

**RIVERINE SAND MINING / SCOFIELD ISLAND
RESTORATION PROJECT (BA-40)
PROJECT NARRATIVE
CEC FILE NO. 09.164
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I. INTRODUCTION

The State of Louisiana's Office of Coastal Protection and Restoration (OCPR) has applied for a permit to construct the Riverine Sand Mining / Scofield Island Restoration Project. This Project is a critical component of the State's Master Plan for restoring and protecting the fragile ecosystem within the Barataria Basin. Like similar Louisiana barrier island restoration projects, it has the overarching goal of creating and sustaining critical barrier island habitats by importing beach and dune sand and marsh sediment from outside the coastal system. Unlike other projects, this Project will attempt to use the renewable sand resources of the Mississippi River, rather than mining sand from the Continental Shelf. To that end, the Design Phase included both the design of the island's beach, dune, and marsh restoration components; and a detailed evaluation of alternative borrow sources in the Mississippi River along with alternatives for mining the sand and alternatives for conveying the mined sand to the island. The purpose of this narrative is to present the descriptions and protocols for mining the sand in the Mississippi River and conveying it to Scofield Island.

II. BORROW AREA (BA) MINING METHODOLOGIES

The mining methods evaluated during plan formulation were hydraulic through the use of a hopper dredge or cutterhead dredge.

A. Hopper Dredge

A hopper dredge is a self-propelled vessel that drags a pair of suction intake heads along the bottom creating a sediment-water slurry at the intake heads. The slurry is elevated through the intake pipes and deposited in a storage compartment (hopper) inside the hull for dewatering. Once filled, the dredge sails to the pump-out location, re-slurries the sediment in the hopper, and pumps the slurry into a sediment pipeline or booster pump/sediment pipeline combination for transport to the fill site. The hopper dredge then returns to the borrow area to repeat the process.

B. Cutterhead Dredge

The cutterhead dredge is normally towed into position and fixed in place within the borrow area by means of conventional anchors and/or spuds (vertical pile-like devices that extend to the bottom but allow the dredge to float up and down freely). The spuds can be raised and lowered independently, allowing the dredge to pivot. The dredging device, a rotating cutter mounted on a ladder-like structure that extends forward from the bow of the dredge, is raised and lowered along the cut face, and

swings from side to side. A suction pipe, usually connected to a pump on the ladder and supported by an additional large pump within the hull of the dredge, moves the sediment slurry from the cutterhead to the discharge. The slurry is transported to the fill site either by a sediment pipeline or a mechanism for filling scow barges. This type of dredge is maneuvered by means of an array of anchors deployed forward of the dredge, or if equipped, by a walking carriage for spuds. Both methods allow the cutterhead dredge to progress along the borrow area while the cutter makes arc-shaped cuts by means of the side to side motion of the ladder. Due to the dynamics of the Mississippi River, it is likely that if a cutterhead dredge were to be used its movement along the borrow area would be controlled by conventional anchors and cables arrangement.

The option of discharging the sediment into scows, which would be towed to a pump out site adjacent to the Empire Waterway, is not considered feasible because of the requirement for additional vessels (spider barge, tugboats, and scow barges) both anchored and moving in an extremely busy section of the Lower Mississippi River. The potential for interference with navigation would likely result.

III. CONVEYANCE CORRIDORS

A. Borrow Area MR-B-09 to the Levee Crossing at Empire, Louisiana

Excavation of Borrow Area MR-B-09 shall be restricted to the use of hopper dredges only. The hopper dredge work area encompasses the borrow area limits, conveyance corridor, and temporary mooring area/pump-out location along the batture at Empire. The conveyance corridor for the hopper dredge will generally follow the travel path of shortest distance when transiting from the borrow area, crossing the Mississippi River to the pump-out location. The actual hopper dredge travel path shall be the responsibility of the Master of the vessel and dictated by the Navigation Rules (Commandant U.S. Coast Guard Instruction M16672.2, *Navigation Rules, International–Inland*, COMDTINST M16672.2D), U. S. Coast Guard (USCG) mandates, and river traffic.

B. Borrow Area MR-E-09 to the Levee Crossing at Empire, Louisiana

1. Hopper Dredge

The hopper dredge work area encompasses the borrow area limits, conveyance corridor, and temporary mooring area/pump-out location along the batture at Empire. The conveyance corridor for the hopper dredge will generally follow the travel path of shortest distance when transiting from the borrow area to the pump-out location. The actual hopper dredge travel path shall be the responsibility of the Master of the vessel and dictated by the Navigation Rules (Commandant

USCG Instruction M16672.2, *Navigation Rules, International–Inland*, COMDTINST M16672.2D), USCG mandates, and river traffic.

