APPENDIX G: MITIGATION

Project Descriptions

DRAFT Guste Island Intermediate Marsh Mitigation Project Description

GENERAL SCOPE:

The Guste Island intermediate marsh restoration project (Guste Island) is proposed as compensatory mitigation for the impacts to fresh marsh incurred by construction and operation of the proposed MSA-2. The Guste Island mitigation project was developed using two recent MVN projects, the constructed Milton Island Intermediate Marsh Restoration Project (Milton Project) (PIER 36 TIER 1) and the approved Pine Island project (EA #576). Both projects are located in the same geographic area as the Guste Island project therefore the designs and impact analysis of these two projects were considered to be similar and could appropriately be used for development and analysis of the Guste Island project.

The Guste Island intermediate marsh restoration project would be located near Madisonville, Louisiana on the north shore of Lake Pontchartrain, west of the Causeway Bridge (Figure 1). This project would consist of three major construction related features:

1. Marsh creation
2. Borrow
3. Access

The proposed marsh creation site would be approximately (~) 75 acres within the previously identified and approved Pine Island swamp restoration area as described in SEA #576. The borrow area would be the same as the borrow area identified for Pine Island. However, substantially less borrow material would be required therefore only ~100 acres within that previously identified area would be dredged. Access for pipeline(s), watercraft, and other construction related equipment would be similar to that described in SEA #576.

PROJECT AREA SIZE ESTIMATION:

Information from the adjacent Milton Project, constructed in 2018, was used to size the Guste Island Project. Wetland value assessments (WVAs) performed for the Milton Project estimated a mitigation potential of 0.315 average annual habitat units/acres (AAHUs/acre) (Appendix G “Prior Reports”). Based on this mitigation potential and a 20 percent contingency ~75 acres for construction would be needed to mitigate ~19.5 AAHUs impacted by the MSA-2 alternative. Contingency was added to account for potential impacts resulting from construction of this project such as, but not limited to, potential impacts to existing marsh or SAV within the construction area, potential impacts associated with fill containment dike construction, and access.

MARSH CREATION PLAN:

The proposed intermediate marsh creation would be constructed within an ~75-acre area within the Pine Island Swamp Mitigation project area (which is ~ 1,965 acres). The proposed marsh creation area is primarily in shallow open water, but there is some existing emergent marsh and submerged aquatic vegetation present as well. The marsh creation area was sized to account for potential unavoidable adverse impacts to emergent marsh and submerged aquatic vegetation. Adverse impacts would be avoided and minimized to the extent practicable. The marsh creation area would consist of three features:

1. Marsh platform – area within containment dikes that would be constructed to an elevation expected to settle within the functional marsh elevation range of intermediate marshes within the Lake Pontchartrain Basin (~ -0.17 to +1.56 feet based on 2014 CRMS data; Jankowski et al., 2017). This would be ~ 67.5 acres and would be constructed to up to ~+3.5 feet NAVD88.
2. Containment dikes – raised areas constructed and designed to contain pumped material that would create the marsh platform. These would be either gapped or completely degraded after the marsh platform settles as part of final construction of the Guste Island project (approximately 1 year after creation of the marsh platform). Material resulting from gapping or degrading would be placed back into the areas dredged to construct the dikes. Existing high ground could be used to contain pumped material to the extent practicable. It is expected this would be ~ 10% of the project area (~ 7.5 acres) and would be constructed to ~ +4.5 feet NAVD88. However, the exact acreage would vary based on design details such as but not limited to shape (square or circle) and location (e.g., does it border any existing high ground?).
3. Containment dike borrow areas – Borrow obtained from within the marsh creation cell or open water adjacent to the dike alignment would be dredged down to an elevation of ~-7.0 feet NAVD88 to construct the containment dikes.

In addition to these three features, deeper openings within the containment dikes and vicinity may be constructed as part of final construction of the Guste Island project (“fish dips”). Fish dips would facilitate exchange with surrounding waterways and allow for aquatic organisms to have better access to the newly created marsh. Close coordination with the NMFS and USFWS regarding if and how fish dips would be constructed would occur during further design.

BORROW PLAN:

Hydraulic cutterhead dredges would be used to excavate ~1,700,000 cubic yards of material from an ~100-acre area within the previously identified and approved 2,238-acre Pine Island borrow area described SEA #576. Dredging of the borrow area would be limited to -19.0 feet NAVD88 plus a 1-foot allowable over depth. A minimum buffer of 800 feet would be required between the borrow site footprint and the transmission line alignment located in Lake Pontchartrain, north of the proposed borrow site. The hydraulically dredged material would be moved into the marsh creation area via pipeline according to the access plan.

DURATION:

Necessary dike construction and initial pumping of sediment into the marsh platfrom would take up to 1 year to complete. Following an approximately 1 year long settlement period after pumping of sediment into the marsh platform, degrading of dike would begin and would take up to one year.

SITE ACCESS:

The pipeline and access corridor designated in SEA #576 from the borrow source to the shoreline would be used for access for pipeline(s), watercraft, and other construction related equipment. There would be no allowances for excavation within the corridor. The dredge pipeline would be floated and or submerged within this corridor to the shoreline. From the shoreline, the dredge pipeline could cross existing marsh wetland habitats causing negative impacts. These impacts would be avoided, reduced, and/or minimized to the extent practicable. Any remaining impacts would be rectified (i.e., repaired as or after the pipeline is being removed) or mitigated. The proposed marsh creation area was sized to account for some impacts of this nature.

STAGING:

Staging of equipment for initial dike construction activities would be via barge(s) on or near the Lake Pontchartrain shoreline as indicated on the attacheddrawing. The proposed staging areas would first be submitted for Government approval. Staging of materials for the initial planting event are anticipated to be within the mitigation areas themselves.

MAINTENANCE/MANAGEMENT ACTIVITIES:

After completion of all dike construction, dredge pumping, and soil preparation activities, herbicides may be applied to the mitigation areas to help control invasive and nuisance plant species. Throughout this period, access/maintenance roads would be maintained as necessary as would be any fish dips (if applicable) and any new drainage features established.

The first monitoring event would occur in late summer one year after the settlement of the marsh platform. Various herbicide application events could take place during this period, if necessary. It is assumed that this monitoring event would show that all vegetation and invasive/nuisance species success criteria had been achieved. It is also assumed this monitoring event would show the success criterion established for the final soil surface elevation in the mitigation areas had been achieved. In this case, the Non-Federal Sponsor would take over the project including all management and maintenance work.

EQUIPMENT

Equipment to be used for the respective work is assumed as follows:

Dike Construction: Excavators, marsh buggies, airboats

Dredge Pumping: Cutterhead dredge, tugs, crew boats, pipeline (steel, and rubber), derricks, barges, up to D-8 dozers, excavators, front-end loaders, marsh buggies, airboats, marsh masters

Rip-rap Construction (if needed): Excavators, scows, barges, up to D-8 dozers, front-end wheel loaders, marsh buggies

Reference

Jankowski, K. Törnqvist, T. E. & Fernandes, A. M. 2017. Vulnerability of Louisiana's coastal wetlands to present-day rates of relative sealevel rise. Nature Communications 8, 14792.

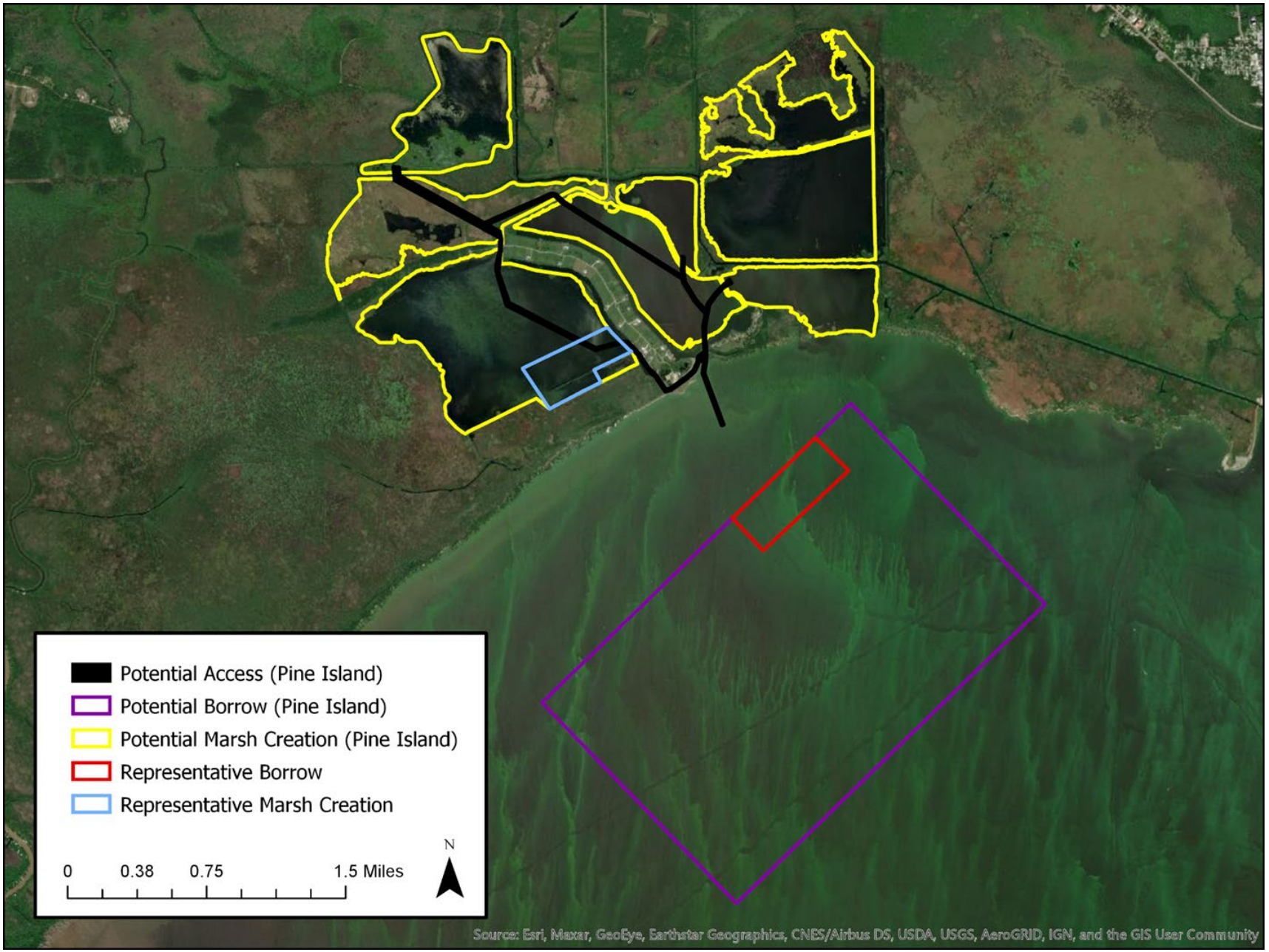


Figure 1: Potential areas show areas that would be considered for the Guste Island Mitigation Project. Representative Areas are included to indicate approximate sizing based on MSA-2's mitigation need, and are not intended to represent the precise location of project features.

St. James BLH-Wet Restoration, St. James Parish, Louisiana

GENERAL SOW:

The proposed project involves restoration of up to approximately (~)74 acres of wet bottomland hardwoods (BLH-wet) as compensatory mitigation for coastal zone BLH impacts resulting from construction of the MSA-2. The BLH restoration area (mitigation area) would be located in existing agricultural fields at the previously approved St. James mitigation area as described in SEA #576. This site is located off the Mississippi River between the towns of Romeville and Union, LA around the Nucorp Plant in St. James Parish.

The main earthwork activities required prior to planting the mitigation areas would include degrading (scraping) portions of some mitigation areas (see degrading section), removal of undesirable drainage ditches and culverts, removal of undesirable earthen berms, establishing dirt access roads, establishing a project staging area, and tillage of areas to be planted. To maximize water flow into the site, any existing dikes/berms within the property boundary which prevent water flow into the site would be degraded as long as this effort does not harm or adversely affect outside properties/water sources. Any existing drainage features (drainage ditches, etc.) within or adjacent to the mitigation areas and within the property boundary would likely be removed to help assure appropriate site hydrology. The mitigation areas would then be planted with native canopy and midstory species typical of BLH-wet habitats.

A 10% contingency was added to the total acres needed to account for potential access roads and unanticipated impacts to the mitigation site during construction.

PROPOSED PLANTING:

Assumed total initial plantings required for the mitigation areas are:

BLH Canopy: ~ 40,330 seedlings. (545 seedlings per acre)

BLH Midstory: ~ 10,064 seedlings. (136 seedlings per acre)

Assume BLH canopy plants species would be installed on an 8ft by 10ft grid.

Assume BLH midstory plants species would be installed on a 16ft by 20ft grid.

Mowing poles (PVC pipes extending roughly 6 feet above grade) would be installed on each planted row every 50’ to 100’ to guide mowing operations. Mowing the areas between planted roles and within other buffer areas would be conducted occasionally to help suppress growth of other plants that may initially compete with the BLH plantings.

DEGRADE AREAS:

Portions of BLH mitigation Areas might need to be degraded (scraped down) to a depth of between ~ 0.5 feet to 1.0 feet below the existing soil surface to help ensure satisfactory hydrology/hydroperiod for BLH-wet habitat.

Degrade material would be hauled off site to a contractor-provided upland disposal area, assume a 15-mile one-way haul distance. Some of the degraded soil may be used on-site if such fill is required.

DEMOLITION:

No existing structures appear to be within the mitigation site. There is an existing underground pipeline that passes through mitigation area. It is currently unknown what type of pipe is in this location. Assume at least a 20-ft buffer around the route of the pipeline unless it is determined that the pipeline is abandoned. The location of the pipeline shown on the map is approximate.

DURATION:

Necessary earthwork and related activities would likely take up to one year. Initial plantings would begin in the winter following completionof earthwork and continue through mid-March.

Monitoring to determine contractor success of the plantings would likely occur the October after plantings. Monitoring to determine initial success would likely occur two Octobers after initial plantings. If this monitoring shows initial success criteria had been satisfied, the monitoring responsibilities would be transferred to the Non-Federal Sponsor the following spring.

