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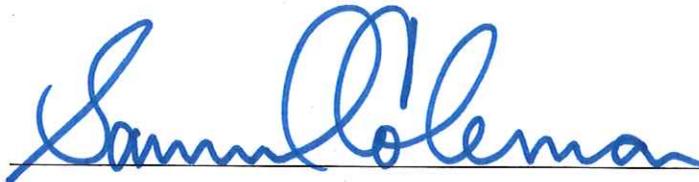
BRAZOS ISLAND HARBOR, TEXAS
MAINTENANCE AND NEW WORK
OCEAN DREDGED MATERIAL DISPOSAL SITES

SITE MANAGEMENT AND MONITORING PLAN

AS REQUIRED BY SECTION 102 OF THE
MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT

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The following Site Management and Monitoring Plan (SMMP) for the Brazos Island Harbor, Maintenance and New Work Ocean Dredged Material Disposal Sites (ODMDSs) complies with Section 102(c)(3) of the Marine Protection, Research and Sanctuaries Act (MPRSA) of 1972 (33 U.S.C. Section 1401, et seq.) as amended by Section 506 of the Water Resources Development Act (WRDA) Amendments of 1992 (Public Law 102-580), and has been approved by the following officials of the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE), Southwestern Division, Galveston District.



5/15/2017

Samuel Coleman, P.E.
Acting Regional Administrator
U.S. Environmental Protection Agency

Date



23 MAY 17

Lars N. Zetterstrom
Colonel, Corps of Engineers
Galveston District
U.S. Army Corps of Engineers

Date

This plan goes into effect upon the date of the last signature for a period not to exceed ten years. The plan shall be reviewed and revised more frequently if site use and conditions at site indicate a need for revision.

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**BRAZOS ISLAND HARBOR, TEXAS PROJECT
OCEAN DREDGED MATERIAL DISPOSAL SITES (ODMDSs)
SITE MANAGEMENT AND MONITORING PLAN**

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ADDAMS	Automated Dredging and Disposal Alternatives Management System
BIH	Brazos Island Harbor
BIH ODMDSs	Collectively refers to the Brazos Island Harbor Maintenance ODMDS and the New Work ODMDS
BIH FIFR-EA Assessment	Brazos Island Harbor Final Integrated Feasibility Report-Environmental Assessment
CESWG	U.S. Army Corps of Engineers, Galveston District
CFR	Code of Federal Regulations
CY	Cubic yards
DQM	Dredge Quality Management
EIS	Environmental Impact Statement
EPA R6	U.S. Environmental Protection Agency, Region 6
ESA	Endangered Species Act
ETS	Electronic Tracking System
FEIS	Final Environmental Impact Statement
ft.	Feet
ITM	Inland Testing Manual
m	Meters
MCY	Million cubic yards
MLLW	Mean Lower Low Water datum
MPRSA	Marine Protection, Research, and Sanctuaries Act of 1972
μ	Micron
NMFS	National Marine Fisheries Service
ODMDS	Ocean Dredged Material Disposal Site
PA	Placement Area
QAPP	Quality Assurance Project Plan
RIA	Regional Implementation Agreement
SMMP	Site Management and Monitoring Plan
STFATE	Short-Term Fate of Dredged Material Model
USACE	U. S. Army Corps of Engineers
USEPA	U. S. Environmental Protection Agency
WRDA	Water Resources Development Act of 1992
XML	eXtensible Markup Language

**Brazos Island Harbor, Texas
Maintenance and New Work
Ocean Dredged Material Disposal Sites (ODMDSs)
Site Management and Monitoring Plan**

1. INTRODUCTION

It is the responsibility of the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE) under the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 to manage and monitor each of the Ocean Dredged Material Disposal Sites (ODMDSs) designated by the USEPA pursuant to Section 102 of MPRSA. Section 102(c)(3) of the MPRSA requires development of a Site Management and Monitoring Plan (SMMP) for each ODMDS and review and revision of the SMMP not less frequently than every 10 years.

The following jointly-developed USEPA Region 6 (EPA R6) and USACE Galveston District (CESWG) documents have been used as guidance in developing this SMMP:

- Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites (USEPA/USACE, 1996), and
- Regional Implementation Agreement (RIA) for Testing and Reporting Requirements for Ocean Disposal of Dredged Material Off the Louisiana and Texas Coasts Under Section 103 of the Marine Protection, Research and Sanctuaries Act (USEPA/USACE, 2003).

This SMMP is intended to provide management and monitoring strategies for the disposal of suitable dredged material from the greater Brownsville, Texas vicinity. Two ODMDSs, a New Work ODMDS for construction material and a Maintenance ODMDS for maintenance dredging material are covered under this SMMP. These ODMDSs would provide alternative disposal sites to the existing upland Placement Areas (PAs) thereby extending the life of those sites by allowing time for management between dredging cycles to include activities such as dewatering, damping and levee raises. The location of the BIH Entrance Channel, Main Channel, and ODMDSs are shown in Figure 1. The channel reaches are shown in Table 1.

Final designation of the Maintenance ODMDS was first sought in July 1989 with the release of the draft Environmental Impact Statement (EIS). After review, the draft was approved as final and the Final Rule for designation was published in the Federal Register September 11, 1990 (55 FR 178). The final designation of the New Work ODMDS was first sought in April 1991 with the release of the draft EIS. After review, the draft was approved as final and the Final Rule for designation was published in the Federal Register January 17, 1992 (57 FR 12). A modification to the use restriction of the Maintenance and New Work ODMDS was sought to include suitable dredged material from the greater Brownsville, Texas vicinity. No comments were received on the proposed rule published June 18, 2015 (80 FR117). A Final Rule was published in the Federal Register September 18, 2015 (80 FR 181). The use restriction became effective October 19, 2015.

A SMMP was first developed for the BIH Maintenance ODMDS in November 1996 and revised in December 2008. A SMMP was first developed for the BIH New Work ODMDS (42-ft. channel) in March 1992. The current revision to the BIH Maintenance and BIH New Work ODMDS combines the individual SMMPs into a single SMMP.

This combined revision to the BIH Maintenance and New Work SMMP supersedes all previous SMMPs. The SMMP itself, however, does not authorize the use of any ODMDS for ocean disposal of dredged materials. Use of any ODMDS for ocean disposal of dredged materials is regulated under a permit (or contract specification) under MPRSA Section 103.

Figure 1. Brazos Island Harbor Dredged Material Placement Areas

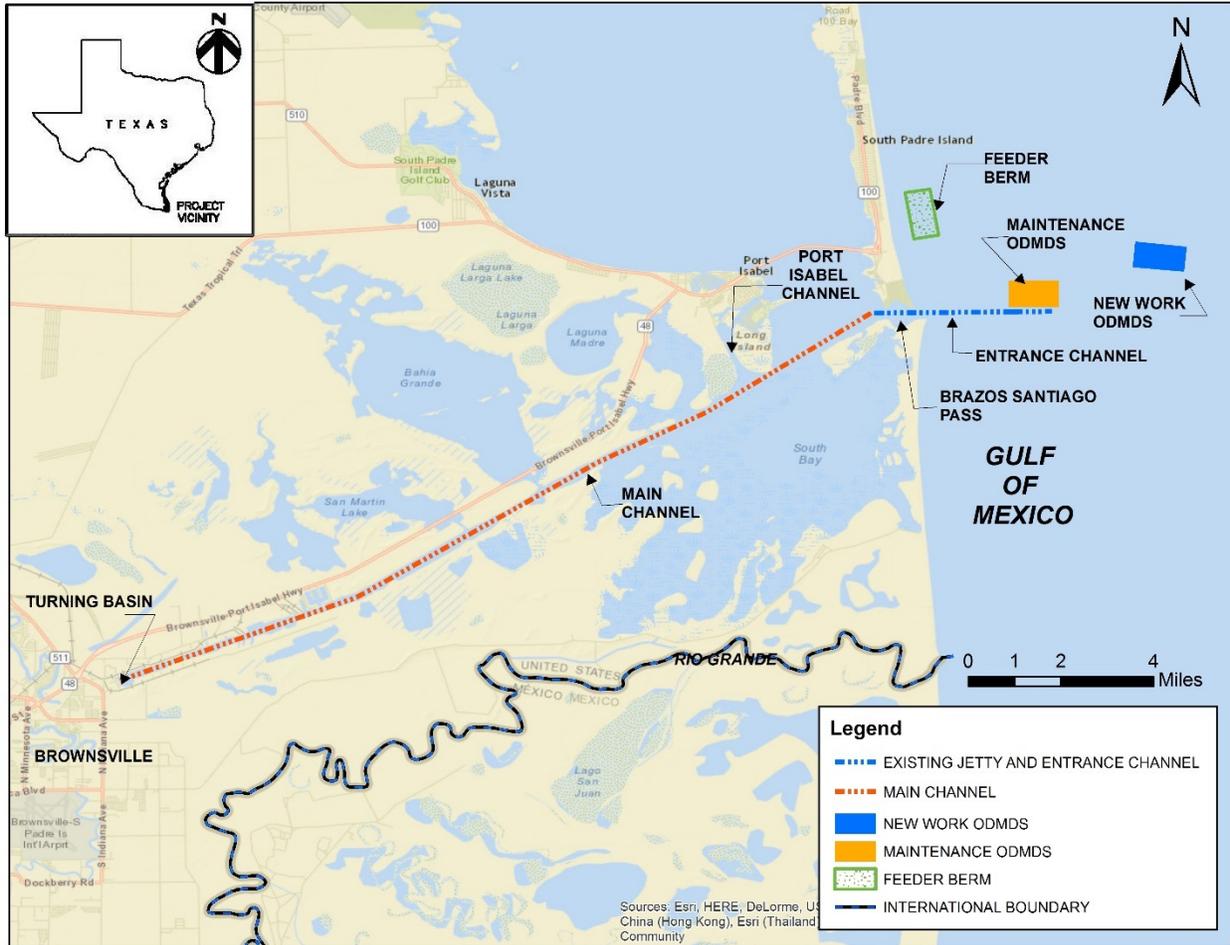


Table 1. Brazos Island Harbor Reaches and Station Numbers

BIH Channel Reach	Stations	
	From	To
Entrance Channel (including extension)	-17+000	-6+000
Jetty Channel	-6+000	0+000
Main Channel	0+000	79+415
Turning Basin Extension	79+415	86+215
Turning Basin	86+215	89+500

SMMP provisions shall be requirements for all dredged material disposal activities at the site. All MPRSA Section 103 ocean disposal permits or contract specifications shall be conditioned as necessary to assure consistency with the SMMP.

