



APPENDIX C-4
AGENCY COORDINATION

Public Notice NHPA/NEPA¹
Notice of Intent to Prepare Programmatic Agreement Regarding Amite River and Tributaries-East of the Mississippi River, Louisiana, Flood Risk Management Feasibility Study

The United States Army Corps of Engineers (USACE), New Orleans District (CEMVN), is initiating the process to develop a Programmatic Agreement (PA) for the Amite River and Tributaries-East of the Mississippi River, Louisiana (ART), Flood Risk Management Feasibility Study pursuant to Section 106 of the National Historic Preservation Act (NHPA), as amended (54 U.S.C. § 300101 et seq.), and Section 110 of the NHPA, that require Federal agencies to take into account the effect of their undertakings on historic properties during the planning process and consult with stakeholders regarding these effects.

The study area, which includes the Amite River Basin, encompasses an area of approximately 3,450 square miles consisting of eight Louisiana parishes (East Feliciana, St. Helena, East Baton Rouge, Livingston, Iberville, Ascension, St. James, and St. John the Baptist) and four Mississippi counties (Amite, Wilkinson, Franklin, and Lincoln). None of the initial array of alternates being considered are located within the state of Mississippi. Proposed measures are intended to provide the best comprehensive solutions to the Amite River Basin that meet the study objective: to reduce flood damages along the main channel and tributary streams of the Amite River, Bayou Manchac, and Comite Rivers. USACE began providing to the public NEPA compliance documentation on the designated project website at <https://www.mvn.usace.army.mil/Amite-River-and-Tributaries/>. CEMVN intends to continue to use this website to post additional project information.

CEMVN has determined that the proposed action constitutes an Undertaking as defined in 36 CFR § 800.16(y) and has the potential to cause effects on historic properties. Accordingly, CEMVN proposes to develop a project-specific PA pursuant to 36 CFR § 800.14(b)(3) to provide a framework for addressing this complex Undertaking and establish protocols for continuing consultation with the LA State Historic Preservation Officer (LA SHPO), Tribal Governments, and other stakeholders. The PA would identify consulting parties, define applicability, establish review timeframes, stipulate roles and responsibilities of stakeholders, summarize Tribal consultation procedures, consider the views of the SHPO/ Tribal Historic Preservation Officer and other consulting parties, afford for public participation, develop programmatic allowances to exempt certain actions from Section 106 review, provide the measures CEMVN will implement to develop an Area of Potential Effects (APE) in consultation with external stakeholders, outline a standard review process for plans and specifications as they are developed, determine an appropriate level of field investigation to identify and evaluate historic properties and/or sites of religious and cultural significance within the APE, streamline the assessment and resolution of Adverse Effects through avoidance, minimization, and programmatic treatment approaches for mitigation, establish reporting frequency and schedule, provide provisions for post-review unexpected discoveries and unmarked burials, and incorporate the procedures for amendments, duration, termination, dispute resolution, and implementation.

To help further develop a course of action for this project CEMVN is requesting your input by June 29, 2019, concerning the proposed Undertaking and its potential to significantly affect historic properties and/or of relevant parties who may have an interest in participating in this consultation. Comments can be sent electronically to: AMITEFS@usace.army.mil, or, mail comments to: Cultural & Social Resources Section (CEMVN-PDP-CSR), USACE, Room 140, 7400 Leake Ave., New Orleans, LA 70118-3651.



¹ CEMVN is issuing this public notice as part of its responsibilities under the Advisory Council on Historic Preservation's regulations, 36 CFR Part 800, implementing Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 306108). This notice applies to activities carried out under the Congressional authority for the ART Flood Risk Management Feasibility Study under the standing authority of The Bipartisan Budget Act of 2018 (Pub. L. 115-123), Division B, Subdivision 1, H. R. 1892-13, Title IV, Corps of Engineers-Civil, Department of the Army, Investigations, for flood and storm damage risk reduction. CEMVN is also required to fulfill the Council of Environmental Quality regulations (NEPA regulations, 43 FR 55978 (1978)) that provide policy and procedures to enable CEMVN officials to be informed and to take into account environmental considerations when authorizing or approving CEMVN actions that may significantly affect the environment of the United States. It is the intent of NEPA that federal agencies encourage and facilitate public involvement to the extent practicable in decisions that may affect the quality of the environment.



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

JUN 10 2019

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

Kristin Sanders, SHPO
LA State Historic Preservation Officer
P.O. Box 44247
Baton Rouge, LA 70804-4241

RE: Notice of Intent to Prepare Programmatic Agreement Regarding "Amite River and Tributaries-East of the Mississippi River, Louisiana, Flood Risk Management Feasibility Study."

Dear Ms. Sanders:

The United States Army Corps of Engineers (USACE), New Orleans District (CEMVN), is initiating the process to develop a Programmatic Agreement (PA) for the Amite River and Tributaries-East of the Mississippi River, Louisiana (ART), Flood Risk Management Feasibility Study pursuant to Section 106 of the National Historic Preservation Act (NHPA), as amended (54 U.S.C. § 300101 et seq.), and Section 110 of the NHPA, that require Federal agencies to take into account the effect of their undertakings on historic properties during the planning process and consult with stakeholders regarding these effects. This letter is intended to notify the LA State Historic Preservation Officer (LA SHPO) pursuant to 36 CFR Part 800.14(b) of our plan to develop a project-specific PA that establishes procedures to satisfy the CEMVN's Section 106 responsibilities with regard to the programmatic review of this feasibility study and allows CEMVN to coordinate Section 106 reviews with its evaluation of the proposed action's potential for significant impacts to the human and natural environment required by the National Environmental Policy Act (NEPA), as amended (42 U.S.C. § 4321 et seq.). The PA will address the potential to effect historic properties that are eligible for or listed on the National Register of Historic Places (NRHP), including archaeological sites, districts, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and/or sites of religious and cultural significance on or off Tribal Lands [as defined in 36 CFR § 800.16(x)] that may be affected by this undertaking. We invite the LA SHPO to participate in this consultation since it may involve important questions of policy or interpretation and will result in the development of a PA that governs the application of the Section 106 process with regards to the proposed Undertaking.

Study Authority

The ART Flood Risk Management Feasibility Study was initiated by a resolution of the committee on Public Works of the United States Senate, adopted on April 14, 1967. CEMVN is conducting the present ART Flood Risk Management Feasibility Study under the standing authority of *The Bipartisan Budget Act of 2018 (Pub. L. 115-123), Division B, Subdivision 1, H.*

R. 1892-13, Title IV, Corps of Engineers-Civil, Department of the Army, Investigations, for flood and storm damage risk reduction. The lead Federal agency for this proposed action is the USACE. The Louisiana Department of Transportation and Development (LA DOTD) is the non-Federal sponsor. The feasibility study phase is 100% federally funded. Due to the limits set under the Bipartisan Budget Act of 2018, only flood control measures are being investigated in this study.

Study Area

The study area, which includes the Amite River Basin, encompasses an area of approximately 3,450 square miles consisting of eight (8) Louisiana parishes (East Feliciana, St. Helena, East Baton Rouge, Livingston, Iberville, Ascension, St. James, and St. John the Baptist), Maurepas Lake, and four (4) Mississippi counties (Amite, Wilkinson, Franklin, and Lincoln). Over three-fourths of the study area is located within the parishes of southeastern Louisiana, east of the Mississippi River and north of Lake Maurepas. The upper one-fourth of the study area's drainage area is located in the southwestern Mississippi counties. However, none of the initial array of alternates presently being considered are located within the state of Mississippi. A map depicting the study area is included as Figure 1.

Study Purpose and Background

Rainfall from hurricanes, tropical storm events, and local storms pose a significant risk to the communities, ecosystems, and industries of the Amite River Basin. Flooding stemming from the Amite River and its tributaries has caused significant repetitive flood damages to residential and non-residential structures as well as industrial, commercial, and agricultural facilities within the present study area. Flooding within the Amite River Basin is typically derived from two (2) primary sources. Upper basin inundation is caused from headwater flooding from rainfall events. Lower basin inundation is caused by a combination of drainage from headwaters and backwater flooding. As recently as August 2016, the Amite basin saw significant flooding well outside of normal stages causing impacts to thousands of homes and businesses and to the Nation's critical infrastructure including to lengthy closures of the I-10 and I-12 transportation system. Furthermore, the flood was responsible for at least 13 deaths and the rescue of over 19,000 people prompting presidentially-declared disaster declarations to be issued for multiple parishes in the Amite River basin.

In accordance with the 1967 study authority, a feasibility-level study was initiated by USACE during the early 1990's which led to construction recommendations that are currently being implemented such as the Comite River Diversion and the East Baton Rouge Flood Control Project. In response to the August 2016 flooding, the entire ART study area is now being reevaluated to determine whether additional improvements for flood control are recommended with particular reference to the Amite River, Bayou Manchac, Comite River, and their tributaries. The present study will reevaluate previously proposed alternates that were not carried forward at the time of the 1990's study as well as consider new alternatives not previously assessed.

SMART Planning Framework

CEMVN is conducting this study according to the Specific, Measurable, Attainable, Risk Informed, Timely (SMART) planning framework for civil works feasibility studies for water resources development projects. The SMART planning process is intended to improve and streamline feasibility studies, reduce their cost, and expedite their completion. The study works progressively through a six-step planning process: 1) identifying problems and opportunities, 2)

inventorying and forecasting conditions, 3) formulating alternative plans, 4) evaluating alternative plans, 5) comparing alternative plans, and 6) selecting a plan. From a NHPA/NEPA perspective, the SMART planning process is broken out into four (4) separate phases over the course of the study (Figure 2): Scoping; Alternative Evaluation and Analysis; Feasibility-Level Analysis; and Integrated Feasibility Report (IFR)/Environmental Impact Statement (EIS) development. On April 02, 2019, CEMVN published a Notice of Intent to Prepare a Draft Environmental Impact Statement for the ART Feasibility Study in the Federal Register (Vol. 84, No. 63) and USACE began providing to the public NEPA compliance documentation on the designated project website at <https://www.mvn.usace.army.mil/Amite-River-and-Tributaries/>. CEMVN intends to continue to use this website to post additional project information throughout the development of the IFR/EIS. The IFR/EIS examines the existing condition of environmental and cultural resources within the study area and analyzes potential impacts to those resources as a result of implementing the alternatives. At the feasibility level, there may be insufficient funding and time to conduct required NHPA cultural resources studies and/or mitigation and typically additional feasibility work still remains to be completed on the cultural, environmental, engineering, cost estimating, economic, real estate, and construction elements of the plan. Therefore, prior to approving the Undertaking, the agency may propose to develop a project-specific PA in consultation with stakeholders when the federal agency cannot fully determine how the Undertaking may affect historic properties or the location of historic properties and their significance and character.

There are five (5) key milestones that mark significant decisions in the SMART planning process (Figure 2): Alternatives Milestone; Tentatively Selected Plan (TSP) Milestone; Agency Decision Milestone; Civil Works Review Board; and Chief's Report Milestone. Table 1 (below) provides a schedule of proposed milestone dates for the ART Flood Risk Management Feasibility Study:

Table 1. Proposed Study Milestone Schedule

Milestone	Scheduled	Actual	Complete
Alternate Milestone	Feb 7, 2019	Feb 7, 2019	Yes
Tentatively Selected Plan	Oct 3, 2019	TBD	No
Release Draft Report to Public	Dec 4, 2019	TBD	No
Agency Decision Milestone	Apr 3, 2020	TBD	No
Final Report Transmittal	Apr 14, 2021	TBD	No
Chief's Report	Oct 1, 2021	TBD	No

Upon the completion of the Draft IFR/EIS a stakeholder/public comment period will be initiated in conjunction with technical, peer, and policy reviews. Subsequently, results of the reviews and additional feasibility work will be incorporated into the final Chief's Report, which will again be made available for stakeholder/public review. Following the execution of a PA, the Chief of Engineers may then proceed with making a final recommendation on the project and issuing a Record of Decision (ROD) in compliance with NHPA and NEPA.

Consideration of Alternates

Proposed measures for the ART Flood Risk Management Feasibility Study are intended to provide the best comprehensive solutions to the Amite River Basin that meet the study objective: to reduce flood damages along the main channel and tributary streams of the Amite River, Bayou Manchac, and Comite Rivers. Other objective considerations include:

- Reduce flood damages in the Amite River Basin to business, residents and infrastructure;
- Reduce risk to human life from flooding from rainfall events;
- Reduce interruption to the nation's transportation corridors;
- Reduce risks to critical infrastructure (e.g. medical centers, schools, transportation etc.);
- Enhance functionality of existing flood risk reduction systems (locally and federally constructed), including evaluation of impacts due to an increase in frequency of rainfall events.

