Jacksonville ODMDS
Site Management and Monitoring Plan

1.0 INTRODUCTION

It is the responsibility of the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) under the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 to manage and monitor each of the Ocean Dredged Material Disposal Sites (ODMDSs) designated by the EPA pursuant to Section 102 of MPRSA. Section 102(c)(3) of the MPRSA requires development of a Site Management and Monitoring Plan (SMMP) for each ODMDS and review and revision of the SMMP not less frequently than every 10 years. The 1996 document, *Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites* (EPA/USACE, 1996) and the EPA, Region 4 and USACE South Atlantic Division Memorandum of Understanding (EPA/USACE, 2007) have been used as guidance in developing this SMMP.

A SMMP was first developed for the Jacksonville ODMDS in June 1997. It was revised in 2007 and further modified in 2010. This current revision to the Jacksonville ODMDS SMMP incorporates the expanded boundaries of the ODMDS. The SMMP provisions shall be requirements for all dredged material disposal activities at the site. All MPRSA Section 103 ocean disposal permits or contract specifications shall be conditioned as necessary to assure consistency with the SMMP.

1.1 Site Management and Monitoring Plan Team. An interagency SMMP team was established to assist EPA and USACE in developing the 1997 Jacksonville ODMDS SMMP. The team consisted of the following agencies and their respective representatives:

- USACE Jacksonville District
- State of Florida (Coastal Zone Management Office)
- EPA Region 4
- U.S. Navy (Naval Station Mayport)
- Port of Jacksonville
- National Marine Fisheries Service (NMFS)
- U.S. Coast Guard

These agencies will continue to be consulted in revisions to the Jacksonville ODMDS SMMP. The team will assist EPA and USACE on deciding appropriate disposal practices, appropriate monitoring techniques, the level of monitoring, the significance of results, and potential management options.

Specific responsibilities of EPA and the USACE Jacksonville District are:

EPA: EPA is responsible for designating/de-designating MPRSA Section 102 ODMDSs, for evaluating environmental effects of disposal dredged material at these sites, and for 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

Section 228.3 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 recommending modifications in site use and/or designation."

2.1 Disposal Site Characteristics

The expanded Jacksonville ODMDS can be found in 40 CFR 228.15(h)(9). The site is located 4.4 nmi offshore and is 3.7 nautical mile (nmi) and 2.7 nmi by 1.3 nmi in size (4.56 nmi^2) (Figure 1). As of 2014, it had a depth range of 9 to 19 meters (28 to 61 feet), with an average depth of 17 meters (56 feet). The site is centered at approximately 30 ° 19.289'N latitude and 81 ° 17.739'W longitude (NAD 83) or state plane coordinates 2176969.70 ft N and 562883.97 ft E (NAD83). The site coordinates are as follows:

Vertices[1]	Geographic[2] (NAD83)		State Plane[3] (FL East 0901 Ft NAD83)	
NW Corner (A)	30°21.514 'N	81°18.558 'W	2190467N	558614E
Upper NE Corner (B)	30°21.514 'N	81°17.418 'W	2190451. N	564609E
Interior Corner (C)	30° 20.50' N	81° 17.43'W	2184390 N	564592 E
Lower NE Corner (D	30°20.510 'N	81°17.012 'W	2184359. N	566729. E
SE Corner (F)	30°17.829 'N	81°17.004 'W	2168112. N	566728 E
SW Corner (E)	30°17.826 'N	81°18.536 'W	2168114. N	558665. E

[1]Figure 1
[2]Degrees, Decimal Minutes
[3]State Plane Florida East (feet)

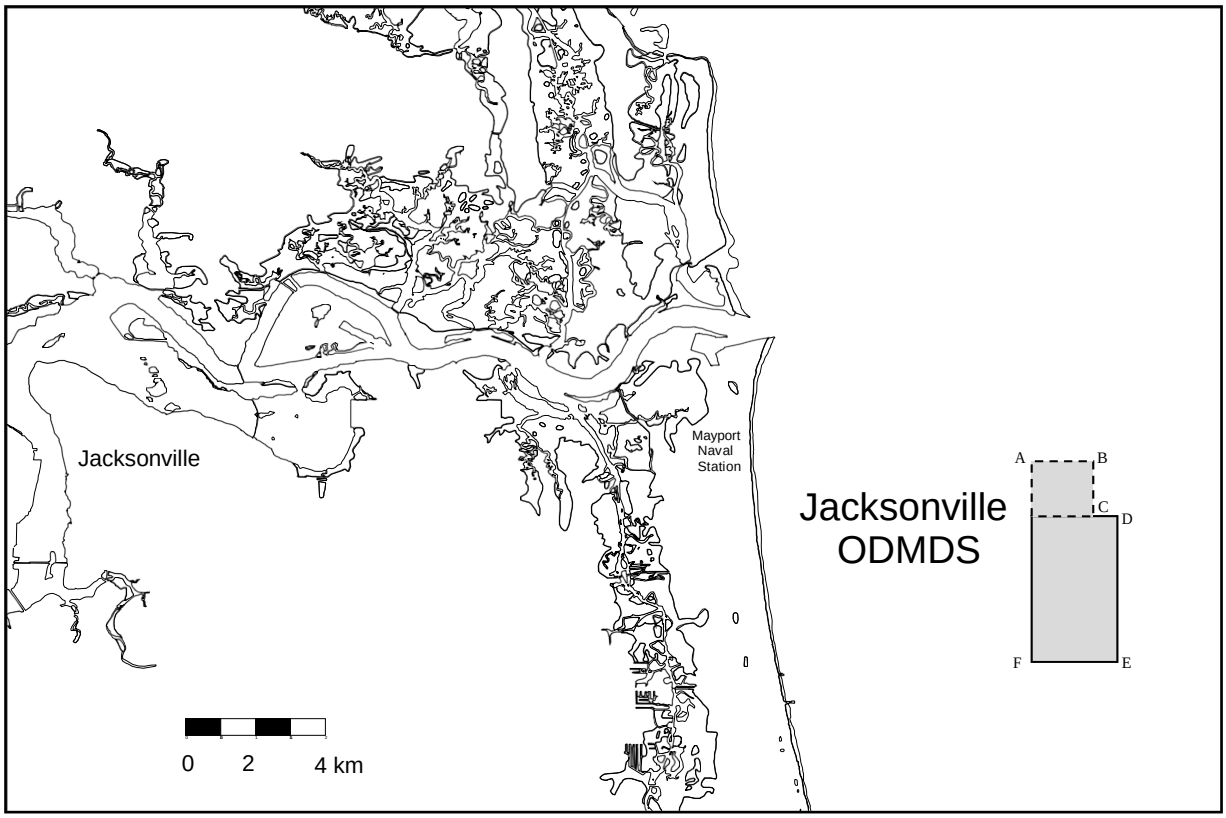

Figure 1. Jacksonville ODMDS Location Map

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

- Protection of the marine environment;
- Documentation of disposal activities and compliance; and
- Maintenance of a long term disposal alternative for dredged material generated in the Jacksonville, Florida vicinity

The following sections provide the framework for meeting these objectives to the extent possible.

2.3 Disposal History and Dredged Material Volumes. The Jacksonville ODMDS and vicinity has been used for the ocean disposal of dredged material since 1952. Material disposed prior to 1970 and in the early 1970's was disposed in an area 0.5 nautical miles east of the original Jacksonville ODMDS. In the late 1970's material was disposed south of the original site. The expanded Jacksonville ODMDS now encompasses the areas of historical disposal. Table 1 summarizes the history of disposal of material.