2. SITE MANAGEMENT

The MPRSA of 1972 (33 U.S.C. Section 1401, et seq.) provides the legislative authority to regulate the disposal of dredged material into ocean waters, including the territorial sea. The transportation of dredged material for the purpose of placement into ocean waters is permitted by the USACE or, in the case of Federal projects, authorized for disposal under MPRSA Section 103(e), applying environmental criteria established by the USEPA in the Ocean Dumping Regulations (40 CFR Parts 220-229). This plan may be modified if it is determined that such changes are warranted as a result of information obtained during the monitoring process.

This SMMP for the BIH ODMDSs was developed jointly by EPA R6 and CESWG, in accordance with Section 102(c)(3) of the MPRSA, as amended by WRDA 92. At a minimum the SMMP shall include but not be limited to:

- A baseline assessment of conditions;
- A program for monitoring;
- Special management conditions or practices to be implemented that are necessary for the protection of the environment;
- Consideration of the quantity and physical/chemical characteristics of dredged materials to be disposed of;
- Consideration of the anticipated use over the long-term; and,
- A schedule for review and revision of the plan.

2.1 Site Management Objectives

ODMDS management is intended to assure that disposal activities will not unreasonably degrade or endanger human health, and welfare, the marine environment, or economic potential (MPRSA section 103(a)). The primary objectives in the management of the BIH ODMDSs are:

1. Protection of the marine environment;
 - a. Ocean discharge of only that dredged material that satisfies the criteria set forth in 40 CFR Part 227 Subparts B, C, D, E, and G and 40 CFR Part 228.4(e) and is suitable for unrestricted placement at the ODMDS;
 - b. Avoidance of excessive mounding either within the site boundaries or in areas adjacent to the site, as a direct result of disposal operations.
2. Documentation of disposal activities and compliance; and,
3. Maintenance of a long term disposal alternative for dredged material generated from the greater Brownsville, Texas vicinity.

These objectives will be achieved through the following measures:

1. Regulation and administration of ocean dumping permits;
2. Development and maintenance of a site monitoring program; and,

3. Evaluation of permit compliance and monitoring results.

The following sections provide the framework for meeting these objectives.

2.2 Roles and Responsibilities

Development of SMMPs for ODMDSs within CESWG's area of operation is the joint responsibility of EPA R6 and CESWG. Both agencies are responsible for assuring that all components of the SMMP are implementable, practical, and applicable to site management decision-making.

Specific responsibilities of EPA R6 and CESWG are:

- In accordance with Section 102(c) of the MPRSA, EPA R6 is responsible for designation/de-designation of ODMDSs, for evaluating environmental effects of disposal of dredged material at these sites and for reviewing and concurring on dredged material suitability determinations.
- CESWG is responsible for evaluating dredged material suitability and issuing MPRSA Section 103 permits, regulating site use, and developing and implementing disposal- monitoring programs.

2.3 Funding

Physical, chemical, and biological effects-based testing shall be undertaken on sediments to be deposited at the ODMDS. This testing will be conducted at five year intervals, or as necessary to address contaminant concerns due to unanticipated events, and will be funded by the permittee if the project is permitted or CESWG for Federal projects. The permittee or CESWG, as appropriate, shall also be responsible for costs associated with placement site hydrographic monitoring. Should this monitoring conclude that additional studies and/or tests are needed at the ODMDS, the scope and cost-sharing of such work would be discussed and agreed upon, between the permittee and CESWG and/or EPA R6. Physical, chemical, and biological effects-based testing at the ODMDS or in the site environs after discharge that is not required as a result of hydrographic monitoring shall be funded by EPA R6. Federal funding of all aspects of this SMMP is contingent on availability of appropriated funds.

2.4 Disposal and Reference Site Characteristics

2.4.1 Maintenance Disposal Site Characterization

The Maintenance ODMDS is located approximately 1.9 miles offshore (Figure 1) and occupies an area of approximately 0.42 square nautical miles (0.56 square statute miles). Water depths range from 55 to 65 feet. Disposal shall be limited to suitable dredged material from the greater Brownsville, Texas vicinity. The site is rectangular in shape with vertex coordinates as shown in Table 2.

Table 2. BIH Maintenance ODMDS Coordinates

Maintenance			
NAD 27	NAD 27	NAD 83	NAD 83
Latitude	Longitude	Latitude	Longitude
26° 04' 32" N	97° 07' 26" W	26° 04' 33.28119" N	97° 07' 26.89076" W
26° 04' 32" N	97° 06' 30" W	26° 04' 33.28097" N	97° 06' 30.88844" W
26° 04' 02" N	97° 06' 30" W	26° 04' 3.28165" N	97° 06' 30.88832" W
26° 04' 02" N	97° 07' 26" W	26° 04' 3.28186" N	97° 07' 26.89066" W

Coordinate Systems: North American Datum of 1927 (NAD 27) and North American Datum of 1983 (NAD 83)

Baseline conditions at the Maintenance ODMDS were assessed during the disposal site designation processes. Details of baseline conditions, including descriptions of the marine environment in the site vicinity and the physical, chemical and biological characteristics of the sediments and the water column at the site, are contained in the Draft and Final EIS for site designation prepared by USEPA (USEPA, 1989, November 1990).

The Maintenance ODMDS sediment can be characterized as predominantly sand (90.8 %) with a small fraction of silt (2.1%) and clay (7.1%).

Table 3. Sediment Grain Size Summary

Location	Physical Parameter			
	% Gravel	% Sand	% Silt	% Clay
Jetty Channel	7.2	59.8	4.5	28.5
Entrance Channel	18.5	55.5	11.4	17.0
Entrance Channel Extension	0.5	81.7	6.4	11.4
Main Channel	0.0	25.9	35.6	38.5
Maintenance ODMDS	0.0	90.8	2.1	7.1
New Work ODMDS	0.5	88.0	2.4	9.1
Reference Area	0.0	20.4	15.1	64.5

Source: Brazos Island Harbor – Entrance Channel Contaminant Assessment, March 2014

As described in the site designation FEIS, the size of the Maintenance ODMDS was based on computer simulations for the placement of approximately 350,000 cubic yards annually. This volume is about 95 percent of the historic average (370,000 cubic yards per year). Since the Maintenance ODMDS is considered dispersive in nature it may accommodate larger quantities less frequently. The shoal material is expected to erode and dissipate, especially due to the high percentage of fine-grain components. Other considerations included avoidance of biologically sensitive and

recreationally important areas, navigation safety and transportation costs.

New Work Disposal Site Characterization

The New Work ODMDS is located approximately 4.4 miles offshore (Figure 1) occupying an area of approximately 0.42 square nautical miles (0.56 square statute miles). Water depths range from 60 to 67 feet. The site is rectangular in shape with vertex coordinates at:

Table 4. BIH New Work ODMDS Coordinates

New Work			
NAD 27		NAD 83	
Latitude	Longitude	Latitude	Longitude
26° 04' 47" N	97° 05' 07" W	26° 04' 48.28032" N	97° 05' 7.88508" W
26° 05' 16" N	97° 05' 04" W	26° 05' 17.27967" N	97° 05' 4.88510" W
26° 05' 10" N	97° 04' 06" W	26° 05' 11.27958" N	97° 04' 6.88269" W
26° 04' 42" N	97° 04' 09" W	26° 04' 43.28022" N	97° 04' 9.88266" W

Coordinate Systems: North American Datum of 1927 (NAD 27) and North American Datum of 1983 (NAD 83)

Baseline conditions at the New Work ODMDS were assessed during the disposal site designation processes. Details of baseline conditions, including descriptions of the marine environment in the site vicinity and the physical, chemical and biological characteristics of the sediments and the water column at the site, are contained in the Draft and Final EIS for site designation prepared by USEPA (USEPA, April 1991, November 1991).

The New Work ODMDS sediment can be characterized as predominantly sand with a small fraction of gravel (0.5%), silt (2.4%) and clay (9.1%) (Table 3).

As described in the site designation FEIS, the size of the New Work ODMDS was based on computer simulations for the placement of approximately 1.325 million cubic yards of new work (virgin) material expected from the Brazos Island Harbor 42-Foot Project. Other considerations included avoidance of biologically sensitive and recreationally important areas, navigation safety and transportation costs.

2.4.2 Reference Site Characterization

The reference site for both the New Work and the Maintenance ODMDSs is located south of the Maintenance ODMDS as shown in Figure 2. Coordinates for the reference site are shown in Table 4. The reference sediment can be characterized as dominantly clay (64.5%) with smaller fraction of sand (20.4%) and silt (15.1%) (Table 3).