The alternatives will be further developed in the IFR/EIS. A map displaying the initial array of alternatives under consideration is included as Figure 3.

Section 106 Consultation

CEMVN has determined that the proposed action constitutes an Undertaking as defined in 36 CFR § 800.16(y) and has the potential to cause effects on historic properties. This letter initiates formal Section 106 consultation pursuant to 36 CFR § 800.3(c). Due to time and budget constraints for this Undertaking associated with the SMART Planning framework, CEMVN proposes to develop a project-specific PA pursuant to 36 CFR § 800.14(b)(3). The goal of this Section 106 consultation is to provide a project-specific framework for addressing this complex Undertaking and establish protocols for continuing consultation with the LA SHPO, Tribal Governments, and other stakeholders. The PA would identify consulting parties, define applicability, establish review timeframes, stipulate roles and responsibilities of stakeholders, summarize Tribal consultation procedures, consider the views of the SHPO/THPO and any other consulting parties, afford for public participation, develop programmatic allowances to exempt certain actions from Section 106 review, provide the measures CEMVN will implement to develop an Area of Potential Effects (APE) in consultation with external stakeholders, outline a standard review process for plans and specifications as they are developed, determine an appropriate level of field investigation to identify and evaluate historic properties within the APE and the potential to affect historic properties and/or sites of religious and cultural significance, streamline the assessment and resolution of Adverse Effects through avoidance, minimization, and programmatic treatment approaches for mitigation, establish reporting frequency and schedule, provide provisions for post-review unexpected discoveries and unmarked burials, and incorporate the procedures for amendments, duration, termination, dispute resolution, and implementation.

CEMVN proposes to send future notices, draft agreements, and other background information to consulting parties by e-mail to minimize communication delays and expedite the development of the PA. Please let CEMVN know if this is impractical, so we can make alternative arrangements.

A date and time for the initial Section 106 consultation meeting has not been set. Upon selection of a TSP, CEMVN will schedule a teleconference with consulting parties. The purpose of the initial meeting will be to discuss the proposed Undertaking, the APE, and determine the appropriate steps to identify, evaluate, avoid, minimize, and mitigate potential adverse effects. CEMVN will notify the SHPO and other likely consulting parties regarding the meeting as soon as possible and forward information regarding the meeting location, a conference call-in number, and the Agenda.

Please do not hesitate to notify CEMVN regarding any information your office may wish to provide at this time concerning the proposed undertaking and its potential to significantly affect historic properties and/or of any other relevant parties who you feel may have an interest in participating in this consultation. Should you have any questions or need additional information regarding this undertaking or the SMART Planning Framework, please contact Jeremiah Kaplan, Archaeologist at Jeremiah.H.Kaplan@usace.army.mil or (504) 862-2004.

Sincerely,

HARPER.MARSH
ALL.KEVIN.1536
114358
MARSHALL K. HARPER
Chief, Environmental Planning Branch

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LA SHPO

An electronic copy of this letter with enclosures will be provided to the Section 106 Inbox, section106@crt.la.gov.

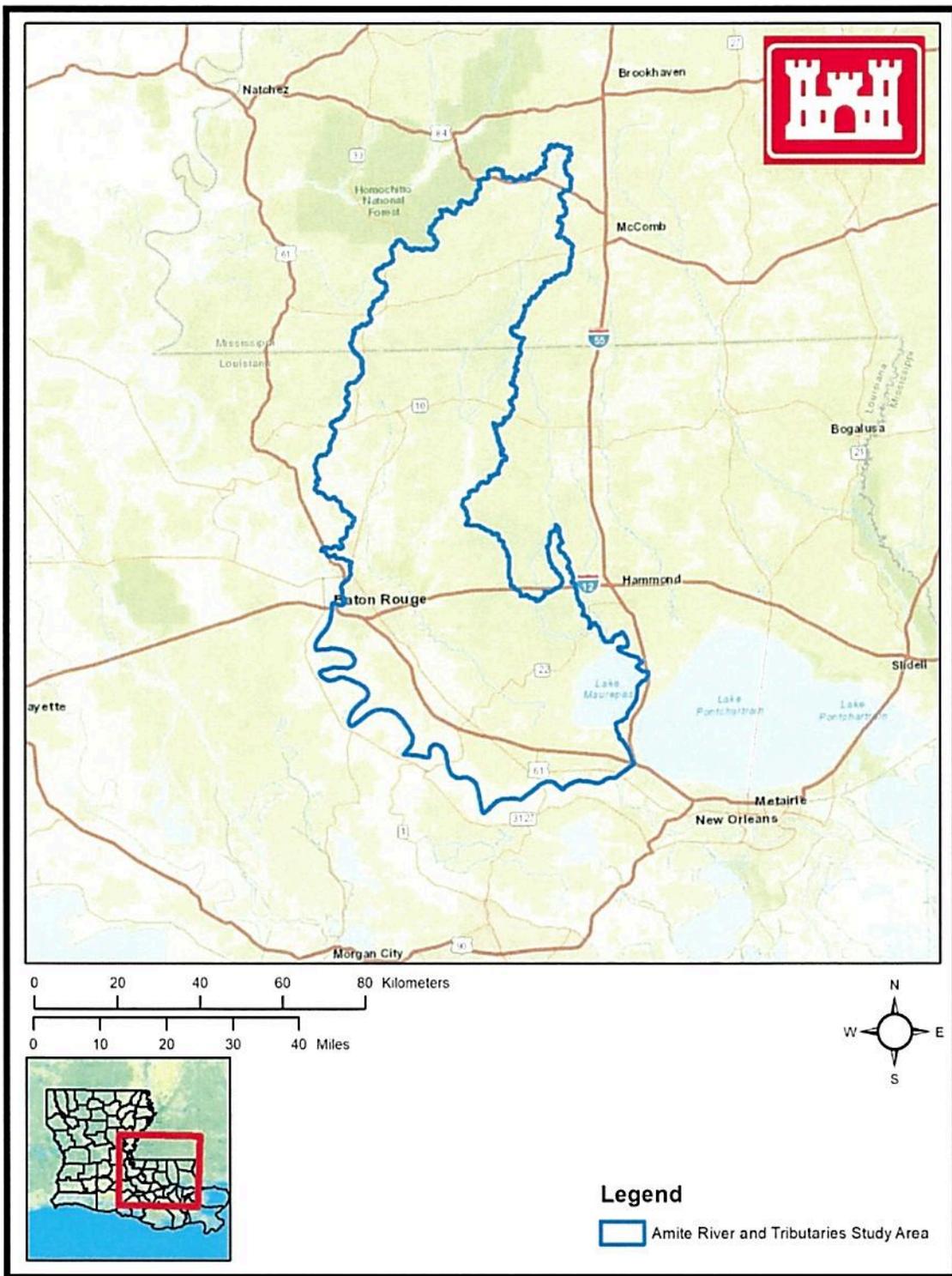


Figure 1. Transportation imagery displaying location of the ART study area.

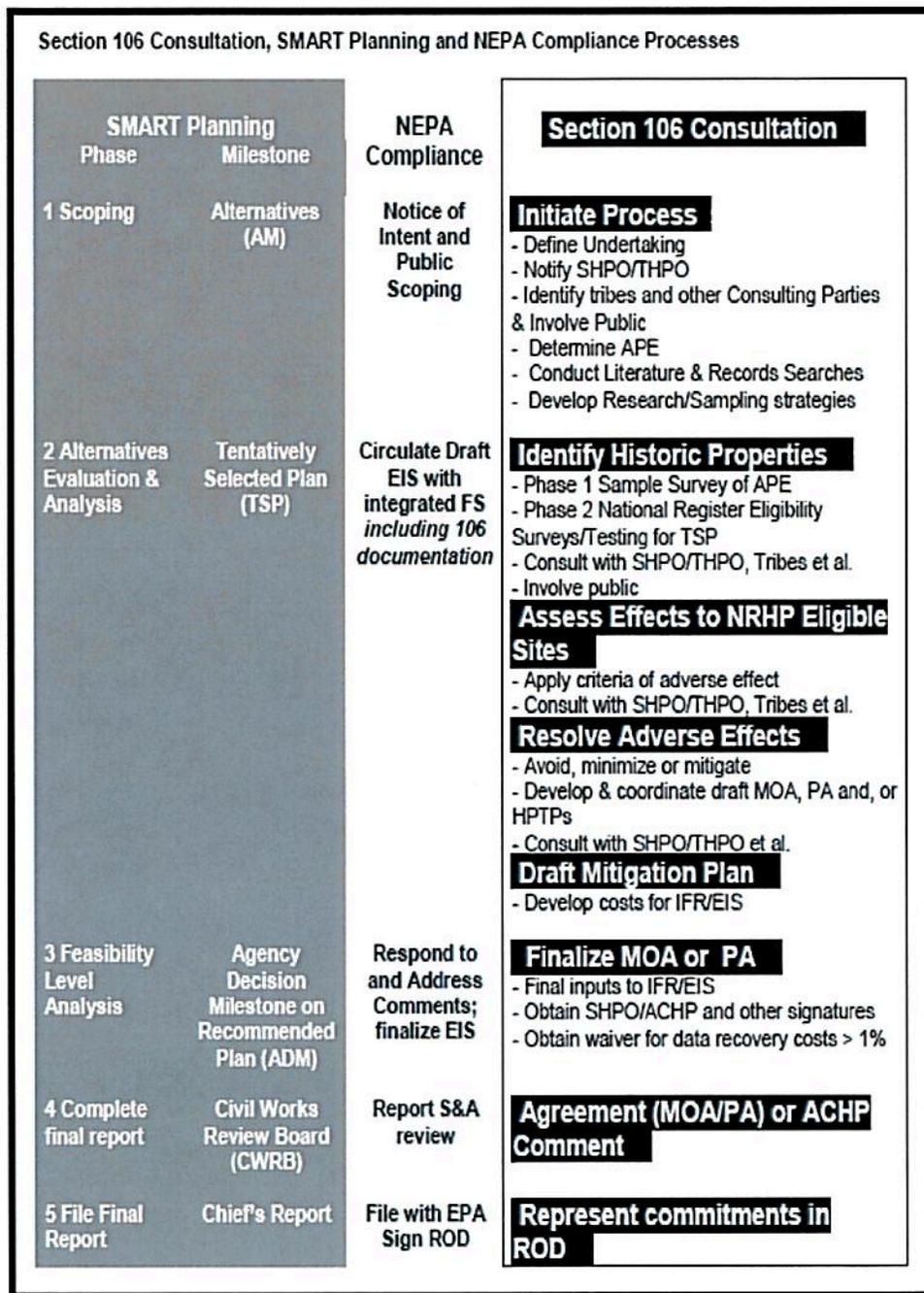


Figure 2. Section 106 Consultation, SMART Planning and NEPA Compliance Processes.

