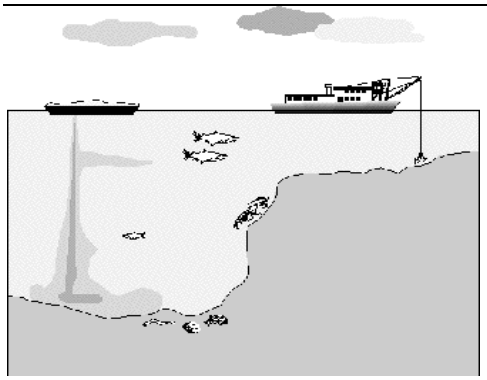
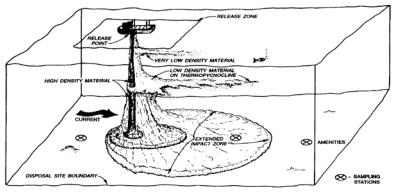
Mobile Ocean Dredged Material Disposal Site

SITE MANAGEMENT AND MONITORING PLAN

July 2020





U.S. Army Corps of Engineers
Mobile District

The following Site Management and Monitoring Plan (SMMP) for the Mobile Ocean Dredged Material Disposal Site (ODMDS) has been developed pursuant to the Water Resources Development Act Amendments of 1992 (WRDA 92) to the Marine Protection, Research, and Sanctuaries Act of 1972 for the management and monitoring of ocean disposal activities.

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This plan is effective from the date of the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) signatures for a period not to exceed ten years.

MOBILE OCEAN DREDGED MATERIAL DISPOSAL SITE
SITE MANAGEMENT AND MONITORING PLAN

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1.0 INTRODUCTION

Under the Marine Protection, Research, and Sanctuaries Act) (MPRSA) of 1972, it is the responsibility of U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) to monitor and manage Ocean Dredged Material Disposal Sites (ODMDS). The goal of this plan is to ensure that ocean dredged material disposal activities will not unreasonably degrade the marine environment or endanger human health or economic potential. MPRSA, as amended by the Water Resources Development Act (WRDA) of 1992, requires the development of a Site Management and Monitoring Plan (SMMP); a Memorandum of Understanding (MOU) of 2017 between the EPA and USACE specifically addresses the development of the SMMP for transportation and disposal of dredged material at ODMDS. The SMMP provisions are an integral part of all disposal activities at the site. EPA concurrence decisions under MPRSA section 103 regarding transportation and ocean disposal of dredged material will assure consistency with the SMMP.

Preparation of this SMMP has been informed by the Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites (EPA and USACE, 1996). This SMMP provides a framework for site monitoring and management as required by MPRSA. The SMMP may be revised if EPA in conjunction with USACE determine that changes are warranted, including as a result of information obtained during the monitoring process or other factors. The SMMP will be reviewed and revised as needed, or every ten years.

The Mobile ODMDS was designated in 1988 and modified in 2020. This SMMP will replace prior versions of the SMMP for the Mobile ODMDS.

1.1 Site Management and Monitoring Plan Team

An interagency SMMP team has been established to assist EPA and the USACE in developing and revising this SMMP. The team consists of the following governmental agencies and their respective representatives:

USACE, Mobile District
Mr. Matthew Lang

Alabama State Port Authority (ASPA)
Mr. James K. Lyons

EPA, Region 4
Dr. Wade Lehmann

Alabama Department of
Environmental Management

Mr. Scott Brown

U.S. Coast Guard
Sector Mobile Commander
CAPT Ladonn Allen

National Oceanic and
Atmospheric Administration
Dr. Roy Crabtree

Other agencies, such as the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the Bureau of Ocean Energy Management (BOEM) are invited to participate where appropriate. EPA and the USACE evaluated existing monitoring data, the type of disposal (i.e., operations and maintenance (O&M) vs. new work), the type of material (i.e., sand vs. silts/clays), location of dredged material placement within the ODMDS, and quantity of material. The team assists EPA and the USACE on deciding on appropriate monitoring techniques, level of monitoring, significance of results, and potential management options.

Specific responsibilities of EPA and the USACE are:

> EPA: EPA is responsible for designating/de-designating MPRSA Section 102 ODMDSs, regulating site use, developing and implementing disposal monitoring programs, evaluating environmental effects of disposal of dredged material at these sites, and for reviewing and concurring on dredged material suitability determinations.
>
> USACE: The USACE is responsible for evaluating dredged material suitability, issuing MPRSA Section 103 permits, and cooperating with EPA in regulating site use and developing and implementing disposal monitoring programs.

The SMMP provisions apply for all dredged material disposal activities at the site, including monitoring and management activities by the federal agencies, but also include template provisions for USACE to include in subsequently issued permits (see Appendix B) or in the transportation and disposal requirements for a Federal project (see Appendix C). References in this document to matters that “will be required” refers to implementation in a subsequent proceeding to authorize disposal of dredged material, whether in a permit, in contract or other Federal project specifications for the transportation and disposal of dredged material, or by the Corps directly. This SMMP does not itself impose binding requirements or obligations, though the SMMP does identify binding rights and obligations established by other final agency actions. The site designation regulation at 40 CFR 228.15(H)14 requires compliance with section 2.8 of this SMMP. Other than section 2.8, matters that “will be required” will be implemented through application of the template language included in the Appendices or the language may vary from the terms of the Appendices. The issuance of this SMMP does not determine the rights or obligations of any third party. EPA can ensure

implementation of the template provisions as necessary through EPA's concurrence actions. All MPRSA Section 103 ocean disposal permits or contract specifications will assure implementation of the SMMP.

2.0 SITE MANAGEMENT

Section 228.3 of the Ocean Dumping Regulations (40 Code of Federal Regulation (CFR) 220-229) states: "Management of a site consists of regulating times, rates, and methods of disposal and quantities and types of materials disposed of; developing and maintaining effective ambient monitoring programs for the site; conducting disposal site evaluation studies; and recommending modifications in site use and/or designation." The SMMP may be modified if it is determined that such changes are warranted as a result of information obtained during the monitoring process. MPRSA, as amended by WRDA 92, provides that the SMMP shall include but not be limited to:

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

2.1 Disposal Site Characteristics

The designation of the Mobile ODMDS is published at 40 CFR 228.15(h)(14). Coordinates in the regulation are provided in NAD 83 (Table 1). The Mobile ODMDS is a 23.8 square nautical mile (nmi^2) area.

Table 1. Site Coordinates

Geographic (NAD 83)	
30°13.0''N	88°08.8'W
30°09.6'N	88°04.8'W
30°08.5'N	88°05.8''W
30°08.5''N	88°12.8'W

30°12.4'N	88°12.8'W

The site lies on the shallow continental shelf, 4 nmi offshore of Mobile Point, Alabama, with an average depth of approximately 42 feet (Figure 1). Physical and biological conditions at the ODMDS are described in, "Environmental Assessment for Modification of the Mobile ODMDS, Mobile, Alabama." (EPA, 2020).

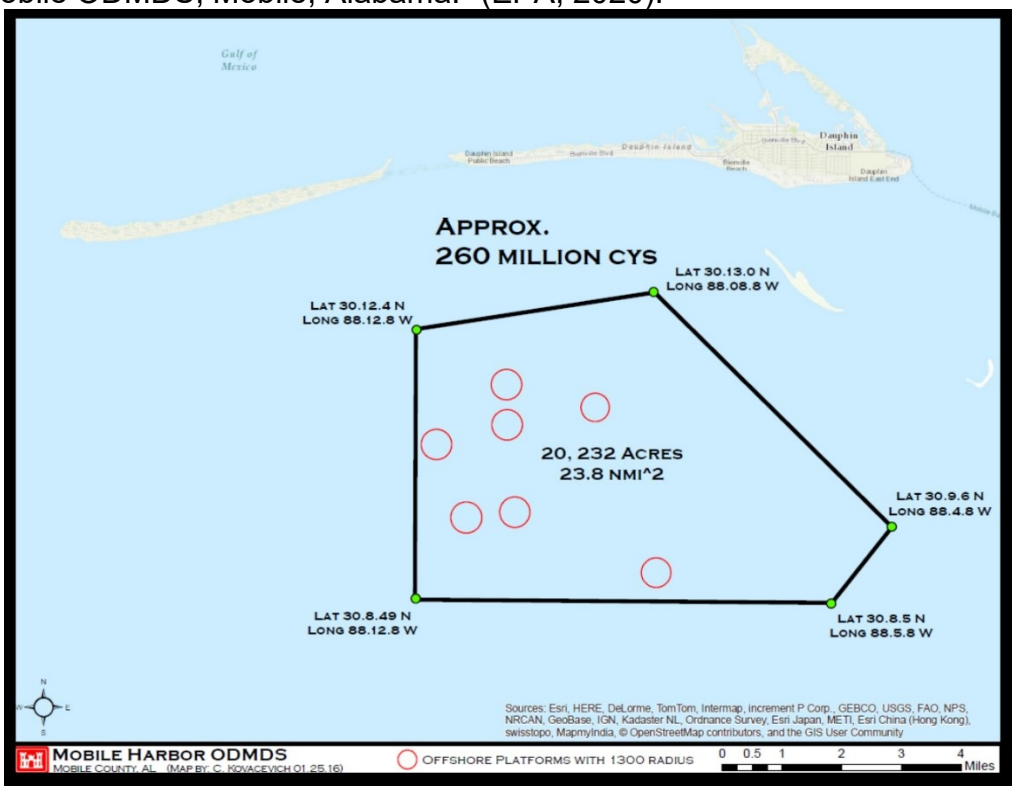

Figure 1. Mobile ODMDS Location Map

2.2 Management Objective

Appropriate management of an ODMDS is aimed at assuring that disposal activities do not unreasonably degrade or endanger human health, welfare, the marine environment or economic potentialities (MPRSA §103(a)). The primary objectives in the management of these ODMDSs are:

- Protection of the marine environment;
- Documentation of disposal activities and compliance; and
- Maintenance of a long-term disposal alternative for dredged material, while encouraging beneficial use of dredged material where practicable.

2.3 Disposal History and Dredged Material Volumes

Disposal history can be found at the Ocean Disposal Database maintained by the USACE (https://odd.el.erdc.dren.mil). The Mobile ODMDS has been used for disposal of approximately 125 million cubic yards (cys) since 1987 (Table 2). Currently, the average annual disposal volume for the Mobile Harbor navigation maintenance is approximately 4.4 million cys. The composition of the dredged material is primarily silts and clays. Additionally, the Mobile Harbor Turning Basin (MHTB) constructed in 2010 requires annual maintenance dredging of approximately 400,000 cys, which may go to the ODMDS. Future volumes and rates of disposal, from both Federal and private applicants, are expected to be similar to previous years. However, this estimate may increase if it is determined feasible to improve the Mobile Harbor Federal Navigation Project (FNP) to its congressionally authorized dimensions. Additionally, approximately 300,000 cys of sandy material is removed from the Bar channel annually and placed in the Sand Island Beneficial Use Area (SIBUA), rather than the Mobile ODMDS to which this SMMP applies.