Figure 2. Area map showing ODMDSs and Reference Site

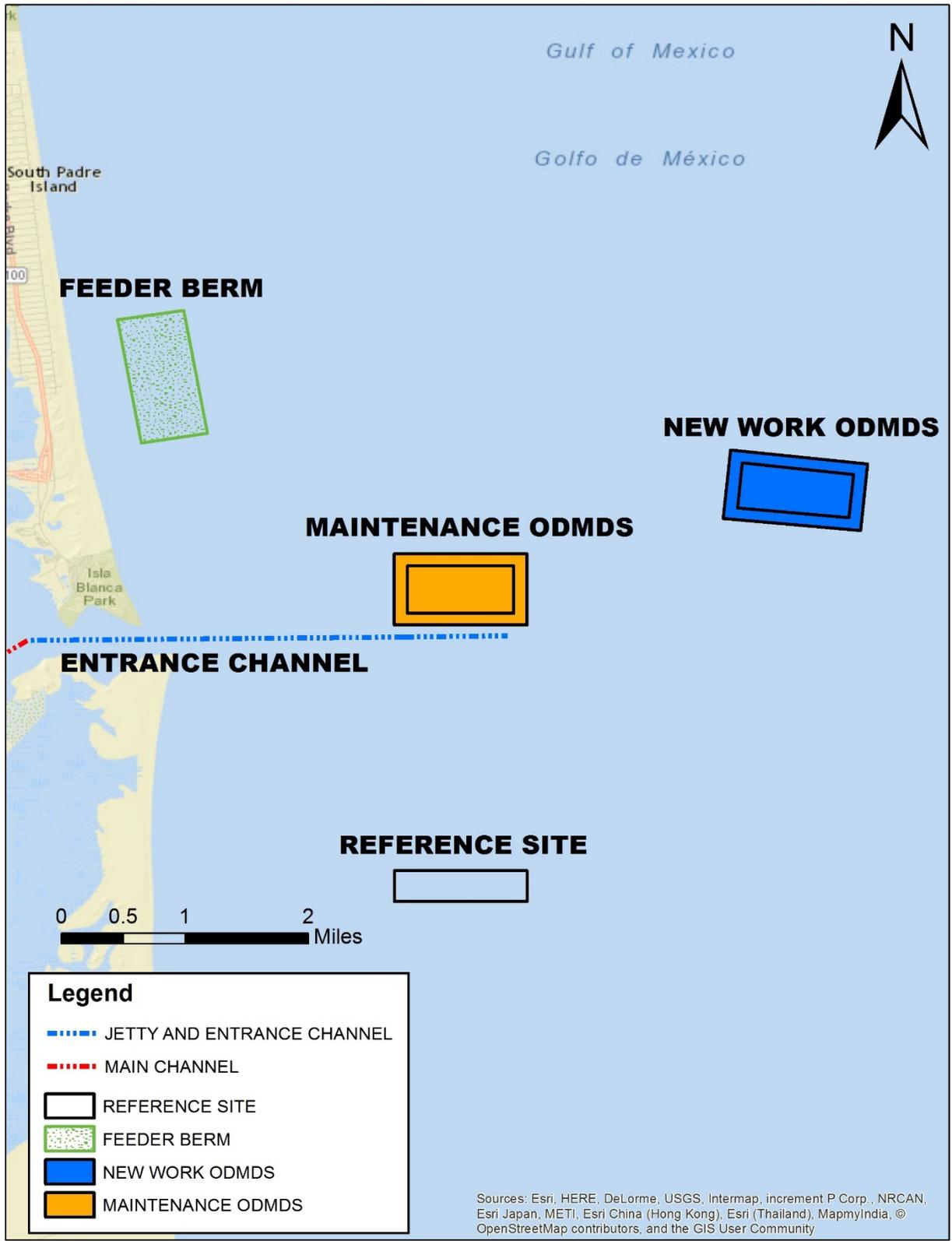


Table 5. BIH Reference Site Coordinates

Reference Site			
NAD 27		NAD 83	
Latitude	Longitude	Latitude	Longitude
26° 02' 18" N	97° 06' 30" W	26° 02' 19.28397" N	97° 06' 30.88789" W
26° 02' 18" N	97° 07' 26" W	26° 02' 19.28419" N	97° 07' 26.89029" W
26° 02' 05" N	97° 07' 26" W	26° 02' 6.28448" N	97° 07' 26.89024" W
26° 02' 05" N	97° 06' 30" W	26° 02' 6.28427" N	97° 06' 30.88784" W

Coordinate Systems: North American Datum of 1927 (NAD 27) and North American Datum of 1983 (NAD 83)

2.5 Disposal History and Dredged Material Volumes

Maintenance ODMDS

Prior to the 1990 final designation of the maintenance site, another placement site located closer to shore was used for dredged material discharge. As explained in the FEIS for site selection, this historically-used site was not selected as the final site because it was located within a buffer zone adjacent to a biologically sensitive area.

During the period from 1958 through 2012, the average maintenance dredging frequency for the Jetty and Entrance Channels was about 1.4 years, with an average of 367,000 cubic yards (CY) of material excavated per dredging contract. Since the final designation of the Maintenance ODMDS in 1990, the average quantity of maintenance material dredged from the Jetty and Entrance Channels has decreased to about 343,000 CY. Maintenance quantities are expected to increase approximately 14.3 percent with the proposed (52-foot) deepening project. Therefore, the projected average maintenance dredging frequency is 1.5 years for the Jetty and Entrance Channels with an estimated volume of 425,000 CY per dredging contract (Table 6).

Dredging of the Entrance and Jetty Channels (station -17+000 to 0+000) and the first 11,000 feet of the Main Channel (0+000 to 11+000) would generally be performed by a hopper dredge, and material would be placed in the nearshore Feeder Berm or on nearby beaches as described above. If maintenance material from the Entrance and Jetty channels cannot be used beneficially, it would be placed at the Maintenance ODMDS.

The dredging frequency for the Main Channel averages approximately 3 years, with an average of about 1,500,000 CY of material excavated per dredging contract (Table 6). Traditionally, maintenance material from the Main Channel (stations 11+000 to 89+500) has been hydraulically pumped into upland confined placement areas along the channel; however, a change in logistics of the navigation channel has warranted flexibility in disposal options. As the most southern of the Gulf of Mexico navigation channels, it has been difficult to obtain competitive bids for hydraulic pipeline dredges, sometimes receiving no bids at all. This lack of competition leads to excessive costs, delays in project schedules, and potential safety hazards if maintenance dredging is not performed in a timely manner. CESWG has proposed removing and placing into the maintenance ODMDS small, quick-formed shoals from the Main channel of about 300,000 cubic yards every other dredging cycle during the maintenance of the Jetty and Entrance Channel and then dredging

the Main channel during the following cycle.

Table 6. Estimated Disposal Volumes and Frequency

Channel Segments	Dredge Area Station Nos	Est. Volume (CY) per contract	Dredging rate (years)
Entrance and Jetty	-17+000 to 0+000	425,000	1.5
Main Channel	0+000 to 89+500	1,500,000	3.0

CESWG’s policy is to implement beneficial uses of dredged material, whenever practicable. Since this ODMDS was designated in 1990, maintenance material dredged from the Entrance Channel was deposited there only one time. CESWG’s routine practice has been to use the dredged material beneficially by placing it into the nearshore Feeder Berm off South Padre Island, or to nourish the nearby beaches under cost-sharing agreements with the Texas General Land Office and the City of South Padre Island. The main impediment to direct beach placement is turtle nesting season.

Maintenance dredging is generally conducted by hopper and cutterhead dredges, with material being distributed among the upland placement areas (PAs), Maintenance ODMDS, and beneficial use sites, i.e. into the Feeder Berm or directly placed on South Padre Island. These placement options are expected to continue to be exercised during future maintenance of the BIH Project.

Presently, the Maintenance ODMDS only receives dredged material from the Federally-maintained BIH Project that cannot be used beneficially. Maintenance material from other sources is not presently placed at this site, and none is expected in the foreseeable future

New Work ODMDS

The New Work ODMDS was designated for the placement of approximately 1.325 MCY new work material from the Brazos Island Harbor 42-foot project. Approximately 575,054 cubic yards of new work material from the widening and deepening of the Brazos Island Harbor Entrance and Jetty Channel (stations 1+000 to -13+000) was placed at the New Work ODMDS over a three-month period from February 20, 1992 to April 14, 1992.

New work material from the deepening and widening of the Entrance and Jetty Channel and extension of the Entrance Channel would be placed at the New Work ODMDS. Under a construction contract, a hopper dredge would deepen the Entrance and Jetty channels. The total length of these channels (after extension of the Entrance Channel) would be 3.2 miles. Although the authorized depth of the offshore channels would be 54 feet below MLLW, the potential dredging depth of the Entrance and Jetty channels could actually be 58 feet below MLLW, after accounting for removal of 2 feet of advance maintenance and 2 feet of allowable overdepth. One hopper dredge would operate continuously for seven (7) months to remove approximately 2,066,000 CY of new work material. All material would be placed at the New Work ODMDS.

2.5.1 Site Use Modification

On September 18, 2015, a final rule was published in the Federal Register (effective October 19, 2015) modifying site use restrictions in 40 CFR Part 228 for the BIH ODMDSs as well as several

other ODMDs located in the Gulf of Mexico offshore of Texas. These sites are EPA designated ocean dumping sites for the disposal of suitable dredged material. This action was taken at the request of the CESWG to allow disposal of suitable dredged material from the vicinity of the federal navigation channels to alleviate pressure on the capacity of their upland dredged material placement areas, when necessary.

The use restriction modification to the BIH Maintenance and New Work ODMDs expands the use of these ODMDs to include the placement of suitable dredged material from both maintenance and new work projects from within the greater Brownsville, Texas vicinity. The primary user of the BIH maintenance ODMDs is the USACE for the disposal of maintenance material from the Main, Jetty and Entrance Channels (Figure 1.). Secondary users of the Maintenance BIH ODMDs would consist of non-federal entities for the placement of suitable dredged material to maintain port slips, berthing areas, etc.

