

N60201.AR.002925
NS MAYPORT
5090.3a

CORRECTIVE MEASURES STUDY ADDENDUM FOR SOLID WASTE MANAGEMENT UNITS
47 AND 53 NS MAYPORT FL
08/12/2015
TETRA TECH



Document Tracking Number 15JAX0047

August 12, 2015

Project Number 112G00436

Naval Facilities Engineering Command, Southeast
ATTN: Mr. Dana Hayworth (Code OPDE3)
Remedial Project Manager
135 Ajax Street North, Building 903
Naval Air Station Jacksonville
Jacksonville, FL 32212-0030

Reference: CLEAN Contract Number N62467-04-D-0055
Contract Task Order Number 0033

Subject: Corrective Measures Study Addendum for Solid Waste Management Units 47 and 53
Naval Station Mayport, Jacksonville, Florida

Mr. Hayworth:

Tetra Tech, Inc. is pleased to submit the Corrective Measures Study (CMS) Addendum for Solid Waste Management Units (SWMUs) 47 and 53 at Naval Station (NAVSTA) Mayport, Jacksonville, Florida. This CMS Addendum was prepared for the United States Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-term Environmental Action Navy Contract Number N62467-04-D-0055 for Contract Task Order (CTO) 0033. This letter report is an addendum to the CMS for SWMUs 47, 53, and 55, which was issued on September 9, 2014.

PURPOSE

The purpose of this CMS Addendum is to update the decisions and actions for SWMUs 47 and 53 as a result of changes in base-wide groundwater background concentrations used in the final CMS submitted September 9, 2014. The background values used in the original CMS document were from a draft-final version of the Groundwater Background Study for Metals at NAVSTA Mayport and was approved for use by the NAVSTA Mayport Installation Restoration Partnering Team (Partnering Team). The groundwater background values were reduced after Florida Department of Environmental Protection (FDEP) regulator comment; thus, changing the CMS contaminant of concern (COC) impacts.

Personnel conducting the field sampling visit for the Long-term Monitoring (LTM) Program reported several wells destroyed and new construction in the area of C-2 berth on Charlie Pier (C-pier). Discussions with the Partnering Team determined that installing new wells in the highly industrial area is difficult, and the groundwater is unsuitable for drinking water due to salinity and other naturally occurring factors.

The CMS for SWMUs 47 and 53 is to be amended as follows:

1. The monitoring wells to be included in the LTM program based on the revised Background Screening Value (BSV) will be increased to include the wells previously omitted due to concentrations less than background criteria.

Tetra Tech, Inc.

8640 Philips Highway, Suite 16, Jacksonville, FL 32256
Tel 904.636.6121 Fax 904.636.6165 www.tetrattech.com

2. Remove the wells in the vicinity of C-2 berth on C-pier from the LTM Program. Continue land use controls (LUCs) for groundwater on C-pier as the only corrective action for this area.

BACKGROUND

The initial investigation at SWMUs 47 and 53 was conducted by Tetra Tech, Inc. in 2000 and was reported in the Resource Conservation and Recovery Act Facility Investigation (RFI) for SWMUs 47, 53, and 55 (Group IV) dated December 8, 2004. Groundwater sample results from the RFI, the RFI Addendum dated December 15, 2004, and the 2011 LTM Evaluation dated June 22, 2012, were compared to the FDEP Cleanup Target Levels (CTLs) and the NAVSTA Mayport BSVs in the 2014 CMS.

The 2013 draft Groundwater Background Study for Metals was used to calculate the NAVSTA Mayport BSVs for iron and manganese as 2,240 and 188 micrograms per liter ($\mu\text{g/L}$), respectively. The CMS evaluation of groundwater sample results used the draft BSVs for comparison to determine the COCs. BSVs were later decreased during resolution of FDEP and University of Florida comments. The final Groundwater Background Study for Metals included the background values for iron and manganese as 593 and 188 $\mu\text{g/L}$, respectively. During preparation of this CMS Addendum, Tetra Tech compared the groundwater sample analytical results at SWMUs 47 and 53 to the final approved iron and manganese BSVs.

REVISED GROUNDWATER COCS

The groundwater COCs identified in the 2014 CMS were iron at MPT-47-DPW04S, MPT-47-DPW10S, MPT-47-DPW15S (destroyed), MPT 47 DPW16S (destroyed), MPT-47-DPW17S, and MPT-FP-DPW01S; manganese at MPT-47-DPW16S and MPT-FP-DPW01S; arsenic at MPT-47-DPW07S; bis(2-ethylhexyl)phthalate at MPT-FP-DPW01D; and 2-methylnaphthalene, carbazole, 1,4-dioxane, and vinyl chloride at MPT-EP-DPW02I.