Date	Quantity in Cubic Yards
1987	101,400
1989	16,000,000
1990	6,755,400
1991	6,888,500
1992	4,939,400
1993	1,945,300
1994	2,400,000
1995	2,636,600
1996	3,028,400
1997	5,503,100
1998	7,425,100
1999	2,617,000
2000	5,911,300
2001	4,593,800
2002	4,101,400
2003	6,785,700
2004	7,848,900
2005	3,223,900
2006	2,546,600
2007	1,952,800
2008	2,235,993
2009	5,979,800
2010	4,361,670
2011	3,500,844
2012	1,592,204

2013	1,901,591
2014	2,037,900
2015	652,338
2016	2,200,000
2017	1,027,500
2018	2,319,480
Total 125,013,920 disposed	

Table 2. Mobile ODMDS disposed material volume

A change in dredging operations occurred in July 2014 with the permanent reinstatement of in-bay open-water disposal practices associated with operation and maintenance (O&M) dredged material (Public Notice FP14-MH01-10). The USACE, Mobile District anticipates approximately 1.5 million cys of material dredged from within Mobile Bay could potentially be placed, annually, at in-bay disposal areas adjacent to the Federal Mobile Harbor navigation project where it will be regulated under Section 404 of the Clean Water Act. Thus, of the anticipated volumes to be dredged annually from the Mobile Harbor Bay channel in order to maintain the existing Federal Mobile Harbor navigation project, only approximately 2.9 million cys of sediment are anticipated to be transported to and disposed of at the Mobile ODMDS.

The Mobile ODMDS has been determined to be a dispersive site, meaning disposed materials are expected to move outside the site boundaries over time, particularly during hurricane season (Byrnes *et al.,* 2010). However, the degree of dispersiveness of the site, and consequently the ultimate capacity of the Mobile ODMDS, is subject to unpredictable variability.

2.4 Dredged Material Characteristics

2.4.1 Mobile Harbor FNP

Grain size characteristics of the shoal material dredged from the Mobile Harbor FNP varies with location within the system. Shoal material from the Mobile River portions of the project is typically 46.3% sand and 52.3% silts/clays. Upper Mobile Bay sediments range from 8.7 -61.2% sand and 38.8-91.3% silts/clays. Sands within the Lower Mobile Bay range from less than 1% to 87.4%, whereas the silt/clay fraction accounts for 12.6 to 99% of the shoal material. Sediments from the Turning Basin are typically 66.3% sands and 34.1% silts/clays.

2.4.2 Associated Beach Quality Materials

USACE Beneficial Use of Dredged Material Engineer Manual (EM) 1110-2-5026 requires dredged material be maximized within the coastal system. Dredged materials that qualify for beach or near-shore placement per the applicable State standards shall

be beneficially placed in such locations, to the maximum extent practicable. It is expected that the applicable State will exercise its authority and responsibility, regarding beach nourishment, to the full extent during any future permitting activities. Beneficial use of beach compatible dredged material for beach nourishment is strongly encouraged and supported by EPA. Most sandy material is placed in the SIBUA located due east of the ODMDS, rather than at the ODMDS, to which this SMMP applies.

2.4.3 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 EPA prior to transportation and disposal. EPA prepares its concurrences on sediment disposal at the ODMDS to be valid for up to three years, on a project specific basis, consistent with the three-year duration of USACE authorizations per 33 CFR 325.6.

Sediment quality verification process:

1) Case-specific evaluation against the exclusion criteria (40 CFR 227.13(b))
2) Determination of testing requirements for non-excluded material based on the potential of sediment contamination since last verification.
3) When applicable, conduct testing and confirm the suitability of non-excluded material for ocean disposal.

The permittee, project sponsor, or USACE completes documentation for suitability prior to use of the ODMDS in the form of a MPRSA Section 103 Evaluation." Potential testing and the evaluation follow the procedures outlined in the 1991 EPA/USACE Dredged Material Testing Manual and 2008 Southeast Regional Implementation Manual (SERIM), or the appropriate updated version. Necessary testing and evaluation include descriptions of how dredging projects will be subdivided into project segments for sampling and analysis. Appendix C of the SERIM outlines the form used for the MPRSA Section 103 Evaluation. Water Quality Compliance determinations will be made using the STFATE (ADDAMS) model. Only material determined to be suitable and in compliance with the Ocean Dumping Criteria (40 CFR Part 227) through the verification process by the USACE and EPA Region 4 is appropriate for transportation and disposal in the ODMDS.

2.5 Time of Disposal

At present no restrictions have been determined to be necessary for disposal related to seasonal variations in ocean current or biotic activity at the Mobile ODMDS.

2.6 Disposal Technique

No specific disposal technique is required for these sites. In order to protect sea turtles and Gulf sturgeon, however, the National Marine Fisheries Service (NMFS), Protected Resources Division (PRD) requires monitoring according to the *Regional Biological*

Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining ("Borrow") Areas Using Hopper Dredges by USACE Galveston, New Orleans, Mobile, and Jacksonville Districts (NMFS, 2003 and amended 2005 & 2007). Site users transiting and disposing at the ODMDS will be required to employ standard surveillance and evasive measures to protect sea turtles and marine mammals.

2.7 Disposal Location

The regulation at 40 CFR §227.28 requires that all disposals occur at least 330 feet (100 meters) inside ODMDS boundaries to prevent material from leaving the site. Release zones will be established by the EPA and the USACE at the time of site use to maintain compliance with the Ocean Dumping Criteria set forth in 40 CFR Part 227. Disposal will be initiated within the applicable release zone boundary and completed (i.e. doors closed) prior to leaving the ODMDS. Placement methods, which prevent mounding of dredged materials from becoming an unacceptable navigation hazard, must be used. Dredged material shall be disposed so that at no point will depths less than -25 feet Mean Lower Low Water (MLLW) occur (i.e., a clearance of 25 feet of water depth will be maintained). Disposal shall not occur closer than 1,300 feet to any oil and gas rigs that are present within the site boundaries. Disposal shall not occur closer than 500 feet to any historic properties that are present within the site boundaries. Those portions of the site that have been in continuous use are eligible for disposal. Updated maps of disposal locations at the Mobile ODMDS are available from EPA Region 4 or USACE Mobile District.

If necessary, the Corps may propose to use the previously unutilized (no disposal has been performed) portions of the ODMDS (the western portion) that were previously evaluated in a 1983 geotechnical survey. If the Corps proposes to use any portion of the previously unused area, the Corps will delineate the intended area and implement procedures as outlined in "Programmatic Agreement for the Mobile Harbor General Reevaluation Study (Project)" dated June 28, 2019, between USACE South Atlantic Mobile District and Alabama Historic Commission in order to protect potential historic properties. During the EPA's MPRSA Section 103 evaluations for proposed disposal of dredged material in the ODMDS, the EPA will include any necessary limitations regarding the location of dredged material disposal as a condition of concurrence decisions in order to prevent impacts to potential historic properties. The USACE Mobile District and the EPA Region 4 will provide a map denoting area to be avoided, upon request.

2.8 Summary of Transit and Disposal Requirements in the SMMP

The site designation regulation at 40 C.F.R. 228.15(H)14, requires that transit and disposal at the Mobile ODMDS comply with the provisions of the SMMP that are identified in Table 3. Further, the disposal monitoring and post-disposal monitoring

requirements described under Section 3.0. Site Monitoring will be included with the management requirements described in this section as permit conditions on all MPRSA Section 103 permits and will be incorporated in the contract language for all federal projects. Draft language provided by USACE is available for this purpose to be included by USACE in permits (Appendix B) and contracts (Appendix C). EPA's concurrence review will confirm implementation.

Table 3. Summary of Disposal Requirements.

Requirement	Reference
Dredged Material Quality Verification	Mobile ODMDS SMMP 2.4.3
Disposal Technique	Mobile ODMDS SMMP 2.6
Disposal Location	Mobile ODMDS SMMP 2.7
Leakage	Mobile ODMDS SMMP 3.2
Marine Mammal Avoidance	Mobile ODMDS SMMP 2.6
Bathymetric surveys	Mobile ODMDS SMMP 3.1 and 3.3
Disposal Monitoring	Mobile ODMDS SMMP 3.2
Reporting Requirements	Mobile ODMDS SMMP 3.5

2.9 Ocean Dumping Criteria (ODC) Compliance Process

All disposal of dredged material in the ocean must comply with the ODC and EPA reviews the demonstrations of compliance when reviewing permits and projects for concurrence. Projects that are not Federal Civil Works, or other federal projects involving ocean disposal of dredged material, require an ocean dumping permit issued by the USACE pursuant to Section 103 of the MPRSA. Federal Civil Works projects, though not required to have a permit, must adhere to the same criteria, factors to be evaluated, procedures, and requirements that apply that apply to permits, including the process for evaluation of the project, and must receive EPA's concurrence prior to awarding any contract for transportation and disposal of dredged material at an ODMDS. A summary of the permitting process can be found at: https://www.epa.gov/ocean-dumping/ocean-disposal-dredged-material.

2.10 Information Management of Dredged Material Disposal Activities

As part of site management, EPA and the USACE will continue to investigate alternatives for appropriate data management. The USACE has an Ocean Disposal Database (https://odd.el.erdc.dren.mil/) maintained by the Engineering Research and Development Center (ERDC). This database provides the quantities disposed of at the ODMDS and whether the project is from a civil works project or private entity. EPA Region 4 and USACE South Atlantic Division (SAD) have agreed on using an extensible Markup Language (XML) standard for sharing of disposal monitoring data (see also Section 3.5).

3.0 SITE MONITORING

Under the SMMP, site monitoring is conducted to ensure the environmental integrity of a disposal site and the areas surrounding the site, as well as to verify compliance with the site designation criteria, any special management conditions, and permit requirements. Monitoring programs should be flexible, cost effective, and based on scientifically sound procedures and methods to meet site-specific monitoring needs. The intent of the program is to provide the following:

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

The main purpose of a disposal site monitoring program is to determine whether dredged material site management practices, including disposal operations, at the site need to be changed to avoid significant adverse impacts.

3.1 Baseline Monitoring

The results of investigations presented in the designation EIS (EPA, 1987) and subsequent surveys listed in Table 4 serve as the main body of data for the monitoring of impacts associated with use of the Mobile ODMDS and serve, in part, as baseline data for future use of the ODMDS. Previous monitoring studies included the ODMDS as well as the surrounding environs, therefore EPA has a database which can serve as baseline data for future monitoring. The most recent survey of the benthic communities within and surrounding the Mobile ODMDS was conducted in October 2017. Because the expansion plans had already been finalized, this survey covered all areas needed to secure an adequate baseline that could be used for future impacts assessment. The results of the most recent survey are summarized below. A bathymetric survey will be conducted by the USACE or site user within three (3) months prior to project disposal for projects expected to exceed 50,000 cys in the area to be utilized within the ODMDS. Bathymetric surveys will be used to monitor the dredged material to ensure a navigation hazard is not produced, to assist in verification of material disposal and containment in the site, to monitor bathymetry changes and trends and to ensure that the site capacity is not exceeded (i.e., the dredged sediments do not exceed the site boundaries at depths expected to have impacts to the benthos) nor are too shallow. Surveys will conform to the minimum performance standards for Corps of Engineers Hydrographic

Surveys for "Other General Surveys & Studies" as described in the USACE Engineering Manual, EM1110-2-1003, *Hydrographic Surveying* dated November 30, 2013 [http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1003.pdf?ver=2014-01-06-155809-307]. The number and length of transects required will be sufficient to encompass the zone of use and a 500-foot wide area around the release zone. The surveys will be taken along lines spaced at 500-foot intervals or less. The minimum performance standards from Table 3-1 of EM 1110-2-1003, *Hydrographic Surveying*, will be followed. Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing a differential global positioning system. The vertical datum will be referenced to prescribed National Oceanic and Atmospheric Administration (NOAA) MLLW datum. The horizontal datum should be referenced to the local State Plane Coordinate System (SPCS) for that area or in Geographical Coordinates (latitude-longitude). The horizontal reference datum should be the North American Datum of 1983 (NAD 83). No additional pre-disposal monitoring is required.