2.6 Dredged Material Characteristics

2.6.1 Previously Placed Materials

Historically, the Maintenance ODMDs has been utilized only once since its designation in 1990. It has been CESWG’s practice to use the maintenance material from the Entrance and Jetty Channels for beneficial use because it is dominated by sand (Table 6). A review of core borings of the New Work dredged sediments show that BIH new-work sediments are overwhelmingly consolidated clay (USACE, 1990, TWE, 2010).

Table 7. BIH Dredged Material Physical Characteristics

Channel Reach	Average			
Range of Stations Sampled	Sand %	Silt %	Clay %	D ₅₀ (mm)
Shoal Material Characteristics*				
Entrance/Jetty Channels (-13+000 to 0+000)	69.1	20.0	11.6	0.13
Main Channel (1+000 to 89+000)	25.9	35.6	38.5	0.039
New Work Material Characteristics**				
Entrance Channel Extension (-13+000 to -17+000)	9.7	7.8	82.5	NA

* CESWG long term average from 1975 to 2012

** average of core borings and 2012 data

2.6.2 Anticipated Materials for Placement

Maintenance dredged material from the Entrance and Jetty Channels is dominated by sand, whereas, maintenance dredged material from the Main channel is dominated by silts and clays.

Suitable dredged material from maintenance dredging projects is anticipated from the Main Channel for placement at the Maintenance ODMDS. Maintenance material from the Entrance and Jetty Channels will continue to be used beneficially on the beach or feeder berm when possible. Suitable virgin dredged material from improvement projects dominated by clay is anticipated for placement at the New Work ODMDS.

2.6.3 Dredged Material Quality Verification

The suitability of dredged material for ocean disposal must be verified by the USACE and agreed to via written concurrence from USEPA prior to disposal. Verification will be valid for three years from permit date. For civil works projects, verification is required every five years.

Verification process:

- Case-specific evaluation against the Exclusion Criteria (40 CFR Part 227.13(b));
- Determination of testing requirements for non-excluded material based on the potential of sediment contamination since last verification; and,
- When applicable, execute testing and determination of suitability of non-excluded material for ocean disposal.

Verification documentation for suitability will be completed prior to use of the BIH ODMDSs. Documentation will be in the form of a MPRSA Section 103 Evaluation. Potential testing and the Evaluation will follow the procedures outlined in the 1991 USEPA/USACE Dredged Material Testing Manual and 2003 RIA or the appropriate updated versions. Water Quality and Bioassay Compliance determinations will be made using the STFATE model (ADDAMS). Only material determined to be suitable through the verification process by the USACE and USEPA will be placed at the BIH ODMDSs.

2.6.4 Time of Disposal

A seasonal hopper dredging restriction has been recommended by the National Marine Fisheries Service (NMFS, 2007) during formal consultation undertaken pursuant to Section 7 of the Endangered Species Act (ESA). This restriction was based on potential impacts of hopper dredging operations on several species of threatened and endangered sea turtles. The recommendation is to restrict hopper dredging to the period from December 1 through March 31, during which sea turtle abundance is at a minimum in the Gulf of Mexico. This recommendation pertains only to actual hopper dredging operations and not placement of the material into the ODMDS. Hopper dredging should be conducted in accordance with all reasonable and prudent measures and implementing terms and conditions described in the 2007 Gulf of Mexico hopper dredging regional biological opinion (NMFS, 2007). While it may not be practical to observe this restriction for all dredging cycles, it will be practiced when feasible.

2.6.5 Disposal Technique

Disposal shall take place within the disposal zone of the specified ODMDS (Figures 3 and 4) and shall be completed (doors closed) prior to departing the ODMDS. Standard surveillance and evasive measures to protect sea turtles and marine mammals shall be employed during all disposal operations at the BIH ODMDSs

MDFATE modeling was done to determine whether the New Work ODMDS and the Maintenance ODMDS were large enough to contain the new work and future maintenance dredged material. The model was run for the size of hopper dredge expected to be used, a 3,818 CY hopper dredge for New Work and 3,316 CY hopper dredged for maintenance work. To avoid excessive mounding, it is necessary that a method be utilized to record the location of each discharge to ensure that the dredge distributes material uniformly over the disposal zone within the ODMDS while it avoids approaching the edges of the ODMDS disposal zone too closely.

Construction Material Disposal Technique

The following is the scheme used in the modeling to avoid excessive mounding and dispersal of material outside the ODMDS: one discharge at all exterior placement points inside the disposal zone, followed by one discharge at each of the interior placement points in a given sequence until each has been utilized. Continue repeating the sequence with one discharge at each interior placement point until construction is complete. (2014 BIH FIFR-EA)

Maintenance Material Disposal Technique

No specific disposal techniques are required for maintenance material placed in the Maintenance ODMDS for disposal volumes less than 1 MCY. For disposal volumes greater than 1 MCY, the placement scheme required for construction material shall be followed.

2.6.6 Disposal Location

40 CFR Part 227.28 requires that disposal occur no less than 330 feet (100 meters) inside the designated site boundaries. A 500-foot buffer no discharge zone has been established to satisfy this criterion and will continue to be used as a means of preventing the short-term transport of material beyond the BIH ODMDS boundary during disposal operations. Figures 3 and 4 provide the disposal zone boundary coordinates for each ODMDS. All operations shall be conducted such that the dredged material remains within the bounds of the specified disposal release zone within each BIH ODMDS immediately following descent to the ocean floor.

Figure 3. Maintenance ODMDS disposal zone boundary coordinates

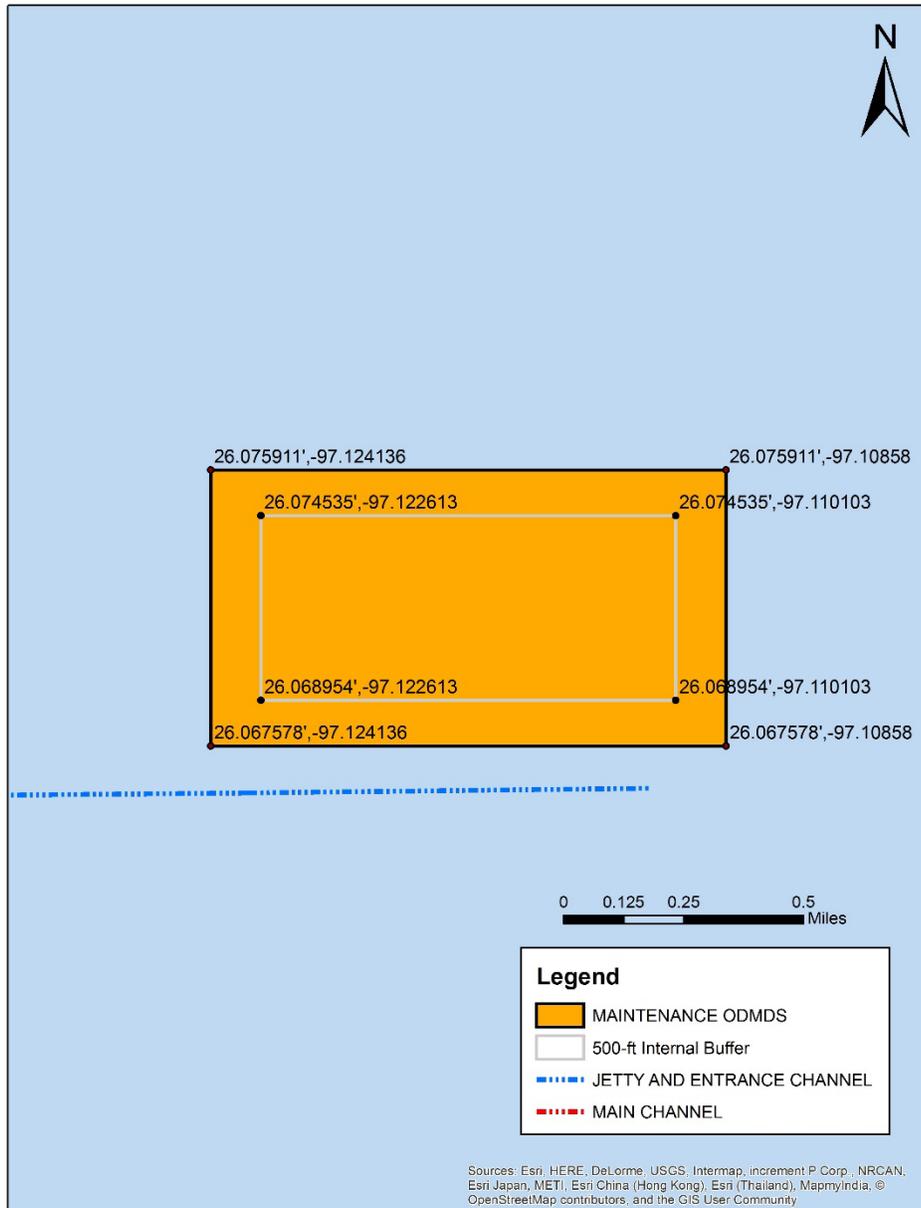
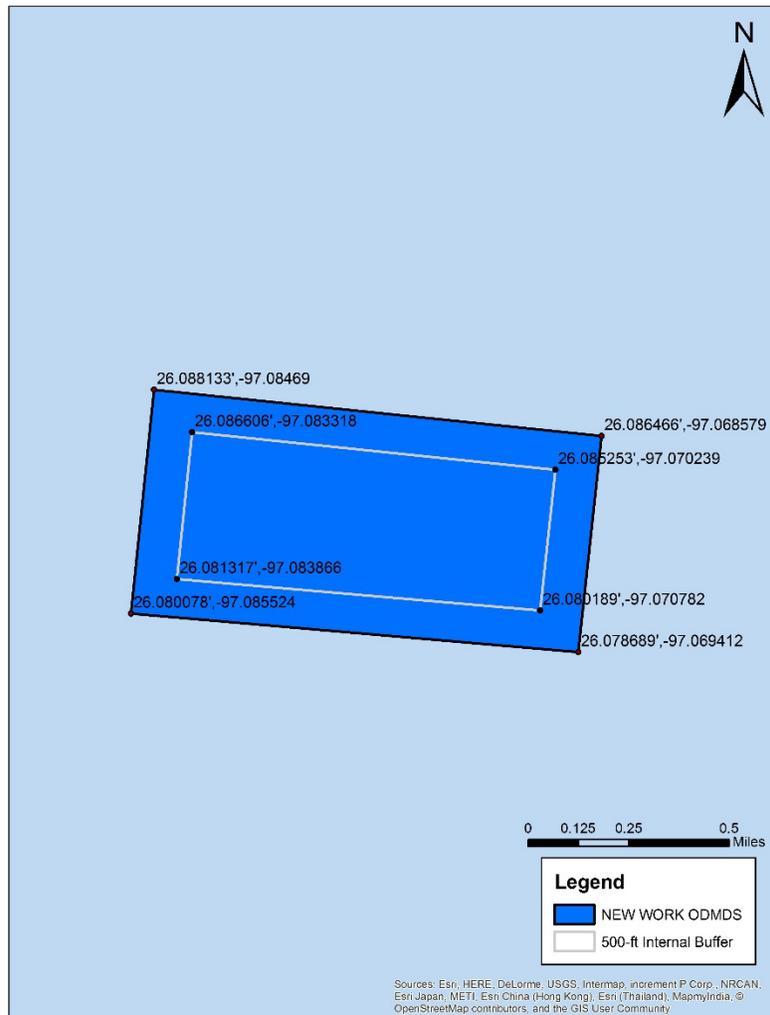


