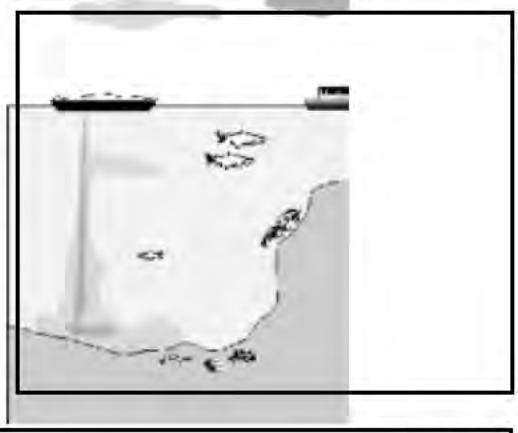
November 2013

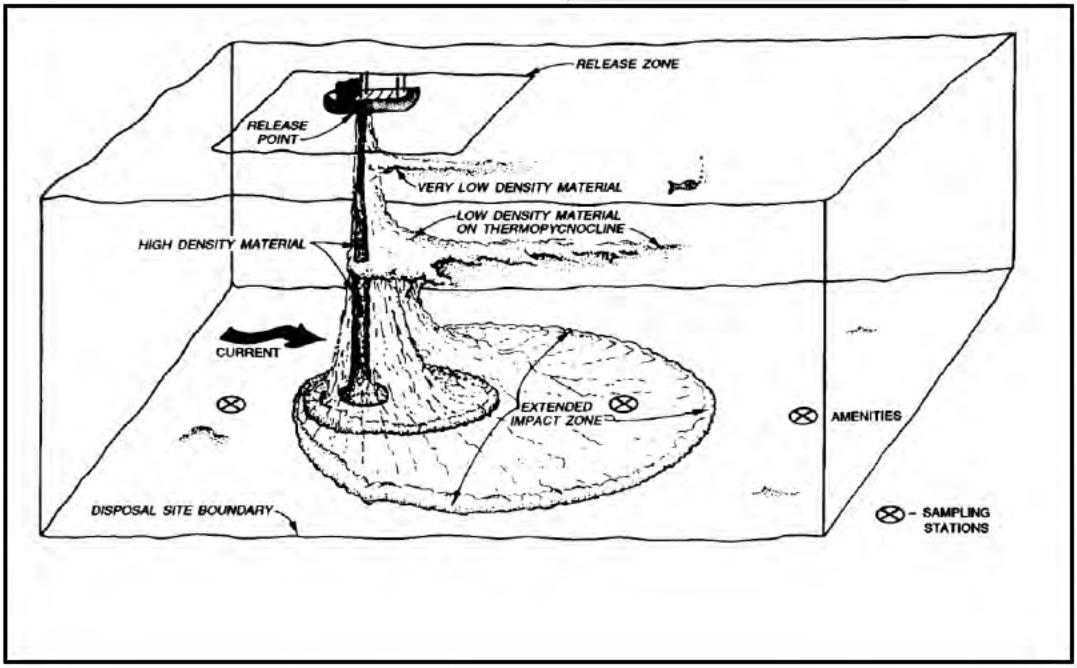
EPA

Savannah
OCEAN DREDGED MATERIAL DISPOSAL SITE

U.S. Army Corps of Engineers

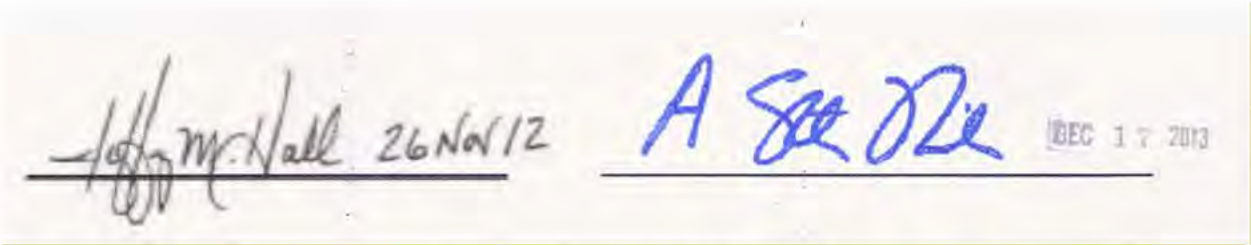
SITE MANAGEMENT AND MONITORING PLAN





This page left blank intentionally.

The following Site Management and Monitoring Plan (SMMP) for the Savannah Ocean Dredged Material Disposal Site (ODMDS) has been developed and agreed to pursuant to the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), as amended by the Water Resources Development Act Amendments of 1992 (WRDA 92), for the management and monitoring of ocean disposal activities, as resources allow, by the US Environmental Protection Agency (EPA) and the US Army Corps of Engineers (USACE).



Jeffrey M. Hall Date
Colonel, District Commander
US Army Corps of Engineers,
Savannah District
Savannah, Georgia

A. Stanley Meiburg Date
Acting Regional Administrator
US Environmental Protection Agency
Region 4
Atlanta, Georgia

This plan is effective from the date of last signature for a period not to exceed 10 years. The plan shall be reviewed and revised more frequently if site use and conditions indicate a need for revision.

SAVANNAH ODMDS

SITE MANAGEMENT AND MONITORING PLAN

TABLE OF CONTENTS

LIST OF FIGURES

Figure No.

LIST OF TABLES

Table No.

APPENDICES

SAVANNAH ODMDS

SITE MANAGEMENT AND MONITORING PLAN

1.0 INTRODUCTION

It is the responsibility of the US Environmental Protection Agency (EPA) and the US Army Corps of Engineers (USACE) under the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 to manage and monitor each of the Ocean Dredged Material Disposal Sites (ODMDS) designated by the EPA pursuant to Section 102 of MPRSA. The goal of this management is to ensure that ocean dredged material disposal activities will not unreasonably degrade the marine environment or endanger human health or economic potential.

On 3 August 1987, EPA designated the Savannah ODMDS as an approved dumping site (40 CFR 228.15(h)(6)). This SMMP specifically addresses the disposal of dredged material into the Savannah ODMDS. The plan includes past monitoring results and complies with provisions of the Water Resources Development Act of 1992 (WRDA 92) and the Memorandum of Agreement (MOA) between EPA and USACE (EPA and USACE, 2007).

This ODMDS SMMP supersedes the SMMP included in the Savannah Harbor Long Term Management Strategy (LTMS), August 1996 (Record of Decision signed February 1997) and has been prepared in accordance with the *Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites* (EPA and USACE 1996). That document provides a framework for the development of SMMPs required by the MPRSA and WRDA 92. The SMMP may be modified if it is determined that such changes are warranted as a result of information obtained during the monitoring process. Pursuant to Section 102(c)(3) of the MPRSA, this SMMP will be reviewed and revised as needed or every ten years, whichever time period is shorter.

Upon execution of this SMMP, the provisions herein shall be requirements for all future dredged material disposal activities at the Savannah site. All Section 103 (MPRSA) ocean disposal permits or evaluations shall be conditioned as necessary to assure consistency with the SMMP.

1.1 SMMP Team. We view the following agencies and their respective representatives as an interagency team whose comments will be considered during the final preparation of this document:

- USACE, Savannah District
- Georgia Department of Transportation
- Environmental Protection Agency, Region 4
- Georgia Department of Natural Resources

Other agencies, such as the National Marine Fisheries Service (NMFS), the US Fish and Wildlife Service (USFWS), the Bureau of Ocean Energy Management (BOEM), and the Bureau of Safety and Environmental Enforcement (BSEE) will be asked to participate where appropriate. EPA and USACE, Savannah District will evaluate 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. mud), the location of placement within the ODMDS, and the quantity of material.

Specific responsibilities of EPA and the USACE, Savannah District are:

EPA: EPA is responsible for designating/de-designating MPRSA Section 102 ODMDS, evaluating environmental effects of disposal of dredged material at these sites, and reviewing and concurring on dredged material suitability determinations.

USACE: USACE is responsible for evaluating dredged material suitability, issuing MPRSA Section 103 permits, regulating site use, and developing and implementing disposal monitoring programs.