SITE ACCESS:

Access to the project work limits would be as follows:

From the north, access to the site to be made via route LA-3125 which leads to Helvetia Street and Wilton Road. Each of these roads run through the site north/south and would be preserved. From the south, access to the site can be made via route LA-44 which leads to Helvetia Street.

Dirt maintenance/access roads ~ 15 feet wide would be established aroundthe perimeter of each of the mitigation areas shown on attached drawing. The Contractor may also establish other maintenance/access roads within the mitigation areas. Such roads would first have to be approved by the Government. If approved, such roads would slightly reduce the acreage of each mitigation area affected.

STAGING:

Staging area(s) will only be permitted within one of the mitigation areas. The Contractor would determine where, within a particular mitigation area, to place staging and laydown areas suitable for the Contractor's means and methods to meet the required project period of performance. The proposed staging area would first be submitted for Government approval. The Contractor would be permitted to place crush stone paving for parking and laydown areas along with a temporary construction trailers. No utilities would be provided by the Government, and the Contractor would have to obtain all permissions and permits for utilities. The trailer, crushed stone paving, and temporary utilities would have to be removed by the Contractor and the end of the project and the disturbed area would have to be planted with native grasses by the Contractor before leaving the project site.

MAINTENANCE/MANAGEMENT ACTIVITIES:

After completion of all excavation, grading, and soil preparation activities but prior to initial plantings, herbicides may be applied to the mitigation areas to help control invasive and nuisance plant species. Mowing may also be performed in the mitigation areas during this time period. After the mitigation areas are initially planted and before the success of these plantings is evaluated (monitored), herbicide applications and/or mowing may also occur to help suppress undesirable vegetation. Throughout this period, access/maintenance roads would be maintained as necessary as would be any new drainage features established.

The first monitoring event would occur in the fall of the year of the initial plantings. This report could show additional plantings are needed or it may not. Regardless, various mowing events and herbicide application events would take place during the period from the first monitoring event to the second monitoring event. It is assumed that the second monitoring event would show success criteria for the plantings had been achieved as were success criteria about control of invasive and nuisance plants. In this case, the Non-Federal Sponsor would take over the project including all management and maintenance work.

EQUIPMENT:

Equipment to be used for the respective work is assumed as follows:

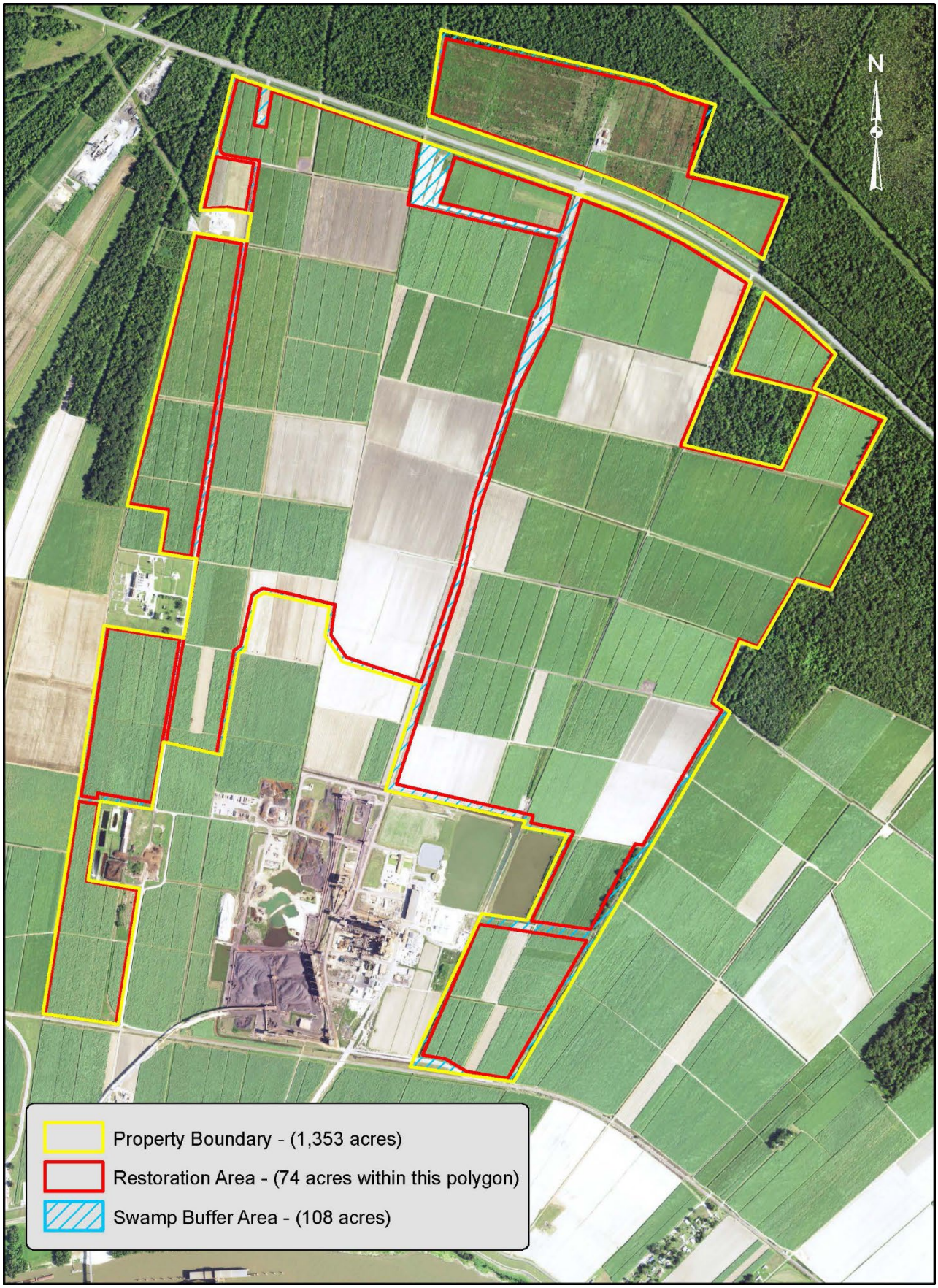
Degrading: Up to D8 bulldozers, wheel tractor scrapers, front-end loaders, off-road and on-road dump trucks.

Demolition (if needed): Backhoes with grapple and hammer attachments, bulldozer, front loaders, and on/off road dump trucks.

Planting Preparation: Tractor with harrow and scarifier, bulldozers, and backhoe.

Planting: Pickup trucks, ATVs and/or UTVs, and 2,000-to-4,000-gallon water trucks.

Initial Maintenance: Tractors with brush-hog/mowers; ATVs and/or UTVs, back-pack sprayers and/or boom sprayers; bulldozers or backhoes.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Property Boundary - (1,353 acres)
Restoration Area - (74 acres within this polygon)
Swamp Buffer Area - (108 acres)

Monitoring Plans

Draft Guste Island Marsh Restoration Mitigation Monitoring Plan

Table of Contents

Introduction

The purpose of this document is to describe the mitigation success criteria, monitoring guidelines, and the monitoring schedule and reporting requirements for the Guste Island Marsh Restoration Mitigation Project (Project). There are mitigation success criteria for topography and vegetation, and guidelines for baseline, initial, intermediate, and long-term monitoring reports. A draft schedule specifying responsible parties is also included.

This Project would serve as compensatory mitigation for impacts to fresh marsh habitats associated with the MSA-2 swamp mitigation feature of the WSLP Project.

Mitigation Success Criteria

1. General Construction[1]

A. Project construction would involve restoration of approximately 75-acres of marsh platform in an area of shallow open water using dredged material from a designated borrow site. The following construction activities would be classified as "initial construction requirements."
   i. Dredge fill construction to elevation up to ~+3.5' NAVD88, to result in a target elevation within the functional marsh elevation range (~ -0.17' to +1.56' NAVD88 based on 2014 CRMS data; Jankowski et al., 2017).
   ii. Perimeter retention dike construction to an elevation of ~+4.5 feet.

B. The following tasks would be classified as "final construction requirements."
   i. Degradation or gapping of retention dikes, as necessary, to approximately marsh platform elevation.
   ii. Construction of fish dips, if necessary.
   iii. Installation of staff gauges

[1]See Table 1 for dates of CEMVN responsible tasks, including General Construction features

2. Topography[1,2,3,4]

A. Initial Success Criteria:
   1. One year after initial construction:
      i. Demonstrate that at least 80% of the marsh platform has a surface elevation that is within +0.5 to – 0.5 feet of the desired target surface elevation as determined by the settlement curve.[3]

   2. Two years after initial construction:
      ii. Demonstrate that at least 80% of the marsh platform has a surface elevation that is within +0.5 feet to -0.25 of the desired target surface elevation as determined by the settlement curve for that year.[3]

B. Intermediate Success Criteria:
   1. Two years following achievement of Topography 2.A:
      i. Demonstrate that at least 80% of the marsh platform has a surface elevation that is within the functional marsh elevation range[3,4].

ii. There are no additional monitoring or attainment requirements for topography beyond meeting the Intermediate Success Criteria for topography.

Notes:
[1] Elevation survey data and report will be provided to the interagency environmental team (IET) for review as part of the initial success criteria report to determine concurrence. The surveys must include water levels inside and outside the marsh creation site at locations representative of site conditions.

[2]See Table 1 for dates of CEMVN responsible tasks, including topographic surveys.

[3]Sucess criteria for topographic features (2.A. and 2.B.) will be evaluated using an interpolation of elevation survey data. That is, topographic Project features will be surveyed and the resulting data will be interpolated to evenly represent the marsh platform. The interpolated data will be used to determine whether the marsh platform meets success criteria.

[4]The "functional marsh elevation range", i.e., the range of the marsh surface elevation that is considered adequate to achieve proper marsh functions and values, was determined to be between -0.17' to +1.56' NAVD88 based on 2014 CRMS data (Jankowski et al., 2017).

3. Native Vegetation[1]

A. Initial Success Criteria (at least 2 growing seasons following completion of initial construction activities in General Construction 1.A.):
   i. The site must achieve a minimum average cover of at least 50% native herbaceous species.
   ii. Demonstrate that native vegetation satisfies CEMVN hydrophytic vegetation criteria.[2]

B. Intermediate Criteria (2 years following attainment of Native Vegetation Criteria 3.A.):
   i. Achieve a minimum average cover of 60%, comprised of native herbaceous species.
   ii. Demonstrate that native vegetation satisfies USACE hydrophytic vegetation criteria.[2]

C. Long-Term Success Criteria[3] (Every monitoring event after attainment of Native Vegetation Criteria 3.B):
   i. Achieve a minimum average cover of 60%, comprised of native herbaceous species.
   ii. Demonstrate that native vegetation satisfies USACE hydrophytic vegetation criteria.[2]

Notes:

[1]See Table 1 for dates of CEMVN responsible tasks, including General Construction schedule

[2]Hydrophytic vegetation criteria will be assessed through application of the 50/20 rule and determination of hydrophytic vegetation by the dominance test, as described in "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)" (see Appendix 1).

[3]There is not a minimum average cover requirement for years 21 – 50. However, vegetation data will be collected throughout the 50-year Project life.

4. Invasive and Nuisance Vegetation

A. Initial, Intermediate, and Long-term[1] Success Criteria

- Maintain the Project area such that the total average vegetative cover accounted for by invasive species and the total average vegetative cover accounted for by nuisance species each constitute less than 5% of the total average plant cover throughout the 50-year Project life. See Tables 1 and 2 for a list of nuisance and invasive species, respectively.

Notes:

[1]Yearly inspections to determine the need for invasive/nuisance control would be conducted until the long term success criteria for vegetation is achieved. After it is achieved, the frequency of inspections to determine the need for invasive/nuisance control would be adjusted based on site conditions.

MITIGATION MONITORING GUIDELINES

Baseline Monitoring Report Requirements

A "baseline" monitoring report will be prepared after completion of Final Construction Requirements. This report will be incorporated into the report for initial success monitoring. The following information will be provided:

1. A plan view drawing of the mitigation site showing the approximate boundaries of the restored marsh, proposed monitoring transect locations, proposed sampling quadrat locations, photo station locations and water level reading locations.

2. Initial and final construction surveys of all topographic Project features (including the fill area, fish dips, and shoreline restoration feature) and an analysis of the survey data addressing attainment of topographic success criteria. The topographic survey will include spot elevations collected within the existing marsh habitat near the restored marsh.

3. Photographs documenting conditions in the Project area taken at the time of vegetation monitoring.

4. Various qualitative observations of the mitigation site to help assess the status and success of mitigation and maintenance activities. These observations will include: general estimate of the average percent cover by native herbaceous plant species; general estimates of the average percent cover by invasive and nuisance plant species; general observations concerning colonization of the mitigation site by volunteer native plant species; general condition of vegetation; trends in the composition of the plant community; wildlife utilization as observed during monitoring (including fish species and other aquatic organisms); the natural formation of interspersion features; the general condition of fish dips and culverts;

the general condition of armoring installed along the shoreline restoration feature. General observations made during the course of monitoring will also address potential problem zones and other factors deemed pertinent to the success of the mitigation Project.

5. A summary assessment of all data and observations along with recommendations as to actions necessary to help meet mitigation and management/maintenance goals and mitigation success criteria.

6. A brief description of anticipated maintenance/management work to be conducted during the period from the current monitoring report to the next monitoring report.

Initial, Intermediate, and Long-term Monitoring Report Requirements

The following information will be provided as part of all monitoring reports unless otherwise noted:

1. A detailed discussion of all mitigation activities completed.

2. A plan view drawing of the mitigation site showing the approximate boundaries of the restored marsh, any culverts and fish dips, proposed monitoring transect locations, proposed sampling quadrat locations, photo station locations, and staff gauge locations.

3. Water level readings taken from inside and outside the marsh creation at site staff gauges. If there appears to be disparity in water levels within the marsh creation site, additional water surface elevation monitoring may be required.