Figure 4. New Work ODMDS disposal zone boundary coordinates



2.7 Permit and Contract Conditions

The disposal monitoring and post disposal monitoring requirements described under 3.0 SITE MONITORING will be incorporated into the contract language for all federal projects. Special conditions may be included on MPRSA Section 103 permits on a case by case basis.

2.7.1 Permit Process

All disposal of dredged material in the ocean, with the exception of Federal Civil Works projects, requires an ocean dumping permit issued by the USACE pursuant to MPRSA Section 103.

2.8 Special Management Conditions or Practices

Special management conditions or practices related to placement of dredged material into the designated BIH ODMDSs are addressed in Section 2.6.

3. SITE MONITORING

The MPRSA Section 102(c)(3)(B) requires that SMMPs include a program for monitoring the site. Site monitoring is conducted to ensure the environmental integrity of a disposal site and the areas surrounding the site and to verify compliance with the site designation criteria, any special management conditions, and with permit or federal authorization requirements. Guidance for SMMP monitoring programs indicates that they should be flexible, cost effective, and based on scientifically sound procedures and methods to meet site-specific monitoring needs.

The monitoring program should provide the following:

1. Information indicating whether the disposal activities are occurring in compliance with the permit and site restrictions;
2. Information indicating short-term and long-term fate of materials disposed of in the marine environment; and,
3. Information concerning the short-term and long-term environmental impacts of the disposal.

The primary purpose of the SMMP is to determine whether dredged material site management practices and disposal operations at the site need to be changed to avoid unreasonable degradation or endangerment of human health and welfare and the marine environment. Monitoring programs should be structured to address specific questions (null hypotheses) and measure the conditions of key indicators and endpoints, particularly those identified during site designation, or major project-specific issues that arise.

Monitoring results will be used for making decisions, preventing unacceptable adverse effects beyond each site's boundary and ensuring regulatory compliance over the life of the BIH ODMDSs. Testing of dredged material is conducted based on the Green Book, Inland Testing Manual (ITM) and RIA procedures; however, it is necessary to verify that the decisions made regarding the suitability of the dredged material are correct and that the material is not having an adverse impact to the environment.

The size and location of the BIH ODMDSs were determined pursuant to the General Criteria as listed in 40 CFR Part 228.5, and the Specific Criteria at 40 CFR Part 228.6(a). There are no significant environmental resources delineated within or immediately outside of either of the BIH ODMDSs. The primary concern regarding ODMDS use is the potential for short-term buildup of dredged material, such that a hazard to navigation is presented. Since the BIH ODMDSs are dispersive in nature, it is expected that material will eventually be transported outside of the site boundaries. It is also expected that this material will not move in distinct mounds, but instead will blend with the surrounding environment causing a progressive transition to sediment containing a higher percentage of silt and clay.

Discharges of dredged material outside of the BIH ODMDSs boundaries will be treated as "unauthorized discharges." Such discharges may occur as a result of dredging equipment malfunction during dredging operations with spillage of material outside of the ODMDS boundaries, or discharge of dredged material in close proximity to an ODMDS boundary such that it falls outside of the site during descent to the seafloor. While significant environmental resources were not identified immediately outside of the BIH ODMDSs during site designation evaluations, unauthorized discharges may be detrimental to immobile or slow moving benthic organisms. A laboratory study conducted by Maurer et al. (1978) suggested that benthic organisms can burrow

through 6-9 inches of dredged material without significant impacts to the benthic community. The formation and persistence of mounds detected above this 6-9-inch threshold, as a direct result of unauthorized discharges outside of the ODMDS boundaries, warrants additional investigation to determine if benthic communities have been adversely impacted.

While the literature on maintenance material disposal on the Gulf coast indicates only minor short-term and negligible long-term mounding from placement activities, little information is available for new work material ODMDSs. Mounding from the construction material, while acceptable, is higher and of firmer material than is true for the maintenance material. Additionally, construction placement is expected to last for only a period of 2 years or less and more-frequent monitoring would be expected than would be necessary for the periodic, but short-term placement that occurs with maintenance dredging. Therefore, specific monitoring is required for each BIH ODMDSs.

Monitoring activities at the BIH ODMDSs are divided into three categories: (1) compilation of past monitoring studies to document baseline conditions (Section 3.1); (2) routine monitoring of the placement of dredge materials conducted by the site-user (Section 3.2 and Section 3.3); and (3) long term trend assessment monitoring, typically done by the USEPA, but which can be jointly executed by the USEPA and USACE (Section 3.4).

3.1 Baseline Assessment

Baseline conditions at the Maintenance ODMDS were assessed during the site designation process. Details of baseline conditions, including descriptions of the marine environment in the site vicinity and the physical, chemical and biological characteristics of the sediments and the water column at the site, are contained in the draft (EPA 1989) and “Final Environmental Impact Statement (EIS) for the Brazos Island Harbor Ocean Dredged Material Disposal Site Designation (EPA 1990). Likewise, baseline conditions at the New Work ODMDS are contained in the draft (EPA 1991) and “Final Environmental Impact Statement (EIS) for the Brazos Island Harbor 42-Foot Project, Texas Ocean Dredged Material Disposal Site Designation. From 1992 to 1993, the CESWG collected and characterized sediment and biological samples from the periphery of the New Work ODMDS, two down current stations and a control station (EH&A 1992, 1993 & 1994). The purpose of the monitoring was to determine the environmental impacts of virgin dredged material disposal at the New Work ODMDS.

Appendix A summarizes various site characterization surveys of the BIH ODMDSs conducted by the USACE, USEPA, and others as part of the designation process and subsequent monitoring to evaluate the dredge material management effectiveness for the BIH ODMDSs. These existing data include but are not limited to water and sediment chemistry, sediment mapping, bathymetry, physical oceanographic conditions and biological studies related to benthic macroinvertebrates and fisheries. These data, as well as data from future surveys that will be added to the database, will serve to define baseline conditions for comparative purposes for evaluation of placement and potential impacts associated with the use of the BIH ODMDSs.

3.2 Routine Monitoring for the ODMDS Site-User

Routine monitoring activities for the site-user at an ODMDS fall into three categories: (1) monitoring of the placement of dredged materials for the evaluation of navigational safety; (2) deposition of dredged material at the ODMDS boundaries, and (3) permit/civil works project

compliance monitoring. The final component of routine monitoring is the compilation of the results in a post disposal summary report.

Bathymetric surveys will be used to monitor for mounding to ensure a navigation hazard is not produced, to assist in verification of material placement, and to monitor bathymetry changes and trends. Bathymetric surveys shall be obtained using a USACE or contract survey vessel equipped with electronic surveying capabilities. The vessel must be equipped with positioning equipment with a horizontal precision of one (1) foot. The fathometer, which shall display real-time depth on real-time location, must have a precision of approximately 0.5 feet. Note that although the fathometer has this precision, the survey may not have accuracy to 0.5 feet since it is challenging to measure bathymetry to this level of accuracy in the open Gulf. All data shall be collected using methodology described in Engineer Manual EM 1110-2-1003, dated 30 November 2013 [http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1003.pdf].

Bathymetric surveys shall be conducted by CESWG or the permittee along transects within the ODMDS and extending 500 feet beyond the outside the periphery of the ODMDS. Transects will be taken perpendicular to the channel at a maximum spacing of approximately 1,000 feet.

The minimum performance standards for bathymetric surveys are:

- Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing a differential global positioning system;
- Vertical datum will be referenced to prescribed NOAA Mean Lower Low Water (MLLW) datum;
- Horizontal datum should be referenced to the local State Plane Coordinate System (SPCS) for that area or in Geographical Coordinates (latitude-longitude);

Horizontal reference datum should be the North American Datum of 1983 (NAD 83) Results from post and pre dredge bathymetry shall be provided to EPA R6 when completed as part of the summary report.

