Appendix A

Environmental Sampling Results

for Rehabilitation of

Dredged Material Containment Area 1N (Onslow Island)

Savannah Harbor Navigation Project

Chatham County, Georgia

In preparation of potentially revitalizing DMCA 1N (Onslow Island), the Corps sampled and tested sediments within the site to ensure they are free from contaminants that may pose a threat to workers and the environment. Sample locations were selected to be as representative of the interior of the DMCA as practicable and specifically included areas that have been used for stockpiling abandoned USFWS vehicles/equipment. Samples were collected from 19 locations (figure 1) and analyzed for metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and pesticides.

FIGURE 1: SITE MAP

Fifty-four samples were collected from the 19 sampling locations on May 14 and 15, 2013. Samples were taken from the ground surface (elevations varying between 22 and 13 feet Mean Lower Low Water (MLLW)) down to a bottom elevation of either 10 or 6 feet MLLW, depending on location The water table at DMCA 1N is approximately 6 feet MLLW. In most cases, samples were composited every 4 feet until reaching the bottom depth (table 1).

Table 1. Sampling Plan

Savannah Harbor DMCA 1N
Sampling Plan Summary Table

**All elevations are MLLW*

For Locations S-1, S-3, S-6, S-8, S-13, S-14, S-16, S-17, S-18, S-19		
Sample below DMCA floor to elev.	6	
For Locations S-2, S-4, S-5, S-7, S-9, S-10, S-11, S-12, S-15		
Sample below DMCA floor to elev.	10	

Sample Boring	Existing Elev. (+/-0.5) (ft)	Min. Boring Depth (ft)	Anticipated Boring Depth (ft)	Proposed # of samples	Sample Intervals (ft)
1N-S-1	13.0	7.0	10.0	2	0-3, 3-7
1N-S-2	15.0	5.0	5.0	2	0-3, 3-5
1N-S-3	15.0	9.0	10.0	3	0-3, 3-5, 5-9
1N-S-4	14.0	4.0	5.0	2	0-2, 2-4
1N-S-5	15.0	5.0	5.0	2	0-3, 3-5
1N-S-6	17.0	11.0	15.0	4	0-3, 3-5, 5-7, 7-11
1N-S-7	13.0	3.0	5.0	1	0-3
1N-S-8	13.0	7.0	10.0	2	0-3, 3-7
1N-S-9	15.0	5.0	5.0	2	0-3, 3-5
1N-S-10	20.0	10.0	10.0	4	0-3, 3-6, 6-8, 8-10
1N-S-11	18.0	8.0	10.0	3	0-3, 3-6, 6-8
1N-S-12	20.0	10.0	10.0	4	0-3, 3-6, 6-8, 8-10
1N-S-13	18.0	12.0	15.0	4	0-3, 3-6, 6-8, 8-12
1N-S-14	18.0	12.0	15.0	4	0-3, 3-6, 6-8, 8-12
1N-S-15	13.0	3.0	5.0	1	0-3
1N-S-16	15.0	9.0	10.0	3	0-3, 3-5, 5-9
1N-S-17	22.0	16.0	20.0	5	0-3, 3-6, 6-9, 9-12, 12-16
1N-S-18	15.0	9.0	10.0	3	0-3, 3-5, 5-9
1N-S-19	14.0	8.0	10.0	3	0-2, 2-4, 4-8

Total # of Samples:	54
Total Boring Depth (lin ft)	153-185

Out of the 19 sample locations only 3 areas (6, 14, & 16) had Polycyclic Aromatic Hydrocarbons (PAHs) exceedances higher than the effects range low (ERL) as specified in the National Oceanic Atmospheric Administration's (NOAA) Screening Quick Reference Tables (SQuiRTs). Other areas had semi-VOC concentrations above the ERL, but none of the samples approached the Effects Range Median (ERM) concentrations. ERL and ERM values are considered guidelines to help categorize the range of concentrations in sediment in which effects are scarcely observed or predicted (below the ERL) and the range above which effects are generally or always observed (above the ERM). [Note: The ERL values are not intended as concentrations that are always predictive of toxicity. Rather, they should be used primarily as estimates of the concentrations below which toxicity is least likely. ERM values are better indicators of concentrations associated with effects than the ERLs.]

Of the metals, arsenic and cadmium were detected above the ERL, but well below the ERM. Cadmium was found in sediments of 9 of the borings but concentrations were also well below the ERM levels. Arsenic is a naturally- occurring metal in most sediment samples in this region and the values detected were 1/3 that of the ERM criteria. The sampling results are included in this appendix.

Acetone was also detected but is known to be a common lab cross-contaminant. There are no applicable ERL or ERM criteria for acetone.

The boring with the highest number of exceedances was S6 (elevation 17 feet MLLW) and appear to be concentrated in the top 5 feet of sediment. This sample site is located in one of four areas where USFWS vehicles had been stored. The other sites' (S14 and S16) ERL exceedances were well below the anticipated disturbance depth.

The draft construction scope of work does not call for the topography of the interior of the DMCA to be uniformly graded, but will specify the construction contractor not disturb sediments at location S6. The other two sites, S14 and S16, will not be excavated down to the depths where the ERL exceedances were detected. Shaping of the interior will be specified to direct water flow from the dredge pipe to the weirs, ensuring the greatest time allotment between input and discharge to allow maximum settling time for fine-grained sediment. The District intends to sample discharges at the weirs in accordance with the existing water quality certification. Weir discharge flows are generally the surface water introduced to the DMCA through dredging. For construction purposes, the District will avoid the areas with PAHs as described above to minimize wildlife/human exposure.