Table 1. Historical Volumes of Dredged Material Placed in the Jacksonville ODMDS and Vicinity

Year	Dredged Material Quantity (cy) (*in situ* volume[6])			
	Jacksonville Federal Navigation Channel	Naval Station Mayport (permit)	Jacksonville Shipyards (permit)	Total
1952–1970[1]	4,461,594	3,992,997	0	8,454,591
1971–1980[1]	2,652,407	3,048,844	0	5,701,251
1985[2]	15,800	0	0	15,800
1986[2]	0	0	109,700	109,700
1987[3]	82,200	0	26,500	108,700
1988[2]	210,500	0	0	210,500
1996[3]	0	659,623	0	659,623
1997[3]	0	439,748	0	439,748
2000[3]	0	887,284	0	887,284
2001[4]	0	174,832	0	174,832
2002[3]	0	225,200	0	225,200
2003[3]	560,446	905,328	0	1,465,774
2005[3]	0	59,667	0	59,667
2006[3]	0	888,134	0	888,134
2007[4]	510,000	0	0	510,000
2008[4]	0	635,000	0	635,000
2009	0	0	0	0

2010[4]	0	174,941	0	174,941
2011[4]	426,000	3,597,663[5]	0	426,000
2012[4]	48,000			3,645,663
2013[4]	57,621			
2014[4]		296,161		
Total	**9,024,568**	**15,985,422**	**136,200**	**25,009,990**

[1] Data from Jacksonville ODMDS EIS (USEPA 1983), in USEPA and USACE 2007
[2] Data from the USACE Ocean Disposal Database in USEPA and USACE 2007
[3] Data from the Jacksonville District Dredge Information System (paid *in situ* volumes), in USEPA and USACE 2007
[4] Data from the Jacksonville District Post Disposal Monitoring Reports
[5]Volume is project total from 2010-2012. Total paid and unpaid in situ volume - 4,082,173 cy.
[6] Volumes prior to 2011 are reported only as paid volumes. Actual volumes could be more.

Since 1995, Naval Station Mayport has utilized the Jacksonville ODMDS on a biannual basis for the disposal of maintenance dredging material. This material typically consists of silts, soft clays and sand mixtures. The Jacksonville Harbor Federal Navigation Project has used the site for disposal of coarse material not approved for beach placement from the Entrance Channel. It is expected that the Naval Station Mayport will continue to utilize the ODMDS, and the Jacksonville Harbor Federal Navigation Project will also continue to utilize the ODMDS for non-beach compatible material in the entrance channel. As upland disposal alternatives become limited, the volume from the Jacksonville Harbor Federal Navigation Project is expected to increase and additional permitted projects may identify a need for ocean disposal.

Maintenance dredged material volumes from the deepened Naval Station Mayport are expected to average 500,000 cubic yards annually. Maintenance dredged material volumes from the Jacksonville Harbor Navigation Project (Cuts 3 to 42) are expected to average 620,000 cubic yards annually. It is expected that most of this material will be placed in the nearshore placement area or in Buck Island (USACE, 2013). Some of this material may not be beach compatible and may need to be disposed in the ODMDS. Future new work projects include potential navigation improvements to Jacksonville Harbor. These improvements may result in additional dredged material disposal volumes of approximately 18 million cy based on dredging to the -47-foot project depth Locally Preferred Plan (LPP) (USACE 2014). Over the next ten years, 5.0 to 11.2 million cubic yards of maintenance material and approximately 18 million cubic yards of new work material for a total of 23 to 29.2 million cubic yards of dredged material are expected to be disposed in the ODMDS.

The capacity of the expanded Jacksonville ODMDS has been estimated at 65 million cubic yards (EPA, 2012).

2.4 Dredged Material Characteristics.

2.4.1 Previously Placed Materials. The original Jacksonville ODMDS (Zone A) currently contains dredged materials that are extremely variable in composition. Materials placed in the Jacksonville ODMDS have historically consisted of rock, gravel, shell hash, silts, soft clays, and sand mixtures.

2.4.2. Anticipated Materials. Based on evaluation of currently permitted projects it has been determined that between twenty (20) and sixty (60) percent of dredged material to be placed in the ODMDS consists of silt and clay. Additionally, rock material associated with deepening projects is anticipated to constitute a considerable amount of material placed in the ODMDS. Rock disposed at the ODMDS will be managed separately (see Section 2.7). Several currently permitted projects contain silty sand that is near-beach quality as established per the State of Florida, Department of Environmental Protection "Rules and Procedures for Application for Coastal Construction Permits" Chapter 62B-41.007(2) j (referred to as the 'Sand Rule'). Silty sand will be placed within the sand-sharing system, to the maximum extent practical, and following the provisions of the Clean Water Act.

2.4.3 Associated Beach Quality Materials. USACE Beneficial Use of Dredged Material EM 1110-2-5026 requires dredged material be maximized within the coastal system. Dredged materials that qualify for beach or nearshore placement per the FDEP's 'Sand Rule' shall be beneficially placed in such location, to the maximum extent practicable. It is expected that the State of Florida 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.

2.4.4 Dredge 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 disposal. Verification will be valid for three years from the most current verification.

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, execute testing and determination of suitability of non-excluded material for ocean disposal.

Verification documentation for suitability will be completed prior to use of the Jacksonville ODMDS. 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/USACE Dredged Material Testing Manual and 2008 Southeast Regional Implementation Manual (SERIM) or the appropriate updated versions. This includes how dredging projects will be subdivided into project segments for sampling and analysis. The MPRSA Section 103 Evaluation will be in the form outlined in Appendix C of the SERIM. Water Quality Compliance determinations will be made using the STFATE (ADDAMS) model and the input parameters provided in Appendix A. Only material determined to be suitable through the verification process by the USACE and EPA, Region 4 will be placed at the Jacksonville 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. Dredging is typically restricted to the winter months due to sea turtle restrictions. As monitoring results are compiled, should any such restrictions appear necessary, disposal activities will be scheduled so as to avoid adverse impacts. During the winter, precautions necessary to protect whales, as described in the next paragraph, are required. Additionally, if new information indicates that endangered or threatened species are being adversely impacted, restrictions may be incurred.

2.6 Disposal Technique. No specific disposal technique is required for this site. However, in order to protect North Atlantic right whales, disposal vessel (either hopper dredge or tug and scow) speed 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, the disposal vessel's captain should be aware of the vessel approach restrictions in 50 CFR §224.103(c) which at the time of this SMMP prohibits approach within 500 yards of a right whale by vessel, aircraft, or any other means.