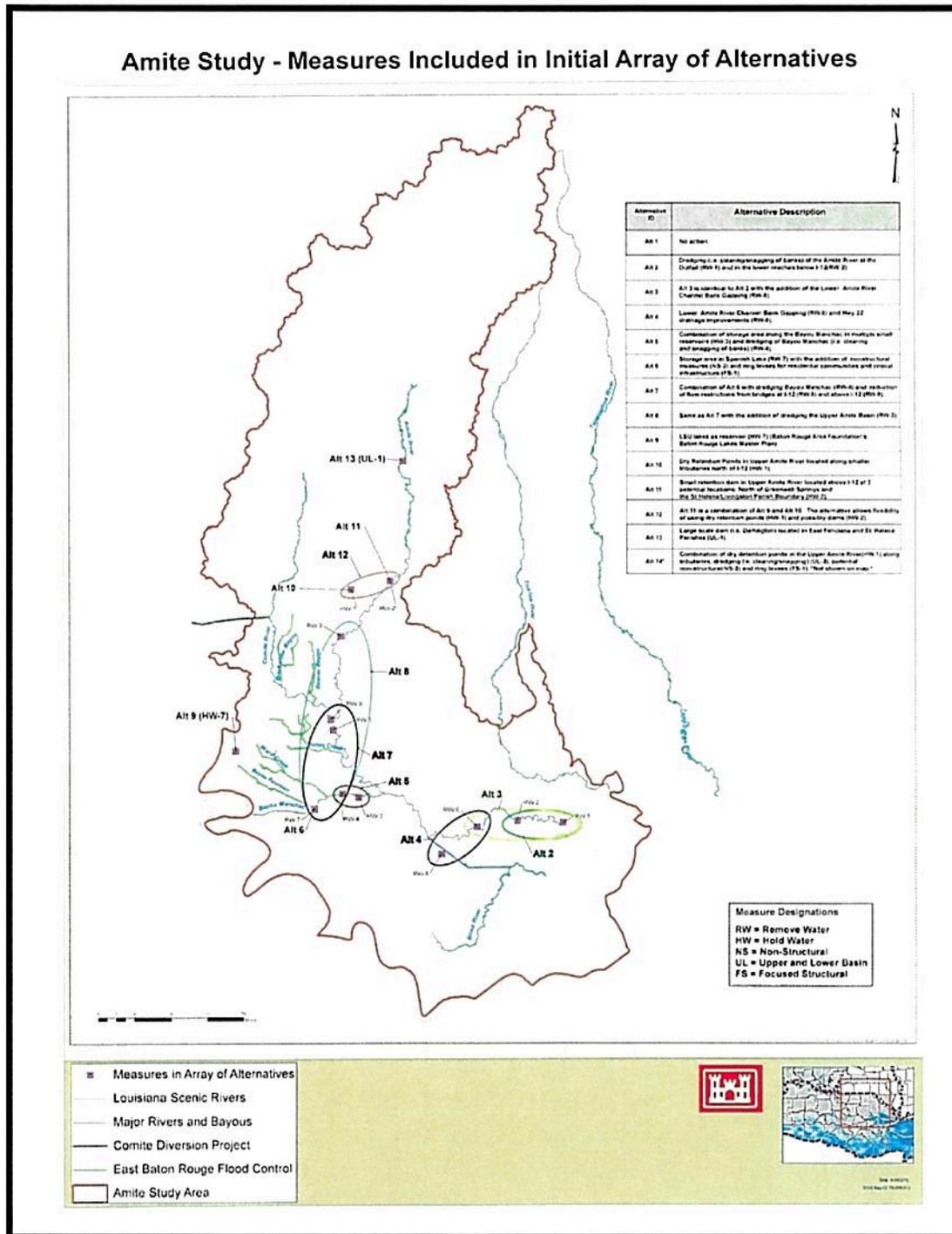


Figure 3. ART feasibility study initial array of alternates ([https://www.mvn.usace.army.mil/Portals/56/docs/BBA%2018/Amite Initial Array of Alternatives 36x48 04242019.pdf](https://www.mvn.usace.army.mil/Portals/56/docs/BBA%2018/Amite%20Initial%20Array%20of%20Alternatives%2036x48%2004242019.pdf)).



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Louisiana Ecological Services
200 Dulles Drive
Lafayette, Louisiana 70506



March 13, 2019

Colonel Michael N. Clancy
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Clancy:

Please reference the Amite River and Tributaries Study East of the Mississippi River, LA (Flood Risk Management Feasibility Study) being conducted by the U.S. Army Corps (Corps) of Engineers (USACE) and the Louisiana Department of Transportation and Development. This study will investigate and determine the extent of Federal interest in plans that reduce flood risk along the Amite River Basin, which covers portions of Amite, Lincoln, Franklin, and Wilkinson Counties in Mississippi as well as East Feliciana, St. Helena, East Baton Rouge, Livingston, Iberville, St. James, St. John the Baptist, and Ascension Parishes in Louisiana.

The effects of flooding from the Amite River and its tributaries are being studied, not localized flooding in adjacent communities. The project features being evaluated to reduce flooding include retention measures, diversions, channelization (dredging downstream reaches combined with upstream detention), ring levees, drainage improvements (swales or road cuts combined with infrastructure), bridge improvements, and channel bank gapping.

The following comments are provided on a planning-aid basis to assist the Corps in developing environmentally acceptable project alternatives and features. These comments and recommendations do not constitute the final report of the Secretary of Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act ((FWCA) 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). The Service submits the following comments in accordance with provisions of the FWCA, the National Environmental Policy Act of 1969, as amended, the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 661 et seq.), the Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d).

Threatened and Endangered Species

Within the study area, three threatened or endangered species are known to occur (Table 1). Information regarding those species and their preferred habitats are provided below.

Table 1. List of threatened and endangered species known to occur within the project area.

Species	Species Group	Status
Alabama Heelsplitter Mussel	Mollusk	Threatened
Atlantic Sturgeon	Fish	Threatened
West Indian Manatee	Mammal	Endangered

Alabama Heelsplitter

Federally listed as a threatened species, the Alabama heelsplitter mussel (*Potamilus inflatus*) was historically found in Louisiana in the Amite, Tangipahoa, and Pearl Rivers. Many life history aspects of the species are poorly understood but are likely similar to that of other members of the Unionidae family. Although the primary host fish for the species is not certain, investigation by K. Roe et al. (1997) indicates that the freshwater drum (*Aplodinotus grunniens*) is a suitable glochidial host for the species.

Based on the most recent survey data, the currently known range for the Alabama heelsplitter in Louisiana occurs only in the lower third of the Amite River along the East Baton Rouge/Livingston Parish line from Spiller’s Creek, which is in the vicinity of Denham Springs downstream to the vicinity of Port Vincent. Because it has not been used widely for past or present gravel mining operations, the lower third of the Amite River (between Louisiana Highway 37 and Louisiana Highway 42) is more typical of a coastal plain river; being characterized by a silt substratum, less channelization, and slower water flow, all of which are characteristic of heelsplitter habitat. This freshwater mussel is typically found in soft, stable substrates such as sand, mud, silt, and sandy gravel, in slow to moderate currents. Heelsplitter mussels are usually found in depositional pools below sand point bars and in shallow pools between sandbars and river banks.

Major threats to this species in Louisiana are the loss of habitat resulting from sand and gravel dredging and channel modifications for flood control, as shown by the apparent local extirpation of the species in the extensively modified upper portions of the Amite River.

Atlantic Sturgeon

The Atlantic sturgeon (*Acipenser oxyrinchus desotoi*), federally listed as a threatened species, is an anadromous fish that occurs in many rivers, streams, and estuarine and marine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida. In Louisiana, Atlantic sturgeon have been reported at Rigolets Pass, rivers and lakes of the Lake Pontchartrain Basin, the Pearl River System, the Amite River, and adjacent estuarine and marine areas. Spawning occurs in coastal rivers between late winter and early spring (i.e., March to May). Adults and sub-adults may be found in those rivers and streams until November, and in estuarine or marine waters during the remainder of the year. Atlantic sturgeon less than two years old appear to remain in riverine habitats and estuarine areas throughout the year, rather than migrate to marine waters. Habitat alterations such as those caused by water control structures and navigation projects that limit and prevent spawning, poor water quality, and over-fishing have negatively affected this species.

West Indian Manatee

The endangered West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable. We recommend the inclusion of the following measures into construction plans and specifications to minimize potential impacts to manatees in areas where they are potentially present:

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:
- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).
- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at “no wake/idle” speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.
- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.

- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½ " X 11" reading language similar to the following: "CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8½ " X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".
- Collisions with, injury to, or sightings of manatees should be immediately reported to the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

The Corps is responsible for determining whether the selected alternative is likely (or not likely) to adversely affect any listed species and/or critical habitat, and for requesting the Service's concurrence with that determination. If the Corps determines, and the Service concurs, that the selected alternative is likely to adversely affect listed species and/or critical habitat, a request for formal consultation in accordance with Section 7 of the Endangered Species Act should be submitted to the Service. That request should also include the Corps' rationale supporting their determination.

At-Risk Species

The Service's Southeast Region has defined "at-risk species" as those that are:

1. Proposed for listing under the ESA by the Service;
2. Candidates for listing under the ESA, which means the species has a "warranted but precluded 12-month finding"; or
3. Petitioned for listing under the ESA, which means a citizen or group has requested that the Service add them to the list of protected species. Petitioned species include those for which the Service has made a substantial 90-day finding as well as those that are under review for a 90-day finding. As the Service develops proactive conservation strategies with partners for at-risk species, the states' Species of Greatest Conservation Need (defined as species with low or declining populations) will also be considered.

The Service's goal is to work with private and public entities on proactive conservation to conserve these species thereby precluding the need to federally list as many at-risk species as possible. Discussed below are species currently designated as "at-risk" that may occur within the project area.

Alabama Hickorynut

The Alabama Hickorynut (*Obovaria unicolor*) is a 1.2-2 inch-long freshwater mussel with round or elliptical shape. The outer shell (periostracum) is smooth and brown to yellow brown, with rays. This species is a long term brooder that is gravid from June through August of the following year. Like other freshwater mussels, the Alabama Hickorynut releases its larvae (glochidia) into the water column, where they parasitize a fish (glochial host) in order to transform into a juvenile mussel. Once the glochidia are ready, they release from the host to find a suitable substrate. Suitable glochidial host fishes for this species include the naked sand darter (*Ammocrypta beani*), southern sand darter (*Ammocrypta meridiana*), Johnny darter (*Etheostoma nigrum*), Gulf darter (*Etheostoma swaini*), blackbanded darter (*Percina nigrofasciata*), dusky darter (*Percina sciera*), and redspot darter (*Etheostoma artesiae*).

The Alabama Hickorynut inhabits sand and gravel substrates in moderate currents in large streams. However, the presence of moderate gradient pool and riffle habitats in a variety of stream and river sizes may contain this species. In Louisiana, the Alabama Hickorynut is known to occur in the Pearl and Amite River systems. Habitat modification and destruction due to siltation and impoundment threaten this species. It is also negatively affected by the pollution of streams and rivers.

Alligator Snapping Turtle

The alligator snapping turtle (*Macrochelys temminckii*) may be found in large rivers, canals, lakes, oxbows, and swamps adjacent to large rivers. It is most common in freshwater lakes and bayous, but also found in coastal marshes and sometimes in brackish waters near river mouths. Typical habitat is mud bottomed waterbodies having some aquatic vegetation. The alligator snapping turtle is slow growing and long lived. Sexual maturity is reached at 11 to 13 year of age (Ernst et al. 1994). Because of this and its low fecundity, loss of breeding females is thought to be the primary threat to the species.

Migratory Birds and Other Trust Resources

Bald Eagle

The proposed project area may provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*), which was officially removed from the List of Endangered and Threatened Species as of August 8, 2007. However, the bald eagle remains protected under the MBTA and BGEPA.

Bald eagles typically nest in large trees located near coastlines, rivers, or lakes that support adequate foraging from October through mid-May. In southeastern Louisiana parishes, eagles typically nest in mature trees (e.g., baldcypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants. Furthermore, bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. Disturbance during these periods may lead to nest abandonment, cracked and chilled eggs, and exposure of small young to the elements. Human activity near a nest late in the nesting cycle may also cause flightless birds to jump from the nest tree, thus reducing their chance of survival.

The Service recommends a survey be conducted to determine if a bald eagle nest is present within or adjacent to the project area. If a bald eagle nest occurs within 660 feet of the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: <http://www.fws.gov/southeast/birds/Eagle/tamain.html>

The Service developed the National Bald Eagle Management Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles. A copy of the guidelines is available at: <http://ecos.fws.gov/ServCat/DownloadFile/36458?Reference=36436>

On September 11, 2009, the Service published two federal regulations establishing the authority to issue permits for non-purposeful bald eagle take (typically disturbance) and eagle nest take when recommendations of the NBEM Guidelines cannot be achieved. Permits may be issued for nest take only under the following circumstances where: 1) necessary to alleviate a safety emergency to people or eagles, 2) necessary to ensure public health and safety, 3) the nest prevents the use of a human-engineered structure, or 4) the activity or mitigation for the activity will provide a net benefit to eagles. Except in emergencies, only inactive nests may be permitted to be taken.

Should you need further assistance interpreting the guidelines, avoidance measures, or performing an on-line project evaluation, please contact Ulgonda Kirkpatrick (phone: 352/406-6780, e-mail: ulgonda_kirkpatrick@fws.gov). For assistance with the bald eagle permitting process, please contact Resee Collins (phone: 404/314-6526, e-mail: resee_collins@fws.gov).

Coastal Forest and Neotropical Migratory Songbirds

The proposed project contains features that could potentially impact (directly and/or indirectly) migratory birds and the habitats upon which they depend. Any loss of forested habitat through direct harvest or because of increased inundation is a concern to the Service. In Louisiana, the primary nesting period for forest-breeding migratory birds occurs between April 15 and August 1. The proposed project may directly impact migratory birds of conservation concern because habitat clearing that occurs during the aforementioned primary nesting period may result in unintentional take of active nests (i.e., eggs and young) in spite of all reasonable efforts to avoid such take.

In addition to the direct loss of forested habitat, the proposed water retention features could increase the amount of time adjacent forested areas are flooded. Increased flooding stress could result in tree mortality and a loss of habitat over time. Forest fragmentation (from direct or indirect habitat loss) may contribute to population declines in some avian species because fragmentation reduces avian reproductive success (Robinson et al. 1995).

Wading Bird Colonies

In accordance with the MBTA and the FWCA, please be advised that the project area includes habitats that are commonly inhabited by colonial nesting waterbirds. We recommend that a

qualified biologist inspect the proposed work sites for the presence of nesting colonies (during the nesting season) prior to any work being initiated that would impact the colony.