2.0 SITE MANAGEMENT

ODMDS management involves a broad range of activities including the regulation of the schedule of use, the quantity, and the physical/chemical characteristics of dredged materials disposed of at the site. It also involves establishing disposal controls and conditions and requirements to avoid and minimize potential impacts to the marine environment. Finally, ODMDS management involves monitoring the site environs to verify that unanticipated or significant adverse effects are not occurring from past or continued use of the site and that permit conditions are met.

Section 228.3(a) of the Ocean Dumping Regulations (40 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 designation studies; and recommending modifications in site use and/or designation.

The plan 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 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 Savannah ODMDS (Figure 1) encompasses an area of 4.26 square nautical miles (NM) (approximately 2.0 by 2.1 NM) and is located about 3.7 NM east of the coastline and about 0.25 NM south of the navigation channel. Water depths surrounding the ODMDS vary between approximately 28 and 42 feet MLW. The site is roughly 3,500 acres. The corner coordinates are as follows:

ODMDS Geographic Coordinates

NAD 27		NAD83	
31º55'53"N	80º44'20"W	31º55.8964'N	80º44.3231'W
31º57'55"N	80º46'48"W	31º57.9297'N	80º46.7898'W
31º57'55"N	80º44'20"W	31º57.9297'N	80º44.3231'W
31º55'53"N	80º46'48"W	31º55.8964'N	80º46.7898'W

State Plane Coordinates (NAD83 in feet)

705457.31N	1099158.36E
717620.18N	1086244.89E
717786.02N	1098995.35E
705291.58N	1086403.23E

The Savannah ODMDS has received an annual average of approximately 1 million cubic yards (cy) of dredge material from the Savannah Harbor Navigation Project (1976-2012). In the past decade the ODMDS was not used in 2006 and 2010 through 2011. Grain size analyses show percent gravel ranges from 0.0 to 13.0%, sand ranges from 70.2 to 98.2%, and silt/clay ranges from 0.7 to 28.5%. Sediment physical, chemical, toxicological, and bioaccumulation conditions at the ODMDS and of the dredge material to be placed in the ODMDS are described in the *Final Report, Savannah Harbor Navigation Project, Savannah, Georgia* (Section 103 Evaluation Report, ANAMAR Environmental Consulting, Inc., May 2010) and *Savannah ODMDS – Status and Trends, May 2006* (U.S. EPA). (Note: channel extension beyond station -60+000B is proposed as part of the Savannah Harbor Expansion Project, still in review as of August 2012.)

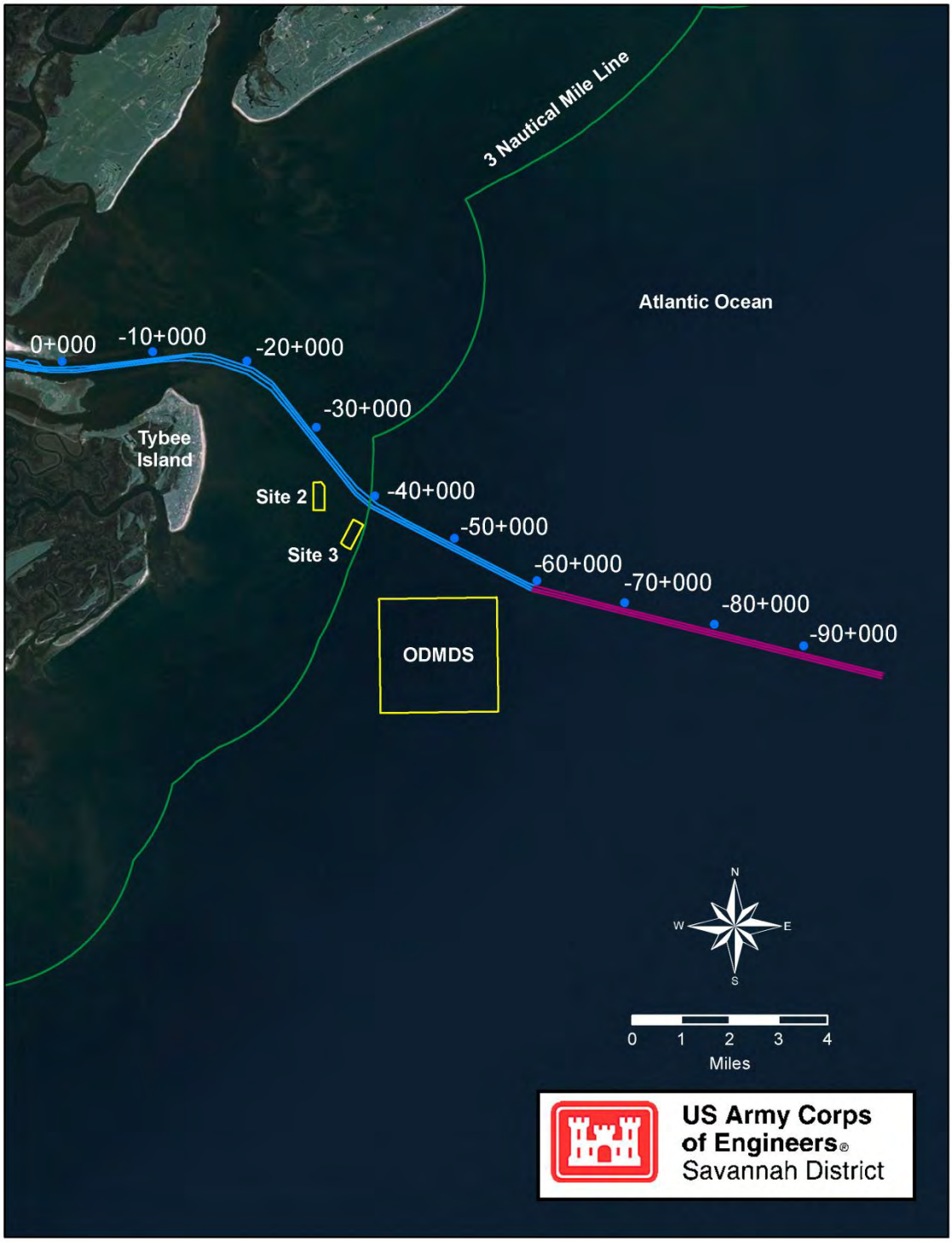


Figure 1. Savannah ODMDS location map and operational boundaries.