2.7 Disposal Location. All disposals will be initiated at least 500 feet from the east and west boundaries and 1000 feet from the north and south boundaries of the ODMDS. Disposal will be completed (i.e. doors closed) prior to leaving the ODMDS boundaries. Disposal shall occur in one of the release zones based on sediment type as described below and shown in Figure 2. The zone to be used will be determined at the time of project approval. The zone will be proposed by the USACE or other user and included as part of the MPRSA Section 103 Evaluation (Section 2.4). Zones will be selected to prevent mounding above -25 MLLW. The approximate area of each zone is as follows:

Release Zone	Approximate Area (nmi^2)
Zone A	0.82
Zone B-1	0.48
Zone B-2	0.48
Zone C-1	0.48
Zone C-2	0.48
Zone D-1	0.41
Zone D-2	0.41

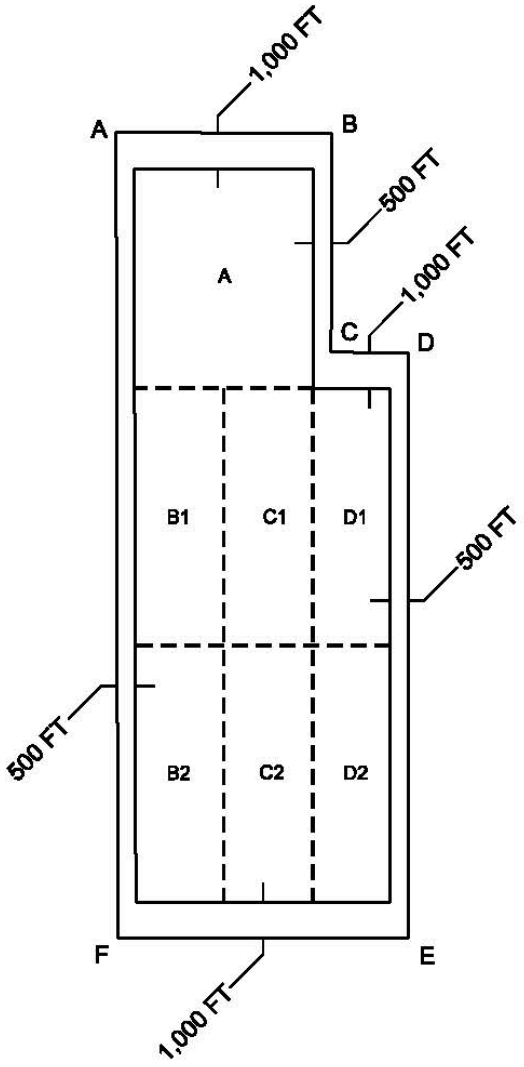

Figure 2: Disposal Release Zones

2.7.1: Release Zone A – Original ODMDS. Material can continue to be disposed within the original ODMDS (Zone A). No more than 1 million cubic yards of material should be authorized for disposal in release Zone A in any one calendar year. Release Zone A coordinates are as follows:

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°21.35'N	81°18.46'W	2189469.04 N	559111.32 E
NE Corner	30°21.35'N	81°17.51'W	2189449.73 N	564102.64 E
SW Corner	30°20.34'N	81°18.46'W	2183368.78 N	559129.37 E
SE Corner	30°20.35'N	81°17.51'W	2183372.65 N	564089.81 E

Disposal shall be initiated within the disposal release zone. More specific release zones can be defined within this disposal zone on a per-project basis to better distribute dredged material throughout the area and to avoid shallow areas within Zone A.

2.7.2 Release Zone B- Fines. Predominately fine-grained material should be disposed in release Zone B. Project specific subzones should be designated for each project with the intent of disposing in the smallest area possible to minimize the amount of benthic habitat that is affected. Zone B-1 should be used until a depth of -30 feet MLLW is reached prior to moving to Zone B-2. The disposal zone coordinates are as follows:

Disposal Zone B-1

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°20.34 'N	81°18.46 'W	2183368.78 N	559129.37 E
NE Corner	30°20.35 'N	81°17.98 'W	2183391.95 N	561610.56 E
SW Corner	30°19.17 'N	81°18.45 'W	2176246.32 N	559140.59 E
SE Corner	30°19.17 'N	81°17.98 'W	2176246.32 N	561606.33 E

Disposal Zone B-2

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°19.17 'N	81°18.45 'W	2176246.32 N	559140.59 E
NE Corner	30°19.17 'N	81°17.98 'W	2176246.32 N	561606.33 E
SW Corner	30°17.99 'N	81°18.44 'W	2169114.98 N	559163.16 E
SE Corner	30°17.99 'N	81°17.98 'W	2169114.04 N	561610.02 E

2.7.3 Release Zone C – Sand. Predominately sand and shell should be disposed in release Zone C. Disposal practices that disperse the material over a large area are encouraged. Project specific subzones should be specified for each project with the intent of dispersing the material over a large area. Zone C-1 should be used until a depth of -30 feet MLLW is reached prior to moving to Zone C-2. The disposal zone coordinates are as follows:

Disposal Zone C-1

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°20.35 'N	81°17.98 'W	2183391.95 N	561610.56 E
NE Corner	30°20.35 'N	81°17.51 'W	2183372.65 N	564089.81 E
SW Corner	30°19.17 'N	81°17.98 'W	2176246.32 N	561606.33 E
SE Corner	30°19.17 'N	81°17.51 'W	2176232.81 N	564092.35 E

Disposal Zone C-2

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°19.17 'N	81°17.98 'W	2176246.32 N	561606.33 E
NE Corner	30°19.17 'N	81°17.51 'W	2176232.81 N	564092.35 E
SW Corner	30°17.99 'N	81°17.98 'W	2169114.04 N	561610.02 E
SE Corner	30°17.99 'N	81°17.51 'W	2169113.82 N	564088.98 E

2.7.4 Release Zone D-1- Rock. Material consisting predominately of rock or portions of projects consisting of rock should be disposed in release Zone D-1. This area had previously been identified by the USACE as suitable for supporting rock placement. Project specific subzones shall be identified for each project starting in the northern portion of Zone D-1. The disposal zone coordinates are as follows:

Disposal Zone D-1

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°20.35 'N	81°17.51 'W	2183372.65 N	564089.81 E
NE Corner	30°20.34 'N	81°17.10 'W	2183358.17 N	566244.54 E
SW Corner	30°19.17 'N	81°17.51 'W	2176232.81 N	564092.35 E
SE Corner	30°19.17 'N	81°17.10 'W	2176246.32 N	566277.07 E

More specific release zones can be defined within this disposal zone on a per-project basis to specifically distribute rock material within Zone D.

2.7.5 Release Zone D-2– Sand or Rock.

Depending on future needs, sand or rock can be disposed in Zone D-2.

Rock: Material consisting of predominantly rock should be disposed in release Zone D-2 after Zone D-1 has been exhausted. Disposal shall occur as described for Zone D-1.

Sand: Material consisting of predominantly sand and shell should be disposed in release Zone D-2 after Zones C-1 and C-2 have been exhausted.

The disposal zone coordinates are as follows:

Disposal Zone D-2

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°19.17 'N	81°17.51 'N	2176232.81 N	564092.35 E
NE Corner	30°19.17 'N	81°17.09 'N	2176246.32 N	566277.07 E
SW Corner	30°17.99 'N	81°17.51 'N	2169113.82 N	564088.98 E
SE Corner	30°17.99 'N	81°17.10 'N	2169112.12 N	566227.81 E

2.8 Permit and Contract Conditions. 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. A summary of the management and monitoring requirements to be included is listed in Table 2. Template language that can be used is included in appendices (see Appendix B and C).

Table 2. Summary of Permit and Contract Conditions

Condition	Reference
Dredged Material Suitability and Term of Verification	Jacksonville ODMDS SMMP page 7 Regional Implementation Manual
Disposal Zone	Jacksonville ODMDS SMMP pages 9-12
Right Whale Avoidance	Jacksonville ODMDS SMMP page 7-8 50 CFR 224.103(c)
Post Bathymetric Surveys	Jacksonville ODMDS SMMP page 14 and 15
Disposal Monitoring	Jacksonville ODMDS SMMP page 14-15
Reporting Requirements	Jacksonville ODMDS SMMP page 23 and 27

2.9 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.htm.