For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period, depending on the species present. Below is the list of colonial nesting birds that may be found and the corresponding activity window during which the project may occur without affecting nesting wading bird colonies.

<u>Species</u>	<u>Project Activity Window/Non-Nesting Period</u>
Anhinga	July 1 to March 1
Cormorant	July 1 to March 1
Great Blue Heron	August 1 to February 15
Great Egret	August 1 to February 15
Little Blue Heron	August 1 to March 1
Tricolored Heron	August 1 to March 1
Reddish Egret	August 1 to March 1
Snowy Egret	August 1 to March 1
Cattle Egret	September 1 to April 1
Green Heron	September 1 to March 15
Black-crowned Night-Heron	September 1 to March 1
Yellow-crowned Night-Heron	September 1 to March 15
Ibis	September 1 to April 1
Roseate Spoonbill	August 1 to April 1

In addition, we recommend that on-site contract personnel including project-designated inspectors be trained to identify colonial nesting birds and their nests, and avoid affecting them during the breeding season (i.e., the time period outside the activity window). Should on-site contractors and inspectors observe potential nesting activity, coordination with the Service and the Louisiana Department of Wildlife and Fisheries should occur.

Fish and Wildlife Conservation Measures

The President's Council on Environmental Quality regulations for implementing the National Environmental Policy Act define mitigation to include: (1) avoiding the impact; (2) minimizing the impact; (3) rectifying the impact; (4) reducing or eliminating the impact over time; and (5) compensating for impacts. The Service supports and adopts this definition and considers the specific elements to represent the desirable sequence of steps in the mitigation planning process. Through this process, the Service strives to make the project's goals co-equal to fish and wildlife resource conservation.

The Service's Mitigation Policy (Federal Register, Vol. 46, pp. 7644-7663, January 23, 1981) has designated four resource categories which are used to ensure that the level of mitigation recommended will be consistent with the fish and wildlife resources involved. The mitigation

planning goals and associated Service recommendations should be based on those four categories, as follows:

Resource Category 1 - Habitat to be impacted is of high value for evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section. The mitigation goal for this Resource Category is that there should be no loss of existing habitat value.

Resource Category 2 - Habitat to be impacted is of high value for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section. The mitigation goal for habitat placed in this category is that there should be no net loss of in-kind habitat value.

Resource Category 3 - Habitat to be impacted is of high to medium value for evaluation species and is relatively abundant on a national basis. FWS's mitigation goal here is that there be no net loss of habitat value while minimizing loss of in-kind habitat value.

Resource Category 4 - Habitat to be impacted is of medium to low value for evaluation species. The mitigation goal is to minimize loss of habitat value.

Streams and wetland habitats associated with the proposed project are designated as Resource Category 2, the mitigation goal for which is no net loss of in-kind habitat value. Non-wetland forests would also be considered Resource Category 2 due to their importance to neotropical migratory songbirds. Scrub-shrub and highly altered waterbodies and wetland habitats that may be impacted are Resource Category 3 due to their reduced value to fish and wildlife and their degraded wetland functions. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value.

To achieve fish and wildlife resource conservation, the Service recommends that the following planning objectives be adopted to guide future project planning efforts.

1. Any physical retention structures constructed within the river or its tributaries should be designed to allow continuous upstream and downstream fish passage. Run of the river conduit systems that allow fish passage through the base of dams should be evaluated, as well as other fish passage designs (HDR Engineering 2014).
2. Diversion structures should be constructed/modified in a "fish friendly" manner. Fish exclusion devices, barriers, and bypass systems should be thoroughly evaluated (U.S. Dept. of the Interior 2006).
3. Channelization measures such as dredging and detention features can potentially cause erosion through headcutting. This can have detrimental impacts on mussels and other aquatic organisms. Any proposed channelization measures should be modeled to determine what other morphological changes would be expected within the Amite River and its tributaries as a result of those actions.

4. Ring levee alignments should be located to avoid and minimize impacts to both herbaceous and forested wetlands as much as possible. The acreage of wetlands enclosed within ring levees also should be minimized to the maximum extent practicable. If borrow pits are needed, those features should be located in areas providing the least fish and wildlife habitat value.
5. Any drainage improvement measures that involve structures in natural tributaries should be constructed in a manner that allows aquatic organism passage (including benthic macroinvertebrates). All round and elliptical culverts should be oversized and installed approximately 20 percent below grade to allow sediment accumulation throughout the entire length of the structure. Square culverts also should be installed below grade to a depth adequate to allow sediment accumulation throughout.
6. Bridge modifications/construction and channel bank gapping should be done in a manner to minimize turbidity and downstream sedimentation.
7. Any clearing of riparian vegetation should be limited to a single bank and when possible that bank should be either the eastern or northern bank.
8. The work order for project features that require within channel excavation should begin at the most upstream reaches.
9. Important fish and wildlife habitat (emergent wetlands, forested wetlands, and non-wetland forest) should be conserved by avoiding and minimizing the acreage of those habitats directly impacted by project features. Any forest clearing associated with project features should be conducted during the fall and winter to minimize impacts to nesting migratory songbirds, when practicable.
10. Avoid impacts to threatened and endangered species, at risk species, and species of concern such as the bald eagle, and wading bird nesting colonies.
11. West Indian manatee conservation measures from the Threatened and Endangered Species section of this report should be included in all contracts, plans, and specifications for in-water work in areas where the manatee may occur.
12. For those project impacts that cannot be fully ascertained the Service recommends that adaptive management be employed post construction to correctly identify the extent of such impacts and develop appropriate mitigation. All adaptive management measures should be developed in coordination with the Service and other natural resource agencies.
13. Compensation should be provided for any unavoidable losses of stream habitat, wetland habitat, and non-wetland forest caused (directly or indirectly) by project features. All mitigation should be coordinated with the Service and other natural resource agencies.

Additional Information Needed

The Service would like the following questions answered through modeling or other studies in order to determine the extent of potential impacts to fish and wildlife resources. These answers will be necessary to accurately assess impacts to Federal trust resources, including Threatened and Endangered Species.

1. How will each of the proposed project features affect water depths locally and from approximately 1.5 miles north of Spiller's Creek to the mouth of the Amite River?
2. How will each of the proposed project features affect water temperatures locally and from approximately 1.5 miles north of Spiller's Creek to the mouth of the Amite River (i.e., Alabama heelsplitter habitat)?
3. How will each of the proposed project features affect dissolved oxygen levels locally and from approximately 1.5 miles north of Spiller's Creek to the mouth of the Amite River?
4. How will each of the proposed project features affect turbidity levels locally and from approximately 1.5 miles north of Spiller's Creek to the mouth of the Amite River? How long (duration) would any increased turbidity levels be expected?
5. How will each of the proposed projects affect bank stabilization, channel erosion, and sedimentation rates locally, throughout the Amite River and Tributaries (AR&T), and especially from approximately 1.5 miles north of Spiller's Creek to the mouth of the Amite River?
6. How will each of the proposed projects affect velocity locally, throughout the AR&T, and especially from approximately 1.5 miles north of Spiller's Creek to the mouth of the Amite River?
7. Will the overall project result in periodic increased storm surge penetration and result in increased river salinization?
8. How will the overall project affect ammonia levels, metals, and nitrates from approximately 1.5 miles north of Spiller's Creek to the mouth of the Amite River?
9. How will the proposed project/project features affect fish passage? Please describe in detail fish passage plans for any project feature that could restrict fish passage.

We look forward to assisting the Corps in the documentation of existing conditions, development of alternatives, and assessment of project alternatives on Federal trust resources during the feasibility study. Should you have any questions regarding our comments, please contact Seth Bordelon (337/291-3138) of this office.

Sincerely,



Joseph A. Ranson
Field Supervisor
Louisiana Ecological Services Office

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Louisiana Ecological Services
200 Dulles Drive
Lafayette, Louisiana 70506



June 25, 2019

Colonel Michael N. Clancy
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Clancy:

Please reference the Amite River and Tributaries Study East of the Mississippi River, LA (Flood Risk Management Feasibility Study) being conducted by the U.S. Army Corps of Engineers (USACE) and the Louisiana Department of Transportation and Development. This study will investigate and determine the extent of Federal interest in plans that reduce flood risk along the Amite River Basin, which covers portions of Amite, Lincoln, Franklin, and Wilkinson Counties in Mississippi as well as East Feliciana, St. Helena, East Baton Rouge, Livingston, Iberville, St. James, St. John the Baptist, and Ascension Parishes in Louisiana.

The effects of flooding from the Amite River and its tributaries are being studied, not localized flooding in adjacent communities. The USACE developed 13 action alternatives focused on four influence areas: (1) the lower Amite River basin near Lake Maurepas; (2) the central portion of the Amite River basin; (3) the upper Amite River basin; and (4) the upper and lower Amite River basin. The U.S. Fish and Wildlife Service (Service) was not involved in the development of alternatives and would like to propose an additional alternative as well as recommendations to mitigate impacts that would result from project development.

The following comments are provided on a planning-aid basis (as a supplement to our March 13, 2019, planning-aid letter) to assist the USACE in developing environmentally acceptable project alternatives and features. These comments and recommendations are submitted in accordance with the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act of 1969 (as amended), and the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 661 et seq.). This letter does not constitute the final report of the Secretary of Interior as required by Section 2(b) of the FWCA.

Recommended New Alternative

A stakeholders meeting was held on June 19, 2019, at the U.S. Geological Survey building in Baton Rouge, LA. The USACE presented alternatives that are being evaluated to address the

risk of flood damages to industrial facilities, commercial facilities, and agricultural facilities, as well as residential and nonresidential structures within the Amite River and tributaries floodplain. At the meeting a representative from the Amite River Basin Commission indicated that the length of the Amite River within the study area has decreased substantially due to the loss of meanders (straightening) that result from sand and gravel mining operations. Our office has since reviewed a USACE's Engineer Research Development Center report (2007) that documented the shortening (due to straightening) and widening (due to erosion) of the Amite River and attributed both changes to riparian sand and gravel mining.

The Service recommends that restoration of the Amite River be evaluated as a project alternative. Restoring meanders to critical sections of the river where most of the straightening has occurred could increase the volume of water held within the main river channel and the amount of time it takes that water to flow from the upper and central portions of the Amite River to the mouth at Lake Maurepas. Shoreline stabilization would also be necessary in unstable areas where sand and gravel mining operations exist and mining pits could be captured by the river leading to further straightening and increased down river flood stages. This alternative would fully incorporate the concepts of engineering with nature.

Mitigation for Impacts

The Service provided general mitigation comments in our March 13, 2019, planning-aid letter. That letter stated that there should be no net loss of in-kind habitat value for streams and wetland habitats associated with the proposed project. Depending on the project features selected and the anticipated impacts from those features, the Service will likely recommend forested wetland restoration on abandoned sand and gravel mining sites along the Amite River as well as in-stream river restoration.

The Service is aware of two previous forest restoration projects that have been constructed on abandoned sand and gravel mining sites along the Amite River and Comite River. In the late 1990's an Amite River Sand and Gravel Mine Reclamation Demonstration Project was constructed after recommendation from the Governor's Interagency Task Force on Flood Prevention and Mitigation. That site is located on the east bank of the Amite River, approximately 1.5 miles southwest of Grangeville, LA, in St. Helena Parish. The Comite River project (Blackwater Conservation Area) was also an abandoned sand and gravel mine that was restored as an ecosystem restoration project under Section 206 of the 1996 Water Resources Development Act. Blackwater Conservation Area was constructed in the late early 2000's under a partnership between the USACE's New Orleans District, the City of Baton Rouge/East Baton Rouge Parish, and the Parks and Recreation Commission for the Parish of East Baton Rouge (BREC). It is located at 9385 Blackwater Road, Central, LA. The Service recommends site visits to evaluate the success of these sand and gravel restoration sites and other potential mitigation sites.

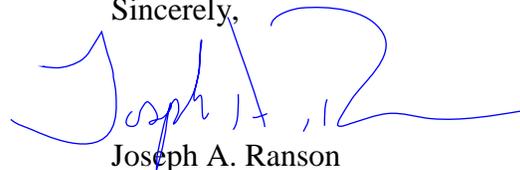
River restoration could include meander creation in areas that have been straightened and shoreline stabilization features to prevent unstable areas from being captured by the river. These mitigation recommendations should be considered throughout the study as their implementation may affect the hydrologic dynamics within the river system.

Endangered Species Act - Section 7(a)(1)

Section 7(a)(1) of the ESA is a conservation mandate that states, “All...Federal agencies shall...utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species.” It is a proactive authority with a goal to recover listed species. If river restoration is performed as a means to achieve flood control or to mitigate for impacts, those activities could be considered a Section 7(a)(1) Conservation Program that benefits the Alabama heelsplitter mussel (*Potamilus inflatus*).