Re-evaluation of the groundwater concentrations for iron and manganese were required as a result of the revised BSV concentrations in the final Groundwater Background Study for Metals. No other COCs were identified for the LTM Program. Additional wells where the iron or manganese concentrations exceeded the GCTLs were identified.

Table 1 identifies the additional monitoring well locations that exceed both the FDEP Groundwater CTLs (GCTLs) and the BSVs from the final Groundwater Background Study for Metals. The concentrations of iron and manganese for each well at SWMU 47 are reported in Table 2.

RECOMMENDED CHANGES TO THE CORRECTIVE MEASURE IN THE CMS

The selected corrective measure in the CMS was LTM and LUCs. The monitoring wells identified in the 2014 CMS have been included in the LTM Program. The additional monitoring wells shown in Table 1 will be added to those already included in the LTM Program as a result of the groundwater re-evaluation. Wells in Table 1 identified with an asterisk are located within C-Pier.

The LTM field sampling event was conducted in December 2014. Numerous monitoring wells in the area of C-2 berth on C-pier were destroyed during recent construction and various maintenance and repair activities including those identified in Table 1 with an asterisk. These wells were not sampled in December 2014. The C-pier area is a peninsula-like pier between the turning basin at NAVSTA Mayport and the St. Johns River, which is approximately $\frac{1}{2}$ mile from the Atlantic Ocean. The turning basin supports the larger ships stationed at and visiting NAVSTA Mayport. The C-pier area is paved and subjected to heavy traffic due to loading and unloading ships. Discussions with the Partnering Team resulted in a general agreement that installing new wells in the highly industrial area is difficult, and the groundwater is unsuitable for drinking water due to salinity and other naturally occurring factors. Additionally, it is likely



that the paved area has further impacted the groundwater geochemistry by reducing the oxygen levels, allowing the naturally occurring iron and manganese to become soluble and potentially increase the naturally occurring levels of these chemicals.

The C-pier monitoring wells with iron and/or manganese GCTL exceedances that have been destroyed are MPT-47-DPW14S, MPT-47-DPW15S, MPT-47-DPW16S, MPT-47-DPW22S, MPT-47-DPW23S, and MPT-47-DPW23D. Monitoring well locations MPT-47-DPW15S and MPT-47-DPW16S contained concentrations of iron exceeding the surface water criteria of 3,000 µg/L. The iron concentration in MPT-47-DPW16S slightly exceeds the health-based value (gastrointestinal) of 4,200 µg/L. The groundwater is not a source of drinking water, nor is it anticipated to be a source of drinking water. Installing monitoring wells in this location is challenging due to logistical challenges including ongoing construction activity and myriad underground utility lines.

SUMMARY

Tetra Tech recommends the following changes to the corrective measure identified as the preferred alternative for SWMU 47 and 53:

- Add the monitoring wells included in Table 1, except for those identified with an asterisk, to the LTM Program.
- Discontinue LTM for iron and manganese in the vicinity of C-2 berth on C-pier and maintain the LUC. The LUC corrective measure will continue to prevent human exposure to the groundwater, and the Corrective Measures Implementation Plan will require LUC monitoring to verify the groundwater is not being used for drinking water. Figure 1 identifies all of the COC monitoring wells for SWMUs 47 and 53 including the missing wells at C-pier. The LUC area defined in the CMIPs for SWMU 47 and 53 will include the entire C-pier area.

If you have any questions with regard to this submittal, please do not hesitate to contact me by telephone at (904) 730-4669, extension 215, or via e-mail at Gregory.Roof@TetraTech.com.

Sincerely,



Gregory S. Roof, P.E.
Project Manager

GSR/df

Enclosures

- c: John Winters, FDEP (CD only)
Paul Malewicki, NAVSTA Mayport (1 hardcopy, 1 CD)
RDM, Tetra Tech (Pittsburgh) (unbound, CD)
Administrative Record (electronic only)
CTO 0033 Project File



Mr. Dana Hayworth
NAVFAC SE
August 12, 2015 – Page 4

PROFESSIONAL CERTIFICATION

The professional opinions rendered in this decision document identified as the *Corrective Measures Study Addendum for Solid Waste Management Units 47 and 53, Naval Station Mayport, Jacksonville, Florida*, were developed in accordance with commonly accepted procedures consistent with applicable standards of practice. This document was prepared under the supervision of the signing engineer and is based in part on information obtained from others. If conditions are determined to exist differently than those described in this document, then the undersigned professional engineer should be notified to evaluate the effects of any additional information on the project described in this document.