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 Jacksonville ODMDS and 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 correctly? Disposed correctly?
- What will happen to the environment at the disposal site?

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 3.6). Additional standards will continue to be investigated for

sharing of other disposal site related information (e.g. environmental monitoring data, testing data, etc.).

3.0 SITE MONITORING

The MPRSA establishes the need for including a monitoring program as part of the SMMP. Site monitoring is conducted to ensure the environmental integrity of a disposal site and the areas surrounding the site and to verify compliance with the site designation criteria, any special management conditions, and 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. Disposal has occurred in the area since 1952. Therefore, no true baseline information has been or can be collected. The results of investigations presented in the 1978 designation EIS (EPA, 1983), the 2010 designation studies (ANAMAR, 2011), and subsequent surveys listed in Table 3 will serve as the main body of data for the monitoring of the impacts associated with the use of the Jacksonville ODMDS.

A baseline bathymetric survey will be conducted prior to the first use of each release zone. 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 January 1, 2002 [http://140.194.76.129/publications/eng-manuals/em1110-2-1003/toc.htm]. The number and length of transects required will be sufficient to encompass the release zone and a 500 foot-wide area around it. The surveys will be taken along lines spaced at 500-foot intervals or less. The minimum performance standards from Table 3-1 *Hydrographic Surveying* shall 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 NOAA Mean Lower Low Water (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 at this site is required.

3.2 Disposal Monitoring. For all disposal activities, an electronic tracking system (ETS) must be utilized. The ETS will provide surveillance of the transportation and disposal of dredged material. The ETS will be maintained and operated to continuously track the horizontal location and draft condition (nearest ±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 miles or every 4 minutes during travel to and from the ODMDS and every twelve seconds or every 30 feet of travel, whichever is smaller, while the hull status is open within the ODMDS. In addition to the continuous tracking data, the following trip information shall be electronically recorded for each disposal cycle:

a. Load Number
b. Disposal Vessel Name and Type (e.g. scow)
c. Estimated volume of Load
d. Description of Material Disposed
e. Source of Dredged Material
f. Date, Time and Location at Initiation and Completion of Disposal Event

It is expected that disposal monitoring will be conducted utilizing the Dredge Quality Management (DQM) system for Civil Works projects [see http://dqm.usace.army.mil/Specifications/Index.aspx], although other systems are acceptable. Disposal monitoring and ETS data will be reported to EPA Region 4 on a weekly basis utilizing the eXtensible Markup Language (XML) specification and protocol per Section 3.6. EPA Region 4 and the USACE Jacksonville District shall be notified within 24 hours if disposal occurs outside of the ODMDS or specified disposal zone or if excessive leakage occurs.

3.3 Post Discharge Monitoring. The USACE or other site user will conduct a bathymetric survey within 30 days after disposal project completion. Surveys will not be required for projects less than 50,000 cubic yards. The number and aerial extent of transects required will be the same as in the baseline survey. Bathymetric survey results will be used to ensure that unacceptable mounding is not occurring and to aid in environmental effects monitoring.

For disposal of rock in Zone D-1, a 100% coverage multibeam or sidescan sonar post disposal survey is required.

3.4 Summary of Results of Past Monitoring Surveys. Surveys conducted at the Jacksonville ODMDS are listed in Table 3. Monitoring activities during the 1970's indicated significant mounding occurring at the site and that a small amount of dredged material had been transported to the south, as demonstrated by bathymetric surveys and physical and chemical analyses of sediments. Since re-initiation of disposal activities at the original ODMDS in the 1990s, mounding has increased (see Figure 3). Bathymetric trends indicate that the site is only partially dispersive and a significant amount of disposed material remains on site. The1978 study, the 1995 and 1998 sediment mapping surveys, and sediment profile imaging (SPI) surveys have indicated the presence of fine-grained dredged material south of the site boundaries. Predominant currents in the area flow to the southwest in the fall and winter and northeast during

spring and summer. Larger waves in the area are predominantly from the east and occur in the winter. It is possible that some southerly transport of dredged material occurs in the fall and winter due to wave induced re-suspension (EPA, 2009). Long-term fate modeling has also indicated a southerly transport of material (USACE, 2010). SPI surveys following the Mayport Deepening Project showed deposited dredged material extending beyond the ODMDS boundaries in excess of 5 cm to the north-northwest and south-southeast (Newfields, 2014).

Table 3. Surveys Conducted at the Jacksonville ODMDS

Survey Title	Conducted by	Date	Purpose	Conclusion
Environmental Investigation of a Dredge Spoil Disposal Site near Mayport, Florida	Naval Oceanographic Office	1972-1973	Evaluation of environmental effects of disposal of dredged material with elevated levels of metals.	No permanent impairment of the benthic biological community when relative abundance and diversity of benthic macro fauna in the ODMDS are compared to control stations.
Environmental Investigation of a Dredged Material Disposal Site Near Mayport, Florida	Naval Oceanographic Office	1977-1978	Effects (sediment chemistry, bathymetry) of disposal of material from Mayport Harbor.	Significant change in bathymetry (depth decreased from 43 feet to 34 feet), noticed movement of material to the south, and significant difference found in heavy metal concentration in sediments inside the site than outside.
Disposal Site Monitoring at the Jacksonville ODMDS	U.S. EPA	1986	Benthic infaunal survey.	No significant benthic infaunal difference between control and disposal stations.
Jacksonville ODMDS Sidescan Sonar Survey	U.S. EPA Region 4	March, 1995	Look for presence of natural resources and presence of man made obstructions on the bottom.	No natural resources found; significant amounts of man made obstructions in north half of site and to the north of the site.
Areal Mapping of Sediment Chemistry at the Jacksonville ODMDS	U.S. EPA Region 4 and Center for Applied Isotope Studies	March, 1995	Conduct sediment mapping of site to determine location of dredged material and to provide baseline for future surveys.	Two primary areas containing fine-grained sand associated with dredged material were found: one in the east-central sector of the ODMDS and the other along the southernmost portion of the survey area (½ mi south of the site). One area of coarse grained dredged material was found consisting of a defined mound within the ODMDS boundaries.

Table 3 (Continued). Surveys Conducted at the Jacksonville ODMDS

Survey Title	Conducted by	Date	Purpose	Conclusion
Status & Trends Survey of the Jacksonville	U.S. EPA Region 4 and Barry Vittor and Associates	July, 1995	Baseline for future surveys *ODMDS* (Includes assessment of the macroinfaunal communities within and outside of the ODMDS, sediment grain size, sediment chemistry and water quality)	Comparisons of the stations mean densities and mean number of taxa showed that the only significant differences observed are more likely to be related to the grain size distribution differences seen and not related to the presence or absence of disposed dredged material. Benthic community indices showed that all stations were extremely diverse with an equitable distribution of taxa when compared to known infaunal assemblages from the same general coastal region. In general, metal concentrations (especially lead, copper and zinc) were higher within than outside the ODMDS. Concentrations were lower in 1995 than in 1978. Organics, Pesticides, and PCBs were not detected.
Post Disposal Areal Mapping of Sediment Chemistry at the Jacksonville ODMDS	U.S. EPA Region 4 and Center for Applied Isotope Studies	March, 1997	Determine location and any migration of dredged material	General indication of increase in surficial fines especially in the western portion of the site as indicated by slurry densities and aluminum concentrations.
Post Disposal Status & Trends Survey of the Jacksonville ODMDS	EPA Region 4 and Barry Vittor and Associates	June, 1998	Monitor for any adverse effects following re-initiation of site use. (Includes assessment of the macroinfaunal communities within and outside of the ODMDS, sediment grain size, sediment chemistry and water quality)	In general, all stations were extremely diverse with an equitable distribution of taxa relative to other benthic infaunal assemblages in the region. There was no predictable pattern in community indices or biomass between stations within and outside the ODMDS. Copper and zinc concentrations remain elevated within the ODMDS, but to a leaser degree than in 1995. Dissolved oxygen levels throughout the water column were lower (3-5mg/l) in 1998 than in 1995 (6mg/l).
Pre-disposal Bathymetry Survey	USACE-Jacksonville	Sept. 2001	Monitor bathymetric trends	Depth maintained at greater than 35 feet throughout the ODMDS.
Post-disposal Bathymetry Survey	USACE-Jacksonville	Nov. 2001	Monitor bathymetric trends	Depth maintained at greater than 34 feet throughout the ODMDS.