Table 4. Surveys and Studies Conducted in the vicinity of the Mobile ODMDS

Survey/Study Title	Conducted By:	Date	Purpose	Results
Analysis & Synthesis of Oceanic Conditions in the Mississippi Sound Offshore Region	USACE	March 1984	Determine the direction and amount of sediment transport from a dredged material disposal site.	Circulation patterns within the site are controlled by astronomical tides, winds, and freshwater discharges.
Sediment Mapping	UGA Center for Applied Isotopes for EPA	2002	Characterization of bottom sediments using gamma spectrometry.	Baseline Survey
Mobile ODMDS Expansion Survey	USACE/EPA	October 2009	Collect physical, chemical and biological data on sediments and water.	Collected and analyzed 30 sediment and 10 water samples covering entire ODMDS.
Mobile ODMDS Post Oil Spill Sediment Sampling	USACE	December 2010	Determine if any oil from the Deep-Water Horizon Oil Spill has contaminated the sediments.	Test results published February 2011 indicate there were no discernible changes in the sediment quality attributed to the Deepwater Horizon Oil Spill.
Bathymetric Survey	USACE	Before and After Event	Monitor bathymetry changes.	Safe navigation depths have been maintained.

Trends assessment survey	EPA	October 2017	Examine potential changes to chemical, biological, and physical characteristic within the used portion of the ODMDS and to establish background data on the same for the unused portion.	Fine sediments are present on the northern boundary of the site and become larger (sand) to the south. Arsenic is naturally present at all sites. Dioxins were detectable at all sites, but not above levels of concern. Macroinvertebrate statistics were the same inside the previously utilized portions of the site as those not utilized. Overall, data present that no significant changes have occurred at the site due to disposal of dredged material.

In 2017, the macroinfauna taxa dominating the assemblages at stations both inside and outside the ODMDS were very similar and typical of those found in nearshore shallow water benthic habitats (Felder and Kemp 2009). In 2017, taxa richness, densities, and diversity at stations inside the active ODMDS site were not significantly different when compared to 2009. There was no significant difference in taxa richness, density, and diversity between stations inside and outside the ODMDS in 2017 (US EPA, 2017). These data indicate that the abundance and diversity of the macroinfaunal assemblages in the active ODMDS site have reached background levels.

3.2 Disposal Monitoring

For all disposal activities, permits and projects will require use of an electronic tracking system (ETS). Appendices B and C provide template language. An ETS provides surveillance of the transportation and disposal of dredged material. An ETS is maintained and operated to continuously track the horizontal location and draft condition (accuracy± 0.1 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 four minutes during travel to and from the ODMDS and every 12 seconds or every 30 feet of travel within the ODMDS and while hull status is open. 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

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 [see http://dqm.usace.army.mil/Specifications/Index.aspx], or equivalent acceptable system. Disposal monitoring and ETS data will be reported to EPA Region 4 on a weekly basis (within one week of disposal) utilizing the eXtensible Markup Language (XML) specification and protocol per Section 3.5. EPA Region 4 and the USACE District require notification within 24 hours if disposal occurs outside of the ODMDS or specified disposal zone, if excessive leakage occurs, if hull open status occurs outside the ODMDS, or other violation of the conditions in this SMMP occur. Correspondence will be required to explain how the issue was addressed, pertinent dates, and corrective actions to be implemented to prevent repetition in the future.

3.3 Post Discharge Requirements

The USACE, or other site user, will be required to conduct a bathymetric survey consistent with the pre-disposal survey requirements within 30 days after disposal project completion. Surveys will not be required for projects less than 50,000 cys. If a release zone is utilized and adhered to, the number and length of transects required will be sufficient to encompass the release zone and a 500-foot wide area around it. Bathymetric surveys will be required to monitor the disposal mound to ensure a navigation hazard is not produced, to assist in verification of material disposal, to monitor bathymetry changes and trends, and to ensure that the site capacity is not exceeded, i.e., the dredged sediment does not exceed the site boundaries on disposal.

3.4 Disposal Effects Monitoring

Based on the type and volume of material disposed, various monitoring techniques can be used to examine if the disposed dredged material is moving and in what direction. There are also techniques to assess potential environmental effects that the material is having on the site and adjacent areas. At the current time, no nearby biological resources (hard-bottom habitat) have been identified that are likely to be impacted by disposal operations at the ODMDS. The Mobile ODMDS is at least one nautical mile from all known fish havens, artificial reefs, and fishing areas. The site has been characterized as dispersive, meaning material is likely to move outside the site boundaries over time due to ocean currents and that disposed dredged material does not move in distinct mounds, but instead blends with the surrounding environment causing a progressive transition to sediments containing a higher percentage of silt and clay consistent with the composition of the material found on the north side of the ODMDS. Changes in sediment composition will likely alter the benthic community structure. However, based on previous benthic studies, it is unlikely that permanent or long-term adverse impacts will result due to changes in sediment composition. At a minimum, a Trend Assessment Survey (40 CFR 228.13) will be conducted approximately every ten years. The Trend Assessment surveys focus on overall health

and viability of the benthic communities and compare areas where disposal has occurred to areas where it has not. Such a survey will be used to detail temporal changes that may be occurring across benthic communities in the northern Gulf of Mexico relative to the ODMDS.

Based on the type and volume of material disposed and impacts of concern, various monitoring surveys can be used to examine whether the disposed dredged material is moving, where it moves, and the environmental effect the material on the site and adjacent areas. A tiered approach will be utilized to determine the level of monitoring effort required following each disposal event. At a minimum, bathymetry will required to be conducted after all disposal events in excess of 50,000 cubic yards, along with requirements for detailed summary project reports certifying either total compliance with all disposal requirements, or explanations of when and where any deviations occur accompanied by a description of actions taken to remedy the cause for such deviations. Template language for contracting for use of the ODMDS is contained in Appendix C.

A tiered strategy for a monitoring program is desirable. With a tiered approach, an unacceptable result may trigger further and often more complex monitoring. Continuous monitoring of all physical, chemical, and biological parameters and resources in and around the ocean dredged material disposal site is not necessary. A monitoring program should be structured to address specific questions (hypotheses) and measure key indicators and endpoints, particularly those defined during site designation or specific project issues that arise. For the Mobile ODMDS, the site expansion environmental assessment did not identify any hard bottoms in nearby waters as resources of concern. These resources were not present within, nor adjacent to, the site. Therefore, the benthic community will serve as the major indicator for identifying adverse impact from dumping. At a minimum, the Trend Assessment Study will be conducted approximately once every ten years. These surveys will be performed in accordance with 40 CFR 228.13. Results from these surveys will be used to assess the need for further, more detailed and complex studies. Table 5 shows how a progression from simple Trends study to Impact assessment studies may occur.

The SMMP Team will continue to use the phased approach to suggest appropriate monitoring techniques and level of monitoring required for a specific action. Team suggestions are based on type of disposal activity (i.e., O&M vs. construction), quality of material, location of placement activity within ODMDS, or quantity of material. EPA and USACE will ultimately determine the actual monitoring activities to be required.

Future surveys as outlined in Table 5 will focus on determining the rate and direction of disposed dredged material dispersal and the capacity of the ODMDS. Should future disposal at the Mobile ODMDS 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, this SMMP may be revised based on the outcome of the monitoring program.

3.5 Post-Disposal Monitoring

The Corps or other site users will conduct a bathymetric survey for all projects which exceed 50,000 cubic yards within 30 days after disposal project completion.

Table 5. Site Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
Monitor Bathymetric Trends	Bathymetry	Site User	Determine the extent of the disposal mound and major bathymetric changes.	Post- Disposal for projects greater than 50,000 cy.	Disposal mound occurs outside ODMDS boundaries.	Continue monitoring.	-Modify disposal method/disposal. -Restrict disposal volumes.
Model Bathymetric Capacity	Bathymetry and capacity modeling	Site User or USACE	Determine that large project volumes can be accommodated based on most recent bathymetry.	For any projects occurring after 2024 that are 5 million cy or larger.	Verify that disposal will remain in the ODMDS at proposed (maximal) volume.	No action.	-Modify disposal. -Restrict disposal volumes. -Expand of modify the site.
Benthic Effects Monitoring & Trend Assessment (40 CFR §228.13)	Sediment Mapping (Gamma/ CS^3)	EPA	Determine aerial influence of dredged material.	Approximately every 10 years.	-Absence of pollution sensitive biota from the site. -Progressive non-seasonal changes in water or sediment quality.	Continue monitoring on prescribed schedule.	-Conduct Environmental Effects Monitoring or Advanced Environmental Effects Monitoring. -Review dredged material evaluation procedures and amend, if necessary. Discontinue site use. De-designate site.
	Water and Sediment Quality, Benthic Community Analysis (40CFR §228.13)	EPA	Periodically evaluate the impact of disposal on the marine environment (40CFR §228.9).	Approximately every 10 years.			
Environmental Effects Monitoring	Chemical Monitoring	EPA/ USACE	Determine if sediment chemical contaminants are	Implement if disposal footprint	Contaminants are found to be elevated in dredged sediments.[1]	Discontinue specific event monitoring.	-Conduct directed, specific contaminant monitoring to define extent of management

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
	Benthic Monitoring		significantly elevated[1] within, and outside of, site boundaries. Determine whether there are adverse changes in the benthic populations outside of the site and evaluate recovery rates.	extends beyond the site boundaries or if Trend Assessment results warrant.	Adverse changes observed outside of the site that may endanger the marine environment.		action required. -Perform biological testing on ODMDS samples. -Review and potentially alter dredged material evaluation procedures.
Advanced Environmental Effects Monitoring	Tissue Chemical Analysis	EPA/ USACE	Determine if the 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.	- Implement case-specific management options (i.e. Remediation, limits on quantities or types of material). - Discontinue site use.
	Benthic Monitoring		Determine if the site is a source of adverse sub-lethal[2] changes in benthic organisms which may endanger the marine environment.		Sub-lethal effects are unacceptable.		
Ensure Safe Navigation Depth & Monitor	Bathymetry	Site User	Determine height of mound and any excessive mounding.	Pre & Post disposal for projects	Mound height > -30 feet mean lower low water (MLLW).	Continue Monitoring.	-Modify future disposal method/disposal. -Restrict disposal volumes.

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
Bathymetric Trends				greater than 50,000 cy.	Mound height > -25 feet MLLW.	Continue Monitoring.	- Physically level material.
Compliance	Disposal Site Use Records & DQM data	Site User	-Ensure management requirements are being met.	Continuously during the project with weekly reports to project manager/EPA.	Disposal records required by SMMP are not submitted or are incomplete.	Continue monitoring.	-Restrict site use until requirements are met.
					Review of records indicates a dump occurred outside ODMDS boundary, excessive leakage en route to disposal.	Continue constant monitoring and reporting.	-Notify EPA Region 4 & USACE and investigate why non-compliance occurred. -Verify corrective actions to be enacted; or -Take appropriate enforcement action.

[1] Significantly elevated: 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.
[2] Examples of sub-lethal effects include without limitation the development of lesions, tumors, development abnormality, and/or decreased fecundity.

3.5 Reporting and Data Formatting

3.5.1 Project Initiation and Violation Reporting Requirements

The USACE will notify (or other site user will be required to notify) EPA 15 days prior to the beginning of a dredging cycle or disposal project. The user also will be required to notify the USACE and EPA within 24 hours if a violation of the permit and/or contract conditions related to required terms of the permit or project authorization occur during disposal operations.

3.5.2 Disposal Monitoring Data

Disposal monitoring will be conducted ideally utilizing the Dredge Quality Management (DQM) system [see http://dqm.usace.army.mil/Specifications/Index.aspx], although other systems are acceptable. The Corps will provide (or require another user to provide) disposal monitoring data to EPA Region 4 electronically on a weekly basis (within one week of disposal event), per EPA Region 4 XML format and delivered as an attachment to an email to DisposalData.R4@epa.gov. The XML format is available from EPA Region 4.