We look forward to continuing our work with the USACE throughout the feasibility study process. Should you have any questions regarding our comments, please contact Seth Bordelon (337/291-3138) of this office.

Sincerely,



Joseph A. Ranson
Field Supervisor
Louisiana Ecological Services Office

cc:

Louisiana Department of Wildlife and Fisheries
Louisiana Department of Environmental Quality
Amite River Basin Commission

Literature Cited

U.S. Army Corps of Engineers. 2007. Fluvial Instability and Channel Degradation of Amite River and its Tributaries, Southwest Mississippi and Southeast Louisiana. ERDC/GSL TR-07-26.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Louisiana Ecological Services
200 Dulles Drive
Lafayette, Louisiana 70506



October 30, 2019

Colonel Stephen Murphy
District Commander
U.S. Army Corps of Engineers
7400 Leake Avenue
New Orleans, LA 70118-3651

Dear Colonel Murphy:

The U.S. Army Corps of Engineers (USACE) is preparing a Draft Feasibility Study with Integrated Environmental Impact Statement for the Amite River and Tributaries Study East of the Mississippi River, Louisiana. This study is investigating alternatives (including a no-action alternative) to reduce flood risk along the Amite River Basin, which covers portions of Amite, Lincoln, Franklin, and Wilkinson Counties in Mississippi as well as East Feliciana, St. Helena, East Baton Rouge, Livingston, Iberville, St. James, St. John the Baptist, and Ascension Parishes in Louisiana. This draft report contains an analysis of the impacts on fish and wildlife resources that would result from project implementation and provides recommendations to minimize those impacts. This draft report has been prepared by the Fish and Wildlife Service (Service) under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and does not constitute the report of the Secretary of the Interior as required by section 2b of that act. The Service also provides comments within this report under the following authorities - the National Environmental Policy Act of 1969, as amended, the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 661 et seq.), the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d). A copy of this report will be provided to the Louisiana Department of Wildlife and Fisheries (LDWF) for review, and their comments will be included in our final report.

The proposed action is authorized as part of the Bipartisan Budget Act of 2018, H. R. 1892—13, Title IV, Corps of Engineers - Civil, Department of the Army, Investigations, where funds are being made available for the expenses related to the completion, or initiation and completion, of flood and storm damage reduction, including shore protection studies which are currently authorized or which are authorized after the date of enactment of this act, to reduce risk from future floods and hurricanes. The funds are at full federal expense and are available for high-priority studies of projects in States and insular areas with more than one flood related major disaster declared pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.) in calendar years 2014, 2015, 2016, or 2017.

This study area is being included based on the August 2016 flooding over southeast and south-central Louisiana, and is continuing investigation under the authorization provided by the Resolution of the Committee on Public Works of the United States Senate, adopted on April 14, 1967.

STUDY AREA

The study area is the Amite River Basin and tributaries. The Amite River Basin begins in southwest Mississippi and flows southward crossing the state line into southeastern Louisiana. The Amite River Basin includes 2,200 square miles flowing into the Amite River and its tributaries.

The study area is similar to the 1984 Amite Rivers and Tributaries Flood Control Initial Evaluation Study by USACE; however, it has been expanded to include areas that are impacted by backwater flooding to the southeast and east since they are hydraulically connected to the Amite River Basin and tributaries. Communities along the Amite River in East Baton Rouge, Ascension, and Livingston Parishes have undergone significant development since 1984 due to their proximity to Baton Rouge. Towns such as Prairieville, Gonzales, and Denham Springs are now subject to increased flood risks. No significant flood risks associated with the Amite River Basin were identified within the state of Mississippi; therefore, modeling and development of alternatives were focused on the state of Louisiana. This was confirmed with the Mississippi Soil and Water Conservation Commission, that there are no flooding impacts in the state of Mississippi from the Amite River and Tributaries in the state of Mississippi.

FISH AND WILDLIFE RESOURCES

The project area contains the Amite River and tributaries, sandbars, herbaceous and forested riparian wetlands, as well as upland forests. Two of the community types observed during roadside surveys were “small stream forests” and “hardwood slope forests” (LDWF 2009). Both of these communities contain yellow poplar, sweetgum, magnolia, and beech, as well as multiple species of oaks, hickories, and pines. The small stream forests also contain several species of elm and ash, as well as sycamore, cypress, cherry laurel, blackgum, and river birch. These ecosystems provide valuable habitat for a variety of freshwater fish, mussels, crustaceans, reptiles, amphibians, birds, and mammals. Many of these species (game and non-game) provide economic value to the State and local communities through hunting, fishing, bird watching, etc.

Federal trust species such as wading birds, waterfowl, and neotropical migrants all utilize the project area. Many of these (i.e., little blue heron, wood thrush, prothonotary warbler, worm-eating warbler, Louisiana waterthrush, and painted bunting) have exhibited substantial population declines over the last 30 years, primarily as the result of habitat loss and fragmentation. The Amite River itself is of particular importance to several federally threatened and at-risk species that are discussed below. Maintaining unobstructed passage for those aquatic resources will be a necessary component of the project design. Additional State-listed at-risk species found within the project area include broadstripe topminnow (*Fundulus euryzonus*), Alabama shad (*Alosa alabamae*), Rayed creekshell (*Anodontoidea radiatus*), and four-toed salamander (*Hemidactylium scutatum*).

The downstream portion of the Amite River has been altered by past deepening projects and a flood control project that rerouted flows. The middle portion of the Amite River has been impacted by sand and gravel mining. This mining has caused instability in the river resulting in the widening and shallowing of portions of the river. Loss of gravel bars has also contributed to this instability and the loss of that instream habitat. Increased turbidity and sedimentation from the instability has decreased aquatic diversity within the river. The upstream portion of the Amite River is adversely affected by incision of the channel due to the gravel mines. This creates turbidity and sedimentation problems as well further impacting less common and/or habitat specific species.

Threatened and Endangered Species

Within the study area, three threatened species are known to occur (Table 1). Information regarding those species and their preferred habitats are provided below.

Table 1. List of threatened species known to occur within the project area.

Species	Species Group	Status
Alabama Heelsplitter Mussel	Mollusk	Threatened
Atlantic Sturgeon	Fish	Threatened
West Indian Manatee	Mammal	Threatened

Alabama Heelsplitter

Federally listed as a threatened species, the Alabama heelsplitter mussel (*Potamilus inflatus*) was historically found in Louisiana in the Amite, Tangipahoa, and Pearl Rivers. Many life history aspects of the species are poorly understood but are likely similar to that of other members of the Unionidae family. Although the primary host fish for the species is not certain, investigation by K. Roe et al. (1997) indicates that the freshwater drum (*Aplodinotus grunniens*) is a suitable glochidial host for the species.

Based on the most recent survey data, the currently known range for the Alabama heelsplitter in Louisiana occurs only in the lower third of the Amite River along the East Baton Rouge/Livingston Parish line from Spiller's Creek, which is in the vicinity of Denham Springs downstream to the vicinity of Port Vincent. Because it has not been used widely for past or present gravel mining operations, the lower third of the Amite River (between Louisiana Highway 37 and Louisiana Highway 42) is more typical of a coastal plain river; being characterized by a silt substratum, less channelization, and slower water flow, all of which are characteristic of heelsplitter habitat. This freshwater mussel is typically found in soft, stable substrates such as sand, mud, silt, and sandy gravel, in slow to moderate currents. Heelsplitter mussels are usually found in depositional pools below sand point bars and in shallow pools between sandbars and river banks. Impacts from sand and gravel mining are believed to be decreasing the range of the Alabama heelsplitter .

Major threats to this species in Louisiana are the loss of habitat resulting from sand and gravel dredging and channel modifications for flood control, as shown by the apparent local extirpation of the species in the extensively modified upper portions of the Amite River.

Atlantic Sturgeon

The Atlantic sturgeon (*Acipenser oxyrinchus desotoi*), federally listed as a threatened species, is an anadromous fish that occurs in many rivers, streams, and estuarine and marine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida. In Louisiana, Atlantic sturgeon have been reported at Rigolets Pass, rivers and lakes of the Lake Pontchartrain Basin, the Pearl River System, the Amite River, and adjacent estuarine and marine areas. Spawning occurs in coastal rivers between late winter and early spring (i.e., March to May). Adults and sub-adults may be found in those rivers and streams until November, and in estuarine or marine waters during the remainder of the year. Atlantic sturgeon less than two years old appear to remain in riverine habitats and estuarine areas throughout the year, rather than migrate to marine waters. Habitat alterations such as those caused by water control structures and navigation projects that limit and prevent spawning, poor water quality, and over-fishing have negatively affected this species.

West Indian Manatee

The threatened West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Please see Appendix A for recommendations to minimize potential impacts to manatees during construction.

The USACE is responsible for determining whether the selected alternative is likely (or not likely) to adversely affect any listed species and/or critical habitat, and for requesting the Service's concurrence with that determination. If the USACE determines, and the Service concurs, that the selected alternative is likely to adversely affect listed species and/or critical habitat, a request for formal consultation in accordance with Section 7 of the Endangered Species Act should be submitted to the Service. That request should also include the USACE's rationale supporting their determination.

At-Risk Species

The Service's Southeast Region has defined "at-risk species" as those that are:

1. Proposed for listing under the ESA by the Service;
2. Candidates for listing under the ESA, which means the species has a "warranted but precluded 12-month finding"; or
3. Petitioned for listing under the ESA, which means a citizen or group has requested that the Service add them to the list of protected species. Petitioned species include those for which the Service has made a substantial 90-day finding as well as those that are under

review for a 90-day finding. As the Service develops proactive conservation strategies with partners for at-risk species, the states' Species of Greatest Conservation Need (defined as species with low or declining populations) will also be considered.

The Service's goal is to work with private and public entities on proactive conservation to conserve these species thereby precluding the need to federally list as many at-risk species as possible. Discussed below are species currently designated as "at-risk" that may occur within the project area.

Alabama Hickorynut

The Alabama Hickorynut (*Obovaria unicolor*) is a 1.2-2 inch-long freshwater mussel with round or elliptical shape. The outer shell (periostracum) is smooth and brown to yellow brown, with rays. This species is a long term brooder that is gravid from June through August of the following year. Like other freshwater mussels, the Alabama Hickorynut releases its larvae (glochidia) into the water column, where they parasitize a fish (glochial host) in order to transform into a juvenile mussel. Once the glochidia are ready, they release from the host to find a suitable substrate. Suitable glochidial host fishes for this species include the naked sand darter (*Ammocrypta beani*), southern sand darter (*Ammocrypta meridiana*), Johnny darter (*Etheostoma nigrum*), Gulf darter (*Etheostoma swaini*), blackbanded darter (*Percina nigrofasciata*), dusky darter (*Percina sciera*), and redspot darter (*Etheostoma artesiae*). These are small fish that live along the bottoms of clear streams.

The Alabama Hickorynut inhabits sand and gravel substrates in moderate currents in large streams. However, the presence of moderate gradient pool and riffle habitats in a variety of stream and river sizes may contain this species. In Louisiana, the Alabama Hickorynut is known to occur in the Pearl and Amite River systems. Habitat modification and destruction due to siltation and impoundment threaten this species. It is also negatively affected by the pollution of streams and rivers.

Alligator Snapping Turtle

The alligator snapping turtle (*Macrochelys temminckii*) may be found in large rivers, canals, lakes, oxbows, and swamps adjacent to large rivers. It is most common in freshwater lakes and bayous, but also found in coastal marshes and sometimes in brackish waters near river mouths. Typical habitat is mud bottomed waterbodies having some aquatic vegetation. The alligator snapping turtle is slow growing and long lived. Sexual maturity is reached at 11 to 13 year of age (Ernst et al. 1994). Because of this and its low fecundity, loss of breeding females is thought to be the primary threat to the species.

Migratory Birds and Other Trust Resources

Bald Eagle

The proposed project area may provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*), which was officially removed from the List of Endangered and Threatened Species as of August 8, 2007. However, the bald eagle remains protected under the MBTA and BGEPA.

Bald eagles typically nest in large trees located near coastlines, rivers, or lakes that support adequate foraging from October through mid-May. In southeastern Louisiana parishes, eagles typically nest in mature trees (e.g., baldcypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants. Furthermore, bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. Disturbance during these periods may lead to nest abandonment, cracked and chilled eggs, and exposure of small young to the elements. Human activity near a nest late in the nesting cycle may also cause flightless birds to jump from the nest tree, thus reducing their chance of survival.