2. Cutterhead Dredge

The cutterhead dredge work area encompasses the borrow area limits, sediment pipeline corridor, and temporary mooring area/pump-out location along the batture at Empire. The sediment pipeline corridor originates at the cutterhead dredge and extends from within the borrow area and along the right descending bank to the levee crossing location. At this point it emerges onto the batture and crosses the Mississippi River levee. The sediment pipeline shall be securely anchored or ballasted to prevent the sediment pipeline from lifting off the bottom under reasonably expected conditions. This ballasting could be accomplished with weighted coatings (Figure 1), collars (Figure 2), or articulated concrete mats (Figure 3), or by an alternate method subject to review and approval by the state and federal regulatory agencies. Regardless of which sediment pipeline construction methodology is employed, use of this borrow area and conveyance method shall include the requirement that the sediment pipeline remain stable and firmly on the river bottom.



Figure 1: Concrete Pipeline Coasting



Figure 2: Bolt-On Concrete Pipeline Collar

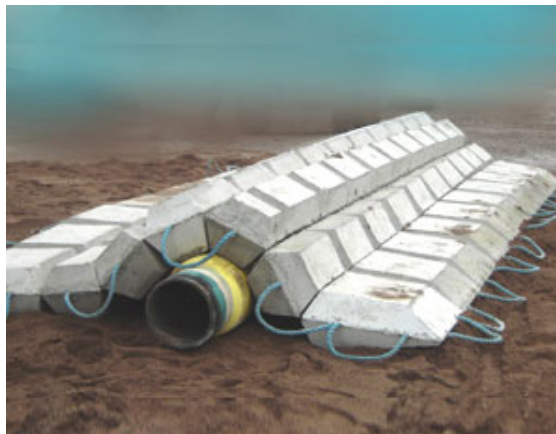


Figure 3: Articulate Concrete Mat

In nearshore locations the ballasted pipe shall be located such as to ensure that a minimum depth of six (6) feet of water is maintained above the top of the pipe and any associated ballast structure for navigational clearance except where exiting the river onto the batture.

To facilitate cutterhead dredge maneuvering, it is customary that the trailing discharge sediment pipeline is mounted on pontoons for some distance between the dredge and the start of the submerged pipe. This distance varies based upon the dredge and support equipment utilized.

IV. SUBMERGED SEDIMENT PIPELINE GENERAL SAFETY AND SECURITY

A daily underwater inspection of any submerged sediment pipeline installed along the right descending bank of the Mississippi River shall be required to detect alignment, stability, and integrity issues with the sediment pipeline. This may be accomplished in combination by multibeam sonar, sidescan sonar, remote underwater video, diver, and/or other approved methods. The presence of any such issues or deviations shall be required to be documented, locations plotted, and reported immediately.

V. MISSISSIPPI RIVER TEMPORARY HOPPER DREDGE PUMP-OUT / BOOSTER STATION

It may be necessary to install temporary piles (dolphins), spud pile/mooring buoy, or similar anchoring method that penetrates the revetment along the right descending bank near the levee crossing location at Empire to provide hopper dredge mooring for pump-out or mooring of booster pump, if required. The installation of any penetration of the revetment shall be implemented in accordance with the U.S. Army Corps of Engineers (USACE) regulations (USACE, 1999. *Repair Procedures Required When Penetrating Revetments with Piles, Caissons, and/or Pile Clusters*. File No. H-18-45204, U.S. Army Corps of Engineers, New Orleans District, New Orleans, Louisiana, USA) and avoid interference with navigation. Further, the necessary engineering studies and designs for such installation shall be performed by a licensed Professional Engineer and must receive the required approval and permits for its construction.

VI. COMMUNICATION PLAN

All dredges and other auxiliary service vessels shall be equipped with bridge-to-bridge radiotelephones capable of operating from the main control stations and capable of transmitting and receiving on the frequencies within the 156 to 162 Megahertz bank using the class of emissions designated by the Federal Communications Commission for the exchange of navigational information and to provide for maximum safety of operations.

For dredge vessels wherein the Code of Federal Regulations (CFR) does not require a USCG licensed U.S. Merchant Marine Officer for operations, an Officer(s) holding at a minimum a grade of *Master of Steam or Motor Vessel upon Inland Waters* shall be required during mobilization, construction, and demobilization. The Officer(s) shall be required to stand watch and monitor the required marine radio channels for vessel-to-vessel communications for passing as well as the operational safety of the dredge, plant, and support vessels.

VII. SIGNAGE AND MARKING PLAN

A. General

Signal lights, signage, and markings shall be utilized to designate the work areas, conveyance corridors, and submerged sediment pipelines; and shall be displayed and operated in accordance with the regulations of the USCG as set forth in Commandant USCG Instruction M16672.2, Navigation Rules: International-Inland (COMDTINST M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland), as applicable.

