MBSD - Saltwater wedge

State of Louisiana

JEFF LANDRY
GOVERNOR

January 31, 2025

Attn: Cullen A. Jones
Department of the Army
US Army Corps of Engineers
New Orleans District
7400 Leak Avenue
New Orleans, Louisiana 70118-3651

Re: CPRA USACE – ROD – 404 and 408
Saltwater Wedge – Experts/Engineers

Dear Col. Jones:

As you are aware, since the Records of Decision in December of 2022, there have been serious issues with the Saltwater Wedge in 2023 and 2024. I have concerns in light of the construction and future operations of the Mid-Barataria Diversion.

The saltwater wedge has become a serious issue, and the USACE comments have not gone unnoticed. On behalf of CPRA, I am looking for guidance.

The 408 Record of Decision from the USACE discusses the saltwater wedge and mandates that CPRA through the life of the project retain appropriate experts to begin to quote as follows:

> "It is currently unknown whether the MBSD would cause saltwater intrusion into the Mississippi River. Given the large uncertainty surrounding the shoaling assessment and saltwater wedge dynamics, the requester (CPRA) will need to conduct data collection, modelling analysis throughout the life of the MBSD project to quantify changes and to determine cause of any shoaling in the MRSC and saltwater wedge dynamics. By requiring the requester to provide this continued feed of information (monitoring, modeling analysis) USACE will be able to continue to track the MBSD project is not causing unreasonable conditions or obstruction of the MRSC" (USACE – ROD – 408 – p. 41).

I attach the relevant pages from the 408 Record of Decision for your review, which is Bates stamped CPRA 408 - 001-006 and the 404 Record of Decision, Bates stamped CPRA 404 - 001-007.

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The question that I have for USACE is should CPRA begin retaining the necessary experts (engineers, etc.) to begin collection of data and engineering for the saltwater wedge prior to operation of the Mid-Barataria Diversion?

Your guidance and clarity on this matter is extremely important to CPRA because of the enormous expenses that are being incurred for the MBSD. If you have any questions, please contact me.

Respectfully submitted,

Gordon E. Dove, Chairman
Coastal Protection and Restoration Authority Board-Louisiana

Enclosures
cc: Governor Jeff Landry: attn. Angelique Freel, Executive Legal Counsel
Glenn Ledet, CPRA, Executive Director

MEMORANDUM FOR RECORD ON PENDING PERMIT DECISIONS (ROD)

SUBJECT: Department of the Army Clean Water Act (Section 404) and Rivers and Harbors Act (Section 10) Review and Statement of Findings for the Above-Referenced Standard Individual Permit Application

This document constitutes the Clean Water Act (CWA) Section 404(b)(1) Guidelines Evaluation, Public Interest Review, and Statement of Findings for the subject application. These reviews utilize information documented in the Final Environmental Impact Statement (EIS) published in the Federal Register on September 23, 2022 (87 FR 58083, 2022[1]). Agency coordination and consultation and compliance with relevant environmental laws such as the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the National Historic Preservation Act, Section 106, and Essential Fish Habitat (EFH) consultation under the Magnuson-Stevens Fishery Management Act, are outlined below.

1.0 INTRODUCTION AND OVERVIEW

Information about the proposal subject to one or more of the United States Army Corps of Engineers' (USACE's or the Corps') regulatory authorities is provided in Section 1, detailed evaluation of the activity is found in Sections 2 through 10 and findings are documented in Section 11 of this memorandum.

1.1 Applicant Name

Coastal Protection and Restoration Authority of Louisiana (CPRA, applicant)

1.2 Activity location

On the right descending bank of the Mississippi River at river mile (RM) 60.7 in the vicinity of the town of Ironton, Plaquemines Parish, Louisiana.