A handwritten signature in blue ink, appearing to read 'Gregory S. Roof', written over a horizontal line.

August 12, 2015
Gregory S. Roof, P.E.
Professional Engineering Number 50842
Tetra Tech Engineering Number 2429

TABLES

TABLE 1	
MONITORING WELLS TO BE ADDED TO THE CMS ADDENDUM FOR SWMUs 47 AND 53 NAVAL STATION MAYPORT JACKSONVILLE, FLORIDA	
Iron GCTL Exceedance	Manganese GCTL Exceedance
MPT-47-DPW01S	MPT-47-DPW03S
MPT-47-DPW02S	MPT-47-DPW04S
MPT-47-DPW03S	MPT-FP-DPW01S
MPT-47-DPW05S	
MPT-47-DPW07S	
MPT-47-DPW08S	
MPT-47-DPW11S	
MPT-47-DPW12S	
MPT-47-DPW14S*	
MPT-47-DPW19S	
MPT-47-DPW20S	
MPT-47-DPW22S*	
MPT-47-DPW23D*	
MPT-47-DPW23S*	
MPT-FP-DPW01S	

Note: Monitoring wells with asterisk have been destroyed.

TABLE 2

**SUMMARY OF POSITIVE DETECTIONS AND HUMAN HEALTH CRITERIA/BACKGROUND EXCEEDANCES IN GROUNDWATER AT SWMU 47
NAVAL STATION MAYPORT
JACKSONVILLE, FLORIDA
PAGE 1 OF 2**

SAMPLE IDENTIFICATION	BSV	GCTL	MPT-47GWDPW01	MPT-47GWDPW02	MPT-G4-GW-37-05	MPT-47GWDPW03	MPT-G4-GW-38-04	MPT-47GWDPW04	MPT-G4-GW-39-04	MPT-47GWDPW05	MPT-47GWDPW05-D
Location Identification			MPT-47-DPW01S	MPT-47-DPW02S	MPT-47-DPW02S	MPT-47-DPW03S	MPT-DPW03S	MPT-47-DPW04S	MPT-47-DPW04S	MPT-47-DPW05S	MPT-47-DPW05S
Sample Date			20001221	20001222	20000707	20001222	20000707	20001222	20000707	20001214	20001214
METALS (µg/L)											
IRON	593	300	949	7,900	2,530	5,350	1,820	13,100	2,010	957	812
MANGANESE	188	50	55.1	102	61.4 J	223	404 J	248	172 J	164	163
SAMPLE IDENTIFICATION	BSV	GCTL	MPT-G4-GW-11-05	MPT-47GWDPW06	MPT-G4-GW-12-05	MPT-47GWDPW07	MPT-G4-GW-25-07	MPT-47GWDPW08	MPT-G4-GW-13-06	MPT-47GWDPW09	MPT-G4-GW-17-09
Location Identification			MPT-47-DPW05S	MPT-47-DPW06S	MPT-47-DPW06S	MPT-47-DPW07S	MPT-47-DPW07S	MPT-47-DPW08S	MPT-47-DPW08S	MPT-47-DPW09S	MPT-47-DPW09S
Sample Date			20000628	20001214	20000628	20001222	20000705	20001222	20000629	20001215	20000629
METALS (µg/L)											
IRON	593	300	1,890	424	1,830	905	3,030	2,450	4,370	588	341 U
MANGANESE	188	50	247 J	70.8	361 J	90.2	318	98	390 J	52.7	17.6 U
SAMPLE IDENTIFICATION	BSV	GCTL	MPT-G4-GW-17-09-D	MPT-47GWDPW10	MPT-G4-GW-16-08	MPT-47GWDPW11	MPT-G4-GW-15-09	MPT-47GWDPW12	MPT-G4-GW-14-10	MPT-47GWDPW13	MPT-G4-GW-21-08
Location Identification			MPT-47-DPW09S	MPT-47-DPW10S	MPT-47-DPW10S	MPT-47-DPW11S	MPT-47-DPW11S	MPT-47-DPW12S	MPT-47-DPW12S	MPT-47-DPW13S	MPT-47-DPW13S
Sample Date			20000629	20001221	20000629	20001221	20000629	20001221	20000629	20001215	20000630
METALS (µg/L)											
IRON	593	300	360 U	4,610	1,680	1,360	486	2,010	748	74.1 U	2,050
MANGANESE	188	50	19.7 U	124	91 J	40.7	8.8 U	157	157 J	21.9	454