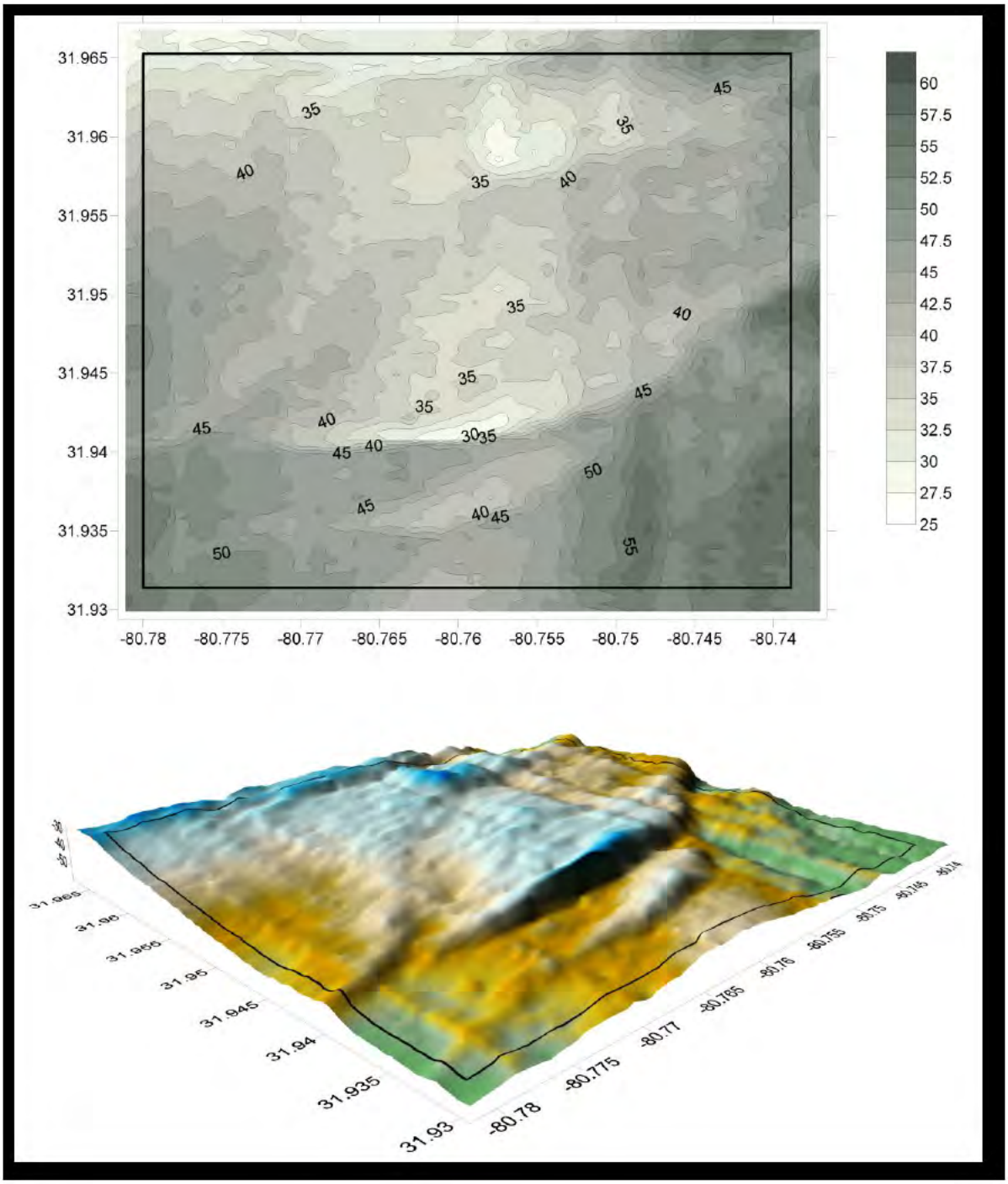


Figure 2. Savannah ODMDS Bathymetry (feet)

2.2 Management Objectives. There are two primary objectives in the management of the Savannah ODMDS:

- Protect the marine environment, living resources, and human health and welfare; and
- Document disposal activities at the ODMDS and provide information which is useful in managing the dredged material disposal activities.

The objective of the SMMP is to provide guidelines in making management decisions necessary to fulfill mandated responsibilities to protect the marine environment as discussed previously. An appropriate SMMP narrows the uncertainty of unforeseeable effects and reduces the level of risk associated with the activity to foster a sound and informed decision. The following sections provide the framework for meeting these objectives.

2.3 Dredged Material Volumes. It is intended that the Savannah ODMDS will be used for the disposal of material dredged (both maintenance and construction or new work material) from the Savannah entrance channel of the Savannah Harbor Navigation Project. The primary user of the Savannah ODMDS is the USACE for Civil Works. The site is designated for disposal of dredged material from the Savannah Harbor area.

Between 1976 and 2012, approximately 30 million cy of dredged material has been disposed in the Savannah ODMDS. Disposal volumes since 1976 are listed in Table 1.

Based on a 2012 Savannah District bathymetric survey, Savannah District estimates the capacity of the site to be approximately 50,000,000 cy. Additional fate and transport modeling will be conducted to determine a more accurate site capacity and appropriate long-term disposal management plan.

Table 1. Yearly Record of Dredged Material Disposal in the Savannah ODMDS

Year	Cubic Yards (cy)
1976	1,545,800
1977	1,915,500
1978	2,964,200
1979	239,500
1980	578,600
1981	1,411,600
1983	2,232,700
1985	2,305,900
1989	537,500
1991	1,105,000
1992	554,700
1993	2,202,800

Year	Cubic Yards (cy)
1994	2,239,800
1995	486,100
1997	583,200
1998	1,273,700
1999	533,200
2000	2,611,900
2001	1,117,900
2002	466,800
2003	635,200
2004	620,600
2005	888,100
2007	997,100
2008	119,200
2012	351,347

Future volumes and rates of disposal from the Savannah Harbor area are expected to be approximately 1 million cy per year. However, future actions including deepening and/or widening the Federal navigation channel into Savannah Harbor may affect long-term life expectancy of the site and require consideration of alternative disposal sites (e.g., designation of a new Savannah ODMDS).

Although the 1987 Final Savannah ODMDS Site Designation found the Savannah ODMDS to be a dispersive site, monitoring records over the last seven years indicate that up to 93% of the material placed in the site remains there. The dispersiveness of the site, and consequently the ultimate capacity of the ODMDS, is subject to unpredictable variability. Due to the unknowns regarding dispersiveness and capacity, a capacity analysis will be conducted by the site user prior to disposal of significant quantities of material from any new work project. Significant quantities are considered those substantially exceeding 1-2 million cy and will be determined on a case by case basis through consultation between Savannah District and EPA. The capacity analysis should utilize USACE developed models including MDFATE, MPFATE, STFATE and/or LTFATE to simulate the disposal of the new work project and to determine an appropriate disposal strategy (i.e. release zone) to prevent excessive mounding (see Section 2.7) and impacts outside of the ODMDS as defined by deposition of 5 cm or more.

New Work Analyses

In lieu of an adequate capacity analysis that yields a manageable disposal plan, for all new work projects exceeding 1,000,000 cy, a conservative buffer may be established and bathymetry surveys will be required for every 1 million cy of material disposal. Disposal will cease should bathymetry exceed the 30 foot contour anywhere within the disposal zone or adjacent 500 foot buffer until management actions can be instituted and agreed upon by EPA and the USACE. The default buffer for the disposal zone will be 2,750

feet from the disposal site boundaries (buffer may be modified through consultation with Savannah District and EPA after completion of the Savannah Harbor Expansion Project capacity analyses). Additionally, post disposal monitoring utilizing sediment profile imaging of the disposal zone and surrounding area (total area to be surveyed will be determined by EPA) will be conducted within 1 year of completion of disposal.

2.4 Dredged Material Suitability. Two basic sources of sediment are expected to be disposed at the site -- new work material and maintenance dredged sediment. These materials consist of mixtures of silts, clays, and sands in varying percentages. Sediments dredged for navigation in Savannah Harbor are derived from mainly ocean and estuarine sources. Shoals occur where specific physical factors promote deposition or movement of sediments. These factors may vary spatially and temporally.

The placement of any significant quantities of beach-compatible sand from future projects will be determined on a project-by-project basis. Utilization of any significant quantities of beach-compatible dredged sediment for beach nourishment is strongly encouraged and supported by EPA and the USACE. The USACE manages its dredged material under its Regional Sediment Management (RSM) initiative which encourages beneficial use of excavated sediment. As a result, the USACE evaluates the whole coastal system when managing dredged material placement rather than focusing on an individual project. Placement of non-beach quality sand should be planned to allow the material to be placed so that it will be within or accessible to the sand-sharing system, to the maximum extent practical, and following the provisions of the Clean Water Act.

The suitability of dredged material for ocean disposal must be verified by the USACE and agreed to by EPA prior to disposal. Verification will be valid for three years from the date of last verification. Verification will involve: 1) a case-specific evaluation against the exclusion criteria set out in 40 CFR 227; 2) a determination of the necessity for testing, including bioassay (toxicity and bioaccumulation) testing for non-excluded material based on the potential for contamination of the sediment since last tested; and 3) testing (when deemed necessary) and determining that the non-excluded, tested material is suitable for ocean disposal.

Documentation of verification will be completed prior to use of the site. Documentation will be in the form of a MPRSA Section 103 Evaluation. The evaluation, and any testing, will follow the procedures outlined in the 1991 *EPA/Corps Dredged Material Testing Manual* and the *2008 Southeast Regional Implementation Manual (SERIM)*. Water Quality Compliance determinations should be made using the STFATE (ADDAMS) model and the input parameters provided in Appendix A or approved modifications. Only material determined to be suitable through the verification process by the USACE and EPA will be placed at the Savannah 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 biota activity. As monitoring results are compiled, should any such restriction appear necessary, disposal activities will be scheduled so as to avoid adverse impacts. The USACE currently

restricts hopper dredging to the period of 15 December through 31 March to protect sea turtles. This window may be adjusted in the future through coordination with NMFS and the USACE South Atlantic Division (SAD). The USACE also requires monitoring for sea turtles, Shortnose and Atlantic sturgeon, and North Atlantic right whales (NARW). Additionally, if new information indicates that endangered or threatened species are being adversely impacted, restrictions may be imposed.