B. Navigational Aids

Existing Navigation Aids (NAVAID) located within or near the work areas may be removed, if necessary, by the USCG (and/or as directed by the USCG) in advance of dredging operations. The need will be assessed by and any movement shall be coordinated with USCG. Construction activities shall not remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any NAVAIID.

C. Dredging Aids

All excavation for the Project fill shall be performed within the limits and depths of the borrow area(s) shown on the drawings and as permitted. Temporary construction-related buoys, dredging aid markers to be placed in the water, and dredging aid markers affixed with a light are subject to review and approval by the USCG prior to their installation. Dredging aid markers and lights shall not be colored or placed in a manner that they will obstruct or be confused with navigation aids and shall conform to the regulations set forth in Commandant USCG Instruction M16672.2, Navigation Rules: International-Inland (COMDTINST M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable.

D. Submerged Sediment Pipeline Markers

The location of the entire length of submerged sediment pipeline shall be marked with signs, buoys, lights, and flags conforming to the USCG regulations mentioned above.

E. Floating Sediment Pipeline Markers

Should any portion of the sediment pipeline not rest on the bottom, it will be considered a floating sediment pipeline and shall be required to be made visible on the water's surface and clearly marked. In no case shall the sediment pipeline be allowed to fluctuate between the surface and the bottom, or lie partly submerged. Lights shall be installed on the floating sediment pipeline as required by the USCG and generally as in paragraph Dredging Aids above. The lights shall be supported either by buoys or by temporary piling. Where the sediment pipeline does not cross a navigable channel, flashing yellow all-around lights shall be spaced and installed in accordance with the USCG regulations mentioned above.

F. No Anchor Zone Designations

Wherever a submerged sediment pipeline crosses a navigable channel, temporary "No Anchoring or Dredging, Pipeline Crossing" signs shall be posted on each bank or shoreline, delimiting the crossing area; subject to review and approval by the state and federal regulatory agencies.

VIII. DREDGE LOCATION CONTROL

Electronic positioning equipment shall be utilized onboard that will locate the dredge when operating on the Project. Continuous updates of the dredge location shall be made during dredging and transporting operations to ensure that accurate and reliable positioning is readily available for vessel-to-vessel communications.

IX. MISSISSIPPI RIVER AND EMPIRE WATERWAY VESSEL TRAFFIC

The mix of vessels that will be encountered on the Mississippi River during the course of the Project runs the gamut from very large commercial vessels (tankers, container ships, bulk carriers, and cruise ships), naval vessels, barge/tug combinations, offshore supply vessels, crewboats, to commercial and recreational fishing vessels. Such vessels will use the navigation channel in the Mississippi River at all hours throughout the duration of the Project. Construction activities shall be conducted in such a manner so as to interfere with navigation as little as possible. In the event the dredge plant and/or sediment pipeline so obstructs the channel as to make difficult or endanger the passage of vessels, said equipment shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage.

Upon completion of the Project the dredge plant, equipment, and sediment pipeline including ranges, buoys, temporary piles, and other markers placed in navigable waters or on the shore shall be promptly removed.

The lowering or raising of the sediment pipeline shall be reported in advance such that it may be included in the "Local Notice to Mariners" issued weekly by the USCG - Eighth District.

X. DREDGE PLANT NAVIGATION RULES AND REGULATIONS COMPLIANCE

The vessels utilized for Project construction shall be commanded, equipped, navigated and/or operated so as to be in strict compliance with the general regulations of the USCG, including applicable section, safety, environmental and navigational rules and regulations of the CFR, parts 33 and 46.

XI. OBSTRUCTION OF NAVIGABLE WATERWAYS

Navigable waterways shall be kept free of obstructions. Material, plant, machinery, or appliance which is lost, dumped, thrown overboard, sunk, or misplaced, shall be promptly recovered and removed. Notice shall be given immediately along with the description and location so it may be included in the "Local Notice to Mariners" issued weekly by the USCG - Eighth District. Such obstructions shall be marked in accordance with USCG regulations mentioned above until they are recovered and removed.

Liability for the removal of a vessel wrecked or sunk without fault or negligence is limited to that provided in sections 15, 19, and 20 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 410 *et. seq.*).

No mooring of out-of-service plant or vessels shall be allowed except in the Ostrica Anchorage, as designated on the appropriate NOAA/NOS Chart.

XII. PETROLEUM PIPELINE CROSSINGS

It is anticipated that the sediment pipeline in the Empire Waterway Conveyance Corridor could cross approximately 28 buried petroleum transmission pipelines. Extending from the southern terminus of the Empire Waterway (vicinity of the jetties) to the fill template on Scofield Island, the sediment pipeline could cross additional petroleum pipelines. Prior to commencement of construction, a field investigation comprised of magnetometer and physical probing surveys shall be conducted of the conveyance corridor to locate the petroleum pipelines and utilities infrastructure, determine their ownership and operational status, and coordinate their protection with the owners.