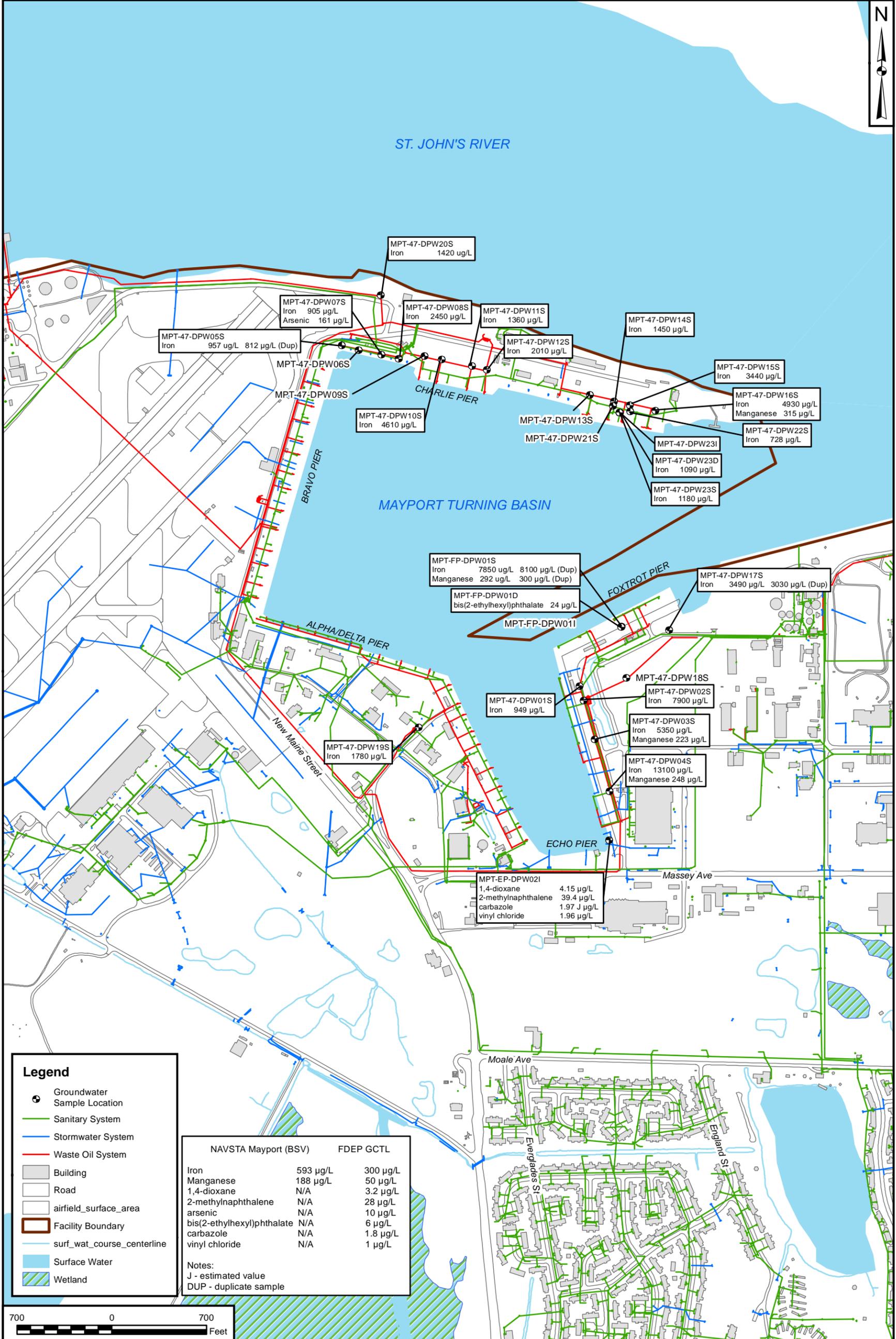
TABLE 2

**SUMMARY OF POSITIVE DETECTIONS AND HUMAN HEALTH CRITERIA/BACKGROUND EXCEEDANCES IN GROUNDWATER AT SWMU 47
NAVAL STATION MAYPORT
JACKSONVILLE, FLORIDA
PAGE 2 OF 2**