4. Vegetation measures taken at 30 or more permanent quadrats established along transects within the marsh platform. GPS coordinates would be recorded at each permanent sampling quadrat location. The number and location of sampling quadrats and transects may be adjusted for later sampling events. Sampling adjustments would need to be justified and coordinated with the CEMVN and IET. Each sampling quadrat will be 1 meter X 1 meter in size. These data will be recorded each quadrat:

    a) total percent cover by native herbaceous (non-woody, non-exotic) plant species (classification will be consistent with USDA Plant Database at tie of monitoring [https://plants.sc.egov.usda.gov/home] at time of monitoring);
    b) total percent cover by invasive plant species (See Table 3);
    c) total percent cover by nuisance plant species (See Table 2); and
    d) percent cover for each individual plant species, and the wetland indicator status of each species.
    e) Total percent vegetative cover

5. Data from 4(a) – 4(c) will be used to determine vegetation success. An average value for each parameter (e.g., percent cover by native plant species by quadrat) from all quadrats will be calculated to determine the overall Project average by parameter. The overall Project average for each parameter will be compared to the success criteria for the specific monitoring event (i.e., initial, intermediate, or long-term). See Mitigation Success Criteria Native Vegetation and Invasive and Nuisance Vegetation Sections for specific success criteria.

6. One photograph shall be taken from the bottom right corner of each sampling quadrat to clearly capture vegetation within the sampling quadrat and must include a sign that indicates the quadrat number and sampling date.

7. Photographs documenting conditions in the Project area taken at the time of vegetation monitoring. Photos would be taken at permanent photo stations along the perimeter restored marsh, adjacent to fish dips and culverts, and at each staff gage during the vegetation monitoring event. Staff gage photos should all be taken on the same day, if possible. GPS coordinates would be recorded at each permanent photo station. At least two photos would be taken at each station with the view of each photo oriented in the same general direction from one monitoring event to the next. As-built photographs of all constructed Project features (e.g., fish dips and/or culverts) would also be included.

8. A brief description of maintenance and/or management work performed since the previous monitoring report along with a discussion of any other significant occurrences.

9. Various qualitative observations would be made in the mitigation site to help assess the status and success of mitigation and maintenance activities. These observations would include:
    a) general condition of the vegetation;
    b) wildlife utilization as observed during monitoring (including fishes and other aquatic organisms);
    c) any natural formation of interspersion features;
    d) observations regarding any general water surface movement; and
    e) the general condition of other constructed Project features such as culverts and fish dips

10. A summary assessment of all data and observations along with recommendations as to actions necessary to help meet mitigation and management/maintenance goals and mitigation success criteria.

11. A brief description of anticipated maintenance/management work to be conducted during the period from the current monitoring report to the next monitoring report.

12. Topographic surveys of the marsh platform would be included for initial and intermediate monitoring event reports. In addition to the surveys themselves, each of the two monitoring reports would include an analysis of the topographic data in regards to the attainment of applicable topographic success criteria (Sections 2A and 2B). If the surveys indicate topographic success criteria have not been achieved and supplemental topographic alterations are completed, then another topographic survey could be required following completion of the supplemental alterations. This determination would be made by CEMVN and the IET.

MITIGATION MONITORING SCHEDULE AND RESPONSIBILITIES

Monitoring will ideally take place in mid to late summer but may be delayed until later in the growing season due to site conditions or other unforeseen circumstances. Monitoring Reports would be submitted by December 31 of each year of monitoring to the CEMVN, non-Federal sponsor (NFS), and the IET.

The CEMVN would be responsible for conducting the Baseline and Initial Success Monitoring events and preparing the associated monitoring reports until such time that the following mitigation success criteria are achieved (criteria follow numbering system used in success criteria section):

1. General Construction – 1.A., 1.B., and 1.C.
2. Topography – 2.A.
3. Native Vegetation –3.A.
4. Invasive & Nuisance Vegetation – 4.A. until such time as monitoring responsibilities are transferred to the NFS.

The NFS would be responsible for conducting the required monitoring events and preparing the associated monitoring reports for all other required years after the CEMVN has achieved the initial success criteria listed above. The responsibility for management, maintenance, and monitoring of the non-structural components of the mitigation Project (i.e., vegetation) would typically be transferred to the NFS during the first quarter of the year immediately following submittal of the monitoring report that demonstrates attainment of the initial success criteria and extend through the 50-year Project life. The 50-year period would begin at the end of the first growing season, after all final construction activities are completed, and when colonization of appropriate vegetation has begun to the satisfaction of CEMVN Environmental Branch. Once monitoring responsibilities have been transferred to the NFS, the next monitoring event (Intermediate) should take place 2 growing seasons after Initial Success (Topography 2.A.ii. and Native Vegetation 3.A.i.) has been met. After Intermediate Success Criteria (Topography 2.B. and Native Vegetation 3.B) have been met, Long-Term Success Criteria monitoring would be conducted every 5 years throughout the remaining 50-year Project life. For a hypothetical schedule projecting when quantitative vegetation monitoring (to determine whether or not success criteria have been met) and qualitative vegetation surveys (to assess Project area for nuisance and invasive species) could occur, see Tables 4 and 5.

If certain success criteria are not achieved, failure to attain these criteria would trigger the need for additional monitoring events not addressed in the preceding paragraphs. The CEMVN would be responsible for conducting such additional monitoring and preparing the associated monitoring reports in the following instances:

1. If initial topographic success criteria (2.A.) are not achieved, the IET would convene to determine whether corrective actions are necessary to meet initial success criteria. If corrective actions are necessary, the CEMVN would be responsible for performing the necessary corrective actions to ensure the mitigation requirement is fully satisfied.

    a. A re-evaluation of Project benefits could be performed to assist the IET in determining the extent of corrective actions that may be necessary. Several re-calculations may be undertaken to update Project Wetland Value Assessment suitability indices and/or assumptions. These could include, but may not be limited to, the re-calculation of settlement curves and functional marsh elevation ranges. A land:water analysis estimating the area benefited outside of marsh platform could also be performed and incorporated into the Project. The CEMVN would be responsible for the re-evaluation of benefits.

b. If corrective actions on the current site are deemed necessary, additional surveys after corrective actions would be taken and a revised initial success monitoring report would be required to indicate whether applicable criteria affected by the corrective action have been satisfied.
c. If corrective actions result in the purchase of mitigation bank credits or the remaining mitigation requirement being satisfied at another site, topographic criteria for the current site could be waived and applicable criteria as well as OMRR&R responsibilities for the site adjusted as necessary for the site's conditions.

2. If the native vegetation initial success criteria (3.A) are not achieved, a monitoring report would be required for each consecutive year until two sequential annual reports indicate that the criteria have been satisfied. The CEMVN would be responsible for management activities (e.g., the purchase and installation of supplemental plants) needed to attain success criteria

3. If initial invasive and nuisance species criteria (4.A.) are not achieved, a monitoring report would be required for each consecutive year until two sequential annual reports indicate that the applicable criteria have been satisfied. The CEMVN would be responsible for the eradication activities needed to attain the success criteria.

There could also be cases where failure to attain certain success criteria would trigger the need for additional monitoring events for which the NFS would be responsible:

1. If the topographic intermediate success criteria (2.B.) are not achieved, the IET would convene to determine whether corrective actions are necessary. If corrective actions are necessary, the NFS would also be responsible for performing the necessary corrective actions to ensure the mitigation requirement is fully satisfied.

    a. A re-evaluation of Project benefits could be performed to assist the IET in determining the extent of corrective actions that may be necessary. Several re-calculations may be undertaken to update Project Wetland Value Assessment suitability indices and/or assumptions. These could include, but may not be limited to, the re-calculation of settlement curves and functional marsh elevation ranges. A land:water analysis estimating the area benefited outside of marsh platform could also be performed and incorporated into the Project. The CEMVN would be responsible for the re-evaluation of benefits.
    b. If corrective actions on the current site are deemed necessary, additional surveys after corrective actions would be taken and a revised initial success monitoring report would be required to indicate whether applicable criteria affected by the corrective action have been satisfied.
    c. If corrective actions result in the purchase of mitigation bank credits or the remaining mitigation requirement being satisfied at another site, topographic criteria for the current site could be waived and applicable criteria as well as OMRR&R responsibilities for the site adjusted as necessary for the site's conditions.

2. If the native vegetation intermediate success criteria (3.B.) are not achieved, a monitoring report will be required for each consecutive year until two sequential annual reports indicate that the native vegetation intermediate success criteria have been satisfied. The IET would convene to determine whether corrective actions are

necessary. If corrective actions are necessary, the NFS would also be responsible for the implementing actions needed to attain the success criteria.

3. If the native vegetation long term success criteria (3.C.) are not achieved, the IET would convene to discuss whether corrective actions would be necessary. If corrective actions are necessary, a monitoring report would be required for each consecutive year following completion of the corrective actions until two sequential annual reports indicate that the native vegetative cover criteria have been attained. The NFS would be responsible for performing corrective actions, conducting the additional monitoring events, and preparing the associated monitoring reports.

4. If the intermediate and long term invasive and nuisance species criteria (4.A.) are not achieved a monitoring report would be required for each consecutive year until two sequential annual reports indicate that the applicable criteria have been satisfied. The NFS would be responsible for the eradication activities needed to attain the success criteria.

Once monitoring responsibilities have been transferred to the NFS, the NFS will retain the ability to modify the monitoring plan and the monitoring schedule should this become necessary due to unforeseen events or to improve the information provided through monitoring. Fifteen years following achievement of Long Term Success Criteria, the number of monitoring transects and/or quadrats that must be sampled during monitoring events may be reduced substantially if it is clear that mitigation success is proceeding as anticipated. Any significant modifications to the monitoring plan or the monitoring schedule must first be approved by the CEMVN and the IET.

Table 1: CEMVN Responsible Events with Projected Completion Dates

Initial Construction: Dredging for Marsh Creation, Retention Dike Construction	**Final Construction:** Could be dike degrading/ gapping, fish dips, culverts	Site Topographic Survey	Qualitative vegetation monitoring for baseline monitoring	Initial Success Vegetation Monitoring	Site Topographic Survey	OMRR&R turnover
2024	2025	2026	2026	2027	2027	2028

Table 2: Nuisance plant species

dog fennel	*Eupatorium* spp
ragweed	*Ambrosia* spp.
blackberry	*Rubus* spp.
black willow	*Salix nigra*
box elder	*Acer negundo*

Table 3: Invasive plant species*	
Chinese tallow tree	*Triadica sebifera*
Chinaberry	*Melia azederach*
Salt Cedar	*Tamarisk* spp.

*New species may be added to the list of invasive plant species, as necessary. New invasive species may become established in the Project vicinity during the Project life, and this list should be adjusted accordingly. New species will be provided to the IET prior to adding species to the list and implementing any management actions.

Table 4: Quantitative Vegetation Monitoring									
Initial Success	**Intermediate Success**	**Long-term Success**							
Year 3	Year 6*	Year 11	Year 16	Year 21	Year 26	Year 31	Year 36	Year 41	Year 46
2027	2030	2035	2040	2045	2050	2055	2060	2065	2070

*topographic survey at Year 6

Table 5: Qualitative Invasive/Nuisance Species Surveys* (until long-term success is achieved)							
Year 3	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11**
2027	2029	2030	2031	2032	2033	2034	2035

*except for years when vegetation monitoring would occur

**likely earliest that long-term success could be achieved

Appendix 1: Excerpt from Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (version 2.0), 2. Hydrophytic Vegetation Indicators, pp. 22-24.

Indicator 2: Dominance test

Description: More than 50 percent of the dominant plant species across all strata are rated OBL, FACW, or FAC.

User Notes: Use the "50/20 rule" described below to select dominant species from each stratum of the community. Combine dominant species across strata and apply the dominance test to the combined list. Once a species is selected as a dominant, its cover value is not used in the dominance test; each dominant species is treated equally. Thus, a plant community with seven dominant species across all strata would need at least four dominant species that are OBL, FACW, or FAC to be considered hydrophytic by this indicator. Species that are dominant in two or more strata should be counted two or more times in the dominance test.

Procedure for Selecting Dominant Species by the 50/20 Rule: Dominant plant species are the most abundant species in the community; they contribute more to the character of the community than do the other non-dominant species present. The 50/20 rule is the recommended method for selecting dominant species from a plant community when quantitative data are available. The rule can also be used to guide visual sampling of plant communities in rapid wetland determinations.

Dominant species are chosen independently from each stratum of the community. In general, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total. For the purposes of this regional supplement, absolute percent cover is the recommended abundance measure for plants in all vegetation strata. See Table 3 for an example application of the 50/20 rule in evaluating a plant community. Steps in selecting dominant species by the 50/20 rule are as follows:

1. Estimate the absolute percent cover of each species in the first stratum. Since the same data may be used later to calculate the prevalence index, the data should be recorded as absolute cover and not converted to relative cover.

2. Rank all species in the stratum from most to least abundant.

3. Calculate the total coverage of all species in the stratum (i.e., sum their individual percent cover values). Absolute cover estimates do not necessarily sum to 100 percent.

4. Select plant species from the ranked list, in decreasing order of coverage, until the cumulative coverage of selected species *exceeds* 50 percent of the total absolute coverage for the stratum. If two or more species are equal in coverage (i.e., they are tied in rank), they should all be selected. The selected plant species are all considered to be dominants. All dominants must be identified to species.

5. In addition, select any other species that, by itself, is at least 20 percent of the total absolute percent cover in the stratum. Any such species is also considered to be a dominant and must be accurately identified.

6. Repeat steps 1-5 for any other stratum present. Combine the lists of dominant species across all strata. Note that a species may be dominant in more than one stratum (e.g., a woody species may be dominant in both the tree and sapling strata).

MITIGATION SUCCESS CRITERIA AND MITIGATION MONITORING:
BOTTOMLAND HARDWOOD MITIGATION FEATURES (BLH-Wet and BLH-Dry)

A monitoring plan consistent with WRDA 2007 Section 2036(a) and specific to the St James mitigation project will be developed prior to initial success monitoring. These general mitigation guidelines developed by the CEMVN, NFS, and the Resource Agencies is included for planning purposes until implementation of the project.

MITIGATION SUCCESS CRITERIA

The success (performance) criteria described herein are applicable to both proposed bottomland hardwood wet (BLH-Wet) habitats and bottomland hardwood dry (BLH-Dry habitats), unless otherwise indicated.