2.6 Disposal Techniques. No specific disposal technique is required for this site. However, to protect NARW, disposal vessel speed (either hopper dredge or tug and scow) and operation will be restricted in accordance with the most recent USACE South Atlantic Division Endangered Species Act Section 7 Consultation Regional Biological Opinion for Dredging of Channels and Borrow Areas in the Southeastern United States. In addition, 50 CFR §224.103(c)(1)(i) prohibits any person, including the disposal vessel's captain, from approaching within 500 yards of a right whale by vessel, aircraft, or any other means.

2.7 Disposal Location. In accordance with 40 CFR §227.28, disposal shall occur no less than 100 meters (330 feet) inside the site boundaries. The USACE will prevent mounded dredged material from becoming a navigation hazard. Dredged material shall be placed so depths will be no less than -25 feet MLLW (i.e., a clearance will be maintained 25 feet above the bottom) where a depth of -30 feet is the warning threshold for monitoring and management purposes. If -30 feet MLLW is reached, then management decisions will be made on future sediment placement to avoid exceeding the -25 foot MLLW threshold. In order to maximize capacity and monitoring efforts, disposal shall be within a specific area within the ODMDS identified by the USACE in consultation with EPA, Region 4. To implement this provision, the USACE will coordinate with EPA after the most recent post-disposal project bathymetric surveys are available to identify whether any placement restrictions should be considered for the next sediment disposal event. Depths at the time of disposal will be monitored to detect if adjustments of disposal methods are needed to prevent unacceptable mounding (i.e. navigational hazards). The physical removal or leveling of material above -25 feet MLLW are potential management alternatives should mound heights occur that are greater than those elevations. Disposal shall be limited within the disposal release zone and shall be completed (doors closed) prior to departing the ODMDS.

The capacity of the ODMDS can be preserved whenever suitable sediments can be deposited in an approved nearshore placement area, rather than in the ODMDS. Placement of sediments in the nearshore environment may occur at locations identified in Figure 1. Placement of material in nearshore feeder berms may occur in the future provided the sediments are determined suitable for nearshore placement and the placement is determined to be practicable. Submerged nearshore sediment placement mounds may allow wave action to move the sediments towards the mudflat, marsh and/or upland area along the shore, aiding in the stabilization of this estuarine environment from erosion. The mounds may also provide protection from storm events. Placement of suitable sediment at a nearshore site would provide beneficial uses of dredged sediment

and support the goals of the Georgia Coastal Management Program and the Rivers and Harbor Development Act (O.C.G.A. 52-9-2).

2.8 Permit Process. All disposal of dredged material in the ocean, with the exception of Federal Civil Works projects, requires an ocean dumping permit issued by the USACE pursuant to Section 103 of the MPRSA. A summary of the permitting process can be found at:
http://www.epa.gov/region4/water/oceans/Dredged_Material_Permit_Process.html.

2.9 Permit and Contract Conditions. The disposal monitoring and post-disposal monitoring requirements described under Section 3, Site Monitoring, will be included as permit conditions on all MPRSA Section 103 permits and will be incorporated in the contract language for all Federal projects. Cross references to the management and monitoring requirements are listed in Table 2.

Table 2. Cross References to Permit and Contract Conditions for Site Monitoring

Condition	SMMP Reference
Dredged Material Suitability and Term of Verification	Page 8, ¶ 2.4
Disposal within Appropriate Zones	Page 9, ¶ 2.7
Disposal Monitoring and Recording of Disposal Locations	Page 13, ¶ 3.2
Post Bathymetric Surveys within 60 days of Project Completion	Page 14, ¶ 3.3
Reporting Requirements: Daily & Monthly Operations Reports and Disposal Summary Reports within 90 Days of Project Completion	Page 17, ¶ 3.5

2.10 Information Management of Dredged Material Placement Activities. As discussed in the following sections, a substantial amount of diverse data regarding use of the Savannah ODMDS and the effects of disposal is required from many sources. If this information is readily available and in a useable format, it can be used to answer many questions typically asked about a disposal site:

- What is being dredged?
- How much is being dredged?
- Where did the dredged material come from?
- Where was the dredged material placed?
- Was dredged material dredged and placed correctly?
- What will happen to the environment at the disposal sites?

In an attempt to streamline data sharing, EPA Region 4 and USACE South Atlantic Division have agreed on an eXtensible Markup Language (XML) standard for sharing of disposal monitoring data (see also Section 3.5). Additional standards will continue to be investigated for sharing of other disposal site related information (e.g., environmental monitoring data, testing data, etc.).

The USACE has an Ocean Disposal Database maintained by the Engineering Research and Development Center (ERDC). This database provides the quantities disposed of at the ODMDS along with the chemical, physical, and biological information, and whether the project is from a civil works project or private entity.

3.0 SITE MONITORING

The implementing regulations of the MPRSA require that a monitoring program be included in the SMMP (40 CFR 228.3). Site monitoring is conducted to preserve the environmental integrity of a disposal site and the areas surrounding the site, and to verify compliance with the site designation criteria, 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. A monitoring program should detect changes to the environment caused by disposal activities and assist in determining regulatory and permit compliance. The intent of the monitoring program is to provide the following:

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

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. Disposal has occurred at the present site since the 1960s and predates any data gathering at the site. Therefore, no true baseline information has or can be collected. The results of investigations presented in EPA's 1987 Site Designation EIS and subsequent surveys listed in Table 3 serve as the main body of data for the monitoring of the impacts associated with the use of the Savannah ODMDS.

Table 3. Surveys and Studies Conducted at the Savannah ODMDS

Survey/Study Title	Conducted By	Date	Purpose	Results
Ecological Evaluation of Discharged Dredged Material (Section 103)	Interstate Electronics Corporation (IEC)	Mar & Dec 1979	Collect and evaluate environmental data to assess effects of dredged material disposal on marine environs	No significant differences in trace metal concentration, water or sediment chemistry, macrophaunal trophic composition were observed at stations within and outside the ODMDS
Section 103 sediment evaluation	Skidaway Institute of Oceanography	1992	To determine suitability of O&M dredged sediment for ocean placement	Sediment was suitable for placement in ODMDS
Section 103 sediment evaluation	Applied Technology and Management, Inc	January 1998	To determine suitability of new work bar channel sediment for ocean placement	Sediment was suitable for placement in the ODMDS
Savannah Harbor Operation and Maintenance (O&M) Sediment Evaluation	ENSR, International	August 2003	To determine suitability of inner harbor and bar channel O&M sediment for ocean placement	Sediment was suitable for placement in the ODMDS
Status and Trends Report	EPA, Region 4	May 2006	Assess status of benthos and water column within and adjacent to ODMDS	No significant differences found
Sidescan Sonar Survey	EPA, region 4	April 2009	Evaluate site for natural resources or obstructions	No significant hard bottoms present on the seafloor within the ODMDS that should be avoided by future disposal activities
Savannah Harbor Navigation Project Section 103 Sediment Evaluation	ANAMAR	July 2010	To determine suitability of bar channel O&M sediment for ocean placement	Sediment was suitable for placement in the ODMDS

Table 3. Surveys and Studies Conducted at the Savannah ODMDS (continued)

Survey/Study Title	Conducted By	Date	Purpose	Results
Savannah Harbor Expansion Project Section 103 Sediment Evaluation	EA Engineering, Science, and Technology, Inc.	2012	To determine suitability of new work sediment for ocean placement	Sediment was suitable for placement in the ODMDS except for two reaches which may be disposed of in a confined disposal area
Wave and Current Survey	USACE Engineering Research and Development Center (ERDC)	April 2013	Calibration/Verification of numerical wave and hydrodynamic models	Currents are predominately northwest and east southeast and rarely exceed 1 foot per secont
Bathymetric Survey	USACE	Before and After Event	Monitor bathymetry changes	A natural shallow feature exists in the southern portion of the ODMDS. Mounding is occurring in the northeast portion of the ODMDS. The deepest portions of the ODMDS remain to the south.
Disposal Monitoring	USACE	During each Event	Compliance	Disposal has been occurring within the OMDDS boundaries

3.2 <u>Disposal Monitoring</u>. For all disposal activities, an electronic tracking system (ETS) must be used. The ETS will provide surveillance of the transportation and disposal of dredged material. The ETS will be maintained and operated to continuously track in real-time 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 4 minutes during travel to and from the ODMDS and every twelve seconds or every 30 feet of travel, while the hull status is open within the ODMDS. The following information shall be electronically recorded for each disposal cycle:

- Load Number
- Disposal Vessel Name and Type (e.g. scow)
- Estimated Volume of each Load
- Description of Material Disposed
- Source of Dredged Material
- Date, Time and Location at Initiation and Completion of Disposal Event

It is expected that disposal monitoring will be conducted using the National Dredging Quality Management (DQM) Program for Civil Works projects [see http://dqm.usace.army.mil/Specifications/Index.aspx], although other systems may be deemed acceptable upon mutual agreement between the USACE and EPA. Disposal monitoring and ETS data are expected to be reported to EPA Region 4 on a weekly basis using the eXtensible Markup Language (XML) specification and protocol per Section 3.5. EPA Region 4 and the USACE Savannah District shall be notified within 24 hours if disposal occurs outside of the ODMDS or specified disposal zone or if excessive leakage occurs.