3.2.1 Navigational Safety

The BIH ODMDSs are located outside of the safety fairway for large vessel traffic, therefore, the mounding will be considered only in regard to shallow-draft vessels. Significant mounding is not expected from discharge operations when the grain-size characteristics of typical maintenance dredged material from the BIH Entrance, Jetty, and Main Channels are considered. However, significant mounding may occur from the discharge of construction material because it is higher and of firmer material than is true for the maintenance material and is expected to be more persistent. The rationale, frequency, action thresholds and management options for the Maintenance and New Work ODMDS are summarized in Appendix B and C (respectively)

3.2.1(i) Routine Bathymetric Survey

Maintenance Material

Bathymetric surveys for each maintenance dredging contract shall be obtained before the start of the disposal operations and within 45 days of completion of disposal operations.

Routine bathymetry for navigational safety looks at the height of the mound from placing the material pre and post placement. If deposited dredged material is not mounding to heights greater than the 10-foot threshold height above the existing bottom elevation, the management objectives are met, and no further post-disposal monitoring will be required. If there is mounding to heights greater than the 10-foot threshold height above existing bottom elevation, the monitoring shall proceed to the Advanced Bathymetric Surveys.

Construction Material

While the literature on maintenance material disposal on the Gulf coast indicates only minor short-term and negligible long-term mounding from placement activities, little information is available for new work material ODMDSs. Mounding from the construction material, while acceptable, is higher and of firmer material than is true for the maintenance material. Additionally, construction placement is expected to last for only a period of 2 years or less and more-frequent monitoring would be expected than would be necessary for the periodic, but short-term placement that occurs with maintenance dredging.

Routine bathymetry shall be conducted for the New Work ODMDS to determine that there is no excessive mounding, e.g. to heights greater than 14-feet (threshold) above the existing bottom elevation (unless an alternate height is determined in agreement between the EPA and USACE on a case-by case basis), and that there is no short-term transport of material beyond the limits of the ODMDS. Therefore, an accumulation of 1 foot of sedimentation along the ODMDS boundary will be considered the threshold level for movement of material outside of the New Work ODMDS. These determinations will be based on a comparison of the results with predisposal surveys.

Bathymetric surveys for each new work dredging contract shall be obtained before the start of the disposal operations, and monthly thereafter until operations are complete.

Based on the modeling studies, less than 0.5 feet of material is expected to accumulate along the boundaries of the ODMDS and dredged material is not expected to mound greater than fourteen (14) feet if the placement scheme is followed. Allowing for a 0.5 feet margin of error in survey collection, a 1.0-foot change in elevation will be acceptable. Since the site is dispersive, movement of material from the site is expected to occur after completion of disposal operations. The post-disposal bathymetric surveying will serve only to document the extent and direction of this movement and verify the transport of material as predicted by the model.

If the monthly surveys indicate deposited dredged material is mounding to heights greater than the threshold elevation above the existing bottom elevation and/or there is movement of material outside of the designated limits, then the disposal operation will be reviewed to determine if the disposal sequence is being properly followed. The disposal sequence shall be adjusted as necessary to compensate for the movement.

If the after-disposal surveys indicate mounding to heights greater than the threshold elevation, and/or movement of material out of the ODMDS has occurred, then the monitoring program shall proceed to the Advanced Bathymetric Survey (Section 3.2.1(ii)).

3.2.1(ii) Advanced Bathymetric Survey

Maintenance Material

Advanced bathymetric surveys are conducted semi-annually to determine changes in mound height until impacts are no longer observed.

If at six (6) months the deposited dredged material is mounding to elevations above the 10-foot threshold height, but less than 15 feet above the existing bottom elevation, then bathymetric surveys shall be continued and a notice to mariners will be issued. Additionally, disposal/placement procedures will be reviewed to determine if they need to be modified and/or disposal operators will be directed to avoid areas shallower than the depth determined by bathymetry.

If deposited dredged material is mounding to elevations greater than 15 feet, CESWG together with EPA R6 will consider various management options to rectify the situation. Such options may include but are not limited to modification of disposal method/placement, restricting disposal volumes, physically leveling the mounds, and institution of Environmental Effects Monitoring.

Construction Material

Advanced bathymetric surveys are conducted semi-annually to determine changes in mound height and/or changes in dispersion of the material until impacts are no longer observed.

If significant transport of material from the site is occurring, hydrographic surveys shall be expanded to include the impacted areas to determine the changes in dispersion of the material. An accumulation of more than 1 foot of sedimentation along the New Work ODMDS boundary will be considered the threshold level for significant movement of material outside of the New Work ODMDS. Following completion of disposal operations, surveys shall continue on a semiannual basis for 1 year or until an agreement is reached between EPA and CESWG to discontinue monitoring. Findings shall be documented for future reference.

If deposited dredged material is mounding to heights greater than 19 feet above the existing bottom elevation, and there is no significant short-term transport of material beyond the limits of the New Work ODMDS, then bathymetric monitoring shall continue at predetermined 6-month intervals for 1 year, or until agreement is reached between the EPA and CESWG to discontinue monitoring. Findings shall be documented for future reference, and a Notice to Mariners shall be issued as appropriate.

3.2.2 Bathymetric Surveys Conducted for Unauthorized Discharges

Discharges of dredged material outside of the BIH ODMDSs boundaries will be treated as “unauthorized discharges.” Such discharges may occur as a result of dredging equipment malfunction during dredging operations with spillage of material outside of the ODMDSs boundaries, or discharge of dredged material in close proximity to an ODMDSs boundary such that it falls outside of the site during descent to the seafloor. In the event of an unauthorized discharge outside of the ODMDSs, bathymetric surveys will be conducted to identify the extent of the affected area or estimate the quantity of dredged material associated with the discharge. In

such situation, joint discussions between EPA R6 and CESWG will determine management action appropriate to resolve the unauthorized discharge.

3.2.2(i) Routine Bathymetric Survey – ODMDS Boundaries

Routine bathymetry of the ODMDS boundaries and 500-foot area outside of the site (pre and post) is used to determine whether or not placement beyond the ODMDSs boundaries has occurred as a result of the disposal event. If sedimentation along and beyond the boundary limits of the ODMDS is not greater than approximately 1 foot, then the management objectives are met, and no further post- disposal monitoring will be required. If sedimentation along and beyond the ODMDS boundary limits is greater than approximately 1 foot, as determined by the post dredging survey, then the monitoring shall proceed to the Advanced Bathymetric Surveys.

3.2.2(ii) Advanced Bathymetric Survey – ODMDS Boundaries

Advanced bathymetric surveys are performed semi-annually. Results are used to determine if changes in transport of material from the site is resulting in persistent accumulations of greater than approximately 1 foot of sedimentation beyond the ODMDS boundary. If at six months the material transported outside of the ODMDS has dispersed such that the sedimentation beyond the ODMDS boundary is less than approximately 1 foot, then no further monitoring is needed. If at six months the material transported outside the ODMDS has not dispersed such that the sedimentation beyond the ODMDS boundary is persistently greater than approximately 1 foot (has not improved), various management options should be considered e.g. modification of disposal method/placement, restriction of disposal volumes, expansion of the ODMDS or relocation of ODMDS.

3.3 Project Disposal Compliance Monitoring

For all disposal activities, an electronic tracking system (ETS) must be utilized. The ETS will provide surveillance of the transportation and disposal of dredged material. The ETS will be maintained and operated to continuously track the horizontal location and draft condition (accuracy \pm 1 foot) of the disposal vessel (i.e. hopper dredge or disposal scow) from the point of dredging to the disposal site and return to the point of dredging. Data shall be collected at least every 0.25 nautical mile or every 4 minutes during travel to and from the ODMDS and twelve seconds or every 30 feet of travel, while the hull status is open within the ODMDS. In addition to the continuous tracking data, the following trip information shall be electronically recorded for each disposal cycle:

- a) Load number
- b) Disposal vessel name and type (e.g. scow)
- c) Estimated volume of load
- d) Description of material disposed
- e) Source of dredged material and,
- f) Date, time and location at initiation and completion of disposal event.

It is expected that disposal monitoring will be conducted utilizing the Dredge Quality Management (DQM) system for Civil Works projects (see specifics at <http://dqm.usace.army.mil/Specifications/Index.aspx>), although other systems are acceptable.

Disposal monitoring and ETS data will be reported to EPA R6 on a weekly basis utilizing the eXtensible Markup Language (XML) specification and protocol. EPA R6 and the CESWG shall be notified within 24 hours if discharge of dredged material occurs outside of the ODMDS or authorized release zone or if excessive leakage occurs. Leak warnings are triggered when the change in draft of the hopper or scow from the point of departure from the dredging site to the disposal site exceeds the established threshold. If the event occurs on the weekend or holiday, notification will take place the following business day.

A post disposal summary report is due 90 days after completion of the project. If reports are not submitted or are incomplete a request for an extension must be made to EPA R6.

3.4 EPA R6 Tiered Long-Term Monitoring

Monitoring of USEPA's ODMDSs is required under 40 CFR Part 228.9. The primary purpose of the monitoring program is to evaluate the impact of disposal on the marine environment by referencing the monitoring results to a set of baseline conditions. Monitoring can be trend assessment surveys, which are the responsibility of the federal government (40 CFR Part 228.9(a)(1)) or special studies (40 CFR Part 228.9(a)(2)) conducted by the permittee. A component of USEPA's monitoring strategy is the routine (approximately 10 year) assessment of the trends at the ODMDSs based on the requirements in 40 CFR Part 228.13. This includes monitoring for any changes in the physical, chemical and biological characteristics of the seafloor in and around the ODMDSs as well as any changes in the properties of the water column.

Trend assessment monitoring, environmental effects monitoring, and advanced environmental effects monitoring represent the tiered monitoring approach for the ODMDS sites (Appendix D). In general, specifications for such long term monitoring are decided on a case-by-case basis by collectively considering the characteristics of a site and any past issues that need to be examined for long term impacts. The objectives as well as the design and performance criteria for the monitoring are part of a QAPP that would be site-specific when it is designed, and will depend upon many factors. The action thresholds for the trend assessment monitoring are based in part on 40 CFR Part 228.10(b) (3-5) and the environmental effects monitoring on Part 228.10(1) (i-v). Monitoring to be conducted in the advanced environmental effects monitoring will depend in large part upon what the environmental concern is that was observed or identified in the earlier tiers.