3.5.3 Post Disposal Summary Reports

A site user will be required to provide a Post-Disposal Summary Report to EPA within 90 days after project completion. Post-Disposal reports will be required to include: vessel name, disposal start and end dates and times; dredging project; volume disposed, number of loads completed, type of material disposed; name of contractor conducting the work, permit and/or contract number; identification of any misplaced material; and dates of bathymetric surveys of the ODMDS. The disposal summary reports must be submitted with the bathymetry survey results (contour plot and X, Y, Z ASCII data file) and can be accessed by USACE personnel at the DQM Website: http://dqm-portal.usace.army.mil.

3.5.4 Environmental Monitoring

EPA and/or the USACE will coordinate material tracking, disposal effects monitoring and any other data collected and provided to SMMP team members and federal and state agencies as appropriate. Data will be available to other interested parties upon request to the extent possible. The report should indicate how the survey relates to the SMMP and previous surveys at the Mobile ODMDS and should provide data interpretations, conclusions, and recommendations, and should project the next phase of the SMMP. Monitoring results will be summarized in subsequent modifications to the SMMP posted to EPA's website (https://www.epa.gov/ocean-dumping.)

4.0 MODIFICATION OF THE MOBILE ODMDS SMMP

If the results of monitoring surveys, reports from other sources, or modeling results indicate that continued use of the ODMDS would lead to unacceptable effects, then the management of the ODMDS will be modified to mitigate the effects or, if necessary, the site use may be terminated. For example, significant changes to the quantity or type of dredged material disposed on site may trigger SMMP review and revision. The plan should be updated in conjunction with activities authorizing use of the site.

5.0 IMPLEMENTATION OF THE MOBILE ODMDS SMMP

This plan is effective and available for implementation from the date of signature for a period not to exceed ten years. EPA, in conjunction with the USACE, will review and revise more frequently if site use and conditions at the site indicate a need for revision. EPA and USACE share responsibility for implementation of the SMMP. Site users may be required to undertake monitoring activities as a condition of their permit. The USACE and any USACE contractor will remain responsible for implementation of the SMMP for Federal new work and maintenance projects.

6.0 REFERENCES

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Mobile SMMP
Appendix A

WATER COLUMN EVALUATIONS NUMERICAL MODEL (STFATE) INPUT PARAMETERS MOBILE ODMDS

Appendix A: Water Column Evaluations Numerical Model (STFATE) Input Parameters Mobile ODMDS

SITE DESCRIPTION

Parameter	**Value**	**Units**
Number of Grid Points (left to right)	96	
Number of Grid Points (top to bottom)	96	
Spacing Between Grid Points (left to right)	500	Ft
Spacing Between Grid Points (top to bottom)	500	Ft
Constant Water Depth	46	Ft
Roughness Height at Bottom of Disposal Site	.005[1]	Ft
Slope of Bottom in X-Direction	0	Deg.
Slope of Bottom in Z-Direction	0	Deg.
Number of Points in Ambient Density Profile Point[1]	3	
Ambient Density at Depth = 3 ft	1.0206	g/cc
Ambient Density at Depth = 26 ft	1.0206	g/cc
Ambient Density at Depth = 46 ft	1.0207	g/cc

[1] from EPA Mobile ODMDS Designation Survey Report (2009) for Zone A

AMBIENT VELOCITY DATA

Parameter	**Value**	**Units**
Profile[2]	2-Point at constant depth	
X-Direction Velocity = 11 feet	0.12	ft/sec
Z-Direction Velocity = 11 feet	-0.41	ft/sec
X-Direction Velocity = 33 feet	0.22	ft/sec

Parameter	Value	Units
Z-Direction Velocity = 33 feet	-0.37	ft/sec

[2] from EPA Mobile ODMDS Designation Survey Report (2009)

DISPOSAL OPERATION DATA

Parameter	Value	Units
Location of Disposal Point from Top of Grid	16,400	Ft
Location of Disposal Point from Left Edge of Grid	28,800	Ft
Dumping Over Depression	0	

INPUT, EXECUTION AND OUTPUT

Parameter	Value	Units
Location of the Upper Left Corner of the Disposal Site - Distance from Top Edge	4,500	Ft
Location of the Upper Left Corner of the Disposal Site - Distance from Left Edge	9,000	Ft
Location of the Lower Right Corner of the Disposal Site - Distance from Top Edge	28,000	Ft
Location of the Lower Right Corner of the Disposal Site - Distance from Left Edge	46,000	Ft
Duration of Simulation	14,400	sec
Long Term Time Step	600	sec

COEFFICIENTS

Parameter	Keyword	Value
Settling Coefficient	BETA	0.000[1]
Apparent Mass Coefficient	CM	1.000[1]
Drag Coefficient	CD	0.500[1]
Form Drag for Collapsing Cloud	CDRAG	1.000[1]
Skin Friction for Collapsing Cloud	CFRIC	0.010[1]
Drag for an Ellipsoidal Wedge	CD3	0.100[1]
Drag for a Plate	CD4	1.000[1]
Friction Between Cloud and Bottom	FRICTN	0.010[1]
4/3 Law Horizontal Diffusion Dissipation Factor	ALAMDA	0.001[1]
Unstratified Water Vertical Diffusion Coefficient	AKYO	Pritchard Expression
Cloud/Ambient Density Gradient Ratio	GAMA	0.250[1]
Turbulent Thermal Entrainment	ALPHAO	0.235[1]
Entrainment in Collapse	ALPHAC	0.100[1]
Stripping Factor	CSTRIP	0.003[1]

[1] Model Default Coefficient

Mobile ODMDS Background Water Concentration.	
Chemicals of Concern	**Background Concentration Levels (µg/l)**
Arsenic	1.66 [1]
Cadmium	0.01 [1]
Chromium (VI)	0.75 [1]
Copper	1.11 [1]
Lead	0.75 [1]
Mercury	0.10 [1,3]
Nickel	0.75 [1]
Selenium	0.23 [1]
Silver	0.005[1]
Zinc	3.78[1]
Cyanide	
Tributyltin (TBT)	0.025 [2,3]
Aldrin	0.005 [1,3]
Chlordane	0.10 [1,3]
DDT	0.05 [1,3]
Dieldrin	0.005 [1,3]
alpha - Endosulfan	0.005 [1,3]
beta - Endosulfan	0.005 [1,3]
Endrin	0.005 [1,3]
gamma-BHC (Lindane)	0.005 [1,3]
Heptachlor	0.005 [1,3]
Heptachlor Epoxide	0.005 [1,3]
Toxaphene	.25 [1,3]
Pentachlorophenol	5.0 [2,3]

[1] Mobile ODMDS Site Designation Study (2010)
[2] Pensacola ODMDS Trend Assessment Study (2013)
[3] Analyte not detected. Value based on one half the reporting limit.

Mobile SMMP
Appendix B

TEMPLATE
For
Generic Special Conditions
For
MPRSA Section 103 Permits
Mobile ODMDS

Appendix B: TEMPLATE OF GENERIC SPECIAL CONDITIONS FOR MPRSA SECTION 103 PERMITS FOR THE MOBILE ODMDS

MPRSA section 102(c)(3) directs EPA in conjunction with the USACE to develop site management and monitoring plans for dredged material disposal sites and such plans are implemented through MPRSA permits issued by USACE or through Federal projects subject to the same criteria, evaluation factors, procedures and requirements as permits. EPA in conjunction with USACE developed the template language below for inclusion in permits, though the template language is intended to be include on a case-by-case basis. Neither the SMMP nor this Appendix impose requirements on a permittee. Instead, the terms of any particular permit would impose (or not) requirements specific to the permitted activity. The USACE is not obligated to impose any particular permit term based on the template language; the language is provided to facilitate USACE permit development and to provide notice to third parties. For any future permit, EPA's concurrence review would confirm that appropriate terms are included to assure adequate implementation of the SMMP.

I. DISPOSAL OPERATIONS

A. For this permit, the term disposal operations shall mean: navigation of any vessel used in disposal of operations, transportation of dredged material from the dredging site to the Mobile ODMDS, proper disposal of dredged material at the disposal area within the Mobile ODMDS, and transportation of the hopper dredge or disposal barge or scow back to the dredging site.

B. The Mobile ODMDS is defined as the trapezoid with corner coordinates as follows:

Mobile ODMDS Corner Coordinates (North American Datum (NAD) 83))	
Latitude 30° 13.0'N	Longitude 88° 08.8'W
Latitude 30° 09.6'N	Longitude 88° 04.8'W
Latitude 30° 08.5'N	Longitude 88° 05.8'W
Latitude 30° 08.5'N	Longitude 88° 12.8'W
Latitude 30° 12.4'N	Longitude 88° 12.8'W

C. No more than [NUMBER] cubic yards of dredged material excavated at the location defined in [REFERENCE LOCATION IN PERMIT] are authorized for disposal at the Mobile ODMDS.

D. The permittee shall use an electronic positioning system to navigate to and from the Mobile ODMDS. For this section of the permit, the electronic positioning system will be

as per the DQM specifications. If the electronic positioning system fails or navigation problems are detected, all disposal operations shall cease until the failure or navigation problems are corrected.

E. The permittee shall certify the accuracy of the electronic positioning system proposed for use during disposal operations at the Mobile ODMDS. The certification shall be accomplished by providing current certification documentation from the National DQM Program for scow and hopper dredge instrumentation systems. The National DQM certification is valid for one year from the date of certification.

F. This permit does not authorize leakage or spillage out of barges, dump scows, or hopper dredges of water and/or excavated material while en route to the ODMDS disposal release zone(s). Failure to repair leaks or change the method of operation which is resulting in the leakage or spillage will result in the suspension of dredging operation and require prompt repair or change of operation as prerequisite to the resumption of dredging. Transit to the ODMDS begins as soon as dredged material loading into the disposal vessel is completed and the vessel begins moving to the ODMDS. All appropriate measures to avoid spillage during transit must be taken. Appropriate measures may include but are not limited to: up-to-date U.S. Coast Guard and/or American Bureau of Shipping certification of all disposal-related vessels; maintenance (inspection and/or replacement) of gaskets on barge doors, minimization of excess free liquids in barge loads, pre-transit testing of barge door hydraulics, and pre-transport verification of appropriate weather and sea state conditions. EPA Region 4 and the USACE Mobile District shall be notified within 24 hours (or the next business day) if any apparent leaking or spilling of dredged material occurs as indicated by an average loss of draft during transit from the dredging area to the disposal release zone(s) (forward draft loss plus aft draft loss divided by 2) in excess of x.x. feet. In addition, the permittee understands that no debris is to be placed in the Mobile ODMDS.

G. A disposal operations inspector and/or captain of any tugboat, hopper dredge or other vessel used to transport dredged material to the Mobile ODMDS shall insure compliance with disposal operation conditions defined in this permit.

1. If the disposal operations inspector or the captain detects a violation, he shall report the violation to the permittee immediately.

2. The permittee shall contact the U.S. Army Corps of Engineers, Mobile District's Regulatory Branch (251) 690-2658 and EPA Region 4 at OceanDumpingR4@epa.gov or (404) 562-9300 to report the violation within twenty-four (24) hours after the violation occurs. A complete written explanation of any permit violation shall be included in the post-dredging report.

H. When dredged material is disposed, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of the Mobile ODMDS as defined in Special Condition B. Additionally, disposal shall occur within a specified disposal zone defined as [DEFINE COORDINATES AND SIZE OF DISPOSAL ZONE]. Disposal shall not occur closer than 1,300 feet to any oil or gas rig that may be present within the site boundaries.