[1] https://www.federalregister.gov/documents/2022/09/23/2022-20646/environmental-impact-statements-notice-of-availability

6.4.3 Potential impacts on human use characteristics (Subpart F 40 CFR 230.50)

The following has been considered in evaluating the potential impacts on human use characteristics (see Table 5):

Table 5 – Potential Impacts on Human Use Characteristics

Human Use Characteristics	N/A	No Effect	Negligible Effect	Minor Effect (Short Term)	Minor Effect (Long Term)	Moderate/ Major Effect
Municipal and private water supplies			X			
Recreational and commercial fisheries						Varies by species
Water-related recreation					Vaires	
Aesthetics					X	
Parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves					X	

Discussion:

6.4.3.1 Municipal and private water supplies

Surface water sources account for the majority of water withdrawals in the Project area, and groundwater withdrawal is minimal by comparison. Most groundwater withdrawn in the Project area is associated with industry along the Mississippi River corridor. Potential impacts on groundwater quality are considered negligible with the only identified threat being an inadvertent spill of hazardous materials that leaches into shallow groundwater aquifers during construction of the proposed project. Increased

turbidity and suspended sediments from in-water construction activities is not expected to impact drinking water supplies.

Along the Mississippi River there are intakes for 13 municipal water supply facilities that service the New Orleans metropolitan area. As described in Section 3.4.2.4 of the Final EIS, because the salt water in the Gulf of Mexico is denser than the fresh water flowing in the Mississippi River, salt water can migrate upstream along the bottom of the river underneath less dense fresh water. This poses risks for municipal water intakes along the Lower Mississippi River during existing conditions. As a mitigation measure for deepening the river channel to 45 feet, during extreme low water conditions, USACE constructs a temporary sand sill (called a saltwater sill) at RM 65 AHP to block the saltwater wedge from migrating upriver. Since deepening the channel to 45 feet, the sand sill has been constructed four times (1988, 1999, 2012, and 2022) in order to mitigate for the increased duration and extent of saltwater intrusion above RM 64 AHP.

The proposed project is not expected to be in operation when conditions in the Mississippi River warrant saltwater sill placement; however, salt wedge migration to RM 60.7 could impact base flow operations.

6.4.3.2 Recreational and commercial fisheries

Under the Applicant's Preferred Alternative, there would likely be temporary, minor, adverse direct impacts on recreational fishing, hunting, wildlife watching, and recreational boating activities near the construction area due to construction-related traffic and noise impacts. Due to the mobilization of crews and equipment, construction activities under the Applicant's Preferred Alternative may cause traffic congestion during the 5-year construction period, which may contribute to delays in accessing recreation sites, particularly in southern Plaquemines Parish. Construction activities are not expected to result in road closures; however, southbound roadway capacity on LA 23 could be reduced at times. Impacts may also occur on LA 23 and local roads south of New Orleans outside of the defined Project construction footprint due to increases in roadway and railroad traffic for construction deliveries and worker commutes. LA 23 is the only road to and from recreation sites south of the diversion structure and Project-induced traffic congestion on LA 23 is projected to be moderate and adverse. This could cause temporary, minor, adverse impacts on recreation users traveling this stretch of LA 23 to access recreation sites south of the proposed Project construction site. Use of open water within the Mississippi River and the Barataria Basin associated with construction of the diversion complex and auxiliary features could include minor increases in water-based traffic. Construction equipment and materials is expected to be barged in from vendors north and south of the proposed Project site, causing minor

ever before. The list of projects and closures to the Ship Channel from Baton Rouge to the Gulf of Mexico have included projects to install fiber optic cables, removal pipelines from below the Ship Channel, provide bank stability with the USACE installing revetment mats, the construction of the salt water sill – due to historic low water conditions (Please note later mention that the chosen models for predictive impacts fail to produce the salt water wedge – that in itself speaks volumes for the concern from the navigation industry), channel maintenance dredging, dredging in the Hopper Dredge Disposal Area and each project involved challenges for navigation often requiring complete channel closures or at least channel transit restrictions. In the midst of these operations the Final Environmental Impact Statement for the Mid-Barataria Sediment Diversion was filed with a 30-day comment period, the comment period was too short to allow a complete review of the Final EIS Designed to "assess the potential environmental impacts associated with the proposed Project." While also noting that the previous comment periods were extended on multiple occasions. The salt water sill construction project alone indicates the real dangers in diverting flow from the mainline Mississippi River thalweg and the potential negative impacts of low flow on America's River, including the balance of fresh water from the River versus the impacts of sea level rise and salt water. Many of the concerns related to maintaining freshwater in the Mississippi River are similar to principles pioneered by James Buchannan Eads to keep the flow in the river to promote the river's mechanisms to self-scour and are also noted in the famous report done by Rafael G. Kazman and David Johnson of Louisiana State University that discussed the impacts of the Mississippi River were to change course. This report and the potential for disaster were related to an avulsion (hydrologic mechanism often catastrophic of a river changing course) almost forming in the area of the Old River Control Structure that occurred during the 1973 flood on the Mississippi River. The report focused on numerous problems and the economic and environmental disaster and went on to make recommendations for the City of New Orleans and Baton Rouge to seek alternate drinking water sources. Please remember the Mississippi River is below sea level to approximately Vidalia, Louisiana (western bank) and Natchez, Mississippi (eastern bank), if the river were to change course the former Mississippi River would be filled with salt water from the Gulf of Mexico to the avulsion. In their report Kazman and Johnson made numerous recommendations about major cities below the Old River structures to seek and prepare for alternate freshwater sources.