1. General Construction

A. For construction from existing land, complete all necessary earthwork and related construction activities in accordance with the mitigation work plan and the project plans and specifications (P&S). The necessary activities will vary with the mitigation site, but may include clearing, grubbing, and grading activities; construction of new water management features (weirs, flap-gates, diversion ditches, etc.); modifications or alterations to existing water control structures and surface water management systems; plantings; and eradication of invasive and nuisance plant species.

2. Topography[1]

A. Initial Success Criteria
   1. For mitigation features requiring earthwork (grading) to attain desired elevation (excluding areas restored from open water) –
      a. Following completion of General Construction Criteria 1.A. but prior to plantings –
         - demonstrate that at least 80% of the total graded area within each feature is within approximately +0.25 feet of the desired target soil surface elevation[2].

Notes:
[1]Elevation surveys must be taken to document achievement of success criterion. The resulting data and report will be provided to the IET for review.
[2]The desired target elevation for each feature was determined during the final design phase.
[3]There are no intermediate or long-term success criterion for topography.

3. Native Vegetation[1]

A. Initial Success Criteria (at end of first growing season following the year planting meets construction requirements) –
   1. Achieve a minimum average survival of 50% of planted canopy species (i.e. achieve a minimum average canopy species density of 269 seedlings/ac.).
   2. The surviving plants must approximate the species composition and percentages specified in the initial plantings' component of the final planting plan[2] found in the project P&S.
   3. These criteria will apply to the initial plantings, as well as any subsequent re-plantings necessary to achieve this initial success requirement.

B. Intermediate Success Criteria (3 growing seasons following attainment of Native Vegetation 3.A.) –
   1. Achieve a minimum average density of 269 living native canopy species per acre (planted trees and/or naturally recruited native canopy species).
   2. Achieve a minimum average density of 135 (50% of 269) living hard-mast producing species in the canopy stratum (planted trees and/or naturally recruited native canopy species). The remaining trees in the canopy stratum must be comprised of soft-mast producing native species.

3. This hard mast criteria will thereafter remain in effect for the duration of the overall monitoring period. Modifications to these criteria could be necessary for reasons such as avoidance of tree thinning if thinning is not warranted and the long-term effects of sea level rise on tree survival. Proposed modifications must first be approved by the CEMVN in coordination with the IET. For BLH-Wet habitats only -- Demonstrate that vegetation satisfies CEMVN hydrophytic vegetation criteria. Plant community must exhibit characteristics and diversity indicative of a viable native forested wetland community, i.e. vegetation community where more than 50% of all dominant species are facultative (FAC) or wetter.

C. Long-Term Success Criteria (Within 6 growing seasons following attainment of 3.B. and maintained for the duration of the remaining 50-year monitoring period[3])[4] --

1. Attain a minimum average canopy cover of 80% by planted and/or naturally recruited native canopy species.
2. Achieve a minimum average density of 135 (50% of 269) living hard-mast producing species in the canopy stratum (planted trees and/or naturally recruited native canopy species). The remaining trees in the canopy stratum must be comprised of soft-mast producing native species.
3. For BLH-Wet habitats only -- Demonstrate that vegetation satisfies USACE hydrophytic vegetation criteria. The plant community must exhibit characteristics and diversity indicative of a viable native forested wetland community, i.e. vegetation community where more than 50% of all dominant species are facultative (FAC) or wetter.

Notes:
[1]There are no success criteria for midstory or understory species; however, data will be collected concurrently with scheduled monitoring throughout the 50-year project life.
[2] Greater flexibilities for species composition may be allotted after multiple years of not meeting initial success criteria.
[3] The 50-year period of monitoring begins once final construction of the project is complete.

- For projects that are not planted, the 50-year monitoring period begins at the end of the first growing season after all final construction activities are completed, including degradation of temporary containment dikes, completion of armoring of permanent dikes, installation of fish dips, and construction of water management features.
- For projects that are planted, the 50-year monitoring period begins at the end of the first growing season after all final construction activities are completed (including planting) and when planting has been conducted to the satisfaction of CEMVN Environmental Branch.

[4] The requirement that the above criteria remain in effect for the duration of the overall monitoring period may need to be modified later due to factors such as the effect of sea level rise on vegetative cover. Proposed modifications must first be approved by the CEMVN in coordination with the IET. If doesn't meet 80% 6 Years Following Completion of 2.C, the IET would meet and discuss path forward. Greater flexibility for species composition may be allotted after multiple years of not meeting initial success criteria.

4. Invasive and Nuisance Vegetation

A. Initial, Intermediate, and Long-term[1] Success Criteria

1. Maintain the project area such that the total average vegetative cover accounted for by invasive species and the total average vegetative cover accounted nuisance species each constitute less than 5% of the total average plant cover each throughout the 50-year project life. The list of invasive and nuisance species is found in Appendix A and will be tailored to reflect specific site needs.

Note:
[1]Yearly inspections to determine the need for invasive/nuisance control would be conducted until the long term success criteria for vegetation is achieved. After it is achieved, the frequency of inspections to determine the need for invasive/nuisance control would be adjusted based on site conditions.

5. Thinning of Native Vegetation (Timber Management)

The CEMVN, in cooperation with the IET, may determine that thinning of the canopy and/or mid-story strata is warranted to maintain or enhance the ecological value of the site. This determination will be made approximately 15 to 20 years following successful completion of plantings (General Construction 1.A or 1.B..). If it is decided that timber management efforts are necessary, the NFS will develop a Timber Stand Improvement/Timber Management Plan, and associated long-term success criteria, in coordination with the CEMVN and IET. Following approval of the plan, the NFS will perform the necessary thinning operations and demonstrate these operations have been successfully completed. Timber management activities will only be allowed for the purposes of ecological enhancement and maintenance of the mitigation site.

6. Hydrology (applicable to BLH-Wet habitats only)

A. Intermediate and Long-term Success Criteria

1. Four years after successful completion of plantings (General Construction 1.A. or 1.B.), site hydrology will be assessed to determine that the site meets the wetland criterion as described in the USACE Wetland Delineation Manual and applicable regional supplement. (USACE 2010) The NFS will provide the CEVMN with a wetland delineation to accompany the monitoring report.

MITIGATION MONITORING GUIDELINES

The following guidelines for mitigation monitoring and reporting are applicable to both BLH-Wet and BLH-Dry habitats unless otherwise indicated.

Baseline Monitoring Report

Within 90 days of completion of all final construction activities (e.g. eradication of invasive and nuisance plants, planting of native species, completion of earthwork, grading, surface water management system alterations/construction, etc.) associated with General Construction 1.A. or 1.B., a “baseline” monitoring report will be prepared. Information provided will typically include the following items:

- A detailed discussion of all mitigation activities completed.

- A description of the various features and habitats within the mitigation site. Various qualitative observations will be made to document existing conditions and will include, but not be limited to, potential problem zones, general condition of native vegetation, and wildlife utilization as observed during monitoring.

- A plan view drawing and shapefiles of the mitigation site showing the approximate boundaries of different mitigation features including planted areas, planted rows, areas involving eradication of invasive and nuisance plant species, surface water management features, access rows, proposed monitoring transects locations, sampling plot locations, photo station locations, and if applicable, piezometer and staff gage locations.

- Initial and final construction surveys for areas having had topographic alterations, including elevations of all constructed surface water drainage features, drainage culverts, and/or water control structures. The initial and final construction surveys should also include cross-sectional surveys of topographic alterations involving the removal of existing linear features such as berms/spoil banks, or the filling of existing linear ditches or canals. The number of cross-sections must be sufficient to represent elevations of these features. The initial and final construction surveys must include areas where existing berms, spoil banks, or dikes have been breached.

- A detailed inventory of all canopy and midstory species planted, including the number of each species planted and the stock size planted. In addition, provide an itemization of the number of each

species planted and correlate this itemization to the various areas depicted on the plan view drawing of the mitigation site.

- Photographs documenting conditions in the project area will be taken at the time of monitoring and at permanent photo stations within the mitigation site. At least two photos will be taken at each station with the view of each photo always oriented in the same general direction from one monitoring event to the next. The number of photo stations required, and the locations of these stations will vary depending on the mitigation site. The CEMVN will make this determination in coordination with the IET and will specify the requirements in the project-specific Mitigation Monitoring Plan. At a minimum, there will be 4 photo stations established. For mitigation sites involving habitat enhancement/earthwork only, permanent photo stations will primarily be established in areas slated for planting of canopy and mid-story species, but some may also be located in areas where plantings are not needed.

- Multiple baseline reports may need to be submitted if additional plantings are required by the contractor to meet planting survival acceptance criteria. Each revision will be updated to incorporate information regarding the re-planting.

Additional Monitoring Reports

All monitoring reports generated after the Baseline Monitoring Report will be called Initial, Intermediate or Long-Term Success Criteria Monitoring Reports and shall be numbered sequentially based on the year in which the monitoring occurred (i.e. Initial Success Criteria Monitoring Report 2019). All Monitoring Reports shall provide the following information unless otherwise noted:

- All items listed for the Baseline Monitoring Report with the exception of: (a) the topographic/construction surveys, although additional topographic surveys are required for specific monitoring reports (see below); and (b) the inventory and location map for all planted species.

- A brief description of maintenance and/or management and/or mitigation work performed since the previous monitoring report along with a discussion of any other significant occurrences.

- Quantitative plant data collected from (1) permanent monitoring plots measuring approximately 90 feet X 90 feet in size or from circular plots having a radius of approximately 53 feet, or (2) permanent transects sampled using the point-centered quarter method with a minimum of 20 sampling points established along the course of each transect, or; (3) permanent belt transects approximately 50 feet wide and perpendicular to planted rows. The number of permanent monitoring plots and transects, as well as the length of each transect will vary depending on the mitigation site. The CEMVN will make this determination prior to the first monitoring event in coordination with the IET and will specify the requirements in the Mitigation Monitoring Plan. Data recorded in each plot or transect will include:

  First monitoring report after a planting event

  - number of living planted canopy species (excluding recruited) present and the species composition;
  - number of living planted midstory species present and the species composition
  - average density of living planted canopy species (i.e., the total number of each species present per acre) and the species composition (transect methods)
  - average density of all native species in the midstory stratum, the total number of each species present, and the wetland indicator status of each species;
  - average percent cover by native species in the midstory stratum;
  - average percent cover accounted for by invasive plant species (all vegetative strata combined); average percent cover accounted for by nuisance plant species (all vegetative strata combined).

Subsequent monitoring reports

- number of living native canopy trees by species;
- average density of all native species in the canopy stratum, and the wetland indicator status of each species;
- average percent cover by native species in the canopy stratum;
- average diameter at breast height (DBH) for trees (measured 10 years after successful completion of plantings) in the midstory and upper strata;
- number of living native midstory species present and the species composition
- average density of all native species in the midstory stratum, the total number of each species present, and the wetland indicator status of each species;
- average percent cover by native species in the midstory stratum;
- average percent cover accounted for by invasive plant species (all vegetative strata combined); average percent cover accounted for by nuisance plant species (all vegetative strata combined).

- Quantitative data concerning plants in the understory (ground cover) stratum and concerning invasive and nuisance plant species will be gathered from sampling quadrats. These sampling quadrats will be established either along the axis of the belt transects discussed above, or at sampling points established along point-centered quarter transects discussed above, depending on which sampling method is used. Each sampling quadrat will be approximately 1 meter X 1 meter in size. The total number of sampling quadrats needed along each sampling transect will be determined by the CEMVN with the IET and will be specified in the Mitigation Monitoring Plan. Data recorded from the sampling quadrats will include average percent cover by native understory species; composition of native understory species and the wetland indicator status of each species; average percent cover by invasive plant species; and average percent cover by nuisance plant species.

- Photographs will be taken to document conditions at each permanent monitoring plot and along each permanent monitoring transect. Two photos at each station will be taken, one facing north and one facing south.

- For BLH-Wet habitats: A summary of rainfall data will be collected during the year preceding the monitoring report based on rainfall data recorded at a station located on or in close proximity to the mitigation site. Once all hydrology success criteria have been achieved, reporting of rainfall data will no longer be required.

- In addition, various qualitative observations will be made in the mitigation site to help assess the status and success of mitigation and maintenance activities. These observations will include general estimates of the average percent cover by native plant species in the canopy, midstory, and understory strata; general estimate of the average percent cover by invasive and nuisance plant species;

    - general estimates concerning the growth of planted canopy and mid-story species;
    - general observations concerning the colonization by volunteer native plant species;
    - general observations made during the course of monitoring will also address potential problem zones, general condition of native vegetation, trends in the composition of the plant communities, wildlife utilization as observed during monitoring, and other pertinent factors.

- For mitigation features restored from existing open water areas: Provide a topographic survey of all such mitigation features one year immediately following final construction activities (General Construction 1.B.). No additional topographic surveys will typically be required following this survey. However, if this survey indicates topographic success criteria have not been achieved and

that supplemental topographic alterations are necessary, then another topographic survey may be required following completion of the supplemental alterations. This determination will be made by CEMVN in coordination with the IET.

- A summary assessment of all data and observations along with recommendations as to actions necessary to help meet mitigation and management/maintenance goals and mitigation success criteria.

- A brief description of anticipated maintenance/management work to be conducted during the period from the current monitoring report to the next monitoring report.

Monitoring Reports Involving Timber Management Activities

In cases where timber management activities (thinning of trees and/or shrubs in the canopy and/or mid-story strata) have been approved by the CEMVN in coordination with the IET, monitoring will be required in the year immediately preceding and, in the year, following completion of the timber management activities (i.e. pre-timber management and post-timber management reports). These reports must include data and information that are in addition to the typical monitoring requirements. The NFS's proposed Timber Stand Improvement/Timber Management Plan must include the proposed monitoring data and information that will be included in the pre-timber management and post-timber management monitoring reports. The proposed monitoring plan must be approved by the CEMVN in coordination with the IET prior to the monitoring events and implementation of the timber management activities.