Table 3 (Continued). Surveys Conducted at the Jacksonville ODMDS

Survey Title	Conducted by	Date	Purpose	Conclusion
Pre-disposal Bathymetry Survey	USACE-Jacksonville	Oct. 2002	Monitor bathymetric trends	Depth maintained at greater than 35 feet throughout the ODMDS.
Pre/Post-disposal Bathymetry Survey	USACE-Jacksonville	April 2003	Monitor bathymetric trends	Depth maintained at greater than 34 feet throughout the ODMDS.
Post-disposal Bathymetry Survey	USACE-Jacksonville	Sept. 2004	Monitor bathymetric trends	Accretions of 2 to 8 feet of material within the disposal zone since 2002. No measurable change in depth outside of the ODMDS boundaries. Depth maintained at greater than 32 feet throughout the ODMDS.
Ocean Current and Wave Measurements at the Jacksonville Ocean Dredged Material Disposal Sites	USEPA Region 4	2006-2007	Determine wave and current climate for water quality modeling and capacity modeling.	Currents in the vicinity of the Jacksonville ODMDSs tend to have a significant tidal component with predominate currents flowing to the north-northwest and south-southeast. Waves in the vicinity of the Jacksonville ODMDS are out of the east-southeast.
Pre/Post-disposal Bathymetry Survey	USACE-Jacksonville	June 2007	Monitor bathymetric trends	Accretions of material to the south of the disposal zone since 2004. No measurable change in depth outside of the ODMDS boundaries. Depth maintained at greater than 32 feet throughout the ODMDS.
Jacksonville Ocean Dredged Material Disposal Site Capacity Report	USACE - Jacksonville	2008	Evaluate capacity of Jacksonville ODMDS	The Jacksonville ODMDS can accommodate the 2.0 million cy of new work from the proposed deepening of the federal channel, cut 3; the Mayport entrance channel; and Mayport turning basin. The remaining ODMDS capacity would allow 8 to 10 years or 6.4 to 8.0 million cy of additional in situ maintenance material without violating the minimum depth or 5-cm contour criteria.
Jacksonville Ocean Dredged Material Disposal Site Long Term Fate Analysis	USACE - Jacksonville	2008	LTFATE analysis was required in order to modify the SMMP to decrease the buffer zone	The analysis indicates that a 500-foot buffer would be adequate to ensure that no significant sediment deposition occurs outside the Jacksonville ODMDS.
Pre-disposal Bathymetry Survey	USACE-Jacksonville	Feb. 2008	Monitor bathymetric trends	Minimum Depth of 30 feet.

Table 3 (Continued). Surveys Conducted at the Jacksonville ODMDS

Survey Title	Conducted by	Date	Purpose	Conclusion
Post-disposal Bathymetry Survey	USACE-Jacksonville	July 2008	Monitor bathymetric trends	Minimum Depth of 26 feet.
Trend Assessments Survey of the Jacksonville ODMDS	EPA Region 4	June, 2009	Monitor for any adverse effects.(Includes assessment of the macroinfaunal communities within and outside of the ODMDS, sediment grain size, sediment chemistry and water quality)	Higher taxa richness, diversity and density outside of ODMDS, but not a significant difference between stations inside and outside of the OMDDS. TBT detected in sediments in and to the south of the ODMDS. Other metal concentrations in sediment continue to decrease.
Jacksonville ODMDS Reconnaissance Survey (Sidescan Sonar & Video)	EPA Region 4/USACE-Jacksonville	October 2009	Determine suitable location for a new ODMDS	Naturally occurring hardbottom occurs to the north of the channel. Scattered rubble fields occur around the existing ODMDS.
Pre-disposal Bathymetry Survey	USACE-Jacksonville	Jan. 2010	Monitor bathymetric trends	Minimum Depth of 30 feet.
Jacksonville ODMDS Reconnaissance Survey (Sidescan Sonar & Video)	EPA Region 4/USACE-Jacksonville	March 2010	Determine suitable location for a new ODMDS. Search zone was expanded.	Livebottom consisting of transverse ark reefs were observed in the southeast extension survey area. Potential reef feature east of the ODMDS was confirmed to not exist.
Spring Site Designation Study	EPA Region 4/USACE-Jacksonville	March 2010	Collect baseline physical, chemical, and biological data on candidate disposal sites.	
Post-disposal Bathymetry Survey	USACE-Jacksonville	April 2010	Monitor bathymetric trends	Minimum Depth of 30 feet.
Fall Site Designation Study	EPA Region 4/USACE-Jacksonville	September 2010	Collect baseline physical, chemical, and biological data on candidate disposal sites.	
Pre -disposal Bathymetry Survey	USACE-Jacksonville	Oct 2010	Monitor bathymetric trends	Depth maintained at >30 feet throughout the ODMDS
Mid-Project Bathymetry Survey	USACE-Jacksonville	Feb. 2011	Monitor bathymetric trends	Minimum Depth of 29 feet.

Table 3 (Continued). Surveys Conducted at the Jacksonville ODMDS

Survey Title	Conducted by	Date	Purpose	Conclusion
Mid-disposal Bathymetry Survey	USACE-Jacksonville	Oct 2011	Monitor bathymetric trends	Depth maintained at >29 feet throughout the ODMDS
Mid-disposal Bathymetry Survey	USACE-Jacksonville	Dec 2011	Monitor bathymetric trends	Depth maintained at >29 feet throughout the ODMDS
Mid-disposal Bathymetry Survey	USACE-Jacksonville	Jan 2012	Monitor bathymetric trends	Depth maintained at >27 feet throughout the ODMDS
Mid-disposal Bathymetry Survey	USACE-Jacksonville	Apr 2012	Monitor bathymetric trends	Depth maintained at >29 feet throughout the ODMDS
Post Mayport Sediment Profile Imaging Survey	USEPA Region 4	Apr 2012 & 2013	Map disposal footprint and evaluate impacts from disposal.	1.The dredged material footprint is centered over the disposal site with dredged material extending beyond the ODMDS boundaries to the north-northwest and south-southeast. 2. The main physical change in sediments at the Jacksonville ODMDS following dredged material disposal was a shift toward finer sediment texture. 3. The normal "equilibrium" infaunal community at the Jacksonville ODMDS appears to consist primarily of low to moderate numbers of Stage I or II surface-dwelling suspension feeders that are pre-adapted to energetic sandy environments. Dredged material disposal from the Mayport Deepening Project resulted in deposition of silt/clay sediments, which also increased the number of Stage II and Stage III infauna at the site.
Sidescan Sonar of the Jacksonville ODMDS	USEPA Region 4	Apr 2012	Map disposal footprint	Acoustic reflections indicate finer grained material throughout the site with the exception of the northeast portions of the ODMDS. Some indication of fine grained material along the southeast border of the ODMDS. No indication of debris within the ODMDS as seen in previous surveys.