The Mississippi River is rapidly changing and during this historic low water period, it is evident that few are paying proper attention to these serious changes, but hopefully the following will shed some light on concerns from the navigation industry that the citizens depending on the Mississippi River should be more made aware of. The purpose of the salt water sill that has just been constructed near Belle Chasse (LA) at Mile 63.8 AHP is indeed one to prevent the salt water wedge from reaching the freshwater intakes for the City of New Orleans. Due to the low water conditions across the Mississippi River and Tributaries the navigation industry is being impacted by too little water, statistically from a project requirement the USACE builds a salt water sill about every ten years, the last time was in 2012 a year after the Bonnet Carré was operated during the severe Flood of 2011.

The navigation industry has been actively engaged with the U.S. Army Corps of Engineers fighting an extended low water challenge to protect the freshwater supply for the city of New Orleans. There have been project related channel closures from Baton Rouge to the Gulf of Mexico besides the construction of the saltwater sill, including indicators that should be of a critical concern to those who depend on maritime commerce within the Mississippi River Basin and the state of Louisiana. This is not my father's Mississippi River, there are dynamic changes ongoing that are being missed, indicators that the most critical water source, the most important navigation channel is dynamically changing. Long held standards and indicators are no longer in the predictable pattern, over the last few years the USACE has had to dredge higher and higher up in the birds'-foot delta, maintenance dredging on the Ship Channel above Venice (Mile 11 Above Head of Passes) is a new phenomenon and then this year dredging was required in the Ship Channel in an area at Mile 22 AHP known as Neptune Pass – an outlet that on May 24, 2022 was diverting 118,000 cubic feet per second (cfs) and a few miles below it at Fort St. Phillip another 100,000 cfs was being lost. The navigation industry and much of a nation's economics depend on the Mississippi River as an economic superhighway and the base level to maintain commerce appears to be an unknown?

On the day of the following flow measurements at Belle Chasse (LA) below about 20 miles downriver from New Orleans was 776,000 cfs.

hopper dredges to dredge during low river stages to maintain Congressionally authorized channel dimensions. However, the long-held standing metric was that dredging in the area of Southwest Pass was needed when the reading on the Carrollton Gage was 10 feet and expected to continue to rise. The reduced flow in the thalweg of the Ship Channel is a dire concern of the Big River Coalition and should be to all who depend on the Mississippi River for their livelihood and drinking water.

Look no further than the saltwater wedge and recall the findings of a historic river report done after the Mississippi River almost changed course down the Atchafalaya River during the flood of 1973. The previously referenced Kazman Johnson report warned about the impact of a major avulsion on the cities of New Orleans and Baton Rouge – where the former Mississippi River would be an inland breach of the Gulf of Mexico as the flow that keeps the salt water wedge downriver is lost. The negative impact of sea level rise on the flow of the Mississippi River Ship Channel must remain a national and USACE priority.

The Big River Coalition is concerned by the negative impacts this project would have on the Mississippi River Ship Channel and that the Coastal Protection and Restoration Authority does not include any Compensatory Mitigation to address the self-reported negative impacts. The Coalition reviewed this Draft Environmental Impact Statement in detail but was unable to find any Compensatory Mitigation measures offered to counter the negative impacts the diversion would have on the Mississippi River Ship Channel. The Mississippi River Ship Channel is an economic superhighway and the proposed diversion would have negative impacts on the main line navigation channel responsible for the movement of 500 million tons of cargo on an annual basis.