Periodic trend assessment monitoring characterizes water and sediment quality and the benthic community. The action thresholds for the trend assessment monitoring are 1) the absence from the ODMDS of pollution sensitive biota and/or 2) progressive non-seasonal changes in water or sediment quality. Exceedance of these action thresholds would trigger the next level of monitoring. The Environment Effects monitoring focuses on sediment chemical monitoring within and outside of the ODMDS boundaries. The action threshold for the environmental effects monitoring is defined as "Concentrations above the range of contaminant levels in dredged sediments that the Regional Administrator and the District Engineer found to be suitable for disposal at the ODMDS." The acceptable level is what was approved for ocean disposal; therefore, anything higher would exceed the threshold and trigger the next level of monitoring. The advanced environmental effects monitoring includes tissue chemical analysis and benthic monitoring. The action thresholds for the advanced environmental effects monitoring are 1) benthic body burdens and risk assessment models indicate potential for food chain impacts and/or 2) unacceptable sub-lethal effects to benthic organisms.

3.5 Future Monitoring Efforts

Changes in bathymetry at the BIH ODMDSs will continue to be monitored in accordance with Section 3.2. Additionally, trend assessment surveys of the sediment, benthos and water column will continue to be performed periodically (approximately every 10 years) by EPA R6 as budgets allow. Should future disposal at the BIH ODMDSs result in unacceptable adverse impacts, further studies may be required to determine the persistence of these impacts, the extent of the impacts within the marine system, and/or possible means of mitigation. In addition, the management plan presented may require revision based on the outcome of any monitoring program.

4.0 REPORTING AND DATA FORMATTING

4.1 Project Initiation and Unauthorized Discharge Reporting

CESWG or the permittee shall complete and submit to EPA R6 a Project Set-Up Form a minimum of 15 days prior to the beginning of a dredging cycle or project disposal. The Project Set-Up Form can be obtained from EPA R6. The user is also required to notify the CESWG and the EPA R6 within 24 hours if a violation of the permit and/or contract conditions related to MPRSA Section 103 or SMMP requirements occur during disposal operations. If the event occurs on the weekend or holiday, notification shall take place the following business day.

4.2 Disposal Monitoring Data

Disposal monitoring data shall be provided to EPA R6 electronically on a weekly basis. Data shall be provided and delivered as an attachment to an email to DisposalData.R4@epa.gov. The XML format is available from EPA R6.

4.3 Post Disposal Summary Report

A Post Disposal Summary Report shall be provided to EPA R6 within 90 days after project completion. An extension can be requested for extenuating circumstances. The report should include:

- a) dredging project title
- b) permit number and expiration date (if applicable)
- c) contract number
- d) name of contractor(s) conducting the work
- e) name and type of vessel(s)
- f) disposal timeframes for each vessel
- g) dredged material volumes placed within the ODMDS
- h) number of loads to the ODMDS
- i) type of material disposed at the ODMDS
- j) dates of pre and post disposal bathymetric surveys of the ODMDS
- k) identification by load number of any misplaced material
- l) narrative discussing any violation(s) of the MPRSA 103 concurrency and/or permit (if applicable).
- m) Bathymetric map with contours showing water depths
- n) Isopach map with one-half to 1 ft. color contours showing Maintenance ODMDS post disposal elevation change. For New Work ODMDS post

disposal elevation change, a minimum of 1 ft. color contours.

The report will be in the form of a narrative with the following sections: 1) introduction, 2) description of dredging and disposal operations, 3) description of pre- and post-disposal bathymetry including synopsis of findings, and 4) a summary. The summary will include a table with the following columns: ID (row identifier), ODMDS, date of Disposal, Gross Cubic Yards Placed, and Discharge Location (Latitude (North) and Longitude (West)). An example of a Post Disposal Summary Report along with guidance is provided in Appendix E.

If applicable, the report should also include a description of any violation(s), indicate the time it occurred and when it was reported to the EPA R6 and CESWG, discuss the circumstances surrounding the violation, and identify specific measures taken to prevent reoccurrence.

The Post Disposal Summary Report should be accompanied by the pre and post bathymetric survey, scatter plot showing disposal footprint, isopach map showing the change in elevation pre-post bathymetry, and a summary table of the trip information required by Section 3.3. If all data is provided in the required XML format, scatter plots and summary tables will not be necessary.

4.4 Environmental Monitoring Reporting

Other federal and state agencies, academia, and non-government organizations conduct research in the vicinity of the Brownsville Ship Channel. EPA R6 and CESWG will periodically review the findings of these groups or request data that are relevant to the navigation channel, ODMDSs, and project area to improve our understanding of site environs. Conversely, EPA R6 and CESWG should make every effort to provide project reports and data to interested parties upon request. New or existing information that is relevant to management of the ODMDS should be incorporated into future versions of this SMMP.

5.0 SITE MANAGEMENT PLAN REVIEW AND REVISION

Pursuant to Section 102(c) of the MPRSA, as amended by WRDA 1992, the SMMP for the ODMDS will be reviewed not less frequently than ten years after adoption and every ten years, thereafter.

Modifications or updates to the SMMP may be necessary, based on scheduled reviews, as specific needs are identified for the project, and/or if results from monitoring surveys or reports indicate that continued use of the ODMDS would lead to unacceptable environmental impacts.

Modifications or updates to the SMMP may be proposed by CESWG or EPA R6. Following a 30-day review period of the proposed changes(s), the modifications may be incorporated into the plan by mutual consent of both agencies.

6.0 IMPLEMENTATION

This plan is effective from the date of signature for a period not to exceed ten years.

7.0 REFERENCES

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Appendix A – Surveys Conducted at the Brazos Island Harbor ODMDSs

SURVEY/STUDY	DATE	CONDUCTED BY	OBJECTIVES	REFERENCE
Sieve analysis for BIH Entrance Channel	April 1985	Galveston District Laboratory	Exclusionary criteria	N/A
Raw Data BIH Entrance Channel	June 1979	Southwestern Division Laboratory	Pre-dredging Bulk Analyses	N/A
Bioassay, Chemical Analysis and Statistical Analysis for the BIH Entrance Channel	September 1980	NUS Corp	Toxicity and Bioaccumulation Assessment	NUS 1980
Raw Data BIH Brownsville Channel	June 1983	Anacon	Pre-dredging Bulk Analyses	Anacon 1983
Bioassay, Chemical Analysis and Statistical Analysis for the BIH Entrance Channel	November 1985	NUS Corp	Toxicity and Bioaccumulation Assessment	NUS 1985
Raw Data BIH Brownsville Channel	July 1986	Anacon	Pre-dredging Bulk Analyses	Anacon 1986
Raw Data BIH Entrance Channel	June 1988	Anacon	Pre-dredging Bulk Analyses	Anacon 1988
Raw Data BIH Entrance Channel	December 1990	Espey/Huston Associates	Pre-dredging Bulk Analyses	Espey/Huston 1990
Raw Data BIH Entrance Channel	December 1994	Espey/Huston Associates	Pre-dredging Bulk Analyses	Espey/Huston 1994
Raw Data BIH Brownsville Channel	April 1998	PBS&J	Pre-dredging Bulk Analyses	PBS&J 1998
Bioassay, Chemical Analysis and Statistical Analysis for the BIH Entrance Channel	November 1998	PBS&J	Toxicity and Bioaccumulation Assessment	PBS&J 1998
Raw Data BIH Brownsville Channel	June 2000	PBS&J	Sediment, water, elutriate chemistry and grain size	PBS&J 2000
Raw Data BIH Entrance Channel	August 2000	PBS&J	Sediment, water, elutriate chemistry and grain size	PBS&J 2000
Raw Data BIH Entrance Channel	August 2002	Parsons	Sediment, water, elutriate chemistry and grain size	Parsons 2002
Raw Data BIH Jetty Channel	April 2004	PBS&J	Sediment, water, elutriate chemistry and grain size	PBS&J 2004
Bioassay, Chemical Analysis and Statistical Analysis for the BIH Entrance Channel	November 2005	PBS&J	Toxicity and Bioaccumulation Assessment	PBS&J 2005
Raw Data BIH Jetty Channel	June 2006	Berger	Sediment, water, elutriate chemistry and grain size	Berger 2006
Raw Data BIH Jetty Channel	Nov 2011	SOL/Atkins	Sediment, water, elutriate chemistry and grain size	Atkins 2011
Raw Data BIH Brownsville Channel	May 2013	SOL/Atkins	Sediment, water, elutriate chemistry and grain size	Atkins 2013
Bioassay, Chemical Analysis and Statistical Analysis for the BIH Entrance Channel maintenance and new work material)	March 2014	SOL/Atkins	Toxicity and Bioaccumulation Assessment	Atkins 2014