I. The permittee shall use an automated disposal verification system that is certified by the National DQM program to continuously track the horizontal location and draft condition of the disposal vessel (hopper dredge or disposal barge or scow) to and from the Mobile ODMDS. This real-time information is available on-line to the Mobile District and will be provided to EPA Region 4 on a weekly basis via email using the eXtensible Markup Language (XML) specification and protocol. Data shall be provided per the EPA Region 4 XML format and delivered as an attachment to an email to R4_DisposalData@epa.gov. The XML format is available from EPA Region 4.

J. The permittee shall conduct a bathymetric survey of the Mobile ODMDS within 30 days of a disposal event following project completion.

1. The number and length of the survey transects shall be sufficient to encompass the defined disposal zone within the Mobile ODMDS and a 500-foot-wide area around the disposal zone. Transects shall be spaced at 500-foot intervals or less with a depth recording density of 20 to 70 feet.

2. Vertical accuracy of the survey shall be ±0.1 feet. Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing either microwave line of site system or differential global positioning system. The vertical datum will be referenced to prescribed NOAA Mean Lower Low Water (MLLW) datum. MLLW is 1.8 feet below NGVD 1929. The horizontal datum will be Alabama State Plane (zone 0102 Alabama West) or Geographic (NAD 1983). State Plane coordinates shall be reported to the nearest 0.10 foot and latitude and longitude coordinates shall be reported as degrees and decimal minutes to the nearest 0.01 minutes.

K. The permittee has read and agrees to assure its actions are consistent with any revisions to the Mobile ODMDS Site Management and Monitoring Plan (SMMP) in effect at the time of permit issuance.

The permittee shall not transport dredged material to the Mobile ODMDS until it confirms that EPA has concurred that the proposed dredge material meets the Ocean Disposal Criteria as given in 40 CFR Part 227.

L. Enclosed is the Gulf Regional Biological Opinion (GRBO) dated [INSERT DATE], for

swimming sea turtles, whales, and sturgeon. The GRBO contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the GRBO. Authorization for transportation and ocean disposal of dredged material at the Mobile ODMDS under the U.S. Army Corps of Engineers (USACE) permit is conditional upon compliance with all of the mandatory terms and conditions associated with the incidental take of the attached GRBO, which terms and conditions are incorporated by reference in the permit. Failure to comply with the terms and conditions associated with the incidental take of the GRBO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your USACE permit. Depending on the affected species, National Marine Fisheries Service (NMFS) is the appropriate authority to determine compliance with the terms and conditions of its GRBO and with the Endangered Species Act. For further clarification of this point, contact the project managers at USACE and the NMFS. Should a determination be made that the conditions of the GRBO have been violated, the violation may be enforced administratively by EPA, or referred to the Department of Justice for further investigation and appropriate enforcement.

II. REPORTING REQUIREMENTS

A. The permittee shall send the U.S. Army Corps of Engineers, Mobile District's Regulatory Branch and EPA Region 4's Ocean, Wetlands, and Streams Protection Branch (61 Forsyth Street SW, Atlanta, GA 30303) a notification of commencement of work at least 15 days before initiation of any dredging operations authorized by this permit.

B. The permittee shall submit to the U.S. Army Corps of Engineers and EPA Region 4 weekly disposal monitoring reports. These reports shall contain the information described in Special Condition I.

C. The permittee shall develop and send one copy of the disposal summary report to the Mobile District's Regulatory Branch and one copy of the disposal summary report to EPA Region 4 documenting compliance with all general and special conditions defined in this permit. The disposal summary report shall be sent within 90 days after completion of the disposal operations authorized by this permit. The disposal summary report shall include the following information:

1. The report shall indicate whether all general and special permit conditions were met. Any violations of the permit shall be explained in detail.

2. The disposal summary report shall include the following information: USACE permit number, actual start date and completion date of dredging and disposal operations, total cubic yards disposed at the Mobile ODMDS, locations of disposal events, and post

disposal bathymetric survey results (in hard and electronic formats).

III. PERMIT LIABILITY

A. The permittee and all contractors or other third parties who perform an activity authorized by this permit on behalf of the permittee shall be separately liable for a civil penalty for each violation of any term of this permit committed alone or in concert with the permittee or other parties. Liability shall be individual, rather than joint and several, and shall not be reduced in any fashion to reflect the liability assigned to and civil penalty assessed against the permittee or any other third party as defined in 33 U.S.C. Section 1415(a).

B. If the permittee or any contractor or other third party knowingly violates any term of this permit (either alone or in concert), the permittee, contractor or other party shall be individually liable for the criminal penalties set forth in 33 U.S.C. Section 1415(b).

Mobile SMMP
Appendix C

Generic Contract Specification Language for Use of the Mobile ODMDS

Appendix C: Generic Contract Specification Language for Use of the Mobile ODMDS

MPRSA section 102(c)(3) directs EPA in conjunction with the USACE to develop site management and monitoring plans for dredged material disposal sites and such plans are implemented through MPRSA permits issued by USACE or through Federal projects subject to the same criteria, evaluation factors, procedures and requirements as permits. EPA in conjunction with USACE developed the template language below for inclusion in USACE contracts or other project specifications for the transportation and disposal at the Mobile ODMDS, though the template language is intended to be include on a case-by-case basis. Neither the SMMP nor this Appendix impose the model requirements directly. Instead, the terms of any particular contract or other project specification document for the transportation and disposal of dredged material at the Mobile ODMDS would impose (or not) requirements specific to the project activity. The USACE is not obligated to impose any particular contract term based on the template language; the language is provided to facilitate USACE contract development and to provide notice to third parties. For any future Federal project, EPA's concurrence review would confirm that appropriate terms are included to assure adequate implementation of the SMMP.

SECTION 35 20 23.23

NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM
HOPPER DREDGE
X/X/20XX

PART 1 GENERAL

1.1 DESCRIPTION

The work under this contract requires use of the National Dredging Quality Management Program (DQM) to monitor the dredge's status at all times during the contract and manage data history.

This performance-based specification section identifies the minimum required output and precision and instrumentation requirements. The requirements may be satisfied

using equipment and technical procedures selected by the Contractor.

1.2 SUBMITTALS

Government approval is required for submittals with a “G” designation; submittals not having a “G” designation are for information only. When used, a designation following the “G” designation identifies the office responsible for review of the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00, “SUBMITTAL PROCEDURES”:

SD-01, Preconstruction Submittals

Dredge Plant Instrumentation Plan Revisions or Addendum; G, SAM-OP-J

SD-06, Test Reports

Data Appropriately Archived e-mail, section 3.2.10; G, XXX-XX-X *(enter local district)*

SD-07, Certificates

Letter of National Dredging Quality Management Program Certification; G, XXX-XX-X *(enter local district)*

1.3 PAYMENT

No separate payment shall be made for installation, operation and maintenance of the DQM certified system as specified herein for the duration of the dredging operations; all costs in connection therewith shall be considered a subsidiary obligation of the Contractor and covered under the contract unit prices for dredging in the bidding schedule.

1.4 NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM CERTIFICATION

The Contractor is required to have a current certification from the DQM for the hopper dredge instrumentation system to be used under this contract. Criteria for certification shall be based on the most recent specification posted on the DQM website (http://dqm.usace.army.mil/Specifications/Index.aspx). Compliance with these criteria shall be verified by annual on-site quality assurance (QA) checks conducted by DQM Support Center Data Acquisition and Analysis Team, and by periodic review of the transmitted data. DQM Certification is valid for one year from the date of the annual QA checks. Certification is contingent upon the system’s ability to continuously meet

the performance requirements as outlined in sections 3.3 and 3.5. If issues with data quality are not corrected within 48 hours, the system certification shall be revoked and additional QA checks by the Data Acquisition Team may be necessary.

Annual DQM Certification shall be based on:

- A series of QA checks as described in Section 3.4 “Compliance Quality Assurance Checks”
- Verification of data acquisition and transfer (Section 3.3)
- Review of the Dredge Plant Instrumentation Plan (DPIP) as described in Section 1.5

The dredging contractor shall have personnel who are familiar with the system instrumentation and who have the ability to recalibrate the sensors on site during the QA process. The dredging contractor shall coordinate pickup times and locations and provide transportation to and from any platform with a DQM system to team personnel in a timely manner. As a general rule, Data Acquisition and Analysis Team personnel will come with PPE consisting of hardhats, steel toe boots, and life jackets. If additional safety equipment is needed, such as eye protection, safety harnesses, work gloves or personal location beacons, these items shall be provided to the team while on site. It is the dredging contractor’s obligation to inform the QA team if the location designated for the QA checks has any site-specific safety concerns prior to their arrival on site.

The owner or operator of the dredge shall contact the DQM at DQM-AnnualQA@rpsgroup.com on an annual basis, or at least three weeks prior to certification expiration, to schedule QA checks for renewal. This notification is meant to make the Data Acquisition Team aware of a target date for the annual QA checks for the dredge. At least one week prior to the target date, the dredging contractor shall contact the Data Acquisition team and verbally coordinate a specific date and location. The contractor shall then follow-up this conversation with a written e-mail confirmation. The owner/operator shall coordinate the QA checks with all local authorities, including but not limited to, the local USACE contracting officer.

Re-certification is required for any yard work which produces modification to displacement (i.e. change in dredge lines, repositioning or repainting hull marks), modification to bin volume (change in bin dimensions or addition or subtraction of structure) or changes in sensor type or location; these changes shall be reported in the sensor log section of the DPIP. A system does not have to be transmitting data between jobs, however in order to retain its certification during this period, the system sensors or hardware should not be disconnected or removed from the dredge. If the system is powered down, calibration coefficients shall be retained.

1.5 DREDGE PLANT INSTRUMENTATION PLAN (DPIP)

The Contractor shall have a digital copy of the DPIP on file with the National DQM Support Center. The Contractor shall also maintain a copy of the DPIP on the dredge while working on site which is always easily accessible to government personnel. This document shall describe the sensors used, configuration of the system, how sensor data will be collected, how quality control on the data will be performed, and how sensors/data reporting equipment will be calibrated and repaired if they fail. A description of computed dredge specific data and how the sensor data will be transmitted to the DQM Database will also be included. The Contractor shall submit to the DQM Support Center any addendum or modifications made to the plan, subsequent to its original submission, prior to start of work.