The Service recommends a survey be conducted to determine if a bald eagle nest is present within or adjacent to the project area. If a bald eagle nest occurs within 660 feet of the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at:
<http://www.fws.gov/southeast/birds/Eagle/tamain.html>

The Service developed the National Bald Eagle Management Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles. A copy of the guidelines is available at:
<https://ecos.fws.gov/ServCat/DownloadFile/36458?Reference=36436>

On September 11, 2009, the Service published two federal regulations establishing the authority to issue permits for non-purposeful bald eagle take (typically disturbance) and eagle nest take when recommendations of the NBEM Guidelines cannot be achieved. Permits may be issued for nest take only under the following circumstances where: 1) necessary to alleviate a safety emergency to people or eagles, 2) necessary to ensure public health and safety, 3) the nest prevents the use of a human-engineered structure, or 4) the activity or mitigation for the activity will provide a net benefit to eagles. Except in emergencies, only inactive nests may be permitted to be taken.

Should you need further assistance interpreting the guidelines, avoidance measures, or performing an on-line project evaluation, please contact Ulgonda Kirkpatrick (phone: 352/406-6780, e-mail: ulgonda_kirkpatrick@fws.gov). For assistance with the bald eagle permitting process, please contact Resee Collins (phone: 404/314-6526, e-mail: resee_collins@fws.gov).

Neotropical Migratory Songbirds

The proposed project contains features that could potentially impact (directly and/or indirectly) migratory birds and the habitats upon which they depend. Any loss of forested habitat through direct impacts or because of increased inundation is a concern to the Service. In Louisiana, the primary nesting period for forest-breeding migratory birds occurs between April 15 and August 1. The proposed project may directly impact migratory birds of conservation concern because habitat clearing that occurs during the aforementioned primary nesting period may result in unintentional take of active nests (i.e., eggs and young) in spite of all reasonable efforts to avoid such take.

In addition to the direct loss of forested habitat, the proposed water retention features (Darlington Dam) could increase the amount of time adjacent forested areas are flooded. Increased flooding stress could result in tree mortality and a loss of habitat over time. Forest fragmentation (from direct or indirect habitat loss) may contribute to population declines in some avian species because fragmentation reduces avian reproductive success (Robinson et al. 1995).

Wading Bird Colonies

In accordance with the MBTA and the FWCA, please be advised that the project area includes habitats that are commonly inhabited by colonial nesting waterbirds. We recommend that a qualified biologist inspect the proposed work sites for the presence of nesting colonies (during the nesting season) prior to any work being initiated that would impact the colony. For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period, depending on the species present.

In addition, we recommend that on-site contract personnel including project-designated inspectors be trained to identify colonial nesting birds and their nests, and avoid affecting them during the breeding season (i.e., the time period outside the activity window). Should on-site contractors and inspectors observe potential nesting activity, coordination with the Service and the Louisiana Department of Wildlife and Fisheries should occur.

DESCRIPTION OF TENTATIVELY SELECTED PLAN AND EVALUATED ALTERNATIVES

Through coordination between the USACE's Project Development Team (PDT), the non-federal sponsor (Louisiana Department of Transportation and Development), and natural resource agencies, a total of 15 alternatives were identified for evaluation to reduce the risk of flood damages. The alternatives included combinations of 34 different structural and non-structural management measures that were identified to remove water more quickly out of the basin (e.g., dredging and diversions) or hold water back temporarily until water levels drop downstream (e.g., flood gates, dams, retention ponds). Non-structural measures such as structure elevations and relocations were also evaluated, as well as focused structural measures to protect critical facilities. Two of the alternatives identified through public scoping evaluated the flood reduction potential of restoring river meanders and converting the abandoned sand and gravel mines back to forested ecosystems.

The USACE modeled the effectiveness of reducing flood risk for each of the 15 alternatives and carried forward the no-action alternative and three action alternatives as the final array for consideration. Details are provided below for each alternative from the final array.

1) No Action Alternative

Under the No-Action Alternative, no risk reduction would occur. The area would continue experience damages from rainfall and wind/tide induced flooding. This would be exacerbated in the Lower Amite River Basin due to relative sea level rise.

2) Dry Dam along Sandy Creek

A 100-year dry dam design on Sandy Creek would lower the peak stage height along the Amite River by holding back water during rain events. This alternative was eliminated because it did not provide as much flood relief benefit as the large scale 25-year dry Darlington Dam and it's benefit area overlapped with the benefit area of the Darlington Dam. It did not provide additive benefit.

3) Large Scale 25 Year Dry Dam (Darlington Dam)

The large scale 25 year Darlington Dam alternative consists of an earthen dam on the Amite River that will function as a dry dam. Since this alternative was previously studied, data for analyzing it was available in the "Amite River and Tributaries, Darlington Reservoir Re-evaluation Study (Reconnaissance Scope)", dated September 1997. The 1997 report analyzed Dry and Reduced-wet Darlington Dam designs. The dry dam (carried forward here as an alternative) would have a crown elevation 1 foot lower than the reduced-wet. The dam consists of a clay core with a random fill outer layer. The design section consists of a reservoir with a 24 ft wide crown at elevation 202.8 (NGVD29) and side slopes of 1 vertical on 3 horizontal from the crown to elevation 172.8 (NGVD29), the elevation of the flood control pool. On the flood side, from the flood control elevation to the conservation pool elevation, the slope is 1 vertical on 6 horizontal. The flatter slope is to reduce the chances of sudden drawdown failures that tend to occur in this zone. Below the conservation pool elevation, the slope is 1 vertical on 4 horizontal. On the protected side, from the flood pool elevation to the conservation pool, the slope is 1 vertical on 5 horizontal. The flatter slope in this area will increase stability and will resist seepage forces that may concentrate in the lower portion of the dam. Below the conservation pool, the slope is 1 vertical on 3 horizontal. The outlet structure for the dam is three 10 foot x 10 foot box culverts with an emergency spillway.

4) Nonstructural (25 Year Floodplain)

A nonstructural assessment was completed that looked at the effectiveness of implementing measures such as structure elevations, relocations, and flood-proofing. An inventory of residential and non-residential structures was developed using the National Structure Inventory (NSI) version 2.0 for the portions of the study area impacted by flooding from rainfall and sea-level rise associated with the future without project condition. An assessment of all structures located in the 25-year and 50-year floodplain was performed and is presented below.

The nonstructural alternatives will be further refined based on analyses of effectiveness and cost. Further refinement will include a new analysis to combine nonstructural measures with structural alternatives, revisiting of groupings to address areas of potential life safety concerns and/or geographic groupings, as well as additional surveys conducted to be applied to the structure inventory.

25 Year Floodplain (4% Annual Chance Exceedance)

- Measure to every structure receiving a flood stage at or above the first floor elevation during the base year 25 year event.

- 4,291 residential structures were raised to the future 100 year stage up to 13’.
- 387 nonresidential structures were floodproofed up to 3’.

50 Year Floodplain (2% Annual Chance Exceedance)

- Measure to every structure receiving a flood stage at or above the first floor elevation during the base year 50 year event.
- 6,774 residential structures were raised to the future 100 year stage up to 13’.
- 670 nonresidential structures were floodproofed up to 3’.

The **Tentatively Selected Plan (TSP)** identified from the final array is the **Large Scale 25 Year Dry Darlington Dam combined with nonstructural measures**. The Dry Darlington Dam scale will be optimized during the feasibility study design. Additionally, the nonstructural plan will be refined by assessing the Darlington Dam as the new base condition for the hydrology which will likely include structures in geographical regions that are not getting direct benefits from the Darlington Dam such as the Lower Reach of the Amite River Basin.

DESCRIPTION OF IMPACTS

Construction of a dry dam across the Amite River would impact the river itself (16.75 miles within the flood pool), sandbars, herbaceous and forested riparian wetlands, as well as upland forests. The footprint of the Darlington Dam would directly impact approximately 205 acres. The flood pool, which would be temporarily inundated during large rain events, encompasses approximately 9,406 acres. The impacts associated with borrow pits for the dam are undetermined at this time.

The two community types observed during roadside surveys were small stream forests and hardwood slope forests, but other bottomland hardwood forest communities associated with riverine systems are also likely present. Once Right-of-Entry (ROE) is obtained, more thorough site visits will allow better evaluation of the natural communities that will be impacted. This information is required for us to finalize our Fish and Wildlife Coordination Act Report.

EVALUATION METHODS FOR THE SELECTED PLAN

Wetland Value Assessment

Preliminary Wetland Value Assessments (WVA’s) were conducted to compare the effects of each alternative to fish and wildlife resources. Roadside site assessments were used to document the existing vegetation at each site within the final array of alternatives. Impacts to the forested communities were estimated based on anticipated flood depths and durations, and by using flood tolerances of the tree species present (U.S. Geological Survey data), growth rates of those species (U.S. Forest Service data), and aerial photography. The purpose of the preliminary WVA’s was to help select the TSP. Once ROE is obtained, final (more thorough) WVAs will be completed to determine mitigation requirements for the TSP.

The USACE’s Civil Works WVA – Bottomland Hardwoods (Version 1.2) will be used to assess environmental effects for this project. Implementation of the WVA requires that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-

project and future with-project conditions. Each WVA model utilizes an assemblage of variables considered important to the suitability of that habitat type to support a diversity of fish and wildlife species. The WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for bottomland hardwoods, chenier/coastal ridge, fresh/intermediate marsh, brackish marsh, and saline marsh. Although, the WVA may not include every environmental or behavioral variable that could limit populations below their habitat potential, it is widely acknowledged to provide a cost-effective means of assessing restoration measures in coastal wetland communities.

The WVA models operate under the assumption that optimal conditions for fish and wildlife habitat within a given wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated and expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: (1) a list of variables that are considered important in characterizing community-level fish and wildlife habitat values; (2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values; and, (3) a mathematical formula that combines the Suitability Indices for each variable into a single value for wetland habitat quality, termed the Habitat Suitability Index (HSI).

The product of an HSI value and the acreage of available habitat for a given target year is known as the Habitat Unit (HU) and is the basic unit for measuring project effects on fish and wildlife habitat. HUs are annualized over the project life to determine the Average Annual Habitat Units (AAHUs) available for each habitat type. The change (increase or decrease) in AAHUs for each future with-project scenario, compared to future without-project conditions, provides a measure of anticipated impacts. A net gain in AAHUs indicates that the project is beneficial to the fish and wildlife community within that habitat type; a net loss of AAHUs indicates that the project would adversely impact fish and wildlife resources.

FISH AND WILDLIFE CONSERVATION MEASURES AND RECOMMENDATIONS

The President's Council on Environmental Quality regulations for implementing the National Environmental Policy Act define mitigation to include: (1) avoiding the impact; (2) minimizing the impact; (3) rectifying the impact; (4) reducing or eliminating the impact over time; and (5) compensating for impacts. The Service supports and adopts this definition and considers the specific elements to represent the desirable sequence of steps in the mitigation planning process. Through this process, the Service strives to make the project's goals co-equal to fish and wildlife resource conservation.

The Service's Mitigation Policy (Federal Register, Vol. 46, pp. 7644-7663, January 23, 1981) has designated four resource categories which are used to ensure that the level of mitigation recommended will be consistent with the fish and wildlife resources involved. The mitigation planning goals and associated Service recommendations should be based on those four categories, as follows:

Resource Category 1 - Habitat to be impacted is of high value for evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section. The mitigation goal for this Resource Category is that there should be no loss of existing habitat value.

Resource Category 2 - Habitat to be impacted is of high value for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section. The mitigation goal for habitat placed in this category is that there should be no net loss of in-kind habitat value.

Resource Category 3 - Habitat to be impacted is of high to medium value for evaluation species and is relatively abundant on a national basis. FWS's mitigation goal here is that there be no net loss of habitat value while minimizing loss of in-kind habitat value.

Resource Category 4 - Habitat to be impacted is of medium to low value for evaluation species. The mitigation goal is to minimize loss of habitat value.

Streams and wetland habitats associated with the proposed project are designated as Resource Category 2, the mitigation goal for which is no net loss of in-kind habitat value. Non-wetland forests (e.g., upland hardwood) would also be considered Resource Category 2 due to their importance to neotropical migratory songbirds. Scrub-shrub, highly altered waterbodies and wetland habitats, bedded pine plantations, and any grasslands that may be impacted are Resource Category 3 due to their reduced value to fish and wildlife and/or their degraded wetland functions. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value; these habitats can be mitigated out-of-kind but should be within the general habitat type (e.g., forested land).

To achieve fish and wildlife resource conservation, the Service recommends the following:

1. The Darlington Dam should be designed to allow continuous upstream and downstream fish passage. The 10' x 10' box culverts should be installed slightly below grade to prevent "perching" and provide benthic macroinvertebrates and bottom dwelling fish (including the host fish for at-risk and listed mussels) free passage. Ideally, culverts should be installed to a depth that allows sediment to accumulate in the bottom, typically 20 percent of the height. If this reduces the required volume of flow to an unacceptable level then larger or more culverts should be installed.
2. Depending on the design and configuration of culverts at the Darlington Dam, we may require a fish passage study. The USACE should coordinate culvert design and configuration with the Service.
3. If ring levees are proposed as part of the "non-structural" component of the TSP, the levee alignments should be located to avoid and minimize impacts to both herbaceous wetlands and forested communities (wet and non-wet) as much as possible. The acreage of wetlands and forested habitat enclosed within ring levees also should be minimized to the maximum extent practicable.