Appendix B – Site User Monitoring Requirements for Maintenance ODMDS

MONITORING CATEGORY	TECHNIQUE	SPONSOR	RATIONALE	FREQUENCY	ACTION THRESHOLD	MANAGEMENT OPTIONS	
						THRESHOLD NOT EXCEEDED	THRESHOLD EXCEEDED
Monitor Bathymetric Trends	Routine Bathymetric Survey	Site User	Determine the height and extent of the disposal mound	Pre and post disposal (45 days) for significant projects (>50,000 CY)	Mound height >10 ft. above existing bottom	Continue monitoring	Initiate Advanced Bathymetric Surveys of the affected area
	Advanced Bathymetric Survey	Site User	Determine changes in mound height until impacts are no longer observed	Semi-annually	(1) Mounding > 10 ft. above existing bottom (2) Persistence of a mound (limited or no dispersion observed between surveys)	Continue monitoring until mound height <10 ft., then resume routine bathymetric monitoring	(1) Modify disposal method/placement; (2) Direct disposal operators to avoid areas shallower than the depth determined by bathymetry; (3) Physically level material to 10 ft. or less; (4) Notify mariners of mound
ODMDS Boundaries	Routine Bathymetric Survey	Site User	Determine if placement beyond assigned disposal zone and/or ODMDS boundaries has occurred.	Pre and post disposal (45 days)	(1) Sedimentation > 1 ft. along and beyond site boundaries (2) Evidence of an unauthorized discharge outside	Continue Monitoring	Initiate Advanced Bathymetric Surveys of the affected area
	Advanced Bathymetric Survey	Site User	Determine changes in dispersion of material until impacts are no longer observed	Semi-annually	Persistence of sedimentation > 1 ft. along and beyond site boundaries	Continue monitoring until sedimentation < 1 ft. along and beyond site boundaries, then resume routine monitoring	(1) Modify disposal method/placement; (2) Restrict disposal volumes; (3) Expansion of ODMDS; (4) Relocation of ODMDS
Project Disposal	Post Disposal Summary Report	Site User	(1) Ensure management requirements are being met; (2) to assist in site monitoring	90 days after project completion	Disposal records required by SMMP are not submitted or are incomplete	Continue monitoring	Request extension from EPA R6

Appendix C – Site User Monitoring Requirements for New Work ODMDS

MONITORING CATEGORY	TECHNIQUE	SPONSOR	RATIONALE	FREQUENCY	ACTION THRESHOLD	MANAGEMENT OPTIONS	
						THRESHOLD NOT EXCEEDED	THRESHOLD EXCEEDED
Monitor Bathymetric Trends	Routine Bathymetric Survey	Site User	Determine the height and extent of the disposal mound	Pre disposal, and monthly thereafter until operations are complete, then 6 months and 1 year after completion	Mound height >14 ft. above existing bottom or sedimentation > 1 ft. along and beyond site boundaries	Continue monitoring	<ol style="list-style-type: none"> (1) Monthly bathymetry: modify disposal method/placement (2) Post disposal bathymetry: Initiate Advanced Bathymetric Surveys of the affected area
	Advanced Bathymetric Survey	Site User	Determine changes in mound height until impacts are no longer observed	Semi-annually	<ol style="list-style-type: none"> (1) Mounding > 14 ft. above existing bottom (2) Persistence of a mound (limited or no dispersion observed between surveys) 	Continue monitoring until mound height <14 ft., then resume routine bathymetric monitoring	<ol style="list-style-type: none"> (1) Modify disposal method/placement; (2) Direct disposal operators to avoid areas shallower than the depth determined by bathymetry; (3) Physically level material to 14 ft. or less; (4) Notify mariners of mound location and depth
ODMDS Boundaries	Routine Bathymetric Survey	Site User	Determine if placement beyond assigned disposal zone and/or ODMDS boundaries has occurred.	Pre disposal, and monthly thereafter until operations are complete, post disposal	Sedimentation > 1 ft. along and beyond site boundaries (2) Evidence of an unauthorized discharge outside of ODMDS boundary	Continue Monitoring	Initiate Advanced Bathymetric Surveys of the affected area
	Advanced Bathymetric Survey	Site User	Determine changes in dispersion of material until impacts are no longer observed	Semi-annually	Persistence of sedimentation > 1 ft. along and beyond site boundaries	Continue monitoring until sedimentation < 1 ft. along and beyond site boundaries, then resume routine monitoring	<ol style="list-style-type: none"> (5) Modify disposal method/placement; (6) Restrict disposal volumes; (7) Expansion of ODMDS; (8) Relocation of ODMDS
Project Disposal	Post Disposal Summary Report	Site User	<ol style="list-style-type: none"> (1) Ensure management requirements are being met; (2) to assist in site monitoring 	90 days after project completion	Disposal records required by SMMP are not submitted or are incomplete	Continue monitoring	Request extension from EPA R6

Appendix D – BIH New Work and Maintenance ODMDS Monitoring Requirements

MONITORING CATEGORY	TECHNIQUE	SPONSOR	RATIONALE	FREQUENCY	ACTION THRESHOLD	MANAGEMENT OPTIONS	
						THRESHOLD NOT EXCEEDED	THRESHOLD EXCEEDED
ODMDS Trend Assessment	Water and Sediment Quality, Benthic Community Analysis (40CFR228.13)	EPA	Periodically evaluate the impact of disposal on the marine environment (40CFR 228.9)	Approximately every 10 years as funding allows	(1) Absence from the site of pollution sensitive biota (2) Progressive non-seasonal changes in water or sediment quality	Continue Monitoring	(1) Conduct Environmental Effects Monitoring or Advanced Environmental Effects Monitoring (2) Review dredged material evaluation procedures
Environmental Effects Monitoring	Chemical Monitoring	EPA	Determine if chemical contaminants are significantly elevated ¹ within and outside of site boundaries	Implement if (1) disposal footprint extends significantly beyond the site boundaries (2) Trend Assessment results warrant	Contaminants are found to be elevated ² .	Discontinue monitoring	(1) Institute Advanced Environmental Effects Monitoring (2) Implement case specific management options (i.e. Remediation, limits on quantities or types of material)
	Benthic Monitoring		Determine whether there are adverse changes in the benthic populations outside of the site and evaluate recovery rates		Adverse changes observed outside of the site that may endanger the marine environment.		
Advanced Environmental Effects Monitoring	Tissue Chemical Analysis	EPA	Determine if site is a source of adverse bioaccumulation which may endanger the marine environment	Implement if Environmental Effects Monitoring warrants	Benthic body burdens and risk assessment models indicate potential for food chain impacts	Discontinue monitoring	(1) Discontinue site use
	Benthic Monitoring		Determine if site is a source of adverse sub-lethal ² changes in benthic organisms which may endanger the marine environment		Sub-lethal effects are unacceptable		(2) Implement case specific management options (i.e. Remediation, limits on quantities or types of material)

Appendix E – EPA R6 Post Disposal Summary Report Template

The Post Disposal Summary Report includes a 1) title page, 2) tables providing description of dredging project and disposal operations with supporting narrative, and 3) bathymetric surveys. A template is provided below which can be filled in.

The purpose of the bathymetric surveys is to evaluate 1) consistency of the disposal operations with the permit or civil works project and 2) adherence to mounding thresholds (within and along the boundary of the ODMDS) established in the ocean dredged material disposal site management and monitoring plan. In order to make this evaluation, the bathymetric surveys should be provided as an isopach with color coded depths and contours. The ODMDS boundary, disposal zone boundary and disposal placement locations should be displayed.

Page 1: Title Page – Enter the ODMDS name, brief project description, and contract # in the appropriate places. The table topics in the table don't change, but the page numbers could.

Page 2: Table and supporting narrative – Complete the information on the right side of the table as directed. Write supporting narrative as directed.

Page 3: Contractor Disposal Summary Table – Insert Contractor Disposal Summary Table. Depending upon the size of the project, this could span more than one page.

Page 4 and beyond: Insert individual bathymetric surveys and isopach

Post Disposal Summary Report

[Insert name of ODMDS]

Project: *[Brief description of project]*

Contract: *[Insert Contract number]*

Page	Topic
2	Includes: dredging project title, permit number and expiration date (if applicable), contract number, name of contractor performing work, name and type of vessel(s) disposing material in ODMDS, disposal timeframes for each vessel, volume disposed at the ODMDS, number of loads to ODMDS, material type, misplaced material, date of pre-disposal, monthly (if applicable), and post-disposal surveys, narrative discussing any violations of Section 103 concurrency and/or permit.
3	Disposal Summary Table
4	Pre-disposal Survey
5	Monthly Surveys (if applicable)
6	Post-disposal Survey
7	Isopach comparing pre-disposal survey with post-disposal survey

ITEM	INFORMATION
1. DOA Permit Number	<i>Enter DOA Permit Number</i>
2. Expiration Date Section 103 Concurrence	<i>Enter date</i>
3. Contract Number	<i>Enter contract number</i>
4. Contract Title	<i>Enter contract title</i>
5. Prime Contractor Tracking System	<i>Enter name of contractor tracking system</i>
6. Vessel Name(s) (type)	<i>Name of Dredge (type of dredge)</i>
7. Disposal Timeframes	<i>Enter dates of disposal</i>
8. Volume disposal at ODMDS	<i>Enter #CY placed</i>
9. Number of loads to ODMDS	<i>Enter number</i>
10. Material Type	<i>Enter type of material (e.g. Silty Sand)</i>
11. Misplaced Material	<i>Enter quantity of misplaced material</i>
12. Date of pre-disposal survey	<i>Enter month/day/year and (survey #)</i>
13. Date(s) of monthly surveys (if applicable)	<i>Enter month/day/year and (survey #)</i>
14. Date of post-disposal survey	<i>Enter month/day/year and (survey #)</i>

Supporting Narrative:

- *If applicable, description of any violation(s), indicate the time it occurred and when it was reported to the EPA R6 and CESWG, discuss the circumstances surrounding the violation, and identify specific measures taken to prevent reoccurrence.*
- *Description of pre-, monthly (if applicable) and post-disposal bathymetry including synopsis of findings*

[Insert Contractor Disposal Summary Table]

<i>Load No.</i>	<i>Date</i>	<i>Area Dredged</i>	<i>Vessel</i>	<i>Captain</i>	<i>Hopper opened Time</i>	<i>Northing</i>	<i>Easting</i>	<i>Draft</i>	<i>Load CY</i>	<i>Disposal Area</i>

[Insert associated maps/figures]

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