Table 3 (Continued). Surveys Conducted at the Jacksonville ODMDS

Survey Title	Conducted by	Date	Purpose	Conclusion
Mid-disposal Bathymetry Survey	USACE-Jacksonville	June 2012	Monitor bathymetric trends	Depth maintained at >28 feet throughout the ODMDS
Post-disposal Bathymetry Survey	USACE-Jacksonville	Aug 2012	Monitor bathymetric trends	Depth maintained at >29 feet throughout the ODMDS
Post-disposal Bathymetry Survey	USACE-Jacksonville	Aug 2013	Monitor bathymetric trends	Depth maintained at >29 feet throughout the ODMDS
Pre -disposal Bathymetry Survey	USACE-Jacksonville	Jan 2014	Monitor bathymetric trends	Depth maintained at >28 feet throughout the ODMDS
Post-disposal Bathymetry Survey	USACE-Jacksonville	March 2014	Monitor bathymetric trends	Depth maintained at >28 feet throughout the ODMDS

Sediment analyses in the late 1970's showed higher concentrations of certain heavy metals (Ni, Cu, Zn, Pb, and Cr), Kjeldahl nitrogen (the sum of organic nitrogen, ammonia, and ammonium), and organic carbon in sediments within the disposal site versus outside the site. This is to be expected as material high in metal concentrations, requiring a waiver of EPA's criteria, was disposed at the ODMDS. Sediment analysis as part of the 1995 benthic survey showed that, in general, metal concentrations within the ODMDS remained elevated compared to outside of the ODMDS. However, concentrations within the ODMDS have decreased since 1978 and, based on the 1998 and 2009 studies, continue to decrease. The average percentage of silts and clays at stations within the ODMDS exceeds that of stations outside the ODMDS, but has decreased both inside and outside of the ODMDS since 1978. Figure 4 shows that metal concentrations within the site increased following significant ODMDS use in 1972 and 1978, but have subsequently decreased.

A benthic infaunal survey was conducted in 1986. Results of the macro infaunal community analysis indicated no difference between disposal and control stations and no difference could be found which could be related to active disposal. A second benthic infaunal survey was conducted in 1995. The sampling stations were composed primarily of sand, with silt/clay content of less than 10%. Station 4, in the center of the disposal pile, had the highest silt/clay fraction, and interestingly also had the highest gravel fraction (21 %). Comparisons of the stations' mean densities and mean number of taxa showed that the only significant differences observed are more likely to be related to the grain size distribution differences seen and not related to the presence or absence of disposed dredged material. Benthic community indices showed that all stations were extremely diverse with an equitable distribution of taxa when compared to known infaunal assemblages from the same general coastal region. Numerical classification of the 12 stations tended to group the stations relative to the coarser grain size fractions. The 1998 study showed that communities remain diverse and no significant changes were observed either temporally or spatially. In 2009, few differences could be found when comparing the various study parameters between stations located inside and outside the ODMDS. Metal concentrations continue to decrease both inside and outside of the ODMDS. Tributyl tin detected within and to the south of the ODMDS boundaries (Zone A) was likely the result of dredged material disposal. Although there was higher taxa richness, diversity, and density outside the ODMDS, there was not a significant difference between stations outside and inside the ODMDS boundaries (EPA, 2013).

The Mayport Deepening Project post-disposal SPI surveys (2012 and 2013) conducted at the Jacksonville ODMDS found a dredged material footprint centered over the disposal site (Zone A) with dredged material extending beyond the ODMDS boundaries (Zone A) to the northwest and southeast with additional re-deposition to the south. The dredged material observed at the ODMDS included homogenous white to tan fine sands, unconsolidated, reduced, dark gray, silt/clay, and continuous or discontinuous layers of gray silts and fine sands along the flanks of the dredged material deposit. The main physical change in sediments at the Jacksonville ODMDS following dredged material disposal was a shift toward a finer sediment texture. The grain size major mode at the ODMDS shifted from fine sand to very fine sand. Dark gray, silt/clay dredged material was present at the ODMDS, and appeared to be recently deposited in

some locations during the post-disposal survey. The fine-grained dredged material did not show evidence of low dissolved oxygen conditions and sedimentary methane was not present at any locations at the ODMDS. The normal "equilibrium" infaunal community at the Jacksonville ODMDS appears to consist primarily of low to moderate numbers of Stage I or II surface-dwelling suspension feeders that are pre-adapted to energetic sand environments. Dredged material disposal from the Mayport Deepening Project resulted in deposition of silt/clay sediments, which also increased the number of Stage II and Stage III infauna at the site.

A sidescan survey was conducted in March 1995. Results of the survey showed that the site (Zone A) and the area north of the site are cluttered with various types of debris and artificial reef material. This is consistent with historical uses of the area. Although not designated as such, this site had historically been used as a disposal location in rough weather for artificial reef material destined for artificial reefs further offshore. As part of the designation surveys for the expanded ODMDS, sidescan sonar surveys indicated scattered rubble throughout the site proximal to the original ODMDS (ANAMAR, 2010). The 2014 Final EIS documents the locations of the rubble areas (EPA, 2014). A sidescan sonar survey of the ODMDS (Zone A) in 2012 did not reveal any of the debris previously observed. It is concluded that this has been buried by dredged material disposal (EPA, 2012).