Monitoring Reports Following Re-Planting Activities

Re-planting of certain areas within the mitigation site may be necessary to ensure attainment of applicable native vegetation success criteria. Any monitoring report submitted following completion of a re-planting event must include:

- an inventory of the number of each species planted and the stock size used;
- a depiction of the areas re-planted, cross-referenced to a listing of the species and number of each species planted in each area;
- documented GPS coordinates for the perimeter of the re-planted area. If single rows are replanted, then GPS coordinates should be taken at the end of the transect; and
- all requirements listed under "Additional Monitoring Reports" of the Mitigation Monitoring Guidelines.

MITIGATION MONITORING SCHEDULE AND RESPONSIBILITIES

Monitoring will be dependent upon site conditions but may be delayed until later in the growing season due to site conditions or other unforeseen circumstances. Monitoring reports submitted as soon as possible but no later than December 31 of that year. Monitoring reports will be provided to the CEMVN, the NFS, and the agencies comprising the IET. The various monitoring and reporting responsibilities addressed in this section are all subject to the provisions set forth in the Introduction section.

The CEMVN will be responsible for conducting the monitoring events and preparing the associated monitoring reports until such time that the following initial success criteria are achieved (criteria follow numbering system used in success criteria section):

1. General Construction – 1.A or 1.B, as applicable.
2. Topography – 2.A.1 or 2.A.2, as applicable.
3. Native Vegetation – 3.A
4. Invasive & Nuisance Vegetation – until such time as monitoring responsibilities are transferred to the NFS.

Monitoring events associated with the above will include the first or baseline monitoring event plus annual monitoring events thereafter until the monitoring responsibilities are transferred to the NFS.

The NFS will be responsible for conducting the required monitoring events and preparing the associated monitoring reports for all other required years after the CEMVN has demonstrated the initial success criteria listed above have been achieved. The responsibility for management, maintenance, and monitoring of the non-structural components of mitigation project (vegetative) will typically be transferred to the NFS during the first quarter of the year immediately following submittal of the monitoring report that demonstrates attainment of the initial success criteria. Once monitoring responsibilities have been transferred to the NFS, the next monitoring event (intermediate) should take place 2 growing seasons after initial success has been met. After intermediate success has been met, monitoring will be conducted every 5 years throughout the remaining 50-year period of analysis.

In certain cases, it is possible that the BLH mitigation features may be established along with other mitigation features, like swamp or marsh habitats, at the same mitigation site. This scenario could require some adjustments to the typical monitoring schedule described above in order to develop a reasonable and efficient monitoring schedule that covers all the mitigation features. Such adjustments, if necessary, would be made at the time final mitigation plans are generated. This schedule must be in general accordance with the guidance provided above and will be prepared by the CEMVN and the IET.

If the initial survival criteria for planted canopy species are not achieved (i.e. the initial success criteria specified in native vegetation success criteria 2.A), the IET will convene to decide by consensus between two remedial actions. 1) Complete replant or supplemental replant or 2) Wait one growing season, monitor for initial success again, and reconvene with the IET to discuss results and determine path forward. If a replant is selected, a monitoring report will be required for each consecutive year until two annual sequential monitoring reports indicate that all survival criteria have been satisfied (i.e. that corrective actions were successful). If the IET decides not to replant, then after one growing season another initial monitoring report will be prepared and the IET will reconvene to determine path forward. The CEMVN will be responsible for conducting this additional monitoring and preparing the monitoring reports. The CEMVN will also be responsible for the purchase and installation of supplemental plants needed to attain the initial success criterion, subject to the provisions mentioned in the Introduction section.

If the native vegetation success criteria specified in in Section 3 are not achieved, a monitoring report will be required for each consecutive year until two annual sequential reports indicate that these criteria have been satisfied. The NFS will be responsible for conducting this additional monitoring and preparing the monitoring reports. The NFS will also be responsible for the purchase and installation of supplemental plants needed to attain these success criteria.

If timber management activities are conducted by the NFS, the NFS will be responsible for conducting the additional monitoring and preparing the associated monitoring reports necessary for such activities (e.g. one monitoring event and report in the year immediately preceding timber management activities and one monitoring event and report in the year that timber management activities are completed). Management activities conducted should be documented in the monitoring report.

Once monitoring responsibilities have transferred to the NFS, the NFS will retain the ability to modify the monitoring plan and the monitoring schedule should this become necessary due to unforeseen events or to improve the information provided through monitoring. Twenty years following completion of initial plantings, the number of monitoring plots and/or monitoring transects that must be sampled during monitoring events may be reduced substantially if it is clear that mitigation success is proceeding as anticipated. Any significant modifications to the monitoring plan or the monitoring schedule must first be approved by the CEMVN in coordination with the IET.

Adaptive Management Plans

ADAPTIVE MANAGEMENT PLAN

FRESH/INTERMEDIATE MARSH

1.0. Introduction

This Adaptive Management (AM) Plan is for the mitigation project included in the Draft Supplemental Environmental Impact Statement (SEIS) to West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Study Draft Mitigation Plan Update which is designed to mitigate for fresh marsh impacts. The Water Resources Development Act (WRDA) of 2007, Section 2036(a) and U.S Army Corps of Engineers New Orleans District (CEMVNCEMVN) implementation guidance for Section 2036(a) (CECW-PC Memorandum dated August 31, 2009: "*Implementation Guidance for Section 2036 (a) of the Water Resources Development Act of 2007 (WRDA 2007) – Mitigation for Fish and Wildlife and Wetland Losses*") requires adaptive management and monitoring plans be included in all mitigation plans for fish and wildlife habitat and wetland losses.

It should be noted that even though the proposed mitigation actions under the SIES include the potential purchase of credits from a mitigation bank, this appendix only details the Adaptive Management planning for the Corps constructed project. In the event that mitigation bank credits are purchased the mitigation management and maintenance activities for the mitigation bank credits will be set forth in the Mitigation Banking Instrument (MBI) for each particular bank. The bank sponsor (bank permittee) will be responsible for these activities rather than the CEMVN and/or the local Sponsor. CEMVN Regulatory staff reviews mitigation bank monitoring reports and conducts periodic inspections of mitigation banks to ensure compliance with mitigation success criteria stated in the MBI.

2.0. Adaptive Management Planning

Adaptive management planning elements included: 1) development of a Conceptual Ecological Model (CEM), 2) identification of key project uncertainties and associated risks, 3) evaluation of the mitigation projects as a candidate for adaptive management and 4) the identification of potential adaptive management actions (contingency plan) to better ensure the mitigation project meets identified success criteria. The adaptive management plan is a living document and will be refined as necessary as new mitigation project information becomes available.

2.1. Conceptual Ecological Model

A CEM was developed to identify the major stressors and drivers affecting the proposed mitigation project (see Table 1). The CEM does not attempt to explain all possible relationships of potential factors influencing the mitigation site; rather, the CEM presents only those relationships and factors deemed most relevant to obtaining the required acres/average annual habitat units (AAHUs). Furthermore, this CEM represents the current understanding of these factors and will be updated and modified, as necessary, as new information becomes available.

Table 1. Conceptual Ecological Model

Alternatives/Issues/Drivers	Fresh/Intermediate Marsh
Subsidence	-
Sea Level Rise	-
Runoff	-
Storm Induced	+/-
Salinity Impacts	+/-
Wave Action	-
Storm Surge	-
Vegetative Invasive Species	-
Herbivory	-
Hydrology (water table; wet/dry days; soil inundation)	+/-
Topography (elevation)	+/-

Key to Cell Codes: - = Negative Impact/Decrease
+ = Positive Impact/Increase
+/- = Duration Dependent

2.2. Sources of Uncertainty and Associated Risks

A fundamental tenet underlying adaptive management is decision making and achieving desired project outcomes in the face of uncertainties. There are many uncertainties associated with restoration of the coastal systems. The project delivery team (PDT) identified the following uncertainties during the planning process.

- Climate change, such as relative sea level rise, drought conditions, and variability of tropical storm frequency, intensity, and timing
- Subsidence and water level trends
- Uncertainty relative to achieving ecological success
- Long-term sustainability of project benefits
- Adaptability

2.3. Adaptive Management Evaluation

The project site was evaluated and planned to develop a project with minimal risk and uncertainty. The items listed below were incorporated into the mitigation project implementation plan and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) plan to minimize project risks.

- Detailed planting guidelines for intermediate marsh
- General monitoring guidelines for project success
- Specified success criteria (i.e., mitigation targets)
- Invasive species control

- Supplementary plantings as necessary (contingency)
- Corrective actions to meet topographic success as required (contingency)

Subsequently, as part of the adaptive management planning effort the project features were re-evaluated against the CEM and sources of uncertainty and risk were identified to determine if there was any need for additional adaptive management actions.

Based on the uncertainties and risks associated with the project implementation the following contingency/adaptive management actions have been identified to be implemented if needed to ensure the required AAHUs are met:

> Potential Action #1. Additional vegetative plantings as needed to meet identified success criteria.
> Potential Action #2. Marsh renourishment by adding sediment to obtain elevations necessary for marsh establishment and maintenance.
> Potential Action #3. Construction of a shoreline restoration feature as necessary to reduce Lake Pontchartrain wave and salinity influences on the marsh restoration feature.
> Potential Action #4. Potential need to adjust gapping in dikes in the future to maintain sufficient marsh hydrology and connectivity.

Actions 1is not recommended as a separate adaptive management action since it is already built into the mitigation plan and success criteria. If monitoring reveals the project does not meet the identified vegetation or topographic success criteria, additional plantings would be conducted under the mitigation project. Specific measures to implement Action 2, if determined necessary to achieve project benefits, would be coordinated with the NFS and other agencies to determine the appropriate course of action. If it is determined that the project benefits are significantly compromised because of improper elevation, additional fill material may need to be pumped into the project area. The CEMVN would be responsible for performing any necessary corrective actions, but the overall cost would be shared with the NFS according to the project cost-share agreement. Actions 3 and 4, if determined necessary to achieve project benefits, should be considered as a separate potential adaptive management action in the future and would be coordinated with the NFS and other agencies. Action

The CEMVN would be responsible for the proposed mitigation construction and monitoring until the initial success criteria are met. Initial construction and monitoring would be funded in accordance with all applicable cost-share agreements with the NFS. The CEMVN would monitor (on a cost-shared basis) the completed mitigation to determine whether additional construction, invasive/nuisance plant species control, and/or plantings are necessary to achieve initial mitigation success criteria. Once the CEMVN determines that the mitigation has met the 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, the CEMVN would consult with other agencies and the NFS to determine the appropriate management or remedial actions required to achieve ecological success. The CEMVN would retain the final decision on whether or not the project's required mitigation benefits are being achieved and whether or not remedial actions are required. If structural changes are deemed necessary to achieve ecological success, the CEMVN 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.

3.0. Monitoring for Project Success

A monitoring plan consistent with WRDA 2007 Section 2036(a) specific to the Guste Island mitigation project has been developed. The monitoring plan identifies success criteria and targets, a schedule for the monitoring events and the specific content for the monitoring reports that measure progress towards meeting the success criteria.

Table 2 summarizes the success criteria outlined in the monitoring plan and may be used to depict project progress towards achieving the identified success criteria. In the event monitoring results reveal that any success criteria have not been met, the CEMVN, NFS, or its assigns after consultation with CEMVN and other appropriate agencies, would modify management practices in order to achieve these criteria in the future.

Table 2: Fresh/Intermediate Marsh Report Card - Summary of Mitigation Success Criteria

Performance Categories	
Mitigation Construction	Criteria 1A: Complete initial construction activities. Criteria 1B: Complete final construction activities.
Native Vegetation	Criteria 3A: The site must achieve a minimum average cover of at least 50% native herbaceous species. Demonstrate that native vegetation satisfies USACE hydrophytic vegetation criteria.Criteria 3B: Achieve a minimum average cover of 60%, comprised of native herbaceous species. Demonstrate that native vegetation satisfies USACE hydrophytic vegetation criteria. Criteria 3C: Achieve a minimum average cover of 60%, comprised of native herbaceous species. Demonstrate that native vegetation satisfies USACE hydrophytic vegetation criteria
Invasive and Nuisance Vegetation	Criteria 4A: Maintain the Project area such that the total average vegetative cover accounted for by invasive species and the total average vegetative cover accounted for by nuisance species each constitute less than 5% of the total average plant cover throughout the 50-year Project life.

Topography	Criteria 2A: One year after initial construction- Demonstrate that at least 80% of the marsh platform has a surface elevation that is within +0.5 to – 0.5 feet of the desired target surface elevation as determined by the settlement curve. Two years after initial construction- Demonstrate that at least 80% of the marsh platform has a surface elevation that is within +0.5 feet to -0.25 of the desired target surface elevation as determined by the settlement curve for that year. Criteria 2B: Two years following achievement of Topography 2.A- Demonstrate that at least 80% of the marsh platform has a surface elevation that is within the functional marsh elevation range.

ADAPTIVE MANAGEMENT

BOTTOM LAND HARDWOOD WET

1.0. Introduction

This Adaptive Management (AM) Plan is for the mitigation project included in the Draft Supplemental Environmental Impact Statement (SEIS) to West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Study Draft Mitigation Plan Update which is designed to mitigate for bottomland hardwood wet (BLH-wet) impacts. The mitigation project is fully described in the previously approved EA #576 and summarized in aforementioned SEIS. The Water Resources Development Act (WRDA) of 2007, Section 2036(a) and U.S Army Corps of Engineers New Orleans District (CEMVN) implementation guidance for Section 2036(a) (CECW-PC Memorandum dated August 31, 2009: "Implementation Guidance for Section *2036 (a) of the Water Resources Development* Act of 2007 (WRDA 2007) – Mitigation for Fish and Wildlife and Wetland Losses") require adaptive management be includedin all mitigation plans for fish and wildlife habitat and wetland losses.

It should be noted that even though the proposed mitigation actions under the SEIS include the potential purchase of credits from a mitigation bank, this appendix only details the Adaptive Management planning for the Corps constructed project. In the event that mitigation bank credits are purchased the mitigation management and maintenance activities for the mitigation bank credits will be set forth in the Mitigation Banking Instrument (MBI) for each particular bank. The bank sponsor (bank permittee) will be responsible for these activities rather than the CEMVN and/or the local Sponsor. CEMVN Regulatory staff reviews mitigation bank monitoringreports and conducts periodic inspections of mitigation banks to ensure compliance with mitigation success criteria stated in the MBI.