SAMPLE IDENTIFICATION	BSV	GCTL	MPT-47-GW-22-08	MPT-47-GW-22-08	MPT-47-GW-22-08						
Location Identification			MPT-47-DPW14S	MPT-47-DPW14S	MPT-47-DPW15S	MPT-47-DPW15S	MPT-47-DPW16S	MPT-47-DPW16S	MPT-47-DPW17S	MPT-47-DPW17S	MPT-47-DPW18S
Sample Date			20001215	20000630	20001222	20000630	20001221	20000705	20010103	20010103	20001229
METALS (µg/L)											
IRON	593	300	1,450	1,050	3,440	831	4,390	83.1 U	3,490	3,030	148
MANGANESE	188	50	171	143	186	121	315	8.1	107	93.9	183
SAMPLE IDENTIFICATION	BSV	GCTL	MPT-G4-GW-29-05	MPT-47-GW-29-05	MPT-47-GW-29-05	MPT-G4-GW-10-10	MPT-47-GW-10-10	MPT-47-GW-10-10	MPT-47-GW-10-10	MPT-47-GW-10-10	MPT-47-GW-10-10
Location Identification			MPT-47-DPW18S	MPT-47-DPW19S	MPT-47-DPW20S	MPT-47-DPW20S	MPT-47-DPW21S	MPT-47-DPW22S	MPT-47-DPW23D	MPT-47-DPW23I	MPT-47-DPW23S
Sample Date			20000706	20010103	20010313	20000628	20010523	20010523	20010607	20010607	20010607
METALS (µg/L)											
IRON	593	300	631	1,780	1,420	288 U	404	728	1,090	509	1,180
MANGANESE	188	50	70.7	107	42.2	28.8 U	17.9	29	68	42.6	37.6
SAMPLE IDENTIFICATION	BSV	GCTL	MPT-47-MW14SR	MPT-47-MW15SR	MPT-CP-MW01S	MPT-FDPW01D-01	MPT-FDPW01I-01	MPT-FDPW01S-01	MPT-FDPW01S-01-D		
Location Identification			MPT-47-MW14	MPT-47-MW15	MPT-CP-MW01	MPT-FP-DPW01D	MPT-FP-DPW01I	MPT-FP-DPW01S	MPT-FP-DPW01S		
Sample Date			20060511	20060511	20060511	20010313	20010313	20010313	20010313		
METALS (µg/L)											
IRON	593	300	NA	NA	NA	61.1	499	7,850	8,100		
MANGANESE	188	50	NA	NA	NA	3.9 U	14.3	292	300		

Notes:
 Shading indicates analyte exceeded both the BSV and GCTL.
 Bold indicates analyte exceeded only the GCTL.
 NA = Not Applicable
 J = Value is estimated.
 U = Analyte was not detected at the reporting limit.

FIGURE



Legend

- Groundwater Sample Location
- Sanitary System
- Stormwater System
- Waste Oil System
- Building
- Road
- airfield_surface_area
- Facility Boundary
- surf_wat_course_centerline
- Surface Water
- Wetland

	NAVSTA Mayport (BSV)	FDEP GCTL
Iron	593 µg/L	300 µg/L
Manganese	188 µg/L	50 µg/L
1,4-dioxane	N/A	3.2 µg/L
2-methylnaphthalene	N/A	28 µg/L
arsenic	N/A	10 µg/L
bis(2-ethylhexyl)phthalate	N/A	6 µg/L
carbazole	N/A	1.8 µg/L
vinyl chloride	N/A	1 µg/L

Notes:
 J - estimated value
 DUP - duplicate sample



DRAWN BY	DATE
J. ENGLISH	04/25/12
CHECKED BY	DATE
D. FEARS	11/25/14
REVISED BY	DATE
J.MADDEN	11/25/14
SCALE	
AS NOTED	



GROUNDWATER SAMPLING LOCATIONS
SWMUs 47 AND 53
CORRECTIVE MEASURES STUDY ADDENDUM
SWMUs 47 AND 53
NAVAL STATION MAYPORT
JACKSONVILLE, FLORIDA

CONTRACT NUMBER	0436	CTO NUMBER	033
APPROVED BY		DATE	
APPROVED BY		DATE	
FIGURE NO.	FIGURE 1	REV	0