The Coalition's immediate responses to this lengthy document are limited to the negative impacts on the Ship Channel and requests for the establishment of sufficient Compensatory Mitigation funding to maintain the status quo of the Ship Channel and requests both that the USACE and USCG perform a full National Safety Risk Assessment (NSRA). If the impact of one dock is worthy of such proper and detailed analysis then our government agencies should focus more comprehensively on a project that is known to have a huge and negative impact on the navigation if constructed, these impacts will hinder commerce along the nation's most important artery of trade. Therefore, a full NSRA is indeed both warranted and represents prudent action since the concerns of the navigation industry have failed to be addressed.

COMPENSATORY MITIGATION FOR THE IMPACTS TO NAVIGATION

1) The requirement to maintain a sufficient Picket Boat during the construction and operation of the diversion structure to protect maritime commerce, transiting vessels and the diversion structure(s) must be included. This requirement meets with protocols for the U.S. Army Corps of Engineers during the operation of the Bonnet Carré and Morganza Spillways. The picket boat requirement adds a layer of protection to assist with passing vessel traffic, in case a transiting vessel losses steerage or power. The Coalition believes that picket boat contract should be a conditional requirement for a towboat vessel to stand picket outside the diversion structure to fend off loose barges or vessels. The standard picket boat requirements for operation at Bonnet Carré Spillway include a twin-screw vessel with a minimum propulsion of 2,000 horsepower to a maximum of 5,000 horsepower with a licensed pilot and crew onboard for 24-hour operations. The requirement for the picket boat during the waterside construction and during the operation of the proposed structure for the lifetime of the project should be a regulatory requirement to protect and promote navigational safety.

   "In the Mississippi River, operational impacts under the Applicant's Preferred Alternative on the existing flow of the Mississippi River would be permanent, moderate, and adverse due to the creation of cross-stream (perpendicular to the existing general downstream flow) velocity component near the proposed diversion site."

   The request for the Picket Boat would seem to match with some of the challenges for shallow-draft tows that were experienced and recorded during the vessel modeling.

   "This indicates that upbound loaded slow-moving tows were vulnerable to the effects of the project intake flow."

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Concerns documented in Table 2.9-1 Comparative Summary of Potential MBSD Impacts Under Each Alternative)as compared to the No Action Alternative unless Otherwise Stated) from Page 2-84:

"Cargo tonnages and marine vessels transiting the Lower Mississippi River, GIWW and Barataria Bay Waterway, and Bayou Lafourche would continue to show little or no growth."

And

"Existing dredging trends would continue"

So, these comments are listed under the so-called No Action Alternative but fail to mention that the Mississippi River Ship Channel and Gulf Intracoastal Waterway are the number 1 and number 3 highest tonnage channels in the country. It also seems to overlook numerous facilities either already under construction or planned for future construction, while also not taking into account the increase in cruise and river cruise vessels.

In the same table the following is listed under the Column titled 75,000 cfs Alternative (Applicant's Preferred) heading:

"Minor, permanent, adverse impacts on maintenance dredging between the proposed intake structure (RM 60.7 AHP) and Venice (RM 13 AHP) in the Mississippi River due to changes in typical shoaling patterns and locations and minor increases in dredging quantities in new point bar growth intrudes into the navigation channel."

"Moderate, permanent, adverse impacts on maintenance dredging in the Mississippi River from Venice to the Gulf, including Head of Passes and in Southwest Pass, and in other passes carrying flow to the Gulf (for example South Pass, Tiger Pass)."

Mere acceptance of the above strongly supports the navigation industry request for sufficient Compensatory Mitigation to address the shoaling that would be induced by the Mid-Barataria Sediment Diversion project. Although we might dispute the moderate level of impact we agree with the adverse and negative impacts based on historical data.