A concurrence, or permit, for disposal of dredged material in the Savannah ODMDS does not authorize excessive leakage, overflow, or spill out of barges, dump scows, or hopper dredges of water and excavated material while en route to the ODMDS release zone. Failure to repair leaks or change the method of operation which is resulting in the leakage, overflow, or spillage will result in suspension of dredging operations and require prompt repair or change of operation to prevent leakage, overflow, or spillage as prerequisite to the resumption of dredging. Excessive leakage may be indicated by average loss of draft during transit from the dredging area to the disposal area (forward draft loss plus aft draft loss divided by 2) in excess of 1.5 feet. Any exceedances of the 1.5 foot criteria will be reported immediately to Savannah District (912-652-6086) for evaluation.

3.3 Post Discharge Monitoring. The USACE, or other site user, will conduct a bathymetric survey within 60 days after disposal project completion; however, surveys are not required for projects less than 50,000 cy. Surveys will conform to the minimum performance standards for USACE Hydrographic Surveys for "Other General Surveys & Studies" as described in the USACE Engineering Manual, EM1110-2-1003, *Hydrographic Surveying*, dated January 1, 2002 [http://publications.usace.army.mil/publications/eng-manuals/EM_1110-2-1003_pfl/toc.htm]. The number and length of transects required will be sufficient to encompass the ODMDS and a 500-foot wide area around the site. In coordination with EPA, the Savannah District may reduce the survey area on a case-by-case basis if disposal zones are specified and adhered to. The surveys will be taken along lines spaced at 500-foot intervals or less. The minimum performance standards from Table 3-1 in *Hydrographic Surveying* shall be followed. Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing either a microwave line of site system or differential global positioning system. The vertical datum will be referenced to prescribed NOAA MLLW datum, 1983-2001 epoch, as shown on the Tidal Benchmark sheet for Fort Pulaski, GA (Station ID: 8670870). MLLW is 4.05 feet below NGVD 1929. The horizontal datum will be Georgia State Plane (zone 1001 GA East, NAD 1983). Bathymetric surveys will be used to monitor the disposal mound to ensure a navigation hazard is not produced, to assist in verification of material placement, to monitor bathymetric changes and trends, to aid in environmental effects monitoring, and to ensure that the site capacity is not exceeded, i.e., the mound does not exceed the site boundaries. Copies of these surveys shall be provided to EPA, Region 4 when completed.

The interagency team will meet to review the results of these surveys and determine whether more information is needed. This need will be based on observance of any anomalies or potential adverse impacts associated with a specific event. If the results of the bathymetric surveys do not indicate any anomalies or adverse impacts, no additional monitoring will be required for the disposal event.

3.4 Material Tracking and Disposal Effects Monitoring. Surveys can be used to address possible changes in bathymetric, sedimentological, chemical, and biological aspects of the ODMDS and surrounding areas as a result of the disposal of dredged material at the sites.

3.4.1 Summary of Results of Past Monitoring Surveys. The surveys/studies listed in Table 3 have indicated that the ODMDS is a dispersive site for fine-grained material. However, monitoring records over the last seven years indicate otherwise.

3.4.2 Future Monitoring Surveys. Based on the type and volume of material disposed, various monitoring surveys can be used to examine if, and the direction, the disposed dredged material is moving, and the environmental effects to the site and adjacent areas caused by the material.

At the current time, no nearby biological resources have been identified that are of concern for potential impact and, at the time of designation, no known hard-bottom areas were within close proximity to ODMDS boundaries. Changes in sediment composition may 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. Reassessment of the site will be undertaken in accordance with 40 CFR 228.13 approximately every 10 years. This reassessment will include benthic macro infaunal, sediment chemistry and water quality measurements.

Future surveys as outlined in Table 4 will focus on determining the rate and direction of disposed dredged material dispersal and the capacity of the ODMDS. The management plan may require revision based on the outcome of any monitoring program.

Table 4. Savannah ODMDS 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 or placement - Restrict disposal volumes
Benthic Effects Monitoring & Trend Assessment (40 CFR 228.13)	Sediment Profile Imaging	EPA	Determine aerial influence of dredged material	Every 10 years or following major disposal event (refer to Section 2.3)	Communities under the influence of dredged material outside the site have significant differences in diversity/richness/ biomass from those not under dredged material influence after one-year recovery period	Discontinue monitoring unless disposal quantities, type of material or frequency of use significantl y changes	- Limit quantity of dredged material to prevent impacts outside boundaries - Create berms to retard dredged material movement - Cease site use
	Benthic Survey		Determine impact of dredged material on benthic community				
Short & Long-Term Fate of Disposed Dredged Material	- Modeling - Erosional Analysis	USACE	Determine dispersivene ss of site and aerial extent of impact	Prior to any major project (refer to Section 2.3)	Aerial extent of impact reaches resources of concern and /or increases over time	Continue to use site without restrictions	- Restrict disposal volumes - Create berms to retard dredged material transport - Cease site use/designate new site
Site Capacity	Information from Long-Term Fate	USACE/ EPA/Site Users	Determine dispersivene ss of site and long and short term capacity	Prior to any major project (refer to Section 2.3)	- New work and/or maintenance volumes exceed estimated capacity	Continue to use site without restrictions	- Enlarge site or designate new site
Ensure Safe Navigation Depth	Bathymetry	Site User	Determine height of mound and any excessive mounding	Post disposal for projects greater than 50,000 cy	Mound height > -30 feet MLLW	Continue monitoring	- Modify disposal method or placement - Restrict disposal volumes
					Mound height > -25 feet MLLW	Continue monitoring	- Halt disposal - Physically level material

Table 4. Savannah ODMDS Monitoring Strategies and Thresholds for Action (continued)

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
Compliance	Disposal Site User Records	Site User	- Ensure management requirements are being met - To assist in site monitoring	Daily during the project	Disposal records required by SMMP are not submitted or are incomplete	Continue monitoring	Restrict site user until requirements are met
					Review of records indicated a dump occurred outside ODMDS boundaries		- Notify EPA, Region 4/USACE, and investigate why egregious dump(s) occurred - EPA may take appropriate enforcement action
					Review of records indicated a dump occurred outside of ODMDS target area		Direct placement to occur as specified

3.5 <u>Reporting and Data Formatting.</u> Disposal monitoring data are expected to be provided to EPA Region 4 electronically on a weekly basis. Data shall be provided per the EPA Region 4 XML format (USEPA, Region 4, 2007) and delivered as an attachment to an email to DisposalData.R4@epa.gov. The XML format is available from EPA Region 4.

Disposal summary reports shall be provided to EPA within 90 days after project completion. These reports should include: dates of disposal; dredging project; volume disposed, number of loads completed, type of material disposed; 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 should be accompanied by the bathymetry survey results (paper plot and X, Y, Z ASCII data file), track plots for each disposal trip, a scatter plot of all dump locations, and a summary table of the information required by Section 3.2. If all data are provided in the required XML format, track plots, scatter plots and summary tables will not be necessary.

The user will be required to prepare and submit to the USACE daily reports of operations and a monthly report of operations for each month or partial month's work. The user is also required to notify the USACE and the EPA within 24 hours (or next business day) if

a violation of the permit and/or contract conditions occur during disposal operations. In the case of large new work projects where the material is expected to consist of stiff clays, it is recommended that mid-project bathymetric surveys be conducted of the disposal area to ensure that mounding limits are not being exceeded.