The DPIP shall include the following as a minimum:
(DPIP must have table of contents in the following order and tabs separating sections)

Cover Page
- Dredge Name
- Date
- Photo of plant

Table of Contents

New page
- Dredge Contacts
- Dredging Company
  - Dredge Point of Contact on-site
  - Phone Number
  - e-mail address
- Dredge Monitoring System Provider
  - Dredge Monitoring System Point of Contact
  - Telephone Number
  - e-mail address

New page
- Table of dredge characteristics
  - Dimensions of dredge
  - Dimensions of hopper
  - Method of disposal
  - Capacity
  - Minimum and maximum digging depth
  - Minimum and maximum drafts and displacements
  - RPM and velocity range
  - ID of suction and discharge pipes

New page

Sensor data collection method

- Any averaging
- Route from sensors to DQM computer
- Internet connection type and provider

Sensor descriptions, locations and calibration methods

- Positioning system
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
  - Sensor location with referenced dimensions
- Dredge heading instrumentation
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
- Hull status
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
  - Sensor location with referenced dimensions
  - Calibration procedure
- Draft
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
  - Sensor location with referenced dimensions
  - Calibration procedure
- Ullage
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
  - Sensor location with referenced dimensions
  - Calibration procedure
- DragarmDrag arm depths
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
  - Sensor location with referenced dimensions
  - Calibration procedure
- Density
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
  - Sensor location with referenced dimensions including pipe diameter
  - Calibration procedure
- Velocity
  - Brand name, model and accuracy
  - Any calculation done external to the instrumentation
  - Sensor location with referenced dimensions including pipe

diameter
- o Calibration procedure
- Pump RPM
  - o Brand name, model and accuracy
  - o Any calculation done external to the instrumentation
  - o Sensor location with referenced dimensions
  - o Calibration procedure
- Pump out (if instrumented)
  - o Brand name, model and accuracy
  - o Any calculation done external to the instrumentation
  - o Sensor location with referenced dimensions

Calibration procedure

Calculated Parameters
- Displacement:

Method used by Contractor to calculate displacement
Tables listing (fresh and saltwater) displacement as a function of draft in feet and tenths of feet
- Hopper Volume:

Method used by Contractor to calculate hopper volume
Table listing the hopper volume as a function of hopper ullage in feet and tenths of feet
Description of datum for ullage sounding measurements
- Drag Head Position
  - o Method used by Contractor to calculate drag head position
- Load number
  - o Method used to increment load number

Quality Control
Description of Contractors quality control process
Log of sensor calibrations, repairs and modifications

Appendices
Hydrostatic curves
Certified Displacement and Volume Tables
Legible Dimensioned Drawings of the Dredge with units in feet

A typical plan of the dredge showing:
Overall dredge and hopper dimensions
Locations of required sensors referenced to uniform longitudinal and transverse reference points
Distance between the draft sensors
Distance between the ullage sensors
Dimensions of drag arm

A profile view of the dredge showing:
Overall dredge and hopper dimensions
Distance between draft sensors and draft marks
Locations of required sensors referenced to uniform vertical and longitudinal reference points
Typical vessel cross section through the hopper
Sensor manuals and certificates of calibration

Any changes to the computation methods shall be approved by the National Dredging Quality Management Program Support Center prior to their implementation.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

REQUIREMENTS FOR REPORTED DATA

The Contractor shall provide, operate and maintain all hardware and software to meet these specifications. The Contractor shall be responsible for replacement, repair and calibration of sensors and other necessary data acquisition equipment needed to supply the required data.

Repairs shall be completed within 48 hours of any sensor failure. Upon completion of a repair, replacement, installation, modification or calibration the Contractor shall notify the Contracting Office's Representative (COR). The COR may request re-calibration of sensors or other hardware components at any time during the contract as deemed necessary.

The Contractor shall keep a log of sensor repair, replacement, installation, modification and calibration in the dredge's onboard copy of the DPIP. The log shall contain a three-year history of sensor maintenance to include: the time of sensor failures (and subsequent repairs), the time and results of sensor calibrations, the time of sensor replacements, and the time that backup sensor systems are initiated to provide required data. It shall also contain the name of the person responsible for the sensor work.

Sensors installed shall be capable of collecting parameters within specified accuracies and resolutions indicated in the following subsections.

Reported sensor values for ullage, draft and drag head depth should represent a weighted average with the highest and lowest values not included in the calculated average for the given interval. This information should be documented in the DPIP sections that say, "Calculations done external to the instrumentation".

3.1.1 Date and Time

The date and time shall be reported to the nearest second and referenced to UTC time based on a 24-hour format; mm/dd/yyyy hh:mm:ss. The reported time shall be the time reported by the GPS in the NMEA string.

3.1.2 Load Number

A load number shall document the end of a disposal event. Load numbering will begin at number 1 at the start of the contract and will be incremented by 1 at the completion of each disposal event or emptying of the hopper. Whenever possible, the load number shall be calculated off the sensors aboard the dredge and shall be a mathematically repeatable routine. Efforts shall be made to include logic that avoids false load number increments while also not allowing the routine to miss any disposal event. If manual incrementing of the load number is in place, extra attention shall be paid to this value in the contractor's quality control process (section 3.5).

3.1.3 Horizontal Positioning

All locations shall be obtained using a Positioning System operating with a minimum accuracy level of 1 to 3 meters horizontal Circular Error Probable (CEP). Positions shall be reported as Latitude/Longitude WGS 84 in decimal degrees. West Longitude and South Latitude values are reported as negative.

3.1.3.1 Vessel Horizontal Positioning

Geographic coordinates of the vessel as indicated by the location of the GPS antenna.

3.1.3.2 Draghead Horizontal Positioning

Geographic coordinates of the heel on centerline of the draghead(s). Any offset calculations from the GPS antenna should be described in the DPIP.

3.1.4 Hull status

Open/closed status of the hopper dredge, corresponding to the split/non-split condition of a split hull hopper dredge shall be monitored. For dredges with hopper doors, the status of a single door that is the first opened during normal disposal operations may be monitored. An "OPEN" value shall indicate the hopper door is open, or in the case of split hull dredges, the hull is split. A "CLOSED" value indicates the hopper doors are closed, or in the case of split hull dredges, the hull is not split. *For this contract, hull*

status shall register closed prior to leaving the disposal area.

3.1.5 Dredge Course

Dredge course-over-ground (COG) shall be provided using industry standard equipment. The Contractor shall provide dredge course over ground to the nearest whole degree with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.6 Dredge Speed

Dredge speed-over-ground shall be provided in knots using industry standard equipment with a minimum accuracy of 1 knot and resolution to the nearest 0.1 knot.

3.1.7 Dredge Heading

Dredge heading shall be provided using industry standard equipment. The dredge heading shall be accurate to within 5 degrees and reported to the nearest whole degree, with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.8 Tide

Tide data shall be obtained using appropriate equipment to give the water level with an accuracy of ± 0.1 feet and a resolution of 0.01 feet. Tide values above project datum described in the dredging specification shall be entered with a positive sign, those below with a negative sign.

3.1.9 Draft

All reported draft measurements shall be in feet, tenths and hundredths with an accuracy of ± 0.1 foot relative to observed physical draft readings. The measurements shall be reported at a resolution of two decimal places (hundredths of a foot). Reported forward draft value shall be equal to the sum of the visual forward port and starboard draft mark readings divided by 2. Reported aft draft value shall be equal to the sum of the visual aft port and starboard draft mark readings divided by 2. Forward draft, aft draft and average draft will be reported. Sensors shall be placed at an optimum location on the vessel to be reflective of observed physical draft mark readings at any trim or list. Minimum accuracies are conditional to relatively calm water. The sensor value reported shall be an average of at least 10 samples per event, remove at least one maximum value and one minimum value, and average the minimum 8 remaining values. When average draft is calculated for the purpose of determining displacement, significant

digits for average draft shall be maintained such that if forward draft was 0.15 and aft draft was 0.1 then the average draft would be 0.125.

3.1.10 Hopper Ullage Sounding

All reported ullage soundings shall be in feet, tenths and hundredths with an accuracy of ± 0.1 foot with respect to the combing and be representative of the forward and aft extents of the hopper as close to centerline as is possible. The measurements shall be reported at a resolution of two decimal places (hundredths of a foot). Forward ullage and aft ullage soundings will be reported. Sensors should be mounted so as to avoid discharge flume turbulence, foam and any structure that could produce sidelobe errors. If sensors must be offset from centerline of the hopper they should be offset to opposite sides of the vessel. If more than one fore or one aft sensor is used, they shall be placed near the corners of the hopper and the average value of the fore sensors and the average value of the aft sensors shall be reported The sensor value reported shall be an average of at least 10 samples per event, remove at least one maximum value and one minimum value, and average the minimum 8 remaining values. When average ullage is calculated for the purpose of determining hopper volume, significant digits for average ullage shall be maintained such that if forward ullage was 0.15 and aft ullage was 0.1 then the average ullage would be 0.125.

3.1.11 Hopper Volume

Hopper volume shall be reported in cubic yards, based on the most accurate method available for the dredge. The minimum standard of accuracy for hopper volume is interpolation from the certified hopper volume table, based on the average fore and aft ullage soundings.

Displacement

Dredge displacement shall be reported in long tons, based on the most accurate method available for the dredge. The minimum standard of accuracy for displacement is interpolation from the displacement table, based on the average draft. For this contract the density of water used to calculate displacement shall be_____ kg/cubic meter and shall be used for an additional interpolation between the fresh and salt water tables. *The water density used is project/location specific. 1000 kg/m^3 (1g/cm^3)- fresh water 1027 kg/m^3 - 1030 kg/m^3 (1.027g/cm^3 - 1.03g/cm^3)- salt water*

Empty Displacement

Empty displacement shall be reported in long tons, and shall be the lightship value of the dredge, or the weight of the dredge with no material in the hopper, adjusted for fuel and water consumption.

3.1.14 Draghead depths

Draghead depths shall be reported with an accuracy of ± 0.5 feet and a resolution to the nearest 0.1 feet as measured from the surface of the water with no tidal adjustments. Minimum accuracies are conditional to relatively calm water. The sensor value reported shall be an average of at least 10 samples per event, remove at least one maximum value and one minimum value, and average the minimum 8 remaining values.

3.1.15 Slurry Densities of Dragarms

A density metering device, calibrated according to the manufacturer's specifications, shall be used to record the slurry density of each dragarm to the nearest 0.0001 g/cc with an accuracy of ± 0.001g/cc. If the manufacture does not specify a frequency of re-calibration, calibration shall be conducted prior to commencement of work.

3.1.16 Slurry Velocities of Dragarms

A flow metering device, calibrated according to the manufacturer's specifications, shall be used to record the slurry velocity of each dragarm to the nearest 0.0001 fps with an accuracy of ± 0.001 fps. If the manufacture does not specify a frequency of re-calibration, calibration shall be conducted prior to commencement of work. The slurry velocity shall be measured in the same pipeline inside diameter as that used for the slurry density measurement.

3.1.17 Pump RPM

Pump RPM shall be measured with the highest level of accuracy that is standard on the vessel operational displays, either at the bridge, at the drag tenders' controls, or in the engine room. Dredges with multiple pumps per side shall report RPM for the pump that best describes the dredging process (typically the outboard pump). If requirements of section 3.1.19 are determined based on pump RPM, then that value shall be reported.

3.1.18 Sea Suction Valve for Dragarm

If sea suction can be taken to bypass suction through the draghead, the sea suction

location and valve status will be reported. The status of the valve will change from "closed" to "open" when the valve starts to open and will register "closed" when the valve is fully closed. When applicable, the state of the latch will be reported as "true" or "false". The sea suction location shall be reported in a standard non-changing name string of no more than 20 characters. These field values will always occur in the XML string as a set. The DQM system can only accommodate up to 4 unique sea suction locations. Suggested options for the naming convention can be found in the Example dataset in section 3.2.9, "Data Format".

3.1.19 Pumpout

When the hopper dredge is being pumped out, a "True" value shall be reported; when it is not, a "False" value shall be reported. The only permissible values are "TRUE" and "FALSE".

NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM SYSTEM REQUIREMENTS

Contractors DQM system shall be capable of collecting, displaying, and transmitting information to the DQM Database. The applicable parameters from section 3.1 shall be recorded as events locally and continually transmitted to the DQM Database anytime an internet connection is available. The Dredge shall be equipped with a DQM computer system consisting of a computer, monitor, keyboard, mouse, data modem, UPS, and network hub. The computer system shall be a standalone system, exclusive to the DQM monitoring system, and will have USACE DQM software installed on it. If a hardware problem occurs, or if a part of the system is physically damaged, then the Contractor shall be responsible for repairing it within 48 hours of determination of the condition.