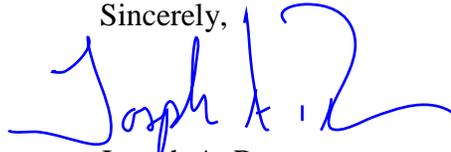
4. Any clearing of riparian vegetation should be limited to a single bank and when possible that bank should be either the eastern or northern bank.
5. Important fish and wildlife habitat (emergent wetlands, forested wetlands, and non-wetland forest) should be conserved by avoiding and minimizing the acreage of those habitats directly impacted by project features.
6. Any forest clearing associated with project features should be conducted during the fall and winter to minimize impacts to nesting migratory songbirds, when practicable.
7. Avoid impacts to threatened and endangered species, at risk species, and species of concern such as the bald eagle, and wading bird nesting colonies.
8. West Indian manatee conservation measures from Appendix A should be included in all contracts, plans, and specifications for in-water work in areas where the manatee may occur.
9. Consultation should continue for the Alabama heelsplitter mussel. Any conservation measures that are identified through consultation should be included in all contracts, plans, and specifications for any work that may adversely impact the heelsplitter.
10. Compensation should be provided for any unavoidable losses of stream habitat, wetland habitat, and non-wetland forest caused (directly or indirectly) by project features. All mitigation should be developed/coordinated with the Service and other natural resource agencies. Only after forest restoration opportunities along the Amite River (abandoned sand and gravel mines) have been implemented to the maximum extent practicable should other mitigation opportunities be pursued. The Service will not be able to agree to the suitability of other mitigation proposals until after ROE allows onsite evaluation of the resources to be impacted to ensure no net loss of “in-kind” habitat value.
11. Borrow material required for construction should be acquired in accordance with the Borrow Site Prioritization Criteria provided in Appendix B.

SERVICE POSITION

The Service does not object to continuation of the feasibility study provided that the above recommendations are fully addressed. However, due to the lack of information regarding the project, the Service does not offer an official position on the TSP at this time. The scale of the Darlington Dam is tentatively set for a 25-year flood event but will be optimized later during the feasibility study. Nonstructural components of the TSP have not yet been clearly identified either. Compensatory mitigation issues also need to be further evaluated before we offer an official position.

We look forward to assisting the USACE in finalizing a plan that would minimize flood risk as well as impacts to fish and wildlife resources. Should you have any questions regarding our comments, please contact Seth Bordelon (337/291-3138) of this office.

Sincerely,

A handwritten signature in blue ink, appearing to read "Joseph A. Ranson". The signature is fluid and cursive, with a large initial "J" and a long, sweeping underline.

Joseph A. Ranson
Field Supervisor
Louisiana Ecological Services Office

Literature Cited

- Ernst, C. H., J. E. Lovich, and R. W. Barbour. 1994. *Turtles of the United States and Canada*. Smithsonian Institution Press, Washington, DC.
- Louisiana Department of Wildlife and Fisheries. 2009. *The Natural Communities of Louisiana*. Louisiana Natural Heritage Program.
- Robinson et al. 1995. Regional forest fragmentation and nesting success of migratory birds. *Science*. Vol. 267, Issue 5206. pp. 1987-90.

Appendix A

Manatee Conditions/Recommendations

During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable. We recommend the inclusion of the following measures into construction plans and specifications to minimize potential impacts to manatees in areas where they are potentially present:

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:
- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).
- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at “no wake/idle” speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.
- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.
- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½ " X 11" reading language similar to the following: “CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT”. A second temporary sign measuring 8½ " X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to

the following: “CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION”.

- Collisions with, injury to, or sightings of manatees should be immediately reported to the Service’s Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

Appendix B

Borrow Site Prioritization Criteria

Location of borrow sites should be prioritized in the following order to avoid and minimize impacts to fish and wildlife resources, especially where multiple alternative borrow areas exist:

1. Permitted commercial sources, authorized borrow sources for which environmental clearance and mitigation have been completed, or non-functional levees after newly constructed adjacent levees are providing equal protection.
2. Areas under forced drainage that are protected from flooding by levees, and that are:
 - a) non-forested (e.g., pastures, fallow fields, abandoned orchards, former urban areas) and non-wetlands;
3. Sites that are outside a forced drainage system and levees, and that are:
 - a) non-forested (e.g., pastures fallow fields, abandoned orchards, former urban areas) and non-wetlands;
4. Areas under forced drainage that are protected from flooding by levees, and that are:
 - a) wetland forests dominated by exotic tree species (i.e., Chinese tallow-trees) or non-forested wetlands(e.g., wet pastures), excluding marshes;
 - b) disturbed wetlands (e.g., hydrologically altered, artificially impounded).
5. Sites that are outside a forced drainage system and levees, and that are:
 - a) wetland forests dominated by exotic tree species (i.e., Chinese tallow-trees) or non-forested wetlands(e.g., wet pastures), excluding marshes;
 - b) disturbed wetlands (e.g., hydrologically altered, artificially impounded).

The Service recommends that immediately after the initial identification of a new borrow site the USACE should initiate informal consultation with the Service regarding potential impacts to federally listed threatened or endangered species.



REPLY TO
ATTENTION OF

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

September 13, 2019

Regional Planning and Environment
Division South

Joseph Ranson
Field Office Supervisor
U.S. Fish and Wildlife Service
646 Cajundome Blvd - Suite 400
Lafayette, LA 70506

Dear Mr. Ranson:

During the 19 June 2019 stakeholder meeting for the Amite River and Tributaries Study East of the Mississippi River, LA (Flood Risk Management Feasibility Study), we had received your input to consider nature-based engineering solutions in our plan formulation that address flood risk management (FRM) in the Amite River Basin. This letter addresses your follow-up planning-aid letter (PAL) dated 25 June 2019 for the Recommended New Alternative of evaluating shoreline restoration and meander creation within the study area. We have considered this alternative and, per further review, we determined that there are limited benefits downstream as well as complications with restoring and protecting meanders on the Amite River Basin.

Adding meanders to the Amite River would increase the length of the river. It may be beneficial for a high frequency rainfall event (e.g. 1 or 2 year), but it would most likely induce flooding in the area of the meanders for a low frequency rainfall event (100+ year).

The abandoned mines could provide additional storage capacity as detention ponds. However, if they are saturated up to the groundwater table, these mines may not provide significant storage capacity for the incoming runoff.

One of the possible FRM benefits of the meanders is the increase of detention volume within the river. For the high frequency events, the additional storage capacity could improve flood risk reduction. This would be extremely unlikely for low frequency rainfall events.

Another possible FRM benefit of the meander is to slow down the peak runoff traveling down the river. Slowing down the water would increase the travel time, which levels out the peak flow and reduces the water depth (i.e. creating "slow down benefit"). For a low frequency event where a significant portion of the flow is out of the channel, the meanders have less effect on storage capacity. For the upper portion of the river basin, the Amite River is mostly within bank up to the 10-year high frequency event. In

that region and for those flood events, re-meandering could slow down the flood water in the channel. For the lower portion of the Amite River Basin, the Amite River is out of its banks for all simulated frequency events, so the "slow down benefit" would be minimal in the region.

For a storm that moves west to east or south to north, rainfall hits the lower Amite River Basin first. In this case, it might be beneficial to slow down the flow from the upper Amite River Basin so that the lower Amite River Basin has time to drain before water flowing from the Upper Amite River Basin. If the storm moves north to south or east to west, it would not support slowing down the water flowing from the upper Amite River Basin. In those cases, water reaches the upper Amite River Basin before reaching the lower Amite River Basin. Therefore, it is more beneficial to let the upper Amite River Basin water drain out as quickly as possible before rainfall drops in the lower Amite River Basin.

If there are significant benefits to meandering other than hydraulic, then it may be worth modeling as an alternative.

While we cannot quantify an estimate of FRM benefits associated with river meander restoration, we can explain it based on existing geomorphological data. On 16 July 2019, we had solicited the USACE Engineering and Research Development Center (ERDC) for subject-matter experts, including those involved with the September 2007 geotechnical study (See Enclosure 1). This report, concerning flood impacts by proposed meander creation in sand and gravel mined reaches, indicates that upstream mined reaches have not influenced downstream flood stages (page 122 of Enclosure 1).

Prior to the 2007 fluvial study, USACE completed a reconnaissance study in 2000 concerning ecosystem restoration on the Amite River and Tributaries (See Enclosure 2) with Alternative #2 involving river remeandering restoration. Such restoration would significantly increase flood stages in the vicinity and also yield decreased flood stages downstream from applied reaches.

Both of these studies indicate possibilities for mitigation for impacts to wildlife, the threatened heelsplitter mussel (*Potamilus inflatus*), and water quality. Pursuant to Section 7(a)(1) of the Endangered Species Act in your PAL letter, we could include river restoration as a means to mitigate for environmental impacts. This mitigation would require a Louisiana Scenic Rivers permit for impacts to the Amite River channel (pursuant LA Scenic Rivers Act of 1988).

We look forward to continuing our work with the USFWS throughout the feasibility study. Should you have any questions regarding our comments, please contact Daniel Meden (504-862-1014) or via email at daniel.c.meden@usace.army.mil.

Sincerely,

A handwritten signature in black ink that reads "Marshall K. Harper". The signature is written in a cursive style with a large, prominent initial 'M'.

Marshall K. Harper
Chief, Environmental Planning Branch

Enclosure 1: Hood, D.R., Patrick, D.M., & Corcoran M.K. "Fluvial Instability and Channel Degradation of Amite River and its Tributaries, SouthwestMississippi and Southeast Louisiana." September 2007.

Enclosure 2: Amite River and Tributaries, Louisiana Ecosystem Restoration Reconnaissance Study. July 2000.

JOHN BEL EDWARDS
GOVERNOR



CHUCK CARR BROWN, PH.D.
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY OFFICE OF ENVIRONMENTAL ASSESSMENT

July 2, 2019

Ms. Kaitlyn Carriere
CEMVN-PMR, Room 331
7400 Leake Avenue
New Orleans, LA 70118

RE: Amite River and Tributaries East of the Mississippi River, LA Feasibility Study

Dear Ms. Carriere:

LDEQ appreciates the opportunity to review the proposed study and provide the following recommendations and comments. We look forward to continued collaboration in this effort.

We encourage the use of nature-based solutions such as stream and floodplain restoration. Such activities may include restoring the channel and floodplain to the hydrologic, ecological and water quality conditions present before any significant man-made alterations were made. Restoring the natural functions of the channel and floodplain by restoring hydrologic characteristics such as stream sinuosity, cross sectional area, length, and slope can both reduce flood elevation and duration as well as improve water quality, ecological, and economic conditions.

When streams are realigned by "straightening", the increased slope and decreased channel length increases water velocity, which increases bank instability and erosion. The increased water volume deposited downstream in a shorter period of time also leads to increased water elevations and flooding. Alternatively, restoring the natural meanders of the Amite River and its tributaries would increase flood storage capacity of the channels by increasing the length of the channel and adjacent floodplains. By reducing the slope of the channel and increasing the time it takes water to travel downstream, more water is absorbed by the soil and vegetation, resulting in reduced downstream water levels and flooding impacts.

Alternatives that include dredging or clearing and snagging can have significant potential adverse environmental, ecological, and economic impacts while often providing insignificant benefits for flood mitigation. Both dredging and clearing and snagging can lead to bank instability, erosion, and sedimentation. The resulting sediment deposited in other sections of the river reduces flow capacity and increases concentrations of total suspended solids, turbidity and other pollutants.

While dredging increases channel cross-sectional area, stream velocities and the ability to reaerate and assimilate organic loading are reduced. The reduction in dissolved oxygen levels can cause the waterbody to be listed as impaired, resulting in discharge permit restrictions which adversely impact development and economic conditions. Low dissolved oxygen levels can also lead to septic conditions altering the quantity and diversity of macroinvertebrates, aquatic habitat, and species.

Clearing and snagging by large track-type vehicles tends to alter channel widths and depths, producing similar impacts as described for dredging. At the same time, woody debris and sawdust from the operation can be carried downstream and deposited against bridge pilings, leading to reduced stream flow

July 2, 2019

Amite River and Tributaries East of the Mississippi River, LA Feasibility Study

Page 2 of 2

capacity, lower dissolved oxygen concentrations and other impairments, and increased scouring near bridge structures. Removal of this debris and other logs, trash, and white goods from bridge crossings would aid the waterway's flow capacity and reduce detrimental flooding, infrastructure and environmental impacts.