4.0 ANTICIPATED SITE USE

It is anticipated that there will be a need for use of the Savannah ODMDS for many years. The site will be used to dispose of approximately 1 million cy per year of O&M material. This projection is based on 1964-2012 dredging records, currently available dredged material disposal options, and the USACE planning documents. This volume may be less with use of nearshore feeder berms.

5.0 MODIFICATION OF THE SAVANNAH ODMDS SMMP

If the results of the monitoring surveys or valid reports from other sources indicate that continued use of the ODMDS would lead to unacceptable effects, the ODMDS management will be modified to mitigate the effects. The SMMP will be reviewed and updated at least every 10 years or if site use changes significantly. For example, the SMMP will be reviewed if the quantity or type of dredged material placed at the site changes significantly or if conditions at the site indicate a need for revision. The plan should be updated in conjunction with activities authorizing use of the site.

6.0 IMPLEMENTATION OF THE SAVANNAH ODMDS SMMP

This plan is effective from the date of signature for a period not to exceed 10 years.

The plan shall be reviewed and revised more frequently if site use and conditions at the sites indicate a need for revision. The EPA and the USACE shall share responsibility for implementation of the SMMP. Site users may be required to undertake monitoring activities as a condition of their permit. The USACE will be responsible for implementation of the SMMP for Federal maintenance projects.

7.0 REFERENCES

Anamar, 2010. Savannah Harbor Navigation Project Section 103 Report, Prepared for the Savannah District USACE under contract W91278-08-D-0053 by ANAMAR Environmental Consulting, Inc. Final June 2010.

Evans Hamilton, 2004. Data Report for Field Measurement Program in Support of Investigation of Dredged Sediment Movement and Fate at the Entrance to Savannah Harbor, Georgia. Draft V1.0 March 16, 2004, Prepared for United States Army Corps of

Engineers Engineering Research and Development Center by Evans Hamilton Inc., Charleston, South Carolina 29412, under Contract No. DACW39-99-D-008, Delivery Order No. 33

Fredette, Thomas J., Nelson, David A., Clausner, James E., and Anders, Fred J. 1990. *Guidelines for Physical and Biological Monitoring of Aquatic Dredged Material Disposal Sites*, Technical Report D-90-12, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Pequegnat, Willis E., Gallaway, Benny J., and Wright, Thomas D., 1990. *Revised Procedural Guide for Designation Surveys of Ocean Dredged Material Disposal Sites*, Technical Report D-90-8, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

US Army Corps of Engineers (USACE). 2002. *Hydrographic Surveying*. Engineering Manual 1110-2-1003, Department of the Army, Washington D.C.

US Environmental Protection Agency, 2007. *Savannah ODMDS - Status and Trends, December 2007***.** US Environmental Protection Agency, Region 4, Water Management Division, Wetlands, Coastal & Nonpoint Source Branch, Coastal Section, SNAFC, 61 Forsyth St. SW, Atlanta, GA 30303.

US Environmental Protection Agency, Region 4, 2007. Dredged Material Ocean Disposal Verification System - Specifications for Data Submittal, revised October 30, 2007. Prepared by Wetlands and Marine Regulatory Section.

US Environmental Protection Agency and US Army Corps of Engineers, 1991. *Evaluation of Dredged Material Proposed for Ocean Disposal (Testing Manual)*, February 1991. Prepared by Environmental Protection Agency Office of Marine and Estuarine Protection and Department of Army United States Army Corps of Engineers under EPA Contract No. 68-C8-0105.

US Environmental Protection Agency and US Army Corps of Engineers, 1996. *Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites*, February 1996. Prepared by Environmental Protection Agency Office of Water and Department of Army United States Army Corps of Engineers.

US Environmental Protection Agency Region 4 and US Army Corps of Engineers South Atlantic Division, 2007. *Memorandum of Understanding Between US EPA Region 4 and the USACE South Atlantic Division on Ocean Dredged Material Disposal,* March 2007.

US Environmental Protection Agency, Region 4 and US Army Corps of EngineersSouthAtlantic Division, 2008. *Southeast Regional Implementation Manual (SERIM)Requirements and Procedures for Evaluation of the Ocean Disposal of Dredged Materialin Southeastern U.S. Atlantic and Gulf Coastal Waters*, August 2008.

APPENDIX A

WATER COLUMN EVALUATIONS
NUMERICAL MODEL (STFATE) INPUT PARAMETERS

This page left blank intentionally.

Water Column Evaluations
Numerical Model (STFATE) Input Parameters
Savannah ODMDS

SITE DESCRIPTION

Parameter	Value	Units
Number of Grid Points (left to right)	48	
Number of Grid Points (top to bottom)	48	
Spacing Between Grid Points (left to right)	500	ft
Spacing Between Grid Points (top to bottom)	500	ft
Constant Water Depth	37	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[2]	4	
Ambient Density at Depth = 0 ft	1.0216	g/cc
Ambient Density at Depth = 13 ft	1.0216	g/cc
Ambient Density at Depth = 23 ft	1.0227	g/cc
Ambient Density at Depth = 37 ft	1.0227	g/cc

AMBIENT VELOCITY DATA

Parameter	Value	Units
Water Depth	37	ft
Logarithmic Depth Averaged Profile[3]	2 Point	
Depth at Velocity Profile	37	ft
X-Direction Velocity	0.30	ft/sec
Z-Direction Velocity	0.63	ft/sec

DISPOSAL OPERATION DATA

Parameter	Value	Units
Location of Disposal Point from Top of Grid	9,375	ft
Location of Disposal Point from Left Edge of Grid	9,375	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	3,299	ft
Location of the Upper Left Corner of the Disposal Site - Distance from Left Edge	2,995	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Top Edge	15,451	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Left Edge	15,755	ft
Duration of Simulation	14,400	sec
Long Term Time Step	600	sec

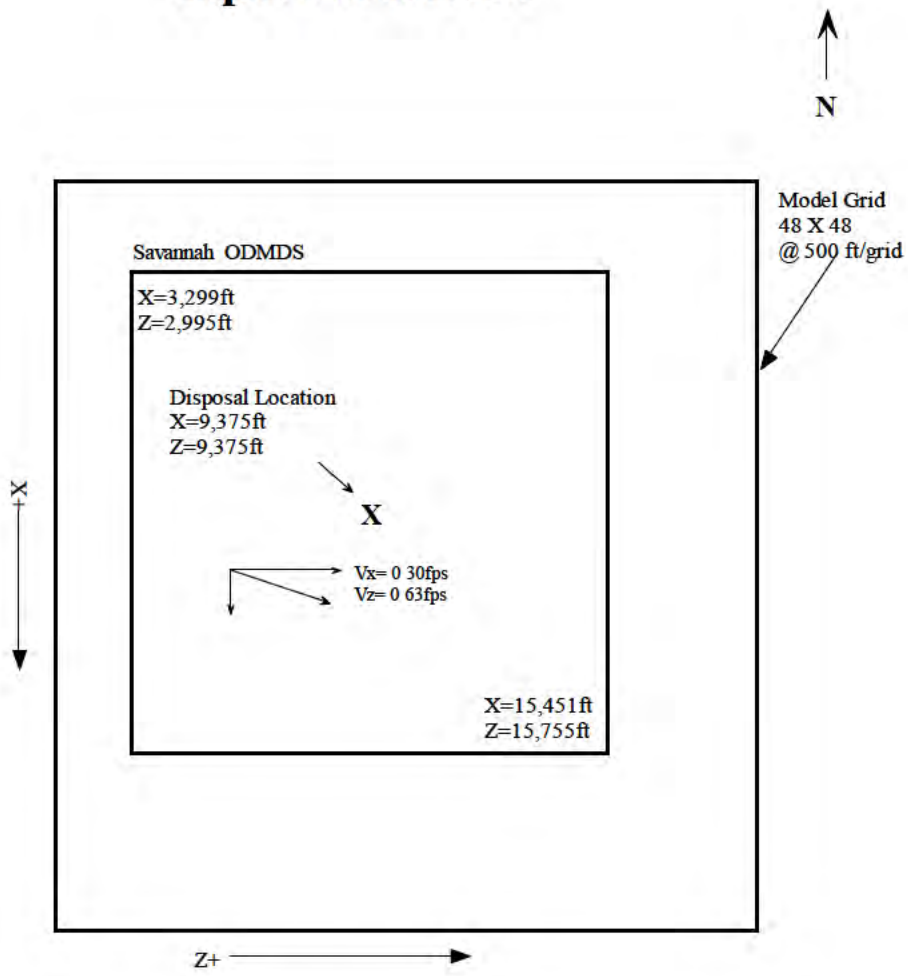
COEFFICIENTS

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 Value
[2] EPA 2006 Savannah ODMDS Trend Assessment Survey (EPA, 2007)
[3]From 2013 Savannah Harbor Expansion Project MPRSA Section 103 Evaluation ADCIRC Model.