3.2.1 Computer Requirements

The Contractor shall provide a dedicated on-board computer for use by the Dredging Quality Management system. This computer shall run the USACE's software and receive data from the Contractor's data reporting interface. This computer must meet or exceed the following performance specifications:

CPU:	Intel or AMD processor with a (non-overclocked) clock speed of at least 3 gigahertz (GHz)
Hard drive:	250 gigabytes (GB); internal
RAM:	2 gigabytes

Ethernet adapter:	10 or 100 megabit (Mbit) internal network card with an RJ-45 connector
Video adapter:	Must support resolution of 1024x768 at 16-bit color depth
Keyboard:	Standard 101-key
Mouse:	Standard 2-button mouse
Monitor:	17-inch viewable display; must support 1024x768 resolution at 16-bit color depth
CD-ROM drive:	16X read speed/8X write speed
Ports:	2 free Serial ports with standard 9-pin connectors; 1 free USB port
Other hardware:	Category 5 (Cat-5) cable with standard RJ-45 plugs connecting the network adapter to the network hub; one spare cable

Contractor shall install a fully licensed copy of Windows 7 Professional Operating System on the computer specified above. Contractor shall also install any necessary manufacturer-provided drivers for the installed hardware.

This computer shall be located and oriented to allow data entry and data viewing, as well as to provide access to data ports for connection of external hardware. Location and orientation shall be subject to Contracting Officer's Representative's approval.

3.2.2 Software

The DQM computer's primary function is to transmit data to the DQM shore side database. No other software which conflicts with this function shall be installed on this computer. The DQM computer will have the USACE provided DQMOBS (Dredge Quality Management Onboard Software) installed on it by DQM personnel along with USACE selected software for remote support and management.

3.2.3 Network Hub

The DQM computer shall communicate via IEEE 802.3 Ethernet and the TCP/IP networking protocol. The Contractor shall provide a network hub to allow the temporary addition of the Contracting Officer's representative's portable computer to the computer

network. The hub shall provide a minimum of four RJ-45 ports that support Category 5 (Cat-5) cable with standard RJ-45 plugs connecting the network adapter to the network hub; one spare cable shall be available on site to plug into the network hub.

3.2.4 UPS

The Contractor shall supply an Uninterruptible Power Supply (UPS) for the computer and networking equipment. The UPS shall provide backup power at 1kVA for a minimum of 10 minutes. The UPS shall interface to the DQM computer to communicate UPS status. The Contractor shall ensure that sufficient power outlets are available to run all specified equipment.

3.2.5 Internet Access

The Contractor shall maintain an internet connection capable of transmitting real time data to the DQM Server and supporting remote access, as well as enough additional band width to clear historically queued data when a connection is re-obtained. The telemetry system shall be always available and have connectivity in contract area. If connectivity is lost, unsent data shall be queued and transmitted upon restoration of connectivity. The Contractor shall acquire and install all necessary hardware and software to make the internet connection available for data transmission to the DQM web service. The hardware and software must be configured to allow the USACE DQM center remote access to this computer. Coordination between the dredging company's IT and DQM support may be required in order to configure remote access though any security, firewall, router, and telemetry systems. Telemetry systems must be capable of meeting these minimum reporting requirements in all operating conditions.

3.2.6 Data Routing Requirements

Onboard sensors shall continually monitor dredge conditions, operations and efficiency and route this information into the shipboard dredge-specific system computer (DSS) to assist in guiding dredge operations. Portions of this Contractor-collected information shall be routed to the DQM computer on a real-time basis. Standard sensor data shall be sent to the DQM computer via an RS-232 9600- or 19200-baud serial interface. The serial interface shall be configured as 8 bits no parity and no flow control.

3.2.7 Data Reporting Frequency

Data shall be logged as a series of events. Each event will consist of a data set containing dredge information as per section 3.1. Each set of measurements (i.e. time, position, etc…) will be considered an event. All required information in section 3.1 that

are not an averaged variable (i.e. draft and ullage) shall be collected within one second of the reported time. A data string for an event shall be sent to the DQM computer every 6 to 12 seconds and this interval shall remain constant throughout the contract; data strings shall never be transmitted more frequently than once per every 5 seconds. Any averaged variable must be collected and computed within this sampling interval.

3.2.8 Data Format

Data shall be reported as an eXtensible Markup Language (W3C standard XML 1.0) document as indicated below. Line breaks and spaces are added for readability, but the carriage return, line feed character combination is only added to delineate records (HOPPER _DREDGING_DATA tag) for actual data transmission.

```
<?xml version="1.0"?>
<HOPPER_DREDGING_DATA version = “2.0”>
   <DREDGE_NAME> string32 </DREDGE_NAME>
     <HOPPER_DATA_RECORD>
        <DATE_TIME> time date string </DATE_TIME>
        <CONTRACT_NUMBER> string32</CONTRACT_NUMBER>
             <LOAD_NUMBER> integer string </LOAD_NUMBER>
        <VESSEL_X coord_type = “LL”> floating point string </VESSEL_X>
        <VESSEL_Y coord_type = “LL”> floating point string </VESSEL_Y>
     <PORT_DRAG_X coord_type = “LL”> floating point string</PORT_DRAG_X>
     <PORT_DRAG_Y coord_type = “LL”> floating point string</PORT_DRAG_Y>
     <STBD_DRAG_X coord_type = “LL”> floating point string</STBD_DRAG_X>
        <STBD_DRAG_Y coord_type = “LL”> floating point string</STBD_DRAG_Y>
        <HULL_STATUS> OPEN/CLOSED string </HULL_STATUS>
        <VESSEL_COURSE> floating point string <VESSEL_COURSE >
        <VESSEL_SPEED> floating point string </VESSEL_SPEED>
        <VESSEL_HEADING> floating point string </VESSEL_HEADING>
        <TIDE> floating point string </TIDE>
        <DRAFT_FORE> floating point string </DRAFT_FORE>
        <DRAFT_AFT> floating point string </DRAFT_AFT>
        <ULLAGE_FORE> floating point string </ULLAGE_FORE>
        <ULLAGE_AFT> floating point string </ULLAGE_AFT>
        <HOPPER_VOLUME> floating point string </HOPPER_VOLUME>
        <DISPLACEMENT> floating point string </DISPLACEMENT>
             <EMPTY_DISPLACEMENT> floating point string </EMPTY_DISPLACEMENT>
        <DRAGHEAD_DEPTH_PORT> floating point string </DRAGHEAD_DEPTH_PORT>
        <DRAGHEAD_DEPTH_STBD> floating point string </DRAGHEAD_DEPTH_STBD>
        <PORT_DENSITY> floating point string </PORT_DENSITY>
        <STBD_DENSITY> floating point string </STBD_DENSITY>
        <PORT_VELOCITY> floating point string </PORT_VELOCITY>
        <STBD_VELOCITY> floating point string </STBD_VELOCITY>
        <PUMP_RPM_PORT> floating point string </PUMP_RPM_PORT>
        <PUMP_RPM_STBD> floating point string </PUMP_RPM_STBD>
<VALVE_1_LOCATION> string32</VALVE_1_LOCATION>
<VALVE_1_STATUS>open/closed</VALVE_1_STATUS>
```

<VALVE_1_LATCHED>**true/false**</VALVE_1_LATCHED>
<VALVE_2_LOCATION> **string32**</VALVE_2_LOCATION>
<VALVE_2_STATUS>**open/closed**</VALVE_2_STATUS>
<VALVE_2_LATCHED>**true/false**</VALVE_2_LATCHED>
<VALVE_3_LOCATION> **string32**</VALVE_3_LOCATION>
<VALVE_3_STATUS>**open/closed**</VALVE_3_STATUS>
<VALVE_3_LATCHED>**true/false**</VALVE_3_LATCHED>
<VALVE_4_LOCATION> **string32**</VALVE_4_LOCATION>
<VALVE_4_STATUS>**open/closed**</VALVE_4_STATUS>
<VALVE_4_LATCHED>**true/false**</VALVE_4_LATCHED>
<PUMP_OUT_ON> **true/false/unknown string** </PUMP_OUT_ON>
</HOPPER_DATA_RECORD>

</HOPPER_DREDGING_DATA>
Carriage return – ASCII value 13
Line Feed – ASCII value 10

Example

```
<?xml version="1.0"?>
<HOPPER_DREDGING_DATA version = “2.0”>
  <DREDGE_NAME>Essayons</DREDGE_NAME>
    <HOPPER_DATA_RECORD>
        <DATE_TIME>04/11/2002 13:12:05</DATE_TIME>
              <CONTRACT_NUMBER>GDSNWP-11-G-
0001</CONTRACT_NUMBER>
        <LOAD_NUMBER>102</LOAD_NUMBER>
        <VESSEL_X coord_type = "LL">-80.123333</VESSEL_X>
        <VESSEL_Y coord_type = "LL">10.123345</VESSEL_Y>
        <PORT_DRAG_X coord_type = "LL">-80.1233371</PORT_DRAG_X >
        <PORT_DRAG_Y coord_type = "LL">10.12335</PORT_DRAG_Y >
        <STBD_DRAG_X coord_type = "LL">-80.123339</STBD_DRAG_X >
        <STBD_DRAG_Y coord_type = "LL">10.123347</STBD_DRAG_Y >
        <HULL_STATUS>CLOSED</HULL_STATUS>
        <VESSEL_COURSE>258</VESSEL_COURSE>
        <VESSEL_SPEED>3.4</VESSEL_SPEED>
        <VESSEL_HEADING>302</VESSEL_HEADING>
        <TIDE>-0.1</TIDE>
        <DRAFT_FORE>10.05</DRAFT_FORE>
        <DRAFT_AFT>15.13</DRAFT_AFT>
        <ULLAGE_FORE>10.11</ULLAGE_FORE>
        <ULLAGE_AFT>10.22</ULLAGE_AFT>
        <HOPPER_VOLUME>2555.2</HOPPER_VOLUME>
        <DISPLACEMENT>4444.1</DISPLACEMENT>
        <EMPTY_DISPLACEMENT>2345.0</EMPTY_DISPLACEMENT>
```

```
        <DRAGHEAD_DEPTH_PORT>55.10</DRAGHEAD_DEPTH_PORT>
        <DRAGHEAD_DEPTH_STBD>53.21</DRAGHEAD_DEPTH_STBD
        <PORT_DENSITY>1.02</PORT_DENSITY>
        <STBD_DENSITY>1.03</STBD_DENSITY>
        <PORT_VELOCITY>22.1</PORT_VELOCITY>
        <STBD_VELOCITY>23.3</STBD_VELOCITY>
<PUMP_RPM_PORT> 55 </PUMP_RPM_PORT>                <PUMP_RPM_STBD>
54 </PUMP_RPM_STBD>
<VALVE_1_LOCATION> Starboard Dragarm </VALVE_1_LOCATION>
<VALVE_1_STATUS>open</VALVE_1_STATUS>
<VALVE_1_LATCHED>true</VALVE_1_LATCHED>
<VALVE_2_LOCATION> Port Dragarm</VALVE_2_LOCATION>
<VALVE_2_STATUS> closed</VALVE_2_STATUS>
<VALVE_2_LATCHED>false</VALVE_2_LATCHED>
<VALVE_3_LOCATION>Port Sea Chest</VALVE_3_LOCATION>
<VALVE_3_STATUS> closed</VALVE_3_STATUS>
<VALVE_3_LATCHED>false</VALVE_3_LATCHED>
<VALVE_4_LOCATION>Starboard Sea Chest</VALVE_4_LOCATION>
<VALVE_4_STATUS>open </VALVE_4_STATUS>
<VALVE_4_LATCHED> false</VALVE_4_LATCHED>
        <PUMP_OUT_ON>false</PUMP_OUT_ON>
                </HOPPER_DATA_RECORD>
</HOPPER_DREDGING_DATA>
<cr>
<lf>
<DREDGE_NAME>Essayons</DREDGE_NAME>
   <HOPPER_DATA_RECORD>
        <DATE_TIME>04/11/2002 13:12:10</DATE_TIME>
                <CONTRACT_NUMBER>GDSNWP-11-G-
0001</CONTRACT_NUMBER>
        <LOAD_NUMBER>102</LOAD_NUMBER>
        <VESSEL_X coord_type = "LL">-80.123334</VESSEL_X>
        <VESSEL_Y coord_type = "LL">10.123346</VESSEL_Y>
        <PORT_DRAG_X coord_type = "LL">-80.1233372</PORT_DRAG_X >
        <PORT_DRAG_Y coord_type = "LL">10.12336</PORT_DRAG_Y >
        <STBD_DRAG_X coord_type = "LL">-80.123340</STBD_DRAG_X >
        <STBD_DRAG_Y coord_type = "LL">10.123348</STBD_DRAG_Y >
        <HULL_STATUS>CLOSED</HULL_STATUS>
        <VESSEL_COURSE>259</VESSEL_COURSE>
        <VESSEL_SPEED>3.5</VESSEL_SPEED>
        <VESSEL_HEADING>300</VESSEL_HEADING>
        <TIDE>-0.1</TIDE>
```