2.0. Adaptive Management Planning

Adaptive management planning elements included: 1) development of a Conceptual Ecological Model (CEM), 2) identification of key project uncertainties and associated risks, 3) evaluation of the mitigation projects as a candidate for adaptive management and 4) the identification of potential adaptive management actions (contingency plan) to better ensure the mitigation project meets identified success criteria. The adaptive management plan is a living document and will be refined as necessary as new mitigation project information becomes available.

2.1. Conceptual Ecological Model

A CEM was developed to identify the major stressors and drivers affecting the proposed mitigation project (see Table 1). The CEM does not attempt to explain all possible relationships of potential factors influencing the mitigation site; rather, the CEM presents only those relationships and factors deemed most relevant to obtaining the required acres/average annual habitat units (AAHUs). Furthermore, this CEM represents the current understanding of these factors and will be updated and modified, as necessary, as new information becomes available.

Table 1. Conceptual Ecological Model

Alternatives/Issues/Drivers	BLH Wet	Mitigation Banks
Freshwater Input	+/-	*
Salinity Impacts	-	*
Subsidence	-	*
Sea Level Rise	-	*
Runoff	-	*
Vegetative Invasive Species	-	*
Herbivory	-	*
Hydrology	+/-	*
Topography (elevation)	+/-	*

Key to Cell Codes:
- = Negative Impact/Decrease
+ = Positive Impact/Increase
+/- = Duration Dependent
*Issues and drivers assumed to be addressed by Mitigation Bank sponsors

2.2. Sources of Uncertainty and Associated Risks

A fundamental tenet underlying adaptive management is decision making and achieving desired project outcomes in the face of uncertainties. There are many uncertainties associated with restoration of the coastal systems. The project delivery team identified the following uncertainties during the planning process.

A. Climate change, such as relative sea level rise, drought conditions, and variability of tropical storm frequency, intensity, and timing
B. Subsidence and water level trends at the mitigation sites
C. Uncertainty Relative to Achieving Ecological Success:
    i. Water, sediment, and nutrient requirements for BLH
    ii. Magnitude and duration of wet/dry cycles for BLH
    iii. Nutrients required for desired productivity for BLH
    iv. Growth curves based on hydroperiod and nutrient application for BLH
    v. Tree litter production based on nutrient and water levels for BLH
    vi. Tree propagation in relation to management/regulation of hydroperiod for BLH
D. Loss rate of vegetative plantings due to herbivory
E. Long-Term Sustainability of Project Benefits

2.3. Adaptive Management Evaluation

The project site was evaluated and planned to develop a project with minimal risk and uncertainty. The items listed below were incorporated into the mitigation project implementation plan and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) plan to minimize project risks.

- Specified success criteria (i.e., mitigation targets)
- Detailed planting guidelines for BLH
- Invasive species control
- Supplementary plantings as necessary (contingency)
- Corrective actions to meet topographic and hydrologic success as required (contingency)

Subsequently, as part of the adaptive management planning effort the mitigation project features were re-evaluated against the CEM and sources of uncertainty and risk were identified to determine if there was any need for additional actions and costs under the adaptive management plan to ensure that the project meets the required success criteria. Based on the uncertainties and risks associated with the project implementation the following contingency actions have been identified to be implemented if needed to ensure the required AAHUs are met.

Potential Action #1. Additional vegetative plantings as needed to meet identified success criteria.

Uncertainties addressed: A,B,C,D, E

Potential Action #2. Additional earthwork at mitigation sites (by adding sediment or degrading) to obtain elevations necessary for BLH vegetative establishment and maintenance.

Uncertainties addressed: A,B,C,E

Potential Action #3. Invasive species control to ensure survival of native species and meet required success criteria.

Uncertainties addressed: E

Actions 1 & 3 are not recommended as separate adaptive management actions since they are already built into the mitigation plan and success criteria identified. In the event that monitoring reveals the project does not meet the identified vegetation, or hydrologic success criteria, additional plantings or construction activities are already accounted for and would be conducted under the mitigation project. Specific measures to implement Action 2, if determined necessary to achieve project benefits, would be coordinated with the NFS and other agencies to determine the appropriate course of action. If it is determined that the project benefits are significantly compromised because of improper elevation, additional fill material may need to be pumped into or removed from the project area. Due to the impact the addition of fill to the mitigation projects once they have been planted would incur, lifts to the projects are not currently considered as a viable remedial action. Instead, increasing the size of the existing mitigation project or mitigating the outstanding balance of the mitigation requirement elsewhere or through the purchase of mitigation bank credits would be options that could be considered through additional coordination with the NFS and the IET. However, such options would have to undergo further analysis in a supplemental NEPA document.

Action 2 is potentially very costly actions. Before implementing such an action, the Corps would coordinate with the NFS and other agencies to determine if other actions, such as

purchasing of credits in a mitigation bank or building additional mitigation elsewhere, would be more cost-effective options to fulfill any shortfalls in the overall project success. The CEMVN would be responsible for performing any necessary corrective actions, but the overall cost would be shared with the NFS according to the project cost-share agreement.

The CEMVN would be responsible for the proposed mitigation construction and monitoring until the initial success criteria are met. Initial construction and monitoring would be funded in accordance with all applicable cost-share agreements with the NFS. The CEMVN would monitor (on a cost-shared basis) the completed mitigation to determine whether additional construction, invasive/nuisance plant species control, and/or plantings are necessary to achieve initial mitigation success criteria. Once the CEMVN determines that the mitigation has met the 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, the CEMVN would consult with other agencies and the NFS to determine the appropriate management or remedial actions required to achieve ecological success. The CEMVN would retain the final decision on whether or not the project's required mitigation benefits are being achieved and whether or not remedial actions are required. If structural changes are deemed necessary to achieve ecological success, the CEMVN 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.

3.0. Monitoring for Project Success

A monitoring plan consistent with WRDA 2007 Section 2036(a) specific to the St James mitigation project will be developed prior to initial success monitoring. The General Mitigation Guidelines developed by the CEMVN, NFS, and the Resource Agencies is included for planning purposes until implementation of the project. The general monitoring plan identifies success criteria and targets, a schedule for the monitoring events and the specific content for the monitoring reports that measure progress towards meeting the success criteria.

Table 2 summarizes the success criteria outlined in the general monitoring plan and may be used to depict project progress towards achieving the identified success criteria. In the event monitoring results reveal that any success criteria have not been met, the CEMVN, NFS, or its assigns after consultation with CEMVN and other appropriate agencies, would modify management practices in order to achieve these criteria in the future.

Table 2: BLH-wet Report Card - Summary of Mitigation Success Criteria

Performance Categories	
Mitigation Construction	Criteria 1A: Complete construction activities.
Native Vegetation	Criteria 3A: Achieve a minimum average survival of 50% of planted canopy species (i.e. achieve a minimum average canopy species density of 269 seedlings/ac.).

	The surviving plants must approximate the species composition and percentages specified in the initial plantings component of the final planting plan found in the project P&S. These criteria will apply to the initial plantings, as well as any subsequent re-plantings necessary to achieve this initial success requirement 3B: Achieve a minimum average density of 269 living native canopy species per acre (planted trees and/or naturally recruited native canopy species). Achieve a minimum average density of 135 (50% of 269) living hard-mast producing species in the canopy stratum (planted trees and/or naturally recruited native canopy species). This hard mast criteria will thereafter remain in effect for the duration of the overall monitoring period. Demonstrate that vegetation satisfies USACE hydrophytic vegetation criteria. Criteria 3C: Attain a minimum average canopy cover of 80% by planted and/or naturally recruited native canopy species. Achieve a minimum average density of 135 (50% of 269) living hard-mast producing species in the canopy stratum (planted trees and/or naturally recruited native canopy species). Demonstrate that vegetation satisfies USACE hydrophytic vegetation criteria.
Invasive and Nuisance Vegetation	Criteria 4A: Maintain the Project area such that the total average vegetative cover accounted for by invasive species and the total average vegetative cover accounted for by nuisance species each constitute less than 5% of the total average plant cover throughout the 50-year Project life.
Topography	Criteria 2A: For mitigation features requiring earthwork (grading) to attain desired elevation (excluding areas restored from open water) – Following completion of General Construction Criteria 1.A. but prior to plantings – demonstrate that at least 80% of the total graded area within each feature is within approximately +0.25 feet of the desired target soil surface elevation Criteria
Hydrology	4 years after successful completion of Construction, site hydrology will be assessed to determine that the site meets the wetland criterion as

	described in the USACE Wetland Delineation Manual and applicable regional supplement.

Prior Reports

Prior Reports

BIPARTISAN BUDGET ACT CONSTRUCTION PROJECTS; WEST SHORE LAKE PONTCHARTRAIN (WSLP), COMITE RIVER DIVERSION (COMITE), AND EAST BATON ROUGE FLOOD RISK MANAGEMENT (EBR), BBA CONSTRUCTION MITIGATION

https://www.mvn.usace.army.mil/Missions/Environmental/NEPA-Compliance-Documents/Bipartisan-Budget-Act-2018-BBA-18/West-Shore-Lake-Pontchartrain/

PROGRAMMATIC INDIVIDUAL ENVIRONMENTAL REPORT 36-TIERED INDIVIDUAL ENVIRONMENTAL REPORT 1 MILTON ISLAND MARSH RESTORATION PROJECT SAINT TAMMANY PARISH, LOUISIANA

https://www.mvn.usace.army.mil/Missions/Environmental/NEPA-Compliance-Documents/HSDRRS-Projects/PIER-36-Bayou-Sauvage-Turtle-Bayou-and-New-Zydeco-Ridge-Restoration/

Agency Coordination

ESA MEMO

From: Tammy Gilmore
Tel: (504) 862-1002
Date: August 15, 2019

Subject: ESA coordination for BBA

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act.) The project, as proposed,

Is not Likely to adversely effect those resources

Joseph A. [illegible] 28 Jan 2020

Supervisor Date
Louisiana Ecological Services Office
U.S. Fish and Wildlife Service

Dear Mr. Ranson:

Attention: David Walther

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared Environmental Assessment (EA) #576 to evaluate alternatives for mitigating the impacts associated with the construction of the West Shore Lake Pontchartrain (WSLP), Comite Diversion, and East Baton Rouge Flood (EBR) Risk Management projects; collectively known as the BBA Construction Projects.

Project Description

Each project in the final array was evaluated to determine the general construction elements that would be required for the conversion of habitat type. General construction elements similar among all projects converting agricultural land to forested wetlands included work items such as construction of new gravel access roads, reduction of site elevations, backfilling of existing ponds/ditches, demolition of onsite structures, harrowing soil to receive planting, and planting of canopy and mid-story plant species required to establish BLH and/or swamp habitat. For all mitigation projects, it was assumed that degraded earthen material will be used to achieve target elevations throughout the site or hauled off by a Contractor to a Government approved disposal area.

Projects that would convert open water to forested wetlands would require such construction activities as hydraulic dredging and pumping of material, construction of containment dikes, placement of rip-rap for shoreline protection, planting of canopy and mid-story plant species required to establish BLH and/or swamp habitat, and gapping or degrading of containment dikes.

Project converting low quality degraded habitats to forested wetlands would require such construction elements as clearing and grubbing, surface alterations and planting of canopy and mid-story plant species required to establish BLH and/or swamp habitat.

Further detail for each project including site specific components such as quantities, access duration and staging are presented in attachment 1.

Occurrence of Protected, Threatened and Endangered Species

Based on a parish search conducted on the USFWS endangered species website in March 2019, and verbal communication with USFWS on July 23, 2019, the only species under USFWS jurisdiction that are expected to be found in any of the project areas are the West Indian manatee and Gulf sturgeon. (https://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=22057).

Bald eagles may be present within the project areas; however, no known nests exist at this time. If bald eagle nests are discovered near the site, the National Bald Eagle Management Guidelines would be followed during construction to avoid and minimize impacts to this species.

No listed species are found within any of the project areas converting agricultural lands to forested wetlands.

The West Indian manatee and Gulf sturgeon have potential to occur at the Pine Island site. No listed species are expected to be directly impacted within the proposed swamp mitigation area since their utilization of the shallow water depths in the site (typically less than two feet) is unlikely and access is extremely limited. However, as a precaution, implementation of standard protection measures and construction conditions for manatees and sturgeon would be implemented to ensure any potential impacts are avoided.

The borrow area could potentially be utilized by manatees and sturgeon, however, the presence of construction- related activity, machinery, and noise is expected to cause these species to avoid the project area during the construction period. Additionally, direct impacts to Gulf sturgeon from construction related activities are not anticipated as hydraulic cutterhead dredges are slow moving and use of them is not known to impact these species. Manatee could potentially be affected by dredging operations, but the impacts would be avoided by implementation of standard manatee protection measures developed by the USFWS.

Potential indirect impacts from the proposed action would primarily consist of effects from dredging operations, notably noise and turbidity, and the loss of foraging habitat. Although the rise in turbidity could immediately reduce water quality in the project area, those effects would be temporary and would be reduced by movement of the tides. Any manatees or sturgeon in the area could relocate during construction since the project area encompasses only a small section of Lake Pontchartrain. The indirect impacts resulting from the loss of the borrow area as foraging habitat would be insignificant given the small size of the project area compared to the overall size and similar habitat within Lake Pontchartrain. Additionally, the depth of material being removed from the borrow area is not anticipated to result in exposure of a different substrate type. Future recolonization of the forage species used by Gulf sturgeon is anticipated in the borrow site. As such, the indirect impacts to manatees and sturgeon are anticipated to be minimal.

Conclusion and Determination

For the reasons discussed above, we believe that the project, as planned, may affect but would not likely adversely affect the manatee and Gulf sturgean. Please review this plan and inform us whether or not you agree with our determination. If you have any questions about the project or need additional information please telephone me at (504) 862-1002.