Dilution Rates for Generic Material (6,000cy)
Minimum dilution outside of disposal site: 182 to 1; Minimum dilution after 4 hours: 580 to 1.

Savannah ODMDS STFATE Input Parameters



WEST

Savannah ODMDS Background Water Concentration.	
Chemicals of Concern	**Background Concentration Levels (µg/l)**
Arsenic	1.49 [1]
Cadmium	0.01 [1]
Chromium (VI)	0.29 [1]
Copper	0.24[1]
Lead	0.08[1]
Mercury	0.1 [1,4]
Nickel	0.25 [1]
Selenium	0.20 [1]
Silver	0.01[1,4]
Zinc	1.11[1]
Ammonia	No Data
Cyanide	No Data
Tributyltin (TBT)	0.01 [3,4]
Aldrin	0.005 [1,4]
Chlordane	0.015 [2,4]
DDT	0.005 [1,4]
Dieldrin	0.005 [1,4]
alpha - Endosulfan	0.005 [1,4]
beta - Endosulfan	0.005 [1,4]
Endrin	0.005 [1,4]
gamma-BHC (Lindane)	0.005 [1,4]
Heptachlor	0.005 [1,4]
Heptachlor Epoxide	0.005 [1,4]
Toxaphene	.25 1[,4]
Parathion	No Data
Pentachlorophenol	No Data

[1] 2010 Site Designation Studies for a New ODMDS offshore Jacksonville, FL
[2] Savannah ODMDS Status and Trends May 2006
[3] Reference Station Water from the 2006 Mayport Harbor 103 Evaluation
[4] Analyte not detected. Value based on one half the reporting limit.

This page left blank intentionally.

APPENDIX B

TEMPLATE
for
GENERIC SPECIAL CONDITIONS
for
MPRSA SECTION 103 PERMITS

This page left blank intentionally.

TEMPLATE

GENERIC SPECIAL CONDITIONS
FOR MPRSA SECTION 103 PERMITS
Savannah, GA ODMDS

I. DISPOSAL OPERATIONS

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

B. The Savannah ODMDS is centered at 31° 56' 54" N and 80° 45' 34"W (NAD83) with corner coordinates as follows:

ODMDS Geographic (NAD83)

31º55.8964'N	80º44.3231'W
31º57.9297'N	80º46.7898'W
31º57.9297'N	80º44.3231'W
31º55.8964'N	80º46.7898'W

State Plane Coordinates (NAD83 in feet)

705457.31N	1099158.36E
717620.18N	1086244.89E
717786.02N	1098995.35E
705291.58N	1086403.23E

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 Savannah ODMDS.

D. The permittee shall use an electronic positioning system to navigate to and from the Savannah ODMDS. For this section of the permit, the electronic positioning system is defined as a differential global positioning system or a microwave line of site system. If the electronic positioning system fails or navigation problems are detected, all disposal operations shall cease until the electronic positioning system is restored 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 Savannah ODMDS. The certification shall be accomplished by direct comparison of the electronic positioning system's accuracy with a known fixed point.

F. The permittee shall not allow excessive water or dredged material placed in a hopper dredge or disposal barge or scow to flow over the sides or leak from such vessels during transportation to the Savannah ODMDS.

This permit does not authorize excessive leakage, overflow, or spill out of barges, dump scows, or hopper dredges of water and excavated material while en route to the ODMDS release zone. Failure to repair leaks or change the method of operation which is resulting in the leakage, overflow, or spillage will result in suspension of dredging operations and require prompt repair or change of operation to prevent leakage, overflow, or spillage as prerequisite to the resumption of dredging. Excessive leakage may be indicated by average loss of draft during transit from the dredging area to the disposal area (forward draft loss plus aft draft loss divided by 2) in excess of 1.5 feet. Any exceedances of the 1.5 foot criteria will be reported immediately to Savannah District (912-652-6086) for evaluation.

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

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

2. The permittee shall contact the US Army Corps of Engineers, Savannah District's Regulatory Branch [1-800-448-2402] and EPA Region 4 at (404) 562-9386 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. During disposal, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of the Savannah ODMDS. Additionally, disposal shall occur within a specified disposal zone defined as [DEFINE COORDINATES AND SIZE OF DISPOSAL ZONE].

I. The permittee shall use an electronic tracking system (ETS) must be used. The ETS will provide surveillance of the transportation and disposal of dredged material. The ETS will be maintained and operated to continuously track in real-time 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 during travel to and from the ODMDS and every twelve seconds or every 30 feet of travel, while the hull status is open within the ODMDS. This information shall be provided to the Savannah

District and EPA Region 4 in electronic format and on a daily basis utilizing DQM specifications or approved (EPA and USACE) requirements (see Special Condition II.C).

Required digitally recorded data are:

- Load Number
- Disposal Vessel Name and Type (e.g. scow)
- Estimated Volume of each Load
- Description of Material Disposed
- Source of Dredged Material
- Date, Time and Location at Initiation and Completion of Disposal Event (State Plane Coordinates)

The permittee shall use Georgia State Plane or latitude and longitude coordinates (North American Datum 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.

J. The permittee shall conduct a bathymetric survey of the Savannah ODMDS within 60 days following project completion.

1. The number and length of the survey transects shall be sufficient to encompass the defined disposal zone within the Savannah ODMDS and a 500 foot wide area around the disposal zone. Transects shall be spaced at 500-foot intervals or less.

2. Vertical accuracy of the survey shall be ±0.5 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, 1983-2001 epoch, as shown on the Tidal Benchmark sheet for Fort Pulaski, GA (Station ID: 8670870). MLLW is 4.05 feet below NGVD 1929. The horizontal datum will be Georgia State Plane (zone 1001 GA East, 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 that they are in compliance with the requirements of the Savannah ODMDS Site Management and Monitoring Plan.

II. REPORTING REQUIREMENTS

A. The permittee shall send the US Army Corps of Engineers, Savannah District's Regulatory Branch and EPA Region 4 Wetlands, Coastal and Oceans Branch (61 Forsyth Street, Atlanta, GA 30303) a notification of commencement of work at least fifteen (15) days before initiation of any dredging operations authorized by this permit.

B. The permittee shall submit to the Savannah District weekly disposal monitoring reports. These reports shall contain the information described in Special Condition I .

C. Electronic data required by Special Conditions I.I shall be provided to EPA Region 4 on a daily basis. Data shall be submitted as an eXtensible Markup Language (XML) document via Internet e-mail to DisposalData.R4@epa.gov. XML data file format specifications are available from EPA Region 4.

D. The permittee shall develop and send one (1) copy of the disposal summary report to the Savannah District's Regulatory Division and one (1) 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. Dredging Project Title
2. USACE permit number and expiration date
3. Name of contractor(s) conducting the work
4. Name(s) and type of vessel(s) disposing the material in the ODMDS
5. Actual start date and completion date of dredging and disposal operations
6. Total cubic yards disposed (as paid *in situ* volume, total paid and un paid *in situ* volume, and gross volume reported by dredging contractor) at the Savannah, GA ODMDS
7. Number of loads to ODMDS
8. Type of material disposed at the ODMDS
9. Locations of disposal events
10. Identification of any misplaced material (outside disposal zone or the ODMDS boundaries)
11. Dates of pre- and post- disposal bathymetric surveys of the ODMDS
12. Post disposal bathymetric survey results (in hard and electronic formats, plot and X,Y,Z ASCII data file)
13. Verification that all general and special permit conditions were met. Any violations of the permit shall be explained in detail.

APPENDIX C

SAVANNAH DISTRICT
CORPS of ENGINEERS
GENERIC CONTRACT
SPECIFICATION LANGUAGE

This page left blank intentionally.

