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NAS CECIL FIELD
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LETTER REGARDING WORK PLAN FOR GROUNDWATER SAMPLING USING DIRECT
PUSH TECHNOLOGY AT OPERABLE UNIT 2 (OU 2) SITE 5 NAS CECIL FIELD FL
1/6/2012
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PITT-1-12-015

January 6, 2012

Project Number 112G02267

BRAC PMO SE

Attn: Mr. Art Sanford

Remedial Project Manager

4130 Faber Place Drive

North Charleston, South Carolina 29405

Reference: CLEAN Contract Number N62470-08-D-1001
Contract Task Order JM09

Subject: Work Plan for Groundwater Sampling Using Direct Push Technology
Operable Unit 2, Site 5
Naval Air Station Cecil Field, Jacksonville, Florida

Dear Mr. Sanford:

On behalf of the Navy, Tetra Tech, Inc. (Tetra Tech) is pleased to submit this Work Plan for groundwater sampling using direct push technology (DPT) to investigate the source of volatile organic compound (VOC), semi-volatile organic compound (SVOC), and vanadium contamination in groundwater at Operable Unit (OU) 2, Site 5. This Work Plan was prepared for Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62470-08-D-1001.

The primary objective of this Work Plan is to investigate the localized source of VOC, SVOC, and vanadium contamination in groundwater by collecting approximately 18 groundwater samples using DPT in the vicinity of wells CEF-005-LTM01 and CEF-005-LTM04 and determine the limits of the upgradient contaminant plume and the most appropriate upgradient monitoring well location to be incorporated into the current long-term monitoring program. VOC and SVOC concentrations in these two wells have been increasing in recent sampling events; thus further delineation of contamination is appropriate in this area.

BACKGROUND

OU 2, Site 5 consists of the former Oil Disposal Area Northwest at the former Naval Air Station (NAS) Cecil Field. Figure 1 shows the location of OU 2, Site 5 in the southwestern portion of the facility. Site 5 is located approximately 2,500 feet north of the intersection of Perimeter Road and the Lake Fretwell access road. Perimeter Road defines the western boundary of the site.

Site 5 is an undeveloped site with no electrical, water, stormwater, or sewer facilities. The site has no prominent hills or depressions, but is gently sloping to the south toward a drainage ditch; the eastern side of the site slopes toward the eastern wetland. The northern and eastern boundaries of the site are forested and are not defined by physical features. The southern boundary of the site is defined by a small drainage ditch. The area of the entire former disposal pit site was approximately 0.5 acres, which included an unlined pit and the adjacent access areas. The disposal pit itself was reported to be approximately 100 feet by 200 feet or approximately 0.2 acres in size. The area investigated was approximately 7 acres, and included areas north and south of the drainage ditch and west of Perimeter Road.

A Remedial Investigation (RI) for soils at Site 5 was completed in 1991, followed by a Focused Feasibility Study (FFS) in 1994. A subsequent RI and FFS were completed for groundwater in 1995. Based on the results of the RI and FFS, a Record of Decision (ROD) was originally published for OU 2, Site 5 in September 1995, which identified two groundwater technologies as the selected remedies for the site: air sparging and in-situ stripping/biological treatment. However, after the publication of the ROD, analytical data indicated that certain

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site conditions were changing. These included: concentrations of site groundwater constituents of concern (COCs) were diminishing, naturally occurring biological processes were degrading VOCs in the groundwater, and groundwater COCs were not migrating outside the boundaries of Site 5 at unacceptable concentrations. In 1998, soil and sediment were excavated and shipped off site for disposal as part of an interim removal action (IRA) for soil and sediment. Removal of these contaminated soils greatly reduced the migration of contaminants from soil to groundwater.

Five monitoring wells (CEF-005-LTM01, CEF-005-LTM02, CEF-005-LTM03, CEF-005-LTM04, and CEF-005-LTM05) were installed at Site 5 from August 1998 to February 1999 with screened intervals ranging from 2 to 15 feet below ground surface (bgs) to monitor natural attenuation parameters and groundwater COC concentrations. A temporary well point was added to the sampling protocol in the drainage ditch south of the original disposal pit. These changes were documented in an amended ROD submitted in 2000 (Tetra Tech, 2000).