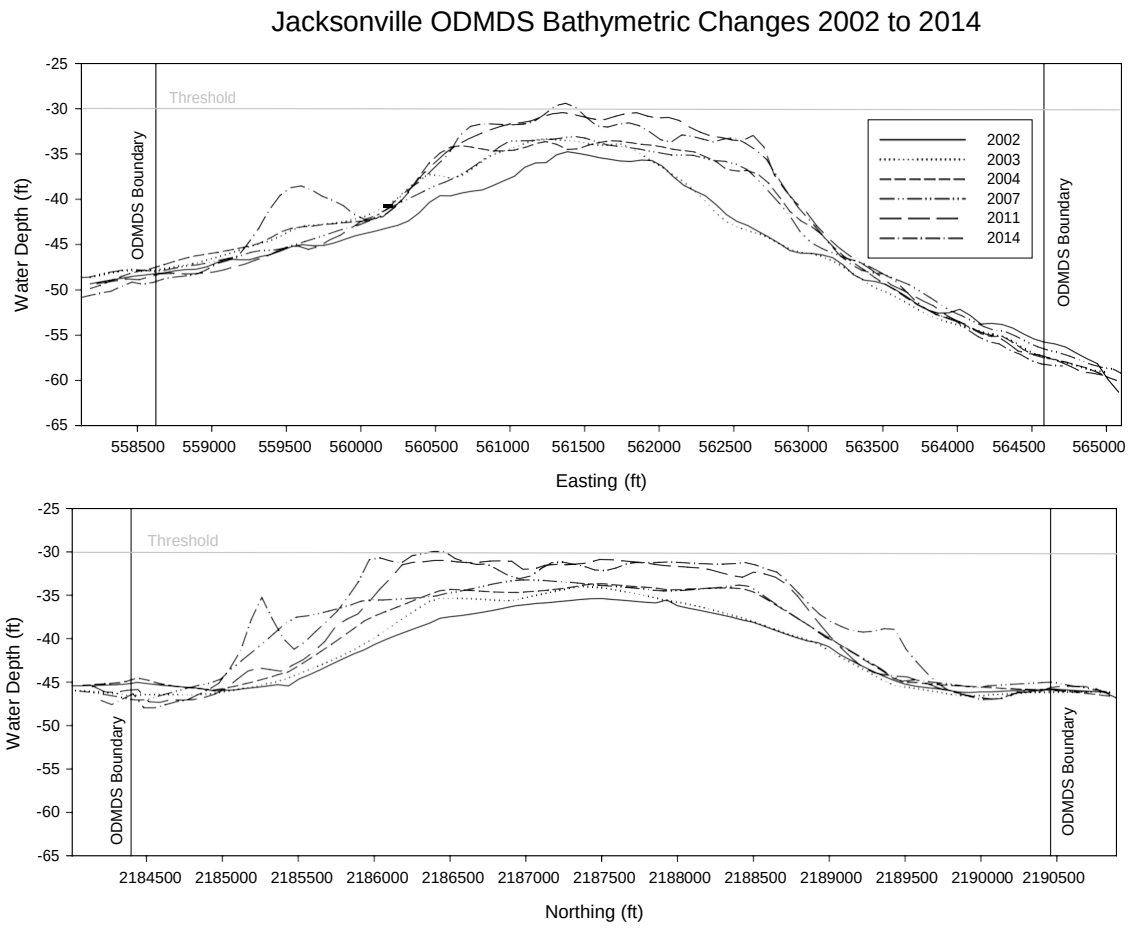

Figure 3: Bathymetric Trends at the Jacksonville ODMDS (Zone A)

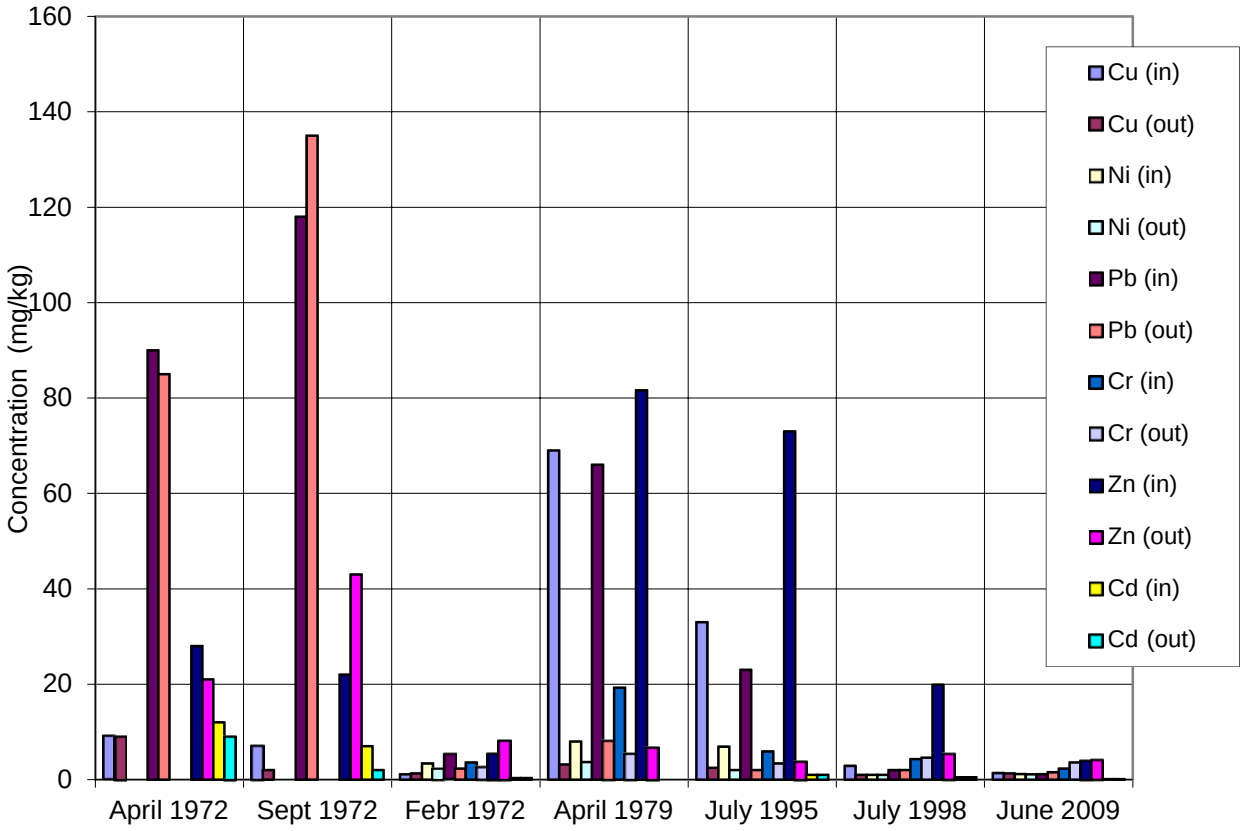

Figure 4. Jacksonville ODMDS (Zone A) Sediment Chemistry Trends.

Note: (in) represents stations within the ODMDS and (out) represents stations outside of the ODMDS.

3.5 Future Monitoring Surveys. Based on the type and volume of material disposed and impacts of concern, various monitoring surveys can be used to determine if and where the disposed material is moving and what environmental effect the material is having on the site and adjacent areas.

Nearshore shrimping grounds are located between the site and the coastline and both natural and artificial reefs are common on the mid-shelf east of the site. A sand borrow area is located east of the expanded site. Monitoring results indicate that the disposal mound is relatively stable with possible southerly transport of material so these areas are not of concern. Sediment composition within the site may be altered as a result of disposal of clay and silty material on otherwise sandy sediments. Progressive transition to sediments containing a higher percentage of silt and clay is inevitable with continued use of the site. 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.

Due to the concern that disposal of silts and clay could deposit on nearby sand areas available for beach placement, making the area unsuitable as a sand source, the site will be managed using the prescribed release zones with fine grained material being disposed furthest from the identified sand areas. Additionally, management of sand mining activities to extract sand most adjacent to the ODMDS will further alleviate the risk of resource integrity.

The ODMDS and borrow areas will be monitored for unintentional transport of material offsite, especially towards the designated borrow areas or potential sand source. If future studies indicate that a sand source is not considered viable, meeting all criteria for beach placement in the state of Florida, then no monitoring of that sand source will be required. Should fine grained disposal material be identified outside the ODMDS in the direction of a viable sand source, in greater than a 5 cm layer and within 1000 feet from the viable sand source, then that specific sand source will be monitored. Should fine grained disposal material be identified within a viable sand source, then disposal actions will be managed per Table 4 to include mitigative actions such as adjusting buffer zones.

Rock and rubble disposal in Zone D-1 will be monitored for habitat creation. The National Dredging Policy promotes the beneficial use of dredged material whenever possible. Consequently, EPA and the USACE have decided to manage rock separately to the extent feasible with the aim of maximizing habitat creation without adversely impacting disposal site capacity. In this way, any habitat created will be spatially separated from areas used for disposal of unconsolidated material. Habitat created will be monitored for function and productivity to assess the success of using this management approach. No management actions are envisioned as a result of this monitoring that would adversely affect overall capacity of the ODMDS as the primary purpose of the ODMDS is dredged material disposal.