Savannah District Corps of Engineers Contract Specification Language

I. DREDGED MATERIAL DISPOSAL

A. Dredged material shall be placed within designated ocean disposal areas or zones, as shown on contract drawings.

Ocean Disposal Notification - The contractor shall notify EPA Region 4's Wetlands, Coastal and Oceans Branch (61 Forsyth Street, Atlanta, GA 30303) at least 15 calendar days, and the local Coast Guard Captain of the Port at least 5 calendar days, prior to the first ocean disposal. The notification will be by certified mail with a copy to the Contracting Officer.

The following information shall be included in the notification:

a. Project designation; Corps of Engineers' Contracting Officer's name and contract number; and, the Contractor's name, address, and telephone number.
b. Port of departure.
c. Location of ocean disposal area (and disposal zone if required).
d. Schedule for ocean disposal, giving date and time proposed for first ocean disposal.

The material excavated shall be transported to and deposited in the Savannah ODMDS shown on the drawings. When dredged material is disposed, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of the Savannah ODMDS as shown on the drawings. Additionally, disposal shall be initiated within the disposal release zone defined by the following coordinates:

[Insert coordinates for appropriate release zone]

Vertices	Geographic NAD 83		State Plane (Georgia) NAD 83	
Center				
North				
West				
South				
East				

Materials deposited outside of the specified disposal zone will be classified as misplaced material and will result in a suspension of dredging operations. Redredging of such materials will be required as a prerequisite to the resumption of dredging unless the Contracting Officer, at his discretion, determines that redredging of such material is not practical. If redredging of such material is not required then the quantity of such misplaced material shall be deducted from the Contractor's pay quantity. If the quantity for each misplaced load to be deducted cannot initially be agreed to by both the Contractor and Contracting Officer, then an average hopper/scow load quantity for the entire contract will be used in the determination. Misplaced loads may also be subject to penalty under the Marine, Protection,

Research and Sanctuaries Act. Materials deposited above the maximum indicated elevation or outside of the disposal area template shown will require the redredging or removal of such materials at the Contractor's expense. In addition, the Contractor must notify the Contracting Officer and the Environmental Protection Agency Region 4's Wetlands, Coastal and Oceans Branch (61 Forsyth Street, Atlanta, GA 30303) within 24 hours of a misplaced dump or any other violation of the Site Management and Monitoring Plan for the Savannah ODMDS. Corrective actions must be implemented by the next dump and the Contracting Officer must be informed of actions taken.

B. Logs

The Contractor shall keep a log for each load placed in the Savannah ODMDS. The log entry for each load shall include:

- Load Number
- Disposal Vessel or Scow Name (e.g. scow)
- Estimated Volume of each Load
- Description of Material Disposed
- Source of Dredged Material
- Date, Time and Location at Initiation and Completion of Disposal Event (State Plane Coordinates)

At the completion of dredging and at any time upon request, the log(s) shall be submitted in paper and electronic formats to the Contracting Officer for forwarding to the appropriate agencies.

C. The use of bottom dump barges and dredges, hydraulic unloading barges, hydraulic pipeline and hopper dredges to dispose of dredged material in the offshore disposal area is permitted if appropriate modeling for placement and material suitability has been conducted.

A concurrence for disposal of dredged material in the Savannah ODMDS does not authorize excessive leakage, overflow, or spill out of barges, dump scows, or hopper dredges of water and excavated material while en route to the ODMDS release zone. Failure to repair leaks or change the method of operation which is resulting in the leakage, overflow, or spillage will result in suspension of dredging operations and require prompt repair or change of operation to prevent leakage, overflow, or spillage as prerequisite to the resumption of dredging. Excessive leakage may be indicated by average loss of draft during transit from the dredging area to the disposal area (forward draft loss plus aft draft loss divided by 2) in excess of 1.5 feet. Any exceedances of the 1.5 foot criteria will be reported immediately to Savannah District (912-652-6086) for evaluation.

Material shall be placed in the offshore disposal area below the –25 MLLW level, and at least 100 meters inside the boundary of the ODMDS. A depth of -30 feet is the

warning threshold for monitoring and management purposes. If -30 feet MLLW is reached, then management decisions will be made on future sediment placement to avoid exceeding the -25 foot MLLW threshold.

II. ELECTRONIC TRACKING SYSTEM (ETS) for OCEAN DISPOSAL VESSELS

The Contractor shall furnish an ETS for surveillance of the movement and disposition of dredged material during dredging and ocean disposal. This ETS shall be established, operated and maintained by the Contractor to continuously track in real-time the horizontal location and draft condition of the disposal vessel (hopper dredge or disposal barge or scow) for the entire dredging cycle, including dredging area and disposal area. The ETS shall be capable of displaying and recording in real-time the disposal vessel's draft and location.

[USE LANGUAGE BELOW FOR NON DQM PROJECTS]

A. ETS Standards

The Contractor shall provide automated (computer) system and components to perform monitoring in accordance with EM 1110-1-2909. A copy of the EM can be downloaded from the following web site: http://www.usace.army.mil/inet/usace-docs'eng-manuals/em.htm. The accuracy of the horizontal location shall be equal to or better than a standard DGPS system, (i.e., equal to or better than plus/minus 10 feet (horizontal repeatability)). Vertical (draft) data shall have an accuracy of plus/minus 0.5 foot. Horizontal location and vertical data shall be collected in sets and each data set shall be referenced in real-time to date and local time (to nearest minute), and shall be referenced to the same state plane coordinate system used for the survey(s) shown in the contract plans. The ETS shall be calibrated, as required, in the presence of the Contracting Officer’s Representative (COR) at the work location before disposal operations have started, and at 30-day intervals while work is in progress. The COR shall have access to the ETS in order to observe its operation. Disposal operations will not commence until the ETS to be used by the Contractor is certified by the COR to be operational and within acceptable accuracy. It is the Contractor's responsibility to select a system that will operate properly at the work location. The complete system shall be subject to the COR's approval.

B. Data Requirements and Submissions

1. The ETS for each disposal vessel shall be in operation for all dredging and disposal activities and shall record the entire trip for each loading and disposal cycle. [Note: A dredging and disposal cycle constitutes the time from commencement of dredging to complete discharge of the material.] The COR shall be notified immediately in the event of ETS failure and all dredging operations for the vessel shall cease until the ETS is fully operational. Any delays resulting from ETS failure shall be at the contractor’s expense.

2. Data shall be collected at least every 0.25 nautical mile during travel to and from the ODMDS and every twelve seconds or every 30 feet of travel, while the hull status is open within the ODMDS.

3. Plot Reporting (2 types):

(a) Tracking Plot - For each disposal event, data collected while the disposal vessel is in the vicinity of the disposal area shall be plotted in chart form, in 200-foot intervals, to show the track and draft of the disposal vessel approaching and traversing the disposal area. The plot shall identify the exact position at which the dump commenced.

(b) Scatter Plot - Following completion of all disposal events, a single and separate plot will be prepared to show the exact disposal locations of all dumps. Every plotted location shall coincide with the beginning of the respective dump. Each dump will be labeled with the corresponding Trip Number and shall be at a small but readable scale. To accompany the Scatter Plot, a single and separate table will be prepared of the corresponding ETS data for every dump location. The volume of material disposed for each trip will be included in this table.

(c) Summary Table – A spreadsheet which contains all of the information in the log(s) [Section I.B.] above shall be prepared and shall correspond to the exact dump locations represented on the Scatter Plot.

4. ETS data and log data shall be provided to EPA Region 4 on a daily or more frequent basis. Data shall be submitted to EPA Region 4 as an eXtensible Markup Language (XML) document via Internet e-mail to DisposalData.R4@epa.gov. XML data file format specifications are available from EPA Region 4. All digital ETS data shall be furnished to the COR within 24 hours of collection. The digital plot files should be in an easily readable format such as Adobe Acrobat PDF file, Microstation DGN file, JPEG, BMP, TIFF, or similar. The hard copy of the ETS data and tracking plots shall be both maintained onboard the vessel and submitted to the COR on a weekly basis.

[FOR DQM PROJECTS]

See: http://dqm.usace.army.mil/Specifications/Index.aspx

For scows, the monitoring profile, TDS profile or Ullage profile shall be used.