Literature Cited

U.S. Fish & Wildlife Service (USFWS). Endangered Species Program. 2015. http://www.fws.gov/lafayette/pdf/LA_T&E_Species_List.pdf

Sincerely,

Marshall K. Harper
Chief, New Orleans District
Environmental Branch

PROJECT: BBA Mitigation, Pine Island Swamp Creation, St. Tammany Parish, Louisiana

GENERAL SOW:

The proposed project involves creation of up to a total of approximately 1,965 acres of swamp habitat over eight separate mitigation areas as compensatory mitigation for some of the swamp impacts resulting from construction of BBA projects. The swamp creation areas (mitigation areas) would be located in open water areas around Milton Island on the north shore of Lake Pontchartrain. This site is located southwest of the town of Madisonville adjacent to the Tchefuncte River in St. Tammany Parish.

Required earthwork prior to dredging would first consist of containment dike construction or rehabilitation around the perimeter of each of the eight mitigation areas. The crest elevation of these dikes would be approximately 5.0 feet NAVD88 and each dike would have a 5-ft wide crown. Existing material within each mitigation area would be used to construct or rehabilitate the containment dikes. Temporary submerged pipelines would be placed on the bottom of the canals that run between the mitigation areas as well as underneath the roads separating them as indicated on the attached drawing. Following dike construction and installation of the temporary pipelines, a cutterhead dredge would hydraulically place material (sediment) from within the borrow area indicated on the attached drawing into the mitigation areas using the shown pipeline routes. After filling the mitigation areas is complete, a one-year settlement period would pass prior to dike degrading the containment dikes and planting the mitigation areas. The temporary pipelines would be removed after pumping of dredged materials into the mitigation areas is complete.

Earthwork would also include building a permanent shoreline protection rip-rap feature along an approximately 2,420-ft stretch of Lake Pontchartrain shoreline adjacent to Mitigation Area 7 which will be underlain with separator geotextile fabric.

After the end of the fill settlement period in the 8 mitigation areas and after the containment dikes are degraded to match the average fill elevation in each mitigation area, native canopy and midstory plants typical of swamp habitats would be installed in mitigation Areas 1 – 8 .

The approximate maximum planted acreage within the proposed mitigation areas would be as follows:

Mitigation Area	Area (Acres)
Area 1	218
Area 2	262
Area 3	524
Area 4	226

Mitigation Area	Area (Acres)
Area 5	72
Area 6	337
Area 7	142
Area 8	184
Total	**1,965**

PROPOSED PLANTING:

Assumed total plantings within the swamp mitigation areas (approximate):

Mitigation Area	Canopy Seedlings	Midstory Seedlings
Area 1	118,810	29,648
Area 2	142,790	35,632
Area 3	285,580	71,264
Area 4	123,170	30,736
Area 5	39,240	9,792
Area 6	183,665	45,832
Area 7	77,390	19,312
Area 8	100,280	25,024
Total	**1,070,925**	**267,240**

Assume swamp canopy plant species would be installed on an 8ft by 10ft grid (545 seedlings per acre)

Assume swamp midstory plant species would be installed on a 16ft by 20ft grid (136 seedlings per acre)

Mowing poles (PVC pipes extending roughly 6 feet above grade) would be installed on each planted row every 50' to 100' to guide mowing operations.

Dike Construction/Rehabilitation:

Total perimeter retention would be required to retain dredged material and to allow for vertical accretion. The total length of each mitigation area which would require dike construction, rehabilitation, or lifting would be as follows:

Mitigation Area	Perimeter (ft)
Area 1	14,925
Area 2	22,366
Area 3	22,132
Area 4	19,090
Area 5	9,050
Area 6	16,948
Area 7	12,343
Area 8	30,628
Total	**147,482**

Any existing features such as existing perimeter dikes, access roads, and or ridges would be used for retention of dredged material. If dike rehabilitation is required, material for dike maintenance would come from within the proposed footprint of the swamp sites.

Existing dikes would be used to the extent practical. The retention dikes would be constructed to elevation 5.0 feet NAVD88, with a 5'-wide crown to assure dike integrity. The borrow ditch in each mitigation area used to obtain material for the retention (containment) dikes would be offset a minimum of 40' from each dike to assure dike stability. The borrow ditches would be on the interior side of the dikes (e.g. within the limits of the mitigation areas).``

Plugs would be left in the borrow ditch at 1,000- foot intervals to minimize water flow and material loss during pumping operations. Spill boxes and/or weirs would be constructed at locations along the northern and western retention dikes as necessary to allow for effluent water release from within the swamp creation areas for approximately one year after construction, when the perimeter dikes are breached and degraded. If deemed necessary by the construction contractor, a low-level interior weir or baffle dikes would be constructed to assist in vertical stacking of dredged material. The gaps would be spaced with care being taken to locate gaps at existing natural bayous, canals, or other openings. The gaps would require a 25-foot bottom at approximately elevation 0.0 feet NAVD88 (lower limit of existing nearby marsh platform) to assure water interchange with the existing marsh.

Rip-Rap Construction:

On the Lake Pontchartrain shoreline of Mitigation Area 7, a 2,240-ft long stretch of shoreline covering approximately 0.93 acres would be reinforced with a stone bank rip-rap. This rip-rap would be two feet thick and be placed on the graded shoreline from elevation 0' up to elevation 4.5'. This two-foot thick rip-rap would be underlain with a 200 pound separator geotextile fabric. Total estimated geotextile fabric quantity for this

rip-rap construction is 4,575 square yards and the estimated stone quantity is 5,700 tons or 2,940 cubic yards.

Dredging:

A hydraulic cutterhead dredge would be used to pump approximately 8.9 million cubic yards of material via a pipeline from the proposed borrow site in Lake Pontchartrain to the swamp creation sites. Initial elevation for dredge fill within each mitigation area would be to approximate elevation 2.5 feet NAVD88, with the goal of ultimately resulting in a final target swamp elevation of approximately 2.0 feet. The maximum allowable dredging depth within the borrow site would be -19 feet NAVD88 plus a 1-foot allowable overdepth to account for inaccuracies in the dredging process.

Three 75-ft corridors are indicated on the drawing and run from the borrow site into Mitigation Areas 4 and 7 have been established to place subline for pumping material from the proposed borrow site to the mitigation areas. The first pipeline corridor runs down the middle of the entrance channel to the east of Milton Island and to the east of an area indicated to be a shell reef site. All activities related to this proposed work would avoid this area. All pipeline corridors would be placed and located in a manner which does not impact existing wetlands.

The estimated quantities required to achieve the initial target fill elevation of 2.5ft NAVD88 within the eight mitigation areas are as follows:

Mitigation Area	Fill Quantity (Cubic Yards)
Area 1	1,809,900
Area 2	2,205,053
Area 3	4,257,765
Area 4	1,900,702
Area 5	625,541
Area 6	2,756,592
Area 7	1,196,595
Area 8	1,649,163
Total	**16,401,310**

DURATION:

Per the PDT, the assumed start date for construction is 1 June 2020. Necessary dike construction and initial pumping of sediment into the mitigation areas would be completed around June 2021. After a year-long settlement period, degrading of dike would begin in June 2022 and be completed no sooner than March 2023. Initial planting activities would likely be conducted in November 2023 through mid-March

2024. Notice of Construction Completion (NCC) would be issued soon after completion of the initial planting event.

Monitoring to determine success of the initial plantings would likely occur in October 2024 with the report submitted in December 2024. If this monitoring showed success criteria had been satisfied, a second monitoring event would likely occur in October 2025 with the report submitted in December 2025. Assuming this latter report showed applicable success criteria had been satisfied, the overall project would be turned over to the Non-Federal Sponsor in approximately March 2026.

SITE ACCESS:

Access to the project site would be as follows:

From the north, Guste Island Road runs between Areas 1 and 8. This road then splits into Grand Rue Port Louis Road which runs between Areas 4, 5, and 7. South Chenier Drive runs between Area 2 and Area 3. Access to the mitigation areas can also be made via the many canals that run between all the areas.

STAGING:

Staging of equipment for initial dike construction activities and riprap construction would be via barge(s) on or near the Lake Pontchartrain shoreline as indicated on the attached drawing. The proposed staging areas would first be submitted for Government approval. Staging of materials for the initial planting event would be within the mitigation areas themselves most likely.

MAINTENANCE/MANAGEMENT ACTIVITIES:

After completion of all dike construction, dredge pumping, and soil preparation activities but prior to initial plantings, herbicides may be applied to the mitigation areas to help control invasive and nuisance plant species. Mowing may also be performed in the mitigation area during this time period. After the mitigation area is initially planted and before the success of these plantings is evaluated (monitored), herbicide applications and/or mowing may also occur to help suppress undesirable vegetation. Throughout this period, access/maintenance roads would be maintained as necessary as would be any new drainage features established.

The first monitoring event would occur in the fall of the year of the initial plantings. This report could show additional plantings are needed or it may not. Regardless, various mowing events and herbicide application events would take place during the period from the first monitoring event to the second monitoring event performed the next year. It is assumed that the second monitoring event would show success criteria for the plantings had been achieved as were success criteria about control of invasive and nuisance plants. It is also assumed this monitoring event would show the success criterion established for the final soil surface elevation in the mitigation areas had been

achieved. In this case, the Non-Federal Sponsor would take over the project including all management and maintenance work.

EQUIPMENT:

Equipment to be used for the respective work is assumed as follows:

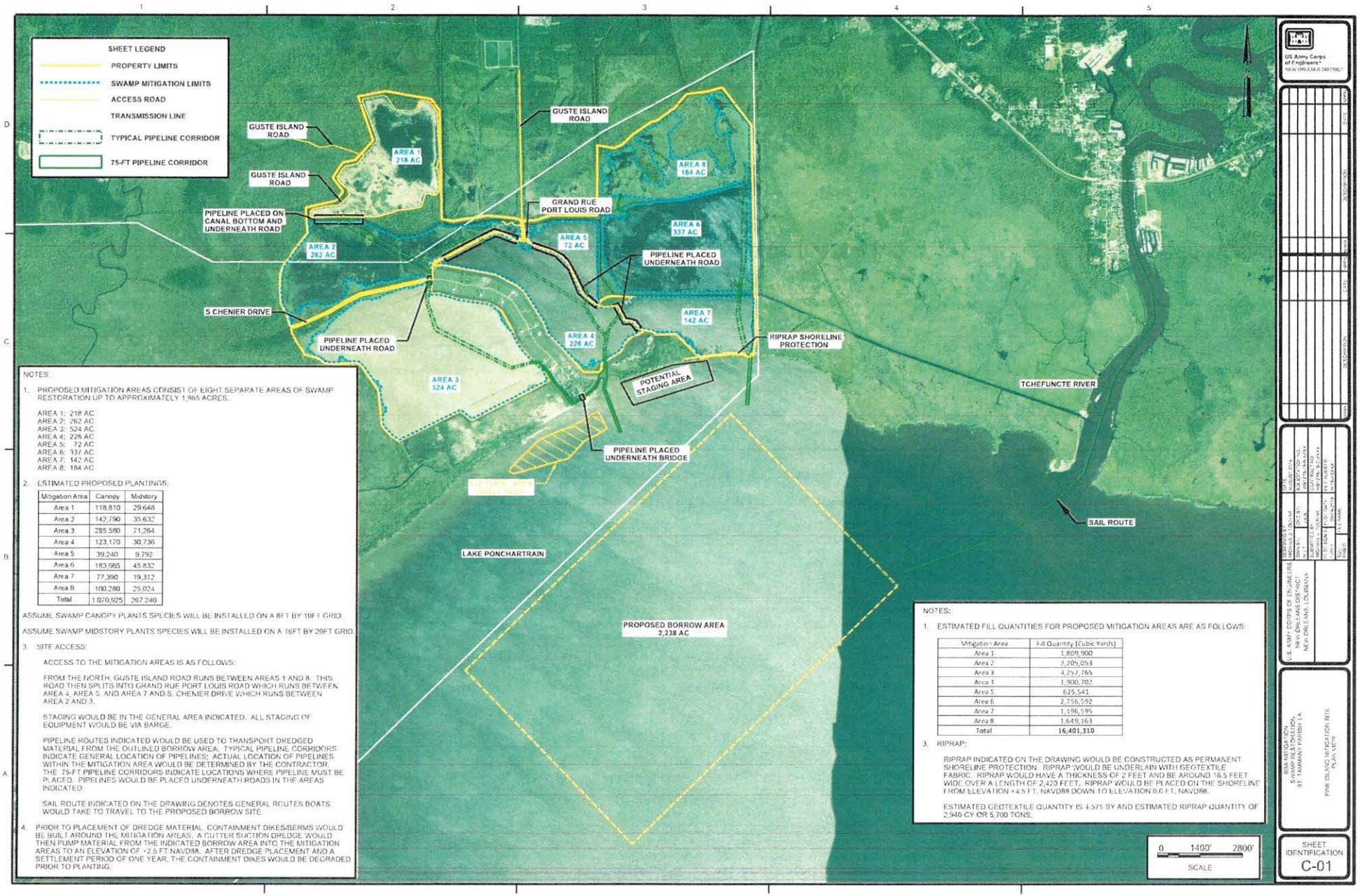
Dike Construction: Excavators, marsh buggies, airboats

Dredge Pumping: Cutterhead dredge, tugs, crewboats, pipeline (steel, and rubber), derricks, barges, up to D-8 dozers, excavators, front-end loaders, marsh buggies, airboats, marsh masters

Rip-rap Construction: Excavators, scows, barges, up to D-8 dozers, front-end wheel loaders, marsh buggies

Planting Preparation: Tractor with harrow and scarifier, bulldozers, and backhoe.

Planting: Pickup trucks, ATVs and/or UTVs, and marsh buggies.



NOTES:

1. PROPOSED MITIGATION AREAS CONSIST OF EIGHT SEPARATE AREAS OF SWAMP RESTORATION UP TO APPROXIMATELY 1,965 ACRES.

   AREA 1: 218 AC
   AREA 2: 262 AC
   AREA 3: 524 AC
   AREA 4: 226 AC
   AREA 5: 72 AC
   AREA 6: 337 AC
   AREA 7: 142 AC
   AREA 8: 184 AC

2. ESTIMATED PROPOSED PLANTINGS:

Mitigation Area	Canopy	Midstory
Area 1	118,810	29,648
Area 2	142,790	35,632
Area 3	285,580	71,264
Area 4	123,170	30,736
Area 5	39,240	9,792
Area 6	183,665	45,832
Area 7	77,390	19,312
Area 8	100,280	25,024
Total	1,070,925	267,240

ASSUME SWAMP CANOPY PLANTS SPECIES WILL BE INSTALLED ON A 8FT BY 10FT GRID.