Concerns documented from Navigation impacts 4.21.2 Overview of Modeling Impact Analysis:

Concerns documented on Page 4-767:

"The models have limitations that allow for a primary qualitative interpretation of their results. Limitations include, for example:

None of the three models reproduced the well-known saline wedge in Southwest Pass; therefore, none of their predictions of navigation channel sedimentation are considered reliable in that channel segment. Their results in Southwest Pass are considered only as part of the overall result and may underestimate actual deposition;

The Delft3D Basinwide and AdH models were not validated by comparison to observed sediment deposition rates in navigation channels; therefore, their predictions of navigation channel sedimentation are considered primarily qualitative. Further, the Delft3D Basinwide and AdH model applications did not compute dredging events during the model simulations; thus, model channels continued to accumulate sediment as if dredging were not performed. Those dredging predictions may be somewhat low as a result;"

One of the main reasons for the concerns of the navigation industry or due to the lack of Compensatory Mitigation for the CPRA to maintain the status quo of channel depths to counter the well-known impact of induced shoaling due to the response of the loss of stream power in the navigation channel. Not to mention the fact that right now, the eyes of the world are on the impact of the salt water sill that this model cannot reproduce.

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Letter ID	Commenter	Comment	Response
		If the impact of one dock is worthy of such proper and detailed analysis then	
244161	Sean Duffy	our government agencies should focusmore comprehensively on a project that is known to have a huge and negative impact on the navigation if constructed,these impacts will hinder commerce along the nation's most important artery of trade. Therefore, a full NSRA isindeed both warranted and represents prudent action since the concerns of the navigation industry have failed to beaddressed.	Noted. The U.S. Coast Guard rescinded its request for the applicant to complete a Navigational Safety Risk Assessment for the project.
244161	Sean Duffy	The purpose of the salt water sill that has just been constructed near Belle Chasse (LA) at Mile 63.8 AHP is indeed one to prevent the salt water wedge from reaching the freshwater intakes for the City of New Orleans. Due to the low water conditions across the Mississippi River and Tributaries the navigation industry is being impacted by too little water, statistically from a project requirement the USACE builds a salt water sill about every ten years, the last time was in 2012 a year after the Bonnet Carré was operated during the severe Flood of 2011.	The proposed operation of the MBSD Project would not affect salt water intrusion above Head of Passes. When the river's flow drops below 450,000, full MBSD operations would cease in accordance with CPRA's operational plan.
244161	Sean Duffy	"The ongoing impacts on navigation from past or present projects and trends are captured in the analysis in Section 4.21 Navigation. The additional impacts of the reasonably foreseeable projects identified in the operations AOT are presented here...." There are positions stated within this quote that are presented as factual but no supporting details are offered. It appears if that the CPRA is representing navigation impacts without doing a proper study or including actual navigation experts.	As stated in Chapter 4, Section 4.25.1 Methodology for Assessing Cumulative Impacts, the cumulative impacts analsis for each resource, including navigation, was conducted using the best available data at the time of analysis.

CPRA-404-007

Mid-Barataria Sediment Diversion Project - Section 408 Permission Request of Coastal Protection and Restoration Authority of Louisiana

PART 1 OF 2

Summary of Findings/ROD to Appendix 3 (FEIS Appendix B)

due to waterway obstructions associated with the cofferdam for the 3.5-year construction timeframe of the river intake system.

- Negligible impacts on deep-draft vessels transiting past the Project site on the other side of the Mississippi River in the navigation channel boundaries.
- Negligible impacts on maintenance dredging in the Mississippi River and the Barataria Basin navigation channels.
- Minor constrictions in Mississippi River flow, which will cause negligible, localized increases in water surface elevations.
- Minor constrictions in Mississippi River flows, potentially leading to increased water velocity and changes in sediment movement, including scouring near the cofferdam and deposition downstream of the cofferdam where water velocities would normalize.

During Operations:

The FEIS concluded the following impacts to the MRSC during MBSD Project operations:

- Minor, intermittent, beneficial impacts on water levels in the Mississippi River, with local reductions of up to 1.0 foot (approximately 0.3 meter) compared with the No Action Alternative during maximum Project operations.
- Moderate, permanent, adverse impacts on flows in the Mississippi River near the intake structure.
- Moderate, permanent, and adverse impacts on currents and flow in the Mississippi River due to the creation of a cross-stream (perpendicular to the existing general downstream flow) velocity component near the MBSD Project site.
- Moderate, intermittent but permanent, adverse impacts on marine traffic efficiency and safety for shallow-draft vessels in the Mississippi River during operations due to crosscurrents extending into the channel from the MBSD Project intake structure.
- Minor, permanent, indirect impacts on marine traffic in the Lower Mississippi River due to increased dredging frequencies (dredging activities may cause delays for marine traffic).
- Moderate, permanent adverse impacts, with general trends of increased erosion immediately upstream of the diversion and increased deposition immediately downstream of the diversion, with the exception of the birdfoot delta. Immediately upstream of the MBSD Project, erosion is expected to increase due to the increased water surface slope induced when the diversion is open (flowing greater than the 5,000 cfs up to a maximum of 75,000 cfs depending on flows in the river). The model results are generally supported by a recent USACE one-dimensional modeling study, which projects a general increase in deposition within the Mississippi River after the MBSD Project begins operating, with more deposition occurring immediately downstream of the diversion than upstream.
- Negligible impacts on dredging in the Mississippi River upriver of the MBSD Project site.
- Minor, permanent, adverse impacts on maintenance dredging between the MBSD Project intake structure (RM 60.7 AHP) and Venice (RM 13 AHP) in the Mississippi River due to changes in typical shoaling patterns and locations and minor

increases in dredging quantities if new point bar growth intrudes into the navigation channel. See additional discussion below.

- Moderate, permanent, adverse impacts on maintenance dredging in the Mississippi River from Venice to the Gulf, including Southwest Pass and other passes carrying flow to the Gulf (for example, South Pass, Tiger Pass). See additional discussion below.

Operational impacts to dredging in the MRSC were evaluated using modeling results from other studies and projects. The results of the models (Delft3D Basinwide, AdH, and HEC-6T) were used to glean information for the assessment of impacts that the MBSD Project would have on the lower Mississippi River. No specific modeling of the riverside impacts of the MBSD Project were performed for this 408 review. The impacts in the FEIS were inferred from extant modeling and analyses of various proposed diversions on Mississippi River sedimentation. The operation of the MBSD Project is expected to have some impacts to MRSC Project maintenance dredging, but the magnitude of these impacts and relative certainty varies at different segments of the Mississippi River. Maintenance dredging does not occur from RM 115 AHP to 13 AHP as this portion of the Mississippi River is naturally deep.

Immediately upstream of the MBSD Project, erosion is expected to increase due to the increased water surface slope induced when the MBSD Project is open (flowing greater than the 5,000 cfs up to a maximum of 75,000 cfs depending on flows in the Mississippi River).

Between the Intake Structure and Venice (RM 60.7 to RM 13 AHP), modeling indicates the potential for changes to typical shoaling patterns and location, which may require maintenance dredging. However, the impacts are unlikely to trigger the need for dredging, unless point bar growth intrudes into the navigation channel. Such changes could arise as part of the Mississippi River's long-term geomorphic response to the MBSD Project. Any increases in maintenance dredging due to the MBSD Project will be the sole responsibility of the Requester.

Between Venice to the Gulf of Mexico, modeling impacts become more challenging to investigate due to complex Mississippi River processes and the salt wedge dynamics. The potential for changes in the rate of deposition of silts and clays associated with changes in the position of the salt wedge can only be quantified with a validated, hydrodynamic, salinity, and sediment transport model that includes physics-based salt wedge dynamics, which was not available at the time of the Section 408 Request. As a result, a qualitative assessment of model outputs and scientific literature was conducted. The qualitative assessment indicates that although the MBSD Project will reduce the total amount of sand in the Mississippi River downstream, the flow transport capacity of the Mississippi River will also be reduced, causing the deposition of sand in the Mississippi River to be deposited farther upstream when operational. This upstream migration of deposition could have a dynamic influence on dredging because the specific location of deposition each year would change based on varying conditions. As a result, there is a potential for permanent, moderate, adverse impacts to maintenance dredging in the

MRSC below Venice. Increased maintenance dredging operations could also restrict access to parts of the MRSC and result in permanent minor indirect impacts on marine traffic. Similar increases in sedimentation rates could potentially occur in South Pass, Tiger Pass, Baptiste Collette, and other passes carrying flow to the Gulf, and may cause permanent, moderate, adverse impacts on maintenance dredging operations in these areas, as well. Any increases in maintenance dredging due to the MBSD Project will be the sole responsibility of the Requester.