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<STBD_VELOCITY>23.3</STBD_VELOCITY>
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<VALVE_3_LATCHED>false</VALVE_3_LATCHED>
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</HOPPER_DREDGING_DATA>
<cr>
<lf>

3.2.9 Data Reporting

The system shall transmit correctly formatted event data XML strings to the DQM Database continuously from mobilization until the last USACE post-dredging survey has been accepted. If the internet connection (section 3.2.6) is non-operable, manual backups from the dredge computer of the XML data string which would have been transmitted to the DQM computer over the serial connection shall be performed for each day the device is inoperable and submitted to the DQM center within 48 hours. This

submission does not replace the requirement of correcting the issue affecting automatic transmission of data. In the event of data transfer, transmission, or hardware failure; a manually recorded disposal log shall be maintained. It shall consist of a series of events. These events are: start of dredging, end of dredging, pre-disposal and post-disposal events. Each event shall include time stamp (GMT), position (Latitude and Longitude WGS84), draft, ullage, volume and displacement. Disposal logs shall be submitted daily to the Contracting Officer's Representative during the time when the system is not operational.

3.2.10 Contractor Data Backup

The Contractor shall maintain an archive of all data sent to the DQM computer during the dredging contract. The COR may require, at no increase in the contract price, that the Contractor provide a copy of these data covering specified time periods. The data shall be provided in the XML format which would have been transmitted to the DQM computer. There shall be no line breaks between the parameters; each record string shall be on separate line. Naming convention for the files shall be <dredgename>_<StartYYYYMMddhhmmss>_<EndYYYYMMddhhmmss>.txt . Data submission shall be via storage medium acceptable to the COR.

At the end of the dredging contact, the Contractor shall contact the National DQM Support Center prior to discarding the data to ensure it has been appropriately archived. The Contractor shall record in a separate section at the end of the dredge's on-board copy of the DPIP the following information:

a. Person who made the call
b. The date of the call
c. The DQM representative who gave permission to discard

The same day of the phone call and prior to discarding the data, the Contractor shall submit a "Data Appropriately Archived e-mail" to the local districts Contracting Officer's Representative with the above information, and Cc: the DQM Support Center representative providing permission. In addition to the above information, also include in the e-mail:

d. Project name and contract number
e. Dredge start and end dates
f. Name of hopper dredge

3.3 PERFORMANCE REQUIREMENTS

The Contractor's DQM system shall be fully operational at the start of dredging operations and fully certified prior to moving dredge material on the contract (see Section 1.4, National Dredging Quality Management Program Certification). To meet contract requirements for operability, in addition to certification, the Contractor's system shall provide a data string with values for all parameters while operating, as described within the specifications. Additionally, all hardware shall be compliant with hardware requirements (Section 3.2). Quality data strings are considered to be those providing values for all parameters reported when operating according to the specification. Repairs necessary to restore data return compliance shall be made within 48 hours. If the Contractor fails to report required data within the specified time window for dredge measurements (see Sections 3.2.7 "Data Measurement Frequency" and 3.2.9 "Data Reporting"); the system will be declared not fully operational, and the Contractor will be assessed liquidated damages equivalent to the additional oversight hours that would be required for USACE personnel to be on site from the first full day after the system is deemed not operational through to the time when the system is returned to fully operational status. For this contract, the liquidated damages shall be ***$_____*** per day. *(A spread sheet of how to calculate this liquidated damage amount is available at the DQM support center; this is NOT just the DQM day rate)*

3.4 COMPLIANCE QUALITY ASSURANCE CHECKS

Quality assurance checks are required prior to the commencement of dredging, and at the discretion of a COR periodically throughout the duration of the contract. Detailed instructions for performing these checks and a spreadsheet for recording the results are available at http://dqm.usace.army.mil/Certifications/Index.aspx . Incoming data shall be periodically reviewed to assure compliance with performance requirements outlined in section 3.3. In addition to making sure the data received meets the reporting requirements outlined in the sub sections under section 3.1, a more detailed description of some of the quality assurance methods are outlined below.

For annual instrumentation checks and compliance monitoring, the DQM Data Acquisition Team personnel attempt to be as flexible as possible in performing their checks so as not to delay work; however, in order to expedite matters as much as possible, it is necessary that they receive the support and cooperation of the local district and dredging contractor. The dredging contractor shall coordinate pickup times and locations and provide transportation to and from any platform with a DQM certified system in a timely manner. Calibrations to the sensors should already be performed before DQM personnel arrive on site.

3.4.1 Draft & Displacement Check

The COR shall periodically verify the accuracy of the fore and aft system reported draft values by comparing the vessel hull draft marks to the corresponding sensor readings indicated on the DQM screen. The vessel's hull draft reading shall be viewed from a contractor supplied auxiliary vessel circling the dredge. The COR shall review the difference between averaged drafts recorded by the instruments and those estimated from the draft marks to ensure that the system is operating within the acceptable accuracy of approximately $\pm$ 0.1 ft. in calm seas conditions. Reported draft values will be verified light, loaded, and at other intervals at the discretion of the COR. If sensors responsible for collecting draft values are not located on centerline, verification may be required under different trim and list conditions. If values are outside the acceptable range, the Contractor shall re-calibrate or repair system components as necessary. This check may be performed separately or as a part of the Water Load Test. For each system provided fore and aft draft, an average draft value will be calculated during the draft check, and the corresponding displacement will be verified longhand using the supplied draft/displacement tables.

3.4.2 Draghead Depth Check

The COR may require periodic calibration checks of the reported draghead depth using manual means such as tape measures or sounding lines to directly measure draghead depth. The Contractor shall furnish a steel tape, chain, or wire with clearly visible flags/tags placed at 1-foot increments within the operational range of the dragarm. These devices shall be capable of measuring the depth below the water surface to the lowest fixed point of each draghead (often the heel) with enough length to measure 5 feet more than the maximum project depth. Pressure sensors may be used to verify calibration of the draghead sensors only in areas where current flow past the vessel/dragarm cannot be reduced sufficiently to allow safe handling of manual measuring devices. Pressure sensors used for this purpose shall be vented pressure gages and shall be subjected to an annual manufacturer's calibration. Prior to the dragarm depth check, the sensor shall be checked at a known depth, and may be required to be zeroed at this point according to manufacturer's specifications. Care shall be taken not to kink the cable or restrict the vent during deployment.

The COR shall review the draghead depth data to ensure that the system is operating within acceptable accuracy and may direct the Contractor to re-calibrate or repair system components as necessary. If a bubbler type system is used, weekly calibration of the draghead sensors is recommended, as they are sensitive to environmental conditions.

3.4.3 Ullage Sounding & Volume Check

The COR shall periodically check the reported hopper ullage sounding using a tape measure or other distance measuring device. The Contractor shall furnish a clearly readable weighted tape, marked in tenths of a foot, capable of measuring throughout the full range of hopper depth. The weight for this tape shall be a 6-inch diameter disk weighing between 2 and 3 pounds. The COR shall review the hopper dredge ullage sounding data to ensure that the system is operating within acceptable accuracy (0.1 feet). Reported ullage soundings will be verified light, loaded, and at other intervals at the COR's discretion. Measurements can be taken from multiple locations along the combing or from sensor location at the COR's discretion. If values are outside the acceptable range, the Contractor shall re-calibrate or repair system components as necessary. This check may be performed separately or as a part of the Water Load Test. For each sensor provided fore and aft ullage sounding value, an average ullage sounding value will be calculated during the ullage sounding check, and the corresponding volume will be verified longhand using the supplied hopper volume tables.

3.4.4 Position Check

During the QA checks the reported position of the dredge shall be verified by comparison with readings from a handheld GPS receiver. Throughout the contract, the COR shall periodically take readings from an independent GPS to verify locations.

Water Load Test

Water Tests shall consist of pumping the hopper dredge out to its lowest level and then filling it to capacity with water, taking ullage and draft measurements at both levels to determine hopper dredge volume and displacement. The objective of the water test is to validate the dredge's reported displacement and hopper volumes. If the results of the water test indicate that the system is not operating within acceptable accuracy, the Contractor shall correct the deficiencies causing the error, and repeat the water test until the results are acceptable.

The Contractor shall provide a handheld refractometer with automatic temperature compensation to measure the hopper dredge water specific gravity during water tests. The refractometer shall be capable of measuring the hopper dredge water specific gravity with a resolution of 0.001 and minimum accuracy of $\pm$ 0.001. The Contractor shall also provide a water-sampling device to retrieve a sufficient volume of water from various depths in the hopper dredge to accurately determine specific gravity with the refractometer, and a sufficient volume of deionized water for calibration of the device.

3.5 CONTRACTOR QUALITY CONTROL

Dredging contractor shall designate a quality control systems manager (QCSM), who shall develop and maintain daily procedures to ensure the contractor's quality control (CQC) of the DQM system. These methods shall include a procedure by which data being collected is checked against known values, telemetry is verified to be functioning, and the DQM computer is verified to be on and the DQMOBS is running. The Contractor Quality Control Plan which describes these methods and procedures shall be included in the DPIP as per section 1.5 Table of Contents, item 27. This is the only section which shall be submitted to the local district and is a required submittal prior to the start of the contract. CQC Reports may be required at the discretion of the QAR daily. Annotations shall be made in the CQC Report documenting all actions taken on each day of work including all deficiencies found and corrective actions taken.

3.6 LIST OF ITEMS TO BE PROVIDED BY THE CONTRACTOR

DPIP — Sec 1.5 Dredge Plant Instrumentation Plan

DQM SYSTEM

- Sensor Instrumentation — Sec. 3.1 Specifications for Reported Data
- DQM Computer — Sec. 3.2 National Dredging Quality Management System Requirements

DREDGE DATA

- Event documentation — Sec. 3.2.9 Data Reporting
- Dredge Data Backups — Sec 3.2.10 Contractor Data Backups

QA EQUIPMENT ON DREDGE

- Ullage tape — Sec. 3.4.3 Ullage Sounding & Volume Check
- Dragarm depth chain — Sec. 3.4.2 Draghead Depth Check
- Refractometer –measuring in grams/cubic centimeter with a resolution of 0.001 and a minimum accuracy of ± 0.001 with calibration water — Sec. 3.4.5 Water Load Test
- Water sampling device — Sec. 3.4.5 Water Load Test