Additionally, removal of riparian vegetation during clearing and snagging leads to increased bank instability and sedimentation as well as increased pollutant runoff, such as nutrients and fecal coliform bacteria, from adjacent land. Removal of the overhead shading provided by the tree canopy also leads to increased stream temperatures, which increases the rate of decay of organic materials and further reduces dissolved oxygen concentrations in the water column.

Please strongly consider natural channel restoration and debris maintenance to improve function of the stream and floodplain. This approach can reduce flood elevation and duration as well as improve water quality, ecological, and economic conditions. If you have any questions or comments, please contact Mr. William C. Berger, Jr. at (225) 219-3217 or by email at Chuck.Berger@la.gov.

Sincerely,



Jonathan McFarland, P.E.

Administrator

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July 3, 2019

Colonel Michael N. Clancy
District Engineer
United States Army Corps of Engineers
Post Office Box 60267
New Orleans, LA 70160-0267

RE: *Amite River and Tributaries Study East of the Mississippi River, LA*

Dear Colonel Clancy:

The Louisiana Department of Wildlife and Fisheries (LDWF) attended the recent June 19, 2019, stakeholder meeting held at the U.S. Geological Survey building in Baton Rouge, LA and has reviewed other related information regarding the Amite River and Tributaries Study East of the Mississippi River, LA (Flood Risk Management Feasibility Study) being conducted by the U.S. Army Corps of Engineers (USACE) and the Louisiana Department of Transportation and Development (LA DOTD). Based on our participation and review of available information, we offer the following comments and recommendations:

Action Alternatives

We concur with the June 25, 2019, comments provided by the U.S. Fish and Wildlife Service (USFWS) regarding action alternatives to reduce flood risk. Like USFWS, we recommend that restoring meanders and floodplain connectivity to critical reaches of the Amite which have been impacted by sand and gravel mining be evaluated for inclusion in the alternatives analysis. We understand that Alt 13 considered converting existing sand and gravel pits to floodplain; however, we believe that the scope should be increased to consider other measures beyond the footprint of those pits. Measures considered should include restoration of the channel dimension, pattern and profile, removal/redistribution and stabilization of sand tailing stockpiles and their remnants, as well as bioengineering and natural channel design measures to increase stability of highly erosive, sandy streambanks and floodplains found within heavily mined reaches. Many of the streambanks and floodways associated with these reaches currently contain excessive amounts of sand tailings and often, inadequate amounts of established vegetation. In addition, many of the mining operations have significantly altered hydrology within the floodplain with the construction of large pits, levees, and other features. Modification of these abandoned features will improve natural functions and greatly increase available flood storage.

Other measures which we believe should be explored by USACE involve the reconnection of incised Amite River tributaries to their floodplains. This strategy would raise channels and utilize

expanded floodplain area to greatly increase retention and infiltration and greatly reduce flow rates and volumes experienced downstream. Due to sand and gravel impacts, changes in land use, shortsighted channel manipulation, and other perturbations throughout the watershed, many tributaries have degraded and incised or have been disconnected from their floodplains by other means. These unstable channels currently deliver larger volumes of water at much higher flow rates. USACE should identify impacted tributaries where adjacent land use would not interfere with the acquisition of flood easements and restoration of appropriate channels and floodplain. We believe that a larger number of smaller projects, raising streambeds and reconnecting floodplains could cumulatively provide significant flood storage as well as provide needed flow regulation, which could conceivably benefit a large portion of the basin. In order to make the alternative economically viable, LDWF suggests that USACE focus on opportunities which lend themselves to the most cost effective methodologies, such as beaver dam analogues. These types of projects are most viable and cost effective on headwater and lower-order streams.

An added benefit of the approaches described above would be that subsequent restoration, rehabilitation, and enhancement of riparian habitats could aid in offsetting any impacts to wetlands and streams resulting from other, more environmentally damaging measures and alternatives currently being considered.

Mitigation Recommendations

Like USFWS, we believe that mitigation should be in-kind and there should be no net loss of habitat value for streams and wetland habitats associated with the project. We strongly believe that USACE should explore wetland and stream mitigation opportunities within the Amite River and tributaries including the Comite River and its tributaries. Numerous abandoned sand and gravel sites exist on the banks of the Amite River and several occur along the Comite River. Due to the degraded state of the habitat, altered hydrology, and loss of function, the mitigation potential for these sites is quite high and projects on these sites could provide significant lift. It may not be prudent to restore all sites to historic contours and habitats, but each could be greatly improved with regrading, capping, planting and other measures to restore function.

Many other locations throughout the watershed could provide in-channel mitigation sites. Potential mitigation projects within the Amite and Comite Rivers range from preventing or restoring gravel pit capture, planting and protecting riparian corridors, restoring appropriate channel dimensions and bedform, etc. Similarly, smaller impacted tributaries provide numerous opportunities to develop instream projects throughout the watershed.

An added benefit to providing in-kind mitigation within the watershed is that the mitigation itself could be sited and developed to improve those functions which further reduce flood risk and make the most of overall project funding.

Louisiana Scenic Rivers

Bayou Manchac is a Louisiana designated Historic and Scenic River; however, its status as such was not included within the June 19, 2019, stakeholder meeting presentation slide deck. It should be noted that Bayou Manchac is a designated Historic and Scenic River from the Amite River to the Mississippi River. As noted, the Amite River is a Louisiana designated Natural and

Scenic River from the Louisiana-Mississippi state line to La. Highway 37. The Comite River is a Louisiana designated Natural and Scenic River from the Wilson-Clinton Highway in East Feliciana Parish to the entrance of White Bayou in East Baton Rouge Parish.

Although exceptions exist, several of the identified alternatives which may impact Bayou Manchac, the Amite River and the Comite River would require Scenic Rivers authorization and others may be prohibited by the Scenic Rivers Act. Please contact Scenic Rivers Coordinator Chris Davis at 225-765-2642 for additional information regarding our Scenic Rivers and associated constraints.

Wildlife Diversity Program Concerns

The Wildlife Diversity Program (WDP) requests continued involvement in the planning process of this study. We are requesting additional details on the projects proposed within the Amite River and Tributaries - East of the Mississippi River, LA Flood Risk Management Feasibility Study. Below is an initial set of comments from WDP that encompasses rare, threatened and endangered species within the Amite River, the Comite River, and Bayou Manchac.

The Inflated Heelsplitter (*Potamilus inflatus*) may be impacted by the proposed project. This species is listed as threatened under the Endangered Species Act (16 U.S. C. 1533-1544) and is considered critically imperiled in the state of Louisiana. The Inflated Heelsplitter prefers a soft, stable substrate in slow to moderate currents, and has been found in sand, mud, silt, and sandy-gravel. The degradation of water quality is one of the leading threats to this species. Erosion control measures are recommend at proposed construction sites and include silt fencing, mulching, seeding and vegetation to decrease the amount of soil eroded by rainfall and runoff. All construction waste and debris should be placed in containers and disposed offsite, and surveying 500 feet upstream and downstream of the project site for the presence of Inflated Heelsplitters is recommended. If this mussel is found, contact Keri Lejeune at 337-735-8676 with the WDP and Monica Sikes at 337-291-3118 with the USFWS to coordinate activities.

The Alabama shad (*Alosa alabamae*) may occur within the project area. This is a federal candidate species under the Endangered Species Act (16 U.S.C. 1533-1544) and is considered critically imperiled in the state of Louisiana (S1). The Alabama shad resides in large flowing rivers, spawning over sand, gravel, and rock substrates from January to April. An increase in water control structures, poor water quality and dredging of sand bars has caused a significant population decline over the last forty years. Habitat protection is recommended for this species by avoiding disturbances such as construction of dams, water pollution, siltation, and avoiding disturbance of soil / stream bottoms. If you have any questions, please contact Keri Lejeune at 337-735-8676.

Our records indicate that Broadstripe topminnow (*Fundulus euryzonus*) may be found within the project area. This species is considered imperiled in the state of Louisiana with an S2 rank. Broadstripe topminnow prefer creeks and small rivers; frequently occurring at the surface along overhanging banks, overhanging partially submerged shrubs or trees, or around stumps, snags, and living trees standing in water close to the bank. Threats include chemical pollution and channel alterations and impoundments for navigation and flood control that could alter or

eliminate habitat. Effort should be made to minimize impacts to this species. If you have any questions, please contact Keri Lejeune at 337-735-8676.

The proposed project may impact the gulf sturgeon (*Acipenser oxyrinchus desotoi*) and its designated critical habitat. The gulf sturgeon is listed as threatened on both the federal and state species list. Major population limiting factors are thought to include barriers to spawning habitats and habitat loss associated with the construction of water control structures, including dams and sills. Other threats identified include modification to habitat associated with dredged material disposal and poor water quality associated with contamination.

Our records indicate the fresh water, mussel Southern Creekmussel (*Strophitus subvexus*) occur within a mile of the project area. This species has an S1 state rank and is considered critically imperiled in Louisiana because of its extreme rarity. Habitat protection is recommended for this species by avoiding disturbances such as water pollution, siltation, and the construction of dams. In addition, it is important to avoid disturbances of the soil / stream bottoms and existing mussel beds. If you have any questions, please contact Keri Lejeune at 337-735-8676.

Manatee (*Trichechus manatus*) may occur in within the water bodies of your project area. Manatees are large mammals inhabiting both fresh and salt water. Although most manatees are year round residents of Florida or Central America, they have been known to migrate to areas along the Atlantic and Gulf coast during the summer months. Manatee is a threatened species protected under the Endangered Species Act of 1973 and the Federal Marine Mammal Protection Act of 1972. In Louisiana, taking or harassment of a manatee is in violation of state and federal law. Critical habitat for manatee includes marine submergent vascular vegetation (sea-grass beds). Areas with sea-grass beds should be avoided during project activities if possible. Report all manatee sightings to the Louisiana Department of Wildlife and Fisheries at 337-735-8676 or 1-800-442-2511.

The Suckermouth minnow (*Phenacobius mirabilis*) may occur within your project area. The Suckermouth minnow (*Phenacobius mirabilis*) is considered critically imperiled in Louisiana. This species is a benthic organism, and occurs in runs and riffles of creeks and small to medium (sometimes large) rivers with substrates ranging from sand and gravel to large boulders. We recommend protecting habitat for the Suckermouth minnow by keeping sandy-bottomed streams clean and free of silt.

WDP records indicate that the alligator snapping turtle (*Macrochelys temminckii*) occurs in your project area. Minimize disturbance and alteration of nesting habitat, particularly during nesting season (April – June). Nesting typically occurs close to river banks and lake shores. Minimize removal of log jams in streams, as woody debris provides cover and hunting areas used by this species. Stream alteration should be avoided to protect turtle habitat. If dredging is needed, material should be dumped away from potential turtle nesting sites or dumped prior to egg laying (May – early June).

Our records also indicate the presence of a Spruce Pine-hardwood Mesic Flatwoods and two Small Stream Forest adjacent to waterbodies of the proposed project. These natural communities

are considered imperiled in Louisiana with a state ranking of S2. Contact WDP botanist Chris Doffitt at 318-487-5885 for more information on avoiding impacts to these rare natural communities.

Below are other rare fish and mussel species occurring within the project area:

Common Name	Scientific Name	S Rank
Alabama Hickorynut	<i>Obovaria unicolor</i>	S1
Clear Chub	<i>Notropis winchelli</i>	S3
Elephant-ear	<i>Elliptio crassidens</i>	S3
Gulf Logperch	<i>Percina suttkusi</i>	S2
Mississippi Pigtoe	<i>Pleurobema beadleianum</i>	S2
Rainbow Darter	<i>Etheostoma caeruleum</i>	S2
Rayed Creekshell	<i>Strophitus pascagoulaensis</i>	S2
Saddleback Darter	<i>Percina ouachitae</i>	S3
Shoal Chub	<i>Macrhybopsis hyostoma</i>	S3
Smooth Softshell	<i>Apalone mutica</i>	S3
Southern Hickorynut	<i>Obovaria jacksoniana</i>	S1S2
Southern Pocketbook	<i>Lampsilis ornata</i>	S3
Southern Rainbow	<i>Villosa vibex</i>	S2

The Louisiana Department of Wildlife and Fisheries submits these recommendations to the U.S. Army Corps of Engineers in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). Please do not hesitate to contact Habitat Section Programs Manager, Matthew Weigel at 985-543-4931 should you need further assistance.

Sincerely,



Kyle F. Balkum
Biologist Director

mw/cm

cc:

Louisiana Department of Environmental Quality
Amite River Basin Commission
U.S. Fish and Wildlife Service