Long-term monitoring (LTM) began in 1998 and is currently being conducted on an annual basis. Monitoring parameters include groundwater levels, site COCs, and natural attenuation (NA) parameters. COCs are: select VOCs (1,1-dichloroethene, benzene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride, and total xylenes) and select SVOCs (1-methylnaphthalene, 2-methylnaphthalene, 4-methylphenol, and naphthalene) at all five monitoring wells; and vanadium at wells CEF-005-LTM02, CEF-005-LTM03, and CEF-005-LTM05. NA parameters are: sulfate, methane, ferrous iron, hydrogen sulfide, carbon dioxide, manganese, and dissolved oxygen. Surficial groundwater from well point CEF-005-WP is also collected as part of LTM. COC concentrations in wells CEF-005-LTM01, CEF-005-LTM02, CEF-005-LTM04, and CEF-005-LTM05 have consistently exceeded Florida Department of Environmental Protection (FDEP) groundwater cleanup target levels (GCTLs) in recent monitoring events. Several COC concentrations in wells CEF-005-LTM01 and -LTM04 have exhibited increasing trends in recent sampling rounds, as shown on Figure 2.

A basewide 5-Year Review was submitted in April 2011 (Tetra Tech, 2011). United States Environmental Protection Agency (EPA) provided comments on the report that questioned COC concentrations in upgradient well CEF-005-LTM01, and recommended that further delineation of contamination in this area be conducted. During the November 2011 Base Realignment and Closure (BRAC) Cleanup Team (BCT) meeting, it was decided that approximately 18 groundwater samples will be collected in the area near wells CEF-005-LTM01 and -LTM04 by DPT to investigate and delineate COC contamination in this area. The samples will be analyzed for select VOCs, select SVOCs, and vanadium (BCT, 2011). The samples will be collected from ten locations at a depth of 10 feet bgs, and from four locations at depths of both 10 feet bgs and 20 feet bgs. The locations agreed to at the meeting are identified on Figure 2. Based on the results of the DPT groundwater sampling, up to three monitoring wells may be installed to monitor contamination in this area.

FIELD GUIDANCE

Fourteen DPT sampling points have been identified as shown on Figure 2. Tetra Tech will procure and oversee the services of a qualified drilling subcontractor to perform the DPT sampling point installation. The layout is designed in a grid using 50-foot intervals between sampling points. Utility clearance will be conducted and verified via hand auger to a depth of 5 feet. The sampling points are located in primarily unpaved areas.

Groundwater sampling will be conducted in accordance with FDEP and Tetra Tech standard operating procedures (SOPs). Prior to sampling, decontaminated DPT rods and a sealed-screen groundwater sampler will be advanced to the appropriate depth. Sampling at locations with two unique depths will be conducted independently with decontamination procedures conducted between sample collection. Once at the appropriate depth, the screen will be exposed on the groundwater sampler and groundwater will be allowed to fill the sampling device. Dedicated sampling tubing will be lowered to the appropriate depth and a peristaltic pump will be used to draw the groundwater to the ground surface. Purging of the groundwater sampler will be conducted, and a water quality meter will be used to monitor groundwater stabilization parameters. A significant effort will be made to obtain adequate turbidity levels in groundwater during purging; however, it should be noted that desirable turbidity levels are difficult to achieve with this method of groundwater sampling. As described in FDEP SOP 001/01 FS 2212, if naturally occurring conditions prevent purged groundwater from attaining turbidity levels less than the acceptable level of 20 Nephelometric Turbidity Units (NTUs), the sample



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may still be collected at the discretion of the sampling team leader; consequently, these results will be assessed with a potential turbidity-associated bias (FDEP, 2008). The samples will be identified using the sample IDs indicated in Table 1. After sample collection, the DPT rods and sealed-screen groundwater sampler will be removed from the sampling point and decontaminated to prevent cross-contamination of groundwater samples. Following sample collection, the groundwater samples will be placed on ice and delivered via FedEx under chain of custody to Empirical Laboratories, Nashville, Tennessee for analysis.

If you have any questions regarding this submittal, please feel free to contact me at (412) 921-8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
Task Order Manager

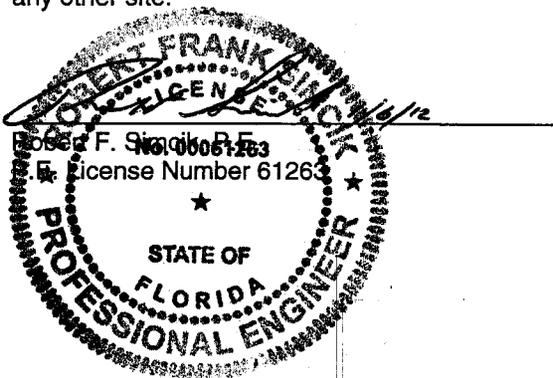
RFS/clm

Attachments (2)

- c: M. Davidson, BRAC PMO SE (electronic copy)
- S. Martin, NAVFAC Atlantic (electronic copy)
- D. Grabka, FDEP (electronic copy)
- D. Vaughn-Wright, U.S. EPA (one copy)
- M. Halil, CH2M Hill (electronic copy)
- S. Currie, Tetra Tech CTO JM09 project file (1 copy, unbound)
- J. Trepanowski, Tetra Tech