ASSUME SWAMP MIDSTORY PLANTS SPECIES WILL BE INSTALLED ON A 16FT BY 20FT GRID.

3. SITE ACCESS:

   ACCESS TO THE MITIGATION AREAS IS AS FOLLOWS:

   FROM THE NORTH, GUSTE ISLAND ROAD RUNS BETWEEN AREAS 1 AND 8. THIS ROAD THEN SPLITS INTO GRAND RUE PORT LOUIS ROAD WHICH RUNS BETWEEN AREA 4, AREA 5, AND AREA 7 AND S. CHENIER DRIVE WHICH RUNS BETWEEN AREA 2 AND 3.

   STAGING WOULD BE IN THE GENERAL AREA INDICATED. ALL STAGING OF EQUIPMENT WOULD BE VIA BARGE.

   PIPELINE ROUTES INDICATED WOULD BE USED TO TRANSPORT DREDGED MATERIAL FROM THE OUTLINED BORROW AREA. TYPICAL PIPELINE CORRIDORS INDICATE GENERAL LOCATION OF PIPELINES; ACTUAL LOCATION OF PIPELINES WITHIN THE MITIGATION AREA WOULD BE DETERMINED BY THE CONTRACTOR. THE 75-FT PIPELINE CORRIDORS INDICATE LOCATIONS WHERE PIPELINE MUST BE PLACED. PIPELINES WOULD BE PLACED UNDERNEATH ROADS IN THE AREAS INDICATED.

   SAIL ROUTE INDICATED ON THE DRAWING DENOTES GENERAL ROUTES BOATS WOULD TAKE TO TRAVEL TO THE PROPOSED BORROW SITE.

4. PRIOR TO PLACEMENT OF DREDGE MATERIAL, CONTAINMENT DIKES/BERMS WOULD BE BUILT AROUND THE MITIGATION AREAS. A CUTTER SUCTION DREDGE WOULD THEN PUMP MATERIAL FROM THE INDICATED BORROW AREA INTO THE MITIGATION AREAS TO AN ELEVATION OF +2.5 FT NAVD88. AFTER DREDGE PLACEMENT AND A SETTLEMENT PERIOD OF ONE YEAR, THE CONTAINMENT DIKES WOULD BE DEGRADED PRIOR TO PLANTING.

NOTES:

1. ESTIMATED FILL QUANTITIES FOR PROPOSED MITIGATION AREAS ARE AS FOLLOWS:

Mitigation Area	Fill Quantity (Cubic Yards)
Area 1	1,809,900
Area 2	3,205,053
Area 3	4,257,765
Area 4	1,900,702
Area 5	625,541
Area 6	2,756,592
Area 7	1,196,595
Area 8	1,649,163
Total	**16,401,310**

3. RIPRAP:

   RIPRAP INDICATED ON THE DRAWING WOULD BE CONSTRUCTED AS PERMANENT SHORELINE PROTECTION. RIPRAP WOULD BE UNDERLAIN WITH GEOTEXTILE FABRIC. RIPRAP WOULD HAVE A THICKNESS OF 2 FEET AND BE AROUND 16.5 FEET WIDE OVER A LENGTH OF 2,420 FEET. RIPRAP WOULD BE PLACED ON THE SHORELINE FROM ELEVATION +4.5 FT. NAVD88 DOWN TO ELEVATION 0.0 FT. NAVD88.

   ESTIMATED GEOTEXTILE QUANTITY IS 4,575 SY AND ESTIMATED RIPRAP QUANTITY OF 2,940 CY OR 5,700 TONS.

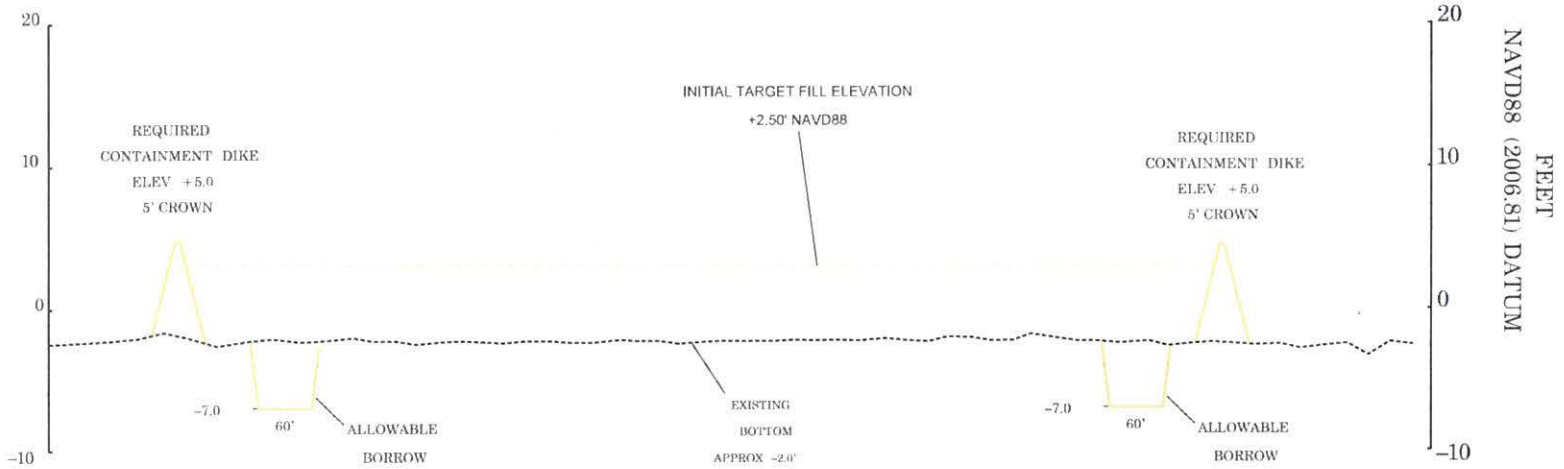
US Army Corps of Engineers
NEW ORLEANS DISTRICT

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

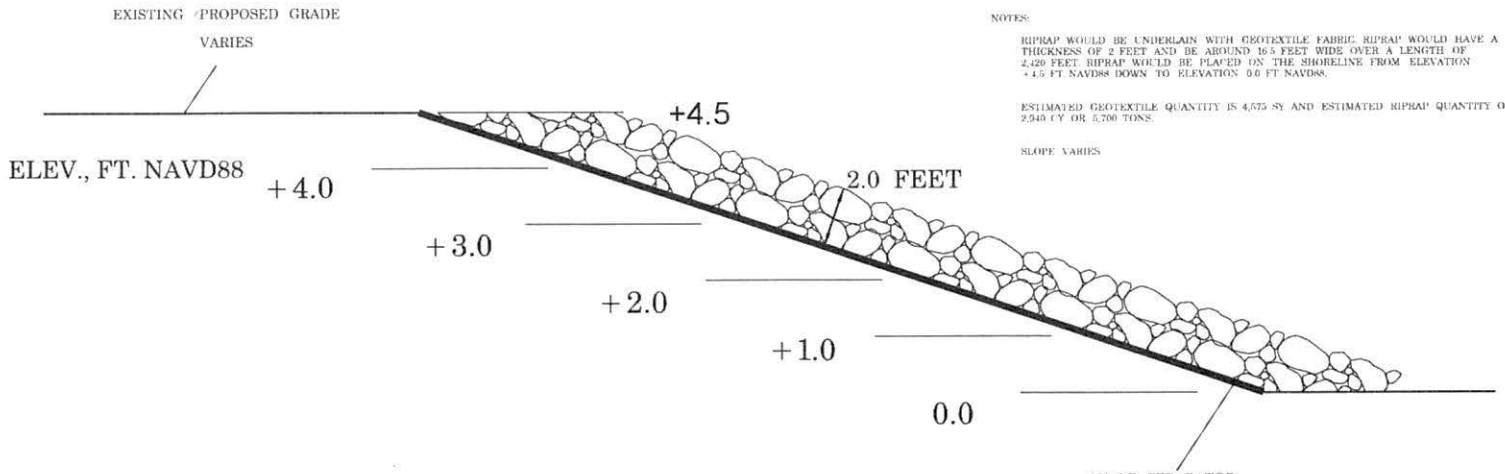
BBA MITIGATION
SWAMP RESTORATION
ST. TAMMANY PARISH, LA.

PINE ISLAND MITIGATION SITE
PLAN VIEW

SHEET IDENTIFICATION
C-01



TYPICAL SECTION – SWAMP CREATION
(NTS)



NOTES:

RIPRAP WOULD BE UNDERLAIN WITH GEOTEXTILE FABRIC. RIPRAP WOULD HAVE A THICKNESS OF 2 FEET AND BE ABOUND 16.5 FEET WIDE OVER A LENGTH OF 2,420 FEET. RIPRAP WOULD BE PLACED ON THE SHORELINE FROM ELEVATION +4.5 FT NAVD88 DOWN TO ELEVATION 0.0 FT NAVD88.

ESTIMATED GEOTEXTILE QUANTITY IS 4,675 SY AND ESTIMATED RIPRAP QUANTITY OF 2,940 CY OR 5,700 TONS.

SLOPE VARIES

TYPICAL SECTION – SHORELINE PROTECTION RIPRAP
(NTS)

US Army Corps of Engineers
NEW ORLEANS DISTRICT

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

BBA MITIGATION
BWAD RESTORATION
ST. TAMMANY PARISH, LA

PINE ISLAND MITIGATION SITE
TYPICAL MITIGATION AREA AND RIPRAP
CROSS SECTIONS

SHEET IDENTIFICATION
C-02

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

November 21, 2019

F/SER31:LW
SERO-2019-02308

Chief, Environmental Branch
New Orleans District Corps of Engineers
Department of the Army
7400 Leake Avenue
New Orleans, Louisiana 70118

Ref.: Bipartisan Budget Act 18 EA #576, Madisonville, St. Tammany Parish, Louisiana. – EXPEDITED

Dear Mr. Harper:

This letter responds to your November 15, 2019, request pursuant to Section 7 of the Endangered Species Act (ESA) for consultation with the National Marine Fisheries Service (NMFS) on the subject action.

We reviewed the action agency's consultation request document and related materials. Based on our knowledge, expertise, and the action agency's materials, we concur with the action agency's conclusions that the proposed action is not likely to adversely affect the NMFS ESA-listed species and/or designated critical habitat. This concludes your consultation responsibilities under the ESA for species and/or designated critical habitat under NMFS's purview. Reinitiation of consultation is required and shall be requested by the action agency or by NMFS where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) take occurs; (b) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this consultation; (c) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not previously considered in this consultation; or (d) if a new species is listed or critical habitat designated that may be affected by the action.

We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions on this consultation, please contact Laura Wright, Consultation Biologist, at (727) 209-5977 or by email at laura.wright@noaa.gov.

Sincerely,

for David Bernhart
Assistant Regional Administrator
for Protected Resources

File: 1514-22.f.7

JOHN BEL EDWARDS
GOVERNOR

THOMAS F. HARRIS
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

March 4, 2020

Marshall K. Harper
Chief, Environmental Planning Branch
Corps of Engineers- New Orleans District
7400 Leake Avenue
New Orleans, LA 70118
Via email: marshall.k.harper@usace.army.mil

RE: **C20190208,** Coastal Zone Consistency
U.S. Army Corps of Engineers
Direct Federal Action
Bipartisan Budget Act 18 Mitigation for Construction Projects: West Shore Lake Pontchartrain Flood Risk Management
St. Mary, St. John the Bapist, St. Tammany and Tangipahoa Parishes, **Louisiana**

Dear Mr. Harper:

The above referenced project has been reviewed for consistency with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in this application, is consistent with the LCRP.

If you have any questions on this matter please contact Jeff Harris of the Consistency Section at (225) 342-7949 or jeff.harris@la.gov.

Sincerely,

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

CR/MH/jdh

cc: Libby Behrens, Corps of Engineers
Tammy Gilmore, Corps of Engineers
Dave Butler, LDWF
Kyle Balkum, LDWF
Craig LeBlanc, OCM/FI
Sabrina Schenk, St. Tammany Parish
René C. Pastorek, St. John the Baptist Parish

JOHN BEL EDWARDS
GOVERNOR

CHUCK CARR BROWN, PH.D.
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

SEP 09 2019

Ms. Tammy Gilmore
U.S. Army Corps of Engineers
Regional Planning and Environmental Division South
CEMVN-PDN-CEP
7400 Leake Avenue
New Orleans, LA 70118

AI No.: 101235
Activity No.: CER2019003

RE: BBA 18 Mitigation Project for the West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction, Comite River Diversion, and East Baton Rouge Parish Flood Risk Management Projects
Water Quality Certification WQC 190828-02

Dear Ms. Gilmore:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has reviewed the application for swamp enhancement and to create and/or restore bottomland hardwoods and swamp to provide for compensatory mitigation for wetland habitat impacts associated with construction of the West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction, Comite River Diversion, and East Baton Rouge Parish Watershed Flood Control projects.

The information provided in the application has been reviewed in terms of compliance with State Water Quality Standards, the approved Water Quality Management Plan and applicable state water laws, rules and regulations. LDEQ determined that the requirements for a Water Quality Certification have been met. LDEQ concludes that the discharge of fill specific to the Pine Island Mitigation Project and all other proposed activities associated with the 19 mitigation projects will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues U.S. Army Corps of Engineers, New Orleans District Water Quality Certification, WQC 190828-02.

Should you have any questions concerning any part of this certification, please contact Elizabeth Hill at (225) 219-3225 or by email at elizabeth.hill@la.gov. Please reference Agency Interest (AI) number 101235 and Water Quality Certification 190828-02 on all future correspondence to this Department to ensure all correspondence regarding this project is properly filed into the Department's Electronic Document Management System. Please find included with this certification the public notice for publication in the Advocate of Baton Rouge.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

Enclosure