened and Endangered Species

There are 11 listed species in the WBV basin (See appendix B-4). Based on a parish search conducted on the USFWS endangered species website in March 2019, none of the species under USFWS and/or NMFS jurisdiction are expected to be found in the project area (https://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=22057).

3.2.1.4 Cultural Resources

There have been no previous surveys for cultural resources conducted in the proposed Highway 307 project area. The areas where restoration activities are to occur have been historically used for agriculture and have been subjected to repeat plowing and other activities associated with agricultural use. A search of the Louisiana Division of Archaeology Cultural Resources Map indicates that a Phase I cultural resources survey was conducted along the Highway 307 corridor in 1982. A review of the 1982 report found that the work did not constitute an actual Phase I survey for cultural, but was more of a review of previous survey work and findings. The closest identified cultural resource is located at the north end of the project area and has been bisected by Highway

307. The site is recorded as a possible mound/cemetery complex with three earthen mounds that were possibly destroyed by previous excavation, and were at risk of further damage during the construction of Highway 307. The name of the site is Bayou Chactimahan, but the 1982 report provides a discussion of the site by its other designation, the Bowie Site. As there has been no extensive survey for cultural resources conducted in the area, little remains known regarding the possibility of cultural resources that could exist in the project area. Though the area has been heavily disturbed by plowing and the construction of Highway 307, there remains a possibility that intact cultural resources could exist below the plow line and outside of the highway corridor. In accordance with the Programmatic Agreement executed on June 18, 2013, the proposed Hwy 307 project would be surveyed for cultural resources prior to project implementation.

3.2.1.5 Aesthetic Resources

The Highway 307 project corridor is remote, but it is a major thoroughfare with great views into the natural landscape. The land use of the area is agricultural, vacant and rural. User activity is relatively low in this region. River Road Scenic Byway is the nearest state designated scenic byway. There are no other known Federal or State designated Scenic Byways in the area. There are no known state protected lands in the area. There are no known state recognized scenic streams or rivers.

3.2.1.6 Air Quality

This project is in Lafourche Parish which is currently in attainment of NAAQS.

3.2.1.7 Noise

There are commercial and residential housing units located along Highway 308, which is directly south of the project area. Noise is produced by consistent and sporadically heavy traffic on this road. The nearest major navigable waterway is Bayou Lafourche, which is adjacent to the Lake Boeuf project area. Sporadic boat traffic may produce noise levels that exceed 55 dBA within the area.

3.2.1.8 Hazardous, Toxic, and Radioactive Waste

An ASTM E 1527-05 Phase I Environmental Site Assessment (ESA) for this project was completed in May 2015. However, since the ESA is greater than three years old, an updated Phase I ESA would be required prior to construction of the project. A copy of Phase 1 ESA will be maintained on file at the U.S. Army Corps of Engineers, New Orleans District Headquarters. No recognized environmental conditions were identified in relation to the project site; therefore, the probability of encountering HTRW for the proposed action is considered low based on the initial site assessment.

3.2.1.9 Socioeconomics/Land Use Environmental Justice and Transportation

This project is located on existing agricultural fields that are currently being farmed. Two communities are in the vicinity of the project. Des Allemands, located in St. Charles Parish, is seven miles north of the mitigation site, and Raceland, located in Lafourche Parish, is about three miles to the south of the site. Both communities are identified by the U.S. Census Bureau as a Census Designated Place (CDP). Census data for Raceland shows that approximately 35 percent of residents are minority and approximately 21 percent of people have incomes below the poverty level. Census data for Des Allemands show that approximately 16 percent of residents are minority and approximately 6 percent of people have incomes below the poverty level. The mitigation site

would be located in Lafourche Parish, where only 16 percent of residents have income below the poverty level. See Appendix B-10 and B-11 for more information. There were 1,138,954 acres of farm land in Lafourche Parish in 2017 (US Department of Agriculture, National Agricultural Statistics Service, 2017 census). The Hwy 307 project area is typically used for agricultural purposes and most land owners live in homes fronting Hwy 308. The use of this land as sugarcane farming may contribute, though minimally, to Lafourche Parish business revenues and even lesser to tax revenues. Hwy 307 is a remote Hwy bordered, on the southernmost portion (where the proposed project is located), by forested wetlands and agricultural land. The northernmost portion of the Hwy does contain some homes. Average daily traffic on Highway 307 near the project site was 1.019 in 2019.

3.2.1.10 Prime and Unique Farmland

The majority of the Hwy 307 FS BLH site is currently being used for agriculture and pasture land. Approximately 96% (530 acres) of the soils in the project area are classified as prime farmlands; Cancienne silty clay loam, Cancienne silt loam, Schriever silty clay loam, and Schriever clay.

4. ENVIRONMENTAL CONSEQUENCES OF THE FINAL ARRAY OF MITIGATION PROJECTS

4.1 INTRODUCTION

This section describes the direct, indirect and cumulative effects of the potential replacement projects for the FS BLH-Wet and FS swamp features. Table 4-1 shows those significant resources found within the project area, and notes whether they would be impacted (adversely or beneficially) by implementation of the projects. The period of impact analysis begins when project construction is completed and generally extends 50 years for USACE projects.

Table 4-1 Significant Resources in Project Area

Significant Resource	Impacted	Not Impacted
Wetlands	X	
Wildlife	X	
Threatened or Endangered Species		X
Cultural Resources		X
Air Quality	X	
Aesthetics	X	
Socioeconomic Resources: Land Use, Transportation	X	
Prime Farmland	X	

Direct impacts are those that are caused by the action taken and occur at the same time and place (40 CFR §1508.8(a)). Indirect impacts are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8(b)). Cumulative impacts are the effects on the environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future action, regardless of what agency or person undertakes such actions. More information on the Cumulative impacts is discussed in section 6.

The following resources would not be impacted by any of the alternatives and therefore will not be discussed further: threatened and endangered species, water quality, essential fish habitat, recreation, environmental justice, navigation, commercial fisheries, and natural and scenic rivers.

Since the projects mitigating the general FS BLH-Wet and FS Swamp impacts are located on the same site or at an unknown site (for mitigation banks), the analysis of impacts to significant resources has been done by site instead of by the habitat requiring mitigation.