A summary of the monitoring strategies for the expanded Jacksonville ODMDS and thresholds for management actions are presented in Table 4. Should future disposal at the Jacksonville ODMDS result in unacceptable adverse impacts as documented in trend assessment and other surveys, further studies may be required to determine the persistence of these impacts, the extent of the impacts within the marine system, and/or possible means of mitigation. In addition, the management plan presented may require revision based on the outcome of any monitoring program.

3.6 Reporting and Data Formatting.

3.6.1 Project Initiation and Violation Reporting. The USACE or other site user shall notify EPA 15 days prior to the beginning of a dredging cycle or project disposal. The user is also required to notify the USACE and the EPA within 24 hours if a violation of the permit and/or contract conditions related to MPRSA Section 103 or SMMP requirements occur during disposal operations.

3.6.2 Disposal Monitoring Data. Disposal monitoring data shall be provided to EPA Region 4 electronically on a weekly basis. Data shall be provided per the 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.

Table 4. Jacksonville ODMDS Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
Short & Long-term Fate of Disposed Dredged Material	Sediment Profile Imaging	Site User /EPA	Confirm aerial extent of disposal mound (apron) and benthic impact. Confirm not impacting benthic communities outside of the ODMDS	Following major New Work Project	Disposal mound footprint occurs outside ODMDS boundaries (5cm)	Continue to use site without further restrictions	-Restrict disposal volumes -Modify disposal zones -Institute Environmental Effects Monitoring
Monitor Bathymetric Trends	Bathymetry and Multibeam bathymetry (Zone D-1)	Site User	Determine the extent of the disposal mound and major bathymetric changes	Prior to use of each release zone and Post disposal for significant projects (>50,000cy)	Disposal mound occurs outside ODMDS boundaries	Continue Monitoring	-Modify disposal method/placement -Restrict Disposal Volumes
Ensure Safe Navigation Depth	Bathymetry	Site User	Determine height of mound and any excessive mounding	Post disposal for significant projects (>50,000cy)	Mound height > -30 feet MLLW	Continue Monitoring	-Modify disposal method/placement -Direct disposal operators to avoid areas shallower than 30 feet.
					Mound height > -25 feet MLLW	Continue Monitoring	-Physically level material shallower than 25 feet -Notify mariners of mound location and depth -Further restrict disposal volumes.

Table 4 (Continued). Jacksonville ODMDS Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
Trend Assessment	Water and Sediment Quality, Benthic Community Analysis (40CFR228.13)	U.S. EPA	Periodically evaluate the impact of disposal on the marine environment (40CFR 228.9)	Approximately every 10 years.	-Absence from the site of pollution sensitive biota -Progressive non-seasonal changes in water or sediment quality	Continue Monitoring	-Conduct Environmental Effects Monitoring or Advanced Environmental Effects Monitoring -Review dredged material evaluation procedures
Environmental Effects Monitoring	Chemical Monitoring	EPA/ USACE	Determine if chemical contaminants are significantly elevated[1] within and outside of site boundaries	Implement if disposal footprint extends beyond the site boundaries or if Trend Assessment results warrant.	Contaminants are found to be elevated[1]	Discontinue monitoring.	- Institute Advanced Environmental Effects Monitoring - Implement case specific management options (ie. Remediation, limits on quantities or types of material). -Consider isolating dredged material (capping)
	Benthic Monitoring	EPA/ USACE	Determine whether there are adverse changes in the benthic populations outside of the site and evaluate recovery rates		Adverse changes observed outside of the site that may endanger the marine environment		

[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.

Table 4 (Continued). Jacksonville ODMDS Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
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	-Discontinue site use - Implement case specific management options (i.e. Remediation, limits on quantities or types of material).
	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.		
Document Habitat Creation	Multibeam bathymetry or sidescan sonar	Site User	Determine the relief and aerial extent of habitat created.	Post disposal	1 meter of relief created	No action	Direct future disposal to areas with less relief if available. Institute Rapid Bioassessment.
	Rapid Bioassessment	EPA	Assess quality of habitat created	Post disposal	Habitat quality equals or exceeds natural habitat	Allow continued dumping	Direct rock disposal to other areas of zone D-1 and/or D-2 as capacity allows
Protect Sand Borrow Areas	Sediment Profile Imaging	EPA/USACE	Ensure no adverse impacts on mineral extraction (40 CFR 228.6(a)(8))	Within 2 years of major new work project (>2mcy) and every 10 years	Fine-grained disposal material is detected (>5cm) outside the ODMDS in the direction of a viable sand source and within 1000’ of the sand source to be mined.	Continue Monitoring	-Monitor sand borrow area for deposition of fines. - If fine grained disposal material is detected (measurable) within sand source area, adjust disposal zones

Table 4 (Continued). Jacksonville ODMDS Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold Not Exceeded	Threshold Exceeded
Compliance	Disposal Site Use Records in EPA Region 4's XML format	Site User	-Ensure management requirements are being met -To assist in site monitoring	Weekly during the project	Disposal records required by SMMP are not submitted or are incomplete	Continue Monitoring	-Restrict site use until requirements are met

3.6.3 Post Disposal Summary Reports. A Post Disposal Summary Report shall be provided to EPA within 90 days after project completion. These reports should include: dredging project title; permit number and expiration date (if applicable); contract number; name of contractor(s) conducting the work, name and type of vessel(s) disposing material in the ODMDS; disposal timeframes for each vessel; volume disposed at the ODMDS (as paid *in situ* volume, total paid and un paid *in situ* volume, and gross volume reported by dredging contractor); number of loads to ODMDS; type of material disposed at the ODMDS; identification by load number of any misplaced material; dates of pre and post disposal bathymetric surveys of the ODMDS; and a narrative discussing any violation(s) of the 103 concurrency and/or permit (if applicable). The narrative should include a description of the violation, indicate the time it occurred and when it was reported to the EPA and USACE, discuss the circumstances surrounding the violation, and identify specific measures taken to prevent reoccurrence. The Post Disposal Summary Report should be accompanied by the bathymetry survey results (plot and X,Y,Z ASCII data file), a summary scatter plot of all disposal start locations, and a summary table of the trip information required by Section 3.2 with the exception of the disposal completion data. If all data is provided in the required XML format, scatter plots and summary tables will not be necessary.

3.6.4 Environmental Monitoring. Material tracking, disposal effects monitoring, and any other data collected shall be coordinated with and be provided to SMMP team members and federal and state agencies as appropriate. Data will be provided to other interested parties requesting such data to the extent possible. Data will be provided for all surveys in a report generated by the action agency.

The report should indicate:

1) How the survey relates to the SMMP and previous surveys at the Jacksonville ODMDS
2) Provide data interpretations, conclusions, and recommendations
3) Project the next phase of the SMMP

Monitoring results will be summarized in subsequent revisions to the SMMP.

4.0 MODIFICATION OF THE JACKSONVILLE ODMDS SMMP

Should the results of the monitoring surveys or reports from other sources indicate that continued use of the ODMDS would lead to unacceptable effects; the ODMDS SMMP will be modified to mitigate the adverse impacts. The SMMP will be reviewed and revised at a minimum of every ten years. The SMMP will be reviewed and updated as necessary 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.

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