Anchorage areas are also important for safe navigation and tend to be located near point bar locations (Figure 5). Approximately 23.9 miles of anchorages exist between the intake structure and the Gulf of Mexico. If construction or operations of the MBSD Project result in point bar growth and intrusion into the navigation channel or onto anchorage areas specifically, dredging, disposal or beneficial use of dredged material, environmental requirements, identification and removal of obstructions prior to dredging, and any other activities or costs required to return the site to pre-existing conditions would be the responsibility of the Requester. Lastly, at low flows, saltwater can intrude up the Mississippi River because the river's bottom profile is deeper than the Gulf of Mexico water surface level. Denser saltwater flows upstream along the bottom of the River underneath the less dense fresh river water in a wedge formation with the highest salt concentrations on the leading edge of the wedge. The saltwater's upriver travel can ultimately affect municipal drinking water and industrial water supplies by allowing water containing chloride levels exceeding the US EPA public water supply standard to enter freshwater intakes. This includes intakes for 13 municipal water supply facilities that provide more than 140 million gallons of drinking water per day to approximately 500,000 people of 5 parishes in the greater New Orleans area. Projects that decrease River flow, such as the MBSD Project, could cause an increase in the duration and extent of this saltwater intrusion and would need to mitigate for those impacts. It is currently unknown whether the MBSD Project would cause saltwater intrusion in the Mississippi River. Given the large uncertainty surrounding the shoaling assessment and saltwater wedge dynamics, the Requester will need to conduct data collection, modeling, and analyses throughout the life of the MBSD Project to quantify changes in and determine cause of any shoaling in the MRSC and saltwater wedge dynamics. By requiring the Requester to provide this continuous feed of information (monitoring, modeling, analyses), USACE will be able to continue to track that the MBSD Project is not causing unreasonable conditions and/or obstruction of the MRSC.

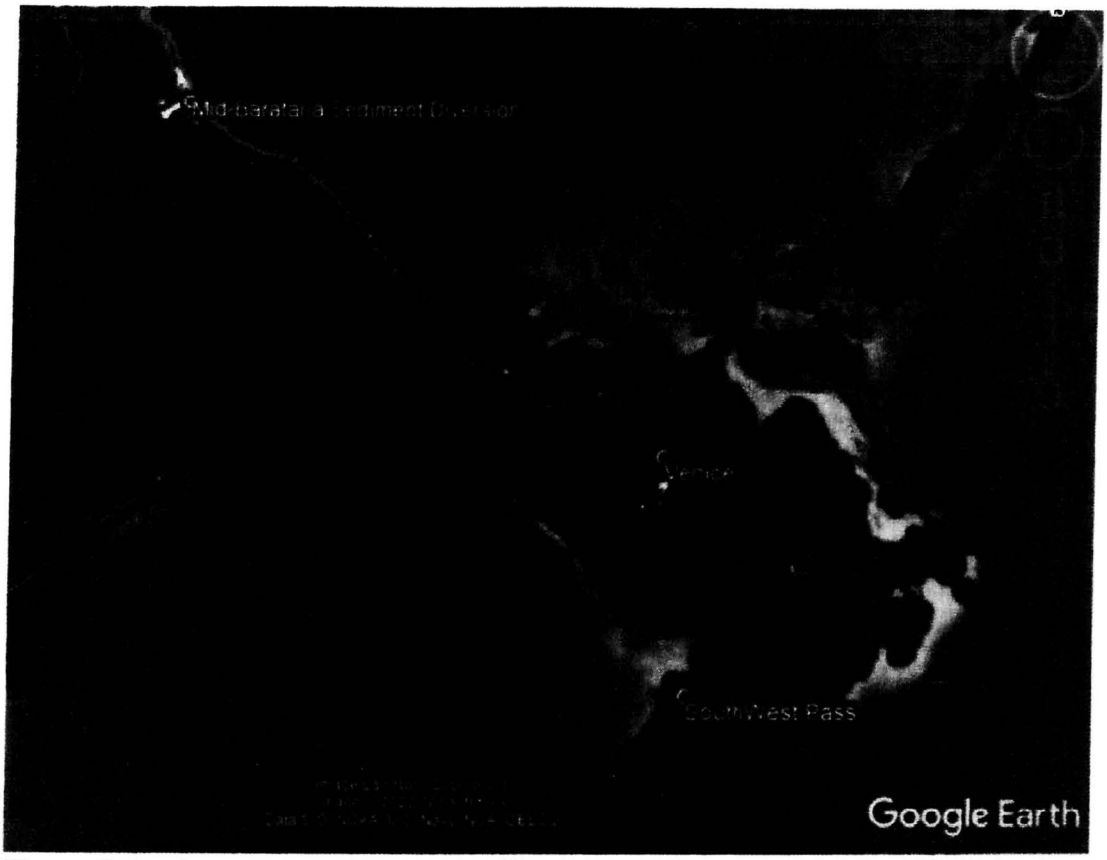

Figure 5. Anchorage locations in the Mississippi River south of the MBSD Project (red rectangles).

Determination: Given the large uncertainty surrounding the shoaling assessment and saltwater wedge dynamics, the Requester will need to conduct data collection, modeling, and analyses throughout the life of the MBSD Project to quantify changes in and determine cause of any shoaling in the MRSC and saltwater wedge dynamics. With the implementation of the Standard and Special Terms and Conditions described in Section XIV, the MBSD Project will not have an adverse impact on the MRSC Project.

b. Impacts to the Public Interest

The Request was reviewed to determine the probable impacts, including cumulative impacts, on the public interest. This evaluation took into consideration information received from key stakeholders, interested parties, tribes, agencies, and the public. The terminology used in the FEIS impact determinations is used in this SoF. Impacts were described with respect to their duration and intensity. The duration of impacts was described in the FEIS as either temporary, short-term, long-term, or permanent. The intensity of impacts was characterized by the following terms: no impact, negligible impact, minor impact, moderate impact, or major impact. More specific impact definitions

runoff of sediment from adjacent work zones, resulting in increased turbidity and suspended sediments.

During Operations:

There will be permanent, major adverse impacts caused by elevated fecal coliform concentrations in the basin possibly causing an oyster propagation use impairment. Changes in salinity, total nitrogen, total phosphorus, dissolved oxygen, total suspended sediment concentration, and sulfate concentrations are expected, but in of themselves are not considered adverse or beneficial.

The salt water in the Gulf of Mexico is denser than the fresh water flowing in the Mississippi River. At low flows saltwater can intrude up the Mississippi River because the river's bottom profile is deeper than the Gulf of Mexico water surface level. Denser saltwater flows upstream along the bottom of the River underneath the less dense fresh river water in a wedge formation with the highest salt concentrations on the leading edge of the wedge. The saltwater's upriver travel can ultimately affect municipal drinking water and industrial water supplies by allowing water containing chloride levels exceeding the EPA's public water supply standard to enter freshwater intakes. This includes intakes for 13 municipal water supply facilities that provide more than 140 million gallons of drinking water per day to approximately 500,000 people of 5 parishes in the greater New Orleans area. As a MRSC mitigation measure for deepening the river channel to 45 feet, during extreme low water conditions, the USACE constructs a temporary sand sill (called a saltwater sill) at RM 64 AHP to block the saltwater wedge from migrating upriver. Since deepening the channel to 45 feet, the sand sill has been constructed four times (1988, 1999, 2012, and 2022) in order to mitigate for the increased duration and extent of saltwater intrusion above RM 64 AHP. USACE retains the right to regulate the base flow of the MBSD Project to ensure that the MBSD Project does not operate when the Mississippi River flows are below 300,000 cfs. USACE also retains the right to require the closure of the MBSD Project Intake Structure if conditions indicate a risk of saltwater intrusion. The Requester will be required to mitigate for saltwater intrusion impacts caused by the MBSD Project.

15. Tidal Flooding and Induced Damages

During Construction:

Stormwater management and drainage alterations will have no impact to risk of flooding or current floodplain function as drainage will be maintained throughout construction.

During Operations:

The MBSD Project will have minor to major, permanent, adverse impacts on water levels in the basin from the input of fresh water. Operation of the MBSD Project at maximum capacity (75,000 cfs), during non-storm conditions (i.e., "sunny day" conditions), will cause water levels in the Outfall Area to increase by 2-3 ft, with water levels gradually decreasing with distance away from the Outfall Area. Water levels will increase