4.2. *MITIGATION FOR GENERAL FS BLH- WET and SWAMP IMPACTS*

4.2.1 Wetlands and other Surface Waters

4.2.1.1 Hwy 307 Restoration Project (TSMMP)

Direct Impacts
There would be a beneficial impact to wetlands as approximately 133 acres of agricultural land would be converted to BLH-Wet habitat and/or 287 acres converted to swamp habitat.

Indirect and cumulative Impacts

By degrading the existing berms around the proposed project area there would be an indirect beneficial impact to the surrounding wetlands as the hydrology would return to a condition that more closely resembles the historic condition. Implementation of this project would prevent an overall loss in the basin of BLH-Wet and/or swamp habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands.

4.2.1.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to wetlands and other surface waters would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.2 Wildlife

4.2.2.1 Hwy 307 Restoration Project (TSMMP)

Direct Impacts
Approximately 420 acres of agricultural field would be converted back to forested wetlands. Wildlife present at the time of construction would be temporarily displaced to adjacent habitats due to noise, movement and vibration. Some slower moving animals (e.g. mice, moles) may experience demise during construction. It is anticipated that displaced animals would return once construction is complete and that the construction of high quality forested wetland habitat would provide additional area for the expansion of existing habitat populations.

Indirect Impacts
With the restoration of approximately 133 acres BLH-Wet habitat and/or 287 acres of swamp habitat, species that historically populated the area, and currently populate the adjacent forested areas, would again utilize the area. Wildlife abundance and diversity would increase in the area as a monoculture of sugar cane would be replaced by a diversity of BLH and/or swamp species that would provide a variety of ecological niches for colonization. If bald eagle nests are discovered, the National Bald Eagle Management Guidelines (appendix G) would be followed to avoid and minimize impacts to this species.

Cumulative Impacts
This project would prevent an overall loss in the basin of BLH and/or swamp habitat necessary for many wildlife species. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would help retard the loss of wetlands and overall decline of wildlife species within the basin and would be beneficial to preserving species bio-diversity.

4.2.2.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to wildlife would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.3 Cultural Resources

4.2.3.1 Hwy 307 Restoration Project (TSMMP)

Direct Impacts
Activities associated with this project have the potential to directly impact cultural resources in the project area. In accordance with the Programmatic Agreement executed on June 18, 2013, the proposed Hwy 307 project would be surveyed for cultural resources prior to project implementation. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP will be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect and Cumulative Impacts
The erosion and land loss caused by natural forces and human activity would continue to impact cultural resources in the project area. The loss of land within the project area threatens the existence and integrity of cultural resources. The implementation of measures to restore ecosystems and habitat could work to reduce continued land loss and erosion, and prevent exposure and impact to significant cultural resources.

This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, could help to prevent continued land loss and impacts to known and undiscovered cultural resources within the basin. At present the Hwy 307 project area is primarily used for agriculture. Removing these lands from agricultural use and restoring the areas to bottomland hardwoods could prevent future impacts to cultural resources that may exist within the project area.

4.2.1.4.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to cultural resources would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.4 Aesthetic Resources

4.2.4.1 Hwy 307 Restoration Project (TSMMP)

Direct, Indirect and Cumulative Impacts
The introduction of swamp and/or bottomland hardwoods would greatly enhance the visual resources of the Highway 307 project region. Under the governance of technical significance, and in terms of the basic design elements, the proposed measures would greatly supplement the value of view sheds from L.A. Highway 307 and the surrounding local roads. Trees could provide framing elements for open areas and undergrowth, create texture and repetition, and provide a variety of color to the area that wasn't there before. This measure could increase wildlife diversity and the opportunity for viewing wildlife as well.

Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes. The project could have minimal cumulative impacts to visual resources in the study area.

4.2.4.2 Mitigation Bank Project

Direct Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative air quality impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.5 Air Quality

4.2.5.1 Hwy 307 Restoration Project (TSMMP)

Direct, indirect and Cumulative Impacts
During construction of the Hwy 307 project features, an increase in air emissions could be expected. These emissions could include 1) exhaust emissions from operations of material delivery and removal/dump trucks and various types of non-road construction equipment such as loaders, excavators, etc. and 2) fugitive dust due to earth disturbance. The principal air quality concern associated with the proposed activities is emission of fugitive dust near demolition and construction areas. The on-road trucks and private autos used to access the work area would also contribute to construction phase air pollution in the project neighborhood when traveling along local roads. Emission of fugitive dust near the construction area is not anticipated to be a problem. Any impacts to air quality, such as vehicle exhaust emissions, would be temporary during the construction period. Best management practices would be implemented to reduce dust and particulate matter emissions. Lafourche Parish is expected to remain in attainment of all NAAQS.

4.2.5.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative air quality impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.6 Noise

4.2.6.1 Hwy 307 Restoration Project (TSMMP)

Direct and Indirect Impacts
Construction equipment necessary for the initial project construction phase would include dump trucks, bulldozers, tractors, graders, and similar equipment. Table B-8 describes noise emission levels for construction equipment expected to be used during the proposed construction activities. This table shows the anticipated noise levels at various ranges based on data from the Federal Highway Administration (FHWA 2006).Noise levels may result in wildlife avoiding the project area

during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Noise levels would not result in impacts to the human environment as the closest residential area is approximately three miles southwest of the project site.

Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WBV basin as the construction activities would be temporary during the period of construction, restricted to daylight hours and avoidance of the project area by wildlife would occur due to the movement of machinery in the area even without the additional noise.

4.2.6.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, there would be no new direct, indirect or cumulative noise impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.7 Hazardous, Toxic, and Radioactive Waste

4.2.7.1 Hwy 307 Restoration Project (TSMMP)

Direct, Indirect and Cumulative Impacts
An ASTM E 1527-05 Phase 1 Environmental Site Assessment (ESA), HTRW 15-04 dated May 7, 2015, has been completed. However, since the ESA is greater than three years old, an updated Phase I ESA would be required prior to construction of the project. A copy of Phase 1 ESA is on file at the U.S. Army Corps of Engineers, New Orleans District Headquarters. No recognized environmental conditions were identified in relation to the project site; therefore, the probability of encountering HTRW for the proposed action is considered low based on the initial site assessment. If a recognized environmental condition were to be identified in relation to the project site, the U.S. Army Corps of Engineers, 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.

4.2.7.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect, or cumulative HTRW impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.8 Socioeconomics/Land Use Environmental Justice and Transportation

4.2.8.1 Hwy 307 Restoration Project (TSMMP)

Direct Impacts
There would be minimal direct impacts to transportation in nearby residential areas during construction due to heavy vehicle traffic in the vicinity of the restoration site. It is expected that once the necessary construction equipment is on site that no additional transportation impacts would occur until the project construction is complete. Daily traffic by construction workers is

expected to be no more than 10 trips per day minimal and have no significant impact on the residential neighborhood. Average daily traffic on Highway 307 in 2018 was 1,019. The increased traffic due to construction is expected to be a one percent increase temporarily during construction.

The activities associated with the proposed action are not anticipated to adversely impact low income or minority residents. Construction activities are expected to be minimal, permanent effects are not expected and housing is not in proximity to the site. The mitigation construction activities will take place in a rural setting, and are minimally adverse while the nearest housing is over three miles south, in Raceland. Construction of the project is not expected to produce unacceptable noise levels and there would be only minimal transportation impacts which should not impact the human environment. We have not identified any disproportionately high adverse impacts on human health or the environment associated with the proposed action.

Indirect Impacts
There would be minimal indirect land use impacts as private agricultural land is removed from agricultural use which in turn would minimally impact business revenue and ultimately local tax revenues, to a lesser degree. The impact to farm land is expected to be approximately a .04 percent decrease in farm land which in turn will have a minimal indirect impact to the revenue and local tax revenues.

Cumulative Impacts
The cumulative impacts created by movement of equipment to the restoration site may minimally and temporarily affect transportation and socio-economic resources. The project may add minor and temporary impacts to any other past, present and possible future activities within the WBV Basin.

4.2.8.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to socioeconomics/land use, environmental justice, transportation, navigation and commercial fisheries would be incurred from the purchase of these credits for the HSDRRS mitigation. However, depending on the amount of mitigation bank credits available in the basin at the time of credit purchase for the HSDRRS mitigation, use of mitigation bank credits to offset HSDRRS BLH-Wet and/or swamp impacts may significantly reduce the number of credits available to permittees to compensate for BLH and/or swamp impacts authorized by Department of the Army Section 10/404 permits. In the event sufficient credits are not available to offset impacts associated with a proposed permit, the district engineer would determine appropriate permittee responsible compensatory mitigation based on the factors described in 33 CFR Part 332.3(b).

4.2.9 Prime and Unique Farmland

4.2.9.1 Hwy 307 Restoration Project (TSMMP)

Direct Impacts
Approximately 420 acres of prime farmland would be impacted by this project, including Cancienne silty clay loam Cancienne silt loam, Schriever silty clay loam, and Schriever clay. Once the site is developed for mitigation, this area could not be used as productive farmland in the future.

Indirect Impacts

There are approximately 104,520.7 acres combined of Cancienne silty clay loam, Cancienne silty loam, and Schriever clay in Lafourche parish (NRCS, 2013). Since the majority of the project area is presently under agricultural use, current agricultural production in the parish would be affected. The project would result in less than 0.5% of the soils currently found in Lafourche Parish being removed from future potential agricultural development.

Cumulative Impacts
The implementation of this project would affect approximately 420 acres of prime farmland. The cumulative impacts to prime farmlands would be the impacts of the proposed project combined with other losses of prime farmland soils resulting from natural processes and development in Lafourche Parish. A negligible effect on agricultural production in the parish would occur due to the small amount of prime farmland affected.

4.2.9.2 Mitigation Bank Project

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to prime and unique farmland would be incurred from the purchase of these credits for the HSDRRS mitigation.

5. ENVIRONMENTAL CONSEQUENCES OF MITIGATION PLAN ALTERNATIVES

5.1 INTRODUCTION

This section describes the direct and indirect effects of the proposed projects when combined to make up the MMPAs.

5.2 ALTERNATIVES

Natural and scenic rivers, threatened and endangered species, fisheries and aquatic resources, water quality, essential fish habitat and recreational resources would not be impacted by any of the action alternatives and therefore will not be discussed in those sections.

5.2.1 NO ACTION ALTERNATIVE

Direct Impacts
Without construction of the proposed action, there would be an overall loss of BLH and swamp habitat and the associated functions within the system. CEMVN's legal obligation to compensate for habitat losses caused by construction of the HSDRRS would not be satisfied.

Indirect Impacts
Under the No Action alternative, wildlife, water quality, aesthetics and recreation would be indirectly impacted.

5.2.1.1 Wildlife

Without implementation of the proposed action there would be a loss of BLH and swamp habitat in the watershed that once provided cover, resting, nesting and foraging habitat for wildlife. Wildlife species dependent on these habitat types for these activities would be permanently affected resulting in possible reduction in their overall health and ultimately a reduction in their population.

5.2.1.3 Water Quality

Wetlands act as filtering systems removing sediment, nutrients and pollutants from water thereby helping sustain the water quality in the watershed. Not replacing the BLH and swamp habitats would in turn equate to a loss of wetland functions that contribute to the enhancement of water quality in the watershed.

5.2.1.4 Aesthetics

Without the restoration of bottomland hardwoods and swamp habitats there would be a permanent impact to visual resources in the watershed because bottomland hardwoods and swamp habitats enhance the value of view sheds by providing a variety of color and texture and increasing wildlife diversity.

5.2.1.5 Recreation

Without the restoration of bottomland hardwoods and swamp habitats, recreational opportunities linked to these habitat types, like hunting and bird watching, would be permanently lost in the watershed.

5.2.2 TENTATVIVELY SELECTED MODIFIED MITIGATION PLAN ALTERNATIVE

The TSMMPA consists of construction of the Corps constructed projects at Hwy 307 for both the FS BLH-Wet and Swamp features of the mitigation plan. Table 5.1 presents the new MMP mitigating all impacts from construction of the improvements to the WBV HSDRRS.

Table 5.1 Projects that make up the TSMMPA

Habitat Type	Mitigation Projects in MMPA
General FS BLH-wet	Hwy 307 BLH-Wet Restoration
General FS Swamp	Hwy 307 Swamp Restoration

5.2.2.1 Wetlands and other Surface Waters

Direct Impacts
There would be a beneficial impact to wetlands as approximately 133 acres of agricultural land would be converted to BLH-Wet at the Hwy 307 project site; approximately 287 acres of agricultural land would be converted to swamp at the Hwy 307 project site.

Indirect Impacts
Implementation of this plan would prevent an overall loss in the basin of wetland habitat.

5.2.2.2 Wildlife

Direct Impacts
Approximately 133 acres of agricultural land would be converted to BLH-Wet at the Hwy 307 project site. Approximately 287 acres of agricultural land would be converted to swamp at the Hwy 307 project site. Any wildlife present at the time of construction would be temporarily displaced to adjacent habitat due to noise, movement, and vibration. It is anticipated they would return once construction is complete.

Indirect Impacts
Beneficial impacts would be the restoration and enhancement of approximately 133 acres of BLH habitat and restoration of approximately 287 acres of swamp which would offer better shelter and foraging grounds for wildlife in the area.

5.2.2.3 Cultural Resources

Direct Impacts
Activities associated with this project have the potential to directly impact cultural resources in the project area. Based on background research indicating that no Phase I cultural resources surveys have been conducted in the Hwy 307 project area, the area would be surveyed for cultural resources prior to project implementation. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as in accordance with the stipulations of the Programmatic Agreement as executed on June 18, 2013. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP will be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect Impacts
The erosion and land loss caused by natural forces and human activity would continue to impact cultural resources in the project area. The loss of land within the project area threatens the existence and integrity of cultural resources. The implementation of measures to restore

ecosystems and habitat could work to reduce continued land loss and erosion, and prevent exposure and impact to significant cultural resources. At present the Hwy 307 project area is primarily used for agriculture. Removing these lands from agricultural use and restoring the areas to bottomland hardwoods could prevent future impacts to cultural resources that may exist.

5.2.2.4 Aesthetic Resources

Direct and Indirect Impacts
The introduction of BLH and swamp would greatly enhance the visual resources of the project region. Temporary impacts could potentially occur due to construction efforts in the area.

5.2.2.5 Air Quality

Direct and Indirect Impacts
During construction of the Hwy 307 project features, an increase in air emissions could be expected. These emissions could include 1) exhaust emissions from operations of material delivery and removal/dump trucks and various types of non-road construction equipment such as loaders, excavators, etc. and 2) fugitive dust due to earth disturbance. The principal air quality concern associated with the proposed activities is emission of fugitive dust near demolition and construction areas. The on-road trucks and private autos used to access the work area would also contribute to construction phase air pollution in the project neighborhood when traveling along local roads. Emission of fugitive dust near the construction area is not anticipated to be a problem.

Any site-specific construction effects would be temporary and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project areas are in parishes in attainment of NAAQS, a conformity analysis is not required.

5.2.2.6 Noise

Direct and Indirect Impacts
Construction equipment necessary for the initial project construction phase would include dump trucks, bulldozers, tractors, graders, and similar equipment. Table B-8 describes noise emission levels for construction equipment expected to be used during the proposed construction activities. This table shows the anticipated noise levels at various ranges based on data from the Federal Highway Administration (FHWA 2006).These pieces of equipment exceed noise levels above 55 dBA (see Appendix B-8). Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Noise levels would not result in impacts to the human environment as the closest residential area is approximately three miles southwest of the project site.

5.2.2.7 Hazardous, Toxic, and Radioactive Waste

Direct, and Indirect
An ASTM E 1527-05 Phase 1 Environmental Site Assessment (ESA), HTRW 15-04 dated May 7, 2015, has been completed. However, since the ESA is greater than three years old, an updated Phase I ESA would be required prior to construction of the project. A copy of Phase 1 ESA is on file at the U.S. Army Corps of Engineers, New Orleans District Headquarters. No recognized environmental conditions were identified in relation to the project site; therefore, the probability of encountering HTRW for the proposed action is considered low based on the initial site assessment. If a recognized environmental condition were to be identified in relation to the project site, the U.S.

Army Corps of Engineers, 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.

5.2.2.8 Socioeconomics/Land Use, and Transportation

Direct and Indirect Impacts
There would be direct land use impacts as private agricultural land is removed from agricultural use which in turn would impact business revenue and ultimately local tax revenues to some degree. There would be minimal indirect impacts to transportation in nearby residential areas during construction due to heavy vehicle traffic in the vicinity of the restoration site. It is expected that once the necessary construction equipment is on site that no additional transportation impacts would occur until the project construction is complete. Daily traffic by construction workers is expected to be minimal and have no significant impact on the residential neighborhood.

5.2.2.9 Prime and Unique Farmland

Direct and Indirect Impacts
Approximately 420 acres of prime farmland would be impacted in the Hwy 307 project area, including 190.89 acres of Cancienne silty clay loam, 145.95 acres of Cancienne silt loam, 75.35 acres of Schriever silty clay loam, and 118.09 acres of Schriever clay. Once the site is developed for mitigation, the area could not be used as productive farmland in the future.

5.2.3 MODIFIED MITIGATION PROJECT ALTERNATIVE 2

This alternative consists of the purchase of mitigation bank credits for both FS BLH-Wet and FS Swamp features of the mitigation plan.

Purchase of credits would be dependent on receipt of an acceptable proposal and total purchase cost. No particular bank(s) is (are) proposed for use at this time. The bank(s) from which credits would be purchased would be selected through a solicitation process, through which any mitigation bank meeting eligibility requirements and having the appropriate resource type of credits could submit a proposal to sell credits. If appropriate and cost-effective, the Corps may choose to purchase mitigation bank credits from more than one bank to fulfill the compensatory mitigation requirements for a particular habitat type.

Since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to any of the resources would be incurred from the purchase of these credits for the HSDRRS mitigation. However, depending on the amount of mitigation bank credits available in the basin at the time of credit purchase for the HSDRRS mitigation, use of mitigation bank credits to offset HSDRRS BLH-Wet and/or swamp impacts may significantly reduce the number of credits available to permittees to compensate for BLH and/or swamp impacts authorized by Department of the Army Section 10/404 permits.

5.2.4 MODIFIED MITIGATION PROJECT ALTERNATIVE 3

This alternative is a combination of either the FS BLH-Wet or FS Swamp Corps constructed project and the purchase of either BLH-Wet or swamp mitigation bank credits.

Purchase of credits would be dependent on receipt of an acceptable proposal and total purchase cost. No particular bank(s) is (are) proposed for use at this time. The bank(s) from which credits would be purchased would be selected through a solicitation process, through which any mitigation

bank meeting eligibility requirements and having the appropriate resource type of credits could submit a proposal to sell credits. If appropriate and cost-effective, the Corps may choose to purchase mitigation bank credits from more than one bank to fulfill the compensatory mitigation requirements for a particular habitat type.

5.2.4.1 Wetlands and other Surface Waters

Direct and Indirect Impacts
Since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to wetlands and other surface waters, within the WBV basin, would be incurred from the purchase of these credits for the HSDRRS mitigation.

Impacts from the Corps constructed feature would be the same as discussed in section 5.2.2.1; however, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.2 Wildlife

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to wildlife in the WBV Basin would be incurred from the purchase of these credits for the HSDRRS mitigation.

Impacts from the Corps constructed features would be the same as discussed in section 5.2.2.2; however, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.3 Cultural Resources

Activities associated with this project have the potential to directly impact cultural resources in the project area. Impacts from constructing permitted mitigation banks have been assessed through NEPA compliance achieved during the Regulatory permitting process, no new impacts to cultural resources would be incurred from the purchase of these credits.

Impacts from the Corps constructed feature would be the same as discussed in section 5.2.2.3; however, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.4 Aesthetic Resources

Direct and Indirect Impacts
Purchase of mitigation credits from an approved mitigation bank will have negligible direct impacts to visual resources.

The Corps constructed features would be the same as discussed in section 5.2.2.4; however, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.5 Air Quality

Direct and Indirect Impacts

Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct or indirect air quality impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

The Corps constructed features would be the same as discussed in section 5.2.2.5; however, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.6 Noise

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, there would be no new direct or indirect noise impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

The Corps constructed features would be the same as discussed in section 5.2.2.6; however, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.7 Hazardous, Toxic, and Radioactive Waste

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct or indirect HTRW impacts to would be incurred from the purchase of these credits for the HSDRRS mitigation.

The Corps constructed features would be the same as discussed in section 5.2.2.7; however, the chance of encountering HTRW could potentially be lower than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.8 Socioeconomics/Land Use, Transportation,

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct or indirect impacts to socioeconomics/land use, environmental justice, transportation, navigation and commercial fisheries would be incurred from the purchase of these credits for the HSDRRS mitigation. However, depending on the amount of mitigation bank credits available in the basin at the time of credit purchase for the HSDRRS mitigation, use of mitigation bank credits to offset HSDRRS impacts may significantly reduce the number of credits available to permittees to compensate for impacts authorized by Department of the Army Section 10/404 permits. In the event sufficient credits are not available to offset impacts associated with a proposed permit, the district engineer would determine appropriate permittee responsible compensatory mitigation based on the factors described in 33 CFR Part 332.3(b).

The Corps constructed features would be the same as discussed in section 5.2.2.8; however, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

5.2.4.9 Prime and Unique Farmland

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct or indirect impacts to prime and unique farmland would be incurred from the purchase of these credits.

The Corps constructed features would be the same as discussed in section 5.2.2.9; however, the impacts would be less as only a portion of the prime soils discussed in that section would be impacted.

6.0 CUMULATIVE IMPACTS

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. Cumulative impact is defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts were addressed for each project and resource in the preceding sections and include both beneficial and adverse impacts depending on the resource. This section provides an overview of the MMPAs and other actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed.

Appendix B-9 shows the impact of the other past, present and reasonably foreseeable projects in the WBV and LPV basins on the significant resources documented in this SEA. The ecosystem restoration type projects in the basins work to enhance and restore historic ecosystem processes within the basins. Although these projects may result in temporal impacts and tradeoffs among the species within the significant resources, their overall effects on the system from a human and natural environmental perspective would be wholly positive. The structural projects, to a large degree, produce socioeconomic benefits (primarily in the form of navigation or flood control) that are the impetus for their construction. Though impacts to the natural environment from construction of these projects have been avoided to the maximum extent practicable, remaining unavoidable impacts would require mitigation. Environmental Justice impacts have been avoided during design of these projects; however, these projects have resulted in impacts to the aesthetics and recreational opportunities within the system. Some of these projects have had impacts to cultural resources in the basin; however, those impacts have been mitigated by excavating the site, removing the cultural pieces, and documenting the site. In the same vein, construction of many of the structural features (e.g. levee systems) in the FWOP has resulted in the protection of cultural sites found within the protection of the levee system. Ecosystem restoration plans in the WBV basin and in the region that improve estuarine habitat also provide benefits to the commercial fishing industry.

Table 6-1: WBV HSDRRS Modified Mitigation Plan

Habitat Type	TSMP Project	AAHUs Impacted	Mitigation Project Acres (including buffer)
General PS BLH-Wet/Dry	In Basin Mitigation Bank/ Avondale Gardens	200.27 AAHUs	920.00 in construction
General FS BLH-Wet*	Hwy 307	72.04 AAHUs	133
General FS Swamp*	Hwy 307	134.52 AAHUs	287
General FS Fresh Marsh	Jean Lafitte	65.92 AAHUs	138.00 in construction
Park/404(c) FS BLH-Wet	Jean Lafitte	3.12 AAHUs	12.16 constructed
Park/404(c) FS Swamp	Jean Lafitte	7.19 AAHUs	20.44 constructed
Park/404(c)FS Fresh Marsh	Jean Lafitte	3.03 AAHUs	20.40 in construction

* Tentatively Selected Modified Mitigation Projects

6.1 NO ACTION

The No Action Alternative would be the plan previously approved in SPIER #37a. However, the projects identified in SPIER #37a for the FS swamp and FS BLH-Wet features of the MP are not implementable. Under the no action alternative, the Barataria basin would continue a trend of land loss caused by both natural factors such as subsidence, erosion, tropical storms and sea level rise, and human factors such as flood risk reduction, canal dredging, development, interruption of accretion processes and oil and gas exploration. The No Action alternative would not provide for compensatory mitigation of all unavoidable impacts from the construction of the HSDRRS in compliance with WRDA 1986, 33 U.S.C. 2283(a) since the general FS swamp and FS BLH-Wet features of the approved SPIER #37a mitigation plan could not be implemented. CEMVN's legal obligation to compensate for habitat losses caused by construction of the HSDRRS would not be satisfied.

The overall loss of BLH and swamp functions within the WBV basin combined with other habitat loss incurred from implementation of projects in the FWOP conditions could have cumulative adverse impacts to wetlands, wildlife, cultural resources, aesthetic resources, threatened and endangered species, fisheries and aquatic resources, water quality, essential fish habitat and recreational resources.

6.2 TSMMP

6.2.1 Wetlands and other Surface Waters

The TSMMPA would prevent an overall loss in the basin of BLH-Wet and swamp habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands.

6.2.2 Wildlife

The TSMMPA would prevent an overall loss in the basin of wetland habitat necessary for many wildlife species. This project, in conjunction with other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the overall decline of wildlife species within the basin and would be beneficial in preserving species bio-diversity.

6.2.3 Cultural Resources

At present the Hwy 307 project area is primarily used for agriculture. Removing these lands from agricultural use and restoring the areas to bottomland hardwoods could prevent future impacts to cultural resources that may exist within the project area. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, could help to prevent continued land loss and impacts to known and undiscovered cultural resources within the basin.

6.2.4 Aesthetic Resources

Cumulative impacts of visual resources in the region, Louisiana and the Nation result from other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes. Restoration/enhancement of wildlife habitat would increase use of project sites by a diversity of wildlife species, offset the destruction of natural habitats due to human development, and increase the opportunity for viewing wildlife at major roadways, and private lands.

6.2.5 Air Quality

Cumulative impacts to air quality in the project area due to construction of TSMMPA in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action. The project area is located in a parish in attainment of NAAQS.

6.2.6 Noise

Construction of the TSMMPA is not anticipated to add significantly to the cumulative effect of noise in the WPV basin as the construction activities would be temporary and restricted to daylight hours.

6.2.7 Hazardous, Toxic, and Radioactive Waste

No cumulative impacts are anticipated.

6.2.8 Socioeconomics/Land Use and Transportation

Minimal and temporary cumulative impacts to socio-economic resources may occur with the conversion of private agricultural land to forested public land and with the movement of equipment during construction. These impacts would minimally affect transportation, business revenue and ultimately local tax revenues to some degree. The proposed project may add minor and temporary impacts to other impacts incurred from past, present and possible future activities within the WBV basin.

6.2.9 Prime and Unique Farmland

Since the majority of the Hwy 307 FS BLH and Swamp project areas are presently farmed, a loss of agricultural production in the parish would occur. However, the cumulative impacts to prime and unique farmland in the project area due to construction of TSMMPA would affect such a small amount of prime farmland as to have a negligible effect on agricultural production in the parish.

6.3 MMPA2 Mitigation Bank Alternative

No new cumulative impacts to any resource would be incurred from the purchase of credits from a previously approved mitigation bank for the HSDRRS mitigation under the TSMMPA. Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, the purchase of mitigation bank credits would only have new potential impacts on the availability of mitigation bank credits for BLH and swamp habitats in the WBV or LPV basin. In the event sufficient credits are not available for these habitat types to offset impacts associated with a proposed permit, the district engineer would determine appropriate compensatory mitigation based on the factors described in 33 CFR Part 332.3(b).

6.4 MMPA3 Mitigation Bank and Corps Constructed Combo

No new cumulative impacts to any resource would be incurred from the purchase of credits from a previously approved mitigation bank for the HSDRRS mitigation under this alternative. Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, the purchase of mitigation

bank credits would only have potential impacts on the availability of mitigation bank credits for either BLH and swamp habitats in the WBV basin. In the event sufficient credits are not available for these habitat types to offset impacts associated with a proposed permit, the district engineer would determine appropriate compensatory mitigation based on the factors described in 33 CFR Part 332.3(b).

Impacts from the Corps constructed feature would be the same as discussed in section 6.2.2. However, the impacts would be less than discussed in this section as only one of the Corps constructed features would be built.

7. MITIGATION SUCCESS CRITERIA, MITIGATION MONITORING AND REPORTING, AND ADAPTIVE MANAGEMENT

Specific success criteria and monitoring for the Hwy 307 FS BLH-Wet and FS Swamp Restoration Projects can be found in Appendix E.

The purpose of adaptive management activities in the life-cycle of the project is to address ecological and other uncertainties that could prevent successful implementation of a project. Adaptive management (AM) also establishes a framework for decision making that utilizes monitoring results and other information, as it becomes available, to update project knowledge and adjust management/mitigation actions. Hence, early implementation of AM and monitoring allows for a project that can succeed under a wide range of conditions and can be adjusted as necessary. Furthermore, careful monitoring of project outcomes both advances scientific understanding and helps adjust operations changes as part of an iterative learning process. See Appendix E for the AM Plan.

Each Corps constructed MMP would have a contingency plan for taking corrective actions in cases where monitoring demonstrates that the mitigation feature is not achieving ecological success in accordance with its success criteria. If credits are purchased from a mitigation bank, the mitigation bank must be in compliance with the requirements of the USACE Regulatory Program and its MBI, which specifies the management, monitoring, and reporting required to be performed by the bank. Purchase of mitigation bank credits relieves the CEMVN and NFS of the responsibility for monitoring and of demonstrating mitigation success.

An effective monitoring program is required to determine if the project outcomes are consistent with the identified success criteria (WRDA 2007, Section 2036). A Monitoring Plan has been developed for each Corps constructed feature within the TSMMP (Appendix E). The plan identifies success criteria and targets, a general schedule for the monitoring events and the specific content for the monitoring reports that measure progress towards meeting the success criteria. A detailed monitoring plan including transects, sampling plots, gage locations, and monitoring frequency would be developed once designs are complete. The detailed monitoring and adaptive management plans for the TSMMPA are located in Appendix E.

The proposed mitigation action includes construction, with the NFS responsible for operation and maintenance of functional portions of work as they are completed. On a cost shared basis, USACE would monitor completed mitigation to determine whether additional construction, invasive species control and/or planting are necessary to achieve mitigation success. USACE would undertake additional actions necessary to achieve mitigation success in accordance with cost sharing applicable to the project and subject to the availability of funds. Once USACE determines that the mitigation has achieved initial success criteria, monitoring would be performed by the NFS as part of its OMRR&R obligations. If, after meeting initial success criteria, the mitigation fails to meet its intermediate and/or long-term ecological success criteria, USACE would consult with other agencies and the NFS to determine whether operational changes would be sufficient to achieve ecological success criteria. If, instead, structural changes are deemed necessary to achieve ecological success, USACE would implement appropriate adaptive management measures in accordance with the contingency plan and subject to cost sharing requirements, availability of funding, and current budgetary and other guidance.

8. COORDINATION AND CONSULTATION

8.1 PUBLIC INVOLVEMENT

Extensive public involvement has been sought in planning the mitigation for HSDRRS impacts. A public notice of the NEPA Alternative Arrangements was published in the Federal Register on 13 March 2007 (Federal Register Volume 72, No. 48) which included a commitment to analyze alternatives to determine appropriate mitigation. The notice is also available on the website www.nolaenvironmental.gov.

The following public meetings were held to obtain public input on the planning process for WBV HSDRRS mitigation, to obtain any suggestions on potential projects to mitigate WBV HSDRRS impacts, and to update the public on the project status:

1. 31 August 2009 at U.S. Army Corps of Engineers Office in New Orleans, LA
2. 13 May 2010 at Delgado Community College Westbank in Algiers, LA
3. 17 May 2010 at Westwego Tassin Senior Center in Westwego, LA
4. 19 May 2010 at NP Trist Middle School in Meraux, LA
5. 9 December 2010 at Westwego Tassin Senior Center in Westwego, LA
6. 31 July 2012 at Westwego Tassin Senior Center in Westwego, LA

Public notices for each meeting ran in local newspapers and press releases were disseminated to the media in advance of each meeting. The public was able to provide verbal comments during the meetings, written comments after each meeting in person, by mail, and via www.nolaenvironmental.gov.

Draft PIER #37 was distributed for a 30-day public review and comment period on April 2, 2014 and the Decision Record was signed on June 13, 2014. The Draft SPIER #37a was distributed for a 30-day public review and comment period on January 14, 2016 and a Decision Record was signed on March 4, 2016.

This SEA #572 was distributed for a 30-day public review and comment period beginning April 29, 2019 and ending May 29, 2019

8.2 AGENCY COORDINATION

Preparation of this SEA #572 has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. An interagency environmental team was established for this project in which Federal and state agency staff played an integral part in the project planning and alternative project analysis phases of the project (members of this team are listed in Appendix I). This interagency environmental team was integrated with the PDT to assist in the planning of this project and to complete a determination of the potential direct and indirect impacts of the proposed action. The following agencies, as well as other interested parties, received copies of SEA #572:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of the Interior, National Park Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, NMFS
U.S. Natural Resources Conservation Service

Louisiana Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer
Coastal Protection and Restoration Authority Board

If the USACE determines that MMPA2 or MMPA3 would be implemented instead of the TSMMPA, no additional coordination would be necessary since the features of MMPA3 are addressed in the TSMMPA and the purchase of mitigation bank FS BLH-Wet and FS swamp credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions; no new direct, indirect or cumulative impacts to threatened and endangered species or their critical habitat would occur that would require coordination with USFWS or NOAA, NMFS.

By letter dated July 27, 2015, the USFWS concurred with the Corps' determination that the proposed project would have no effect on threatened or endangered species. In March 2019, a parish search on the USFWS website was conducted. Based on this search, CEMVN determined that no listed species occur in the area and therefore there would be no effect on T&E species. Additional coordination under the ESA is not necessary.

The Corps submitted a consistency determination to LDNR on 14 July 2015 per section 307 of the Coastal Zone Management Act of 1972 (16 USC 1451). C20140014 mod 02 was received on December 7, 2015. (Appendix D). On June 14, 2019 the Corps submitted a mod to the 2015 consistency determination and on July 23, 2019 C20140014 mod 15 was received.

Section 106 of the NHPA, as amended, requires consultation with the LA SHPO and Native American tribes. Eleven Federally-recognized tribes that have an interest in the region have been given the opportunity to review the proposed action. A programmatic agreement has been developed through coordination with the LA SHPO, Advisory Council on Historic Preservation, Federally recognized Indian tribes and other interested parties for the HSDRRS Mitigation. The programmatic agreement was executed 18 June 2013 (Appendix D) and CEMVN will comply with stipulations agreed to in the programmatic agreement for continuing consultation with the SHPO and Federally recognized Indian tribes.

Coordination with the USFWS on the Alternative Arrangements process was initiated by letter on 13 March 2007, and concluded on 6 August 2007. A draft Fish and Wildlife CAR for the SPIER #37a was provided by the USFWS on 10 July 2015. A final CAR for SEA #572 was provided by the USFWS on 31 May 2019. The final CAR concluded that the Service supports the USACEs' current mitigation features and the USACEs' plan to mitigate impacts to fish and wildlife resources associated with WBV HSDRRS provided that the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation efforts. A copy of the draft and final reports are provided in Appendix D. The USFWS project-specific recommendations for the proposed action are listed below:

1. USACE should coordinate with the Service and other natural resource agencies to ensure that necessary information to conduct detailed project planning/design and finalize the WVA analysis is developed and available. Final sizing of mitigation must be based on revised WVAs conducted on advanced project designs

Response: Concur. Once final WVAs are received, USACE, if necessary, will resize the mitigation planting area to assure all required AAHUs are mitigated. Any changes will be coordinated with the resource agencies.

2. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, Water Control Plans, or other similar documents) should be coordinated with the Service and other natural resource agencies. The Service should be provided an opportunity to review and submit recommendations on all of the work addressed in those reports.

Response: Concur. USACE will coordinate with the resource agencies throughout the planning, engineering & design and construction process.

3. If applicable, a General Plan for mitigation lands should be developed by the USACE, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA.

Response: Concur.

4. We recommend that when evaluating the mitigation bank alternative the USACE consider the availability of credits at a bank and within a hydrologic unit to avoid exhausting credits available for individual landowners/permittees within a particular hydrologic unit.

Response: Depending on the amount of BLH-Wet and Swamp mitigation bank credits available in the basin at the time of credit purchase for the HSDRRS mitigation, use of mitigation bank credits to offset HSDRRS BLH-Wet and Swamp impacts may significantly reduce the number of credits available to permittees to compensate for BLH impacts authorized by Department of the Army Section 10/404 permits. In the event sufficient credits are not available to offset impacts associated with a proposed permit, the district engineer would determine appropriate permittee responsible compensatory mitigation based on the factors described in 33 CFR Part 332.3(b).

5. If mitigation credits are purchased from a mitigation bank the Service requests that a copy of the letter from the banker acknowledging the acquisition be provided to the Service for our files.

Response: Concur. A copy of the letter acknowledging the acquisition will be provided to the Service.

6. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation and/or maintenance of mitigation lands, then the USACE should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

Response: Project Partnership Agreements (PPAs) between the Federal government and the Non-Federal Sponsor (CPRA in this case) have been executed for the HSDRRS projects, and these PPAs provide the requisite high level of confidence that the Non-Federal Sponsor will fulfill its obligations to operate and to maintain the HSDRRS mitigation projects. In the event that the Non-Federal Sponsor fails to perform, CEMVN has the right to complete, operate, maintain, repair, rehabilitate, or replace any project feature, including mitigation features. However, such an action would not relieve the Non-Federal Sponsor of its responsibility to meet its obligations and would not preclude the Federal government from pursuing any remedy at law or equity to ensure the Non-Federal sponsor's performance.

7. Any proposed change in mitigation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

Response: Concur. USACE will continue to coordinate with the resource agencies throughout the planning, engineering & design, and construction processes.

8. The Service encourages the USACE to finalize mitigation plans and proceed to mitigation construction so that it will be concurrent with project construction. If construction is not concurrent with mitigation implementation then revising the impact and mitigation period-of-analysis to reflect additional temporal losses will be required

Response: The HSDRRS construction was completed under Alternative Arrangements in 2016. Any revisions to the impact and mitigation period-of-analysis are to be captured in the final WVAs.

9. The Service recommends that the USACE maintain full responsibility for any BLH mitigation project for a minimum of 4-years post planting. The USACE should maintain full responsibility for all marsh mitigation projects until monitoring guidelines to be developed are completed and demonstrate the projects are fully compliant with success and performance requirements. Documentation should be provided and referenced to demonstrate funding obligation for the USACE to fulfill initial success criteria at a minimum.

Response: Presently, the USACE intends to issue a Notice of Construction Completion (NCC) for authorized Corps-constructed mitigation projects to the Non-Federal Sponsor (NFS) for functional portions of the mitigation as they are complete (e.g. project would shift from the "construction" phase to the "operation, maintenance, repair, replacement, and rehabilitation" or OMRR&R phase at this point). However, the USACE would retain the primary responsibility for the completion of certain mitigation activities necessary to meet the project's initial success criteria. These activities would vary depending on the specifics of the mitigation plan and its associated success criteria. Note that while the USACE would be responsible for completion of mitigation construction and certain activities after the project is transferred to the NFS, all these activities would be subject to standard cost-sharing provisions and the availability of funds.

10. The Service recommends that all mitigation planning documents should describe in detail actions needed by the USACE and/or the local sponsor if mitigation is not succeeding as planned.

Response: Concur. This information will be included in the project specific monitoring report which will be prepared in coordination with the Service.

11. The USACE should avoid adverse impacts to bald eagle and osprey nesting locations and wading bird colonies through careful design project features and timing of construction. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

Response: Concur. A USACE and a Service biologist will conduct a survey prior to construction to identify any possible eagle or osprey nests within 660 feet of the project footprint. If nests are found, the USACE will coordinate with the Service and the National Bald Eagle Management Guidelines will be followed.

12. The Service recommends that the USACE contact the Service for additional consultation if: 1) the scope or location of the proposed project is changed significantly, 2) new information reveals that the action may affect listed species or designated critical habitat; 3) the action is modified in a manner that causes effects to listed species or designated critical habitat; or 4) a new species is listed or critical

habitat designated. Additional consultation as a result of any of the above conditions or for changes not covered in this consultation should occur before those changes are made and or finalized.

Response: Concur. The USACE will continue to coordinate with the Service throughout the project planning, engineering and design, and construction processes.

9. COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Construction would not commence until the proposed action achieves environmental compliance with all applicable laws and regulations, as described in this section. Environmental compliance would be achieved upon coordination of this SEA #572 with appropriate agencies, organizations, and individuals for their review and comments; resolution of all Fish and Wildlife Coordination Act recommendations and LDNR concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LCRP established under section 307 of the Coastal Zone Management Act of 1972 (16 USC 1451).

The following coordination has been completed: USFWS concurred that the Hwy 307 BLH-Wet and FS Swamp Restoration Projects would have no effect on any endangered or threatened species in a letter dated July 27, 2015; LDNR concurred with the determination that the Hwy 307 FS BLH-Wet and Swamp Restoration Project is consistent, to the maximum extent practicable, with the LCRP in a letter dated July 23, 2019 (C20140014 mod 05).

The following coordination is ongoing: A programmatic agreement has been developed through coordination with the LA SHPO, Advisory Council on Historic Preservation, Federally recognized Indian tribes and other interested parties for the HSDRRS Mitigation. The programmatic agreement was executed June 18, 2013 and CEMVN will comply with stipulations agreed to in the programmatic agreement for continuing consultation with the SHPO and Federally recognized Indian tribes.

10. CONCLUSION

10.1 RECOMMENDED DECISION

Recommend approval of the WBV HSDRRS Mitigation TSMMPA which fulfill the general FS BLH-Wet and general FS swamp mitigation requirements for WBV HSDRRS: The Hwy 307 FS Swamp and BLH-Wet restoration projects.

10.2 PREPARED BY

The point of contact for this SEA #572 is Tammy Gilmore, USACE New Orleans District CEMVN-PDS-C. Table 10-1 lists the preparers of relevant sections of this report. Ms. Gilmore can be reached at the U.S. Army Corps of Engineers, New Orleans District; Coastal Environmental Planning Section, 7400 Leake Avenue; New Orleans, LA 70118.

Table 10-1: SPIER Preparation Team

Position/SEA Section	Team Member
RPEDS Environmental HSDRRS Reviewer/DQC	Elizabeth Behrens, USACE
Environmental Project Manager	Tammy Gilmore, USACE
Water Quality	Tammy Gilmore, USACE
Wetlands and other surface waters, Wildlife, Threatened and Endangered Species	Tammy Gilmore, USACE
Socioeconomics/Land Use/Environmental Justice, Transportation	Andrew Perez USACE
Air	Joseph Musso, USACE-ERDC
Noise	Patricia Naquin, USACE
Cultural Resources	Eric Williams, USACE
Recreation	USACE
Aesthetics	USACE
HTRW	Joseph Musso, USACE
Mitigation Plan, Success Criteria, Planting Plan	Clay Carithers, USACE
Document Organization and Formatting	Patricia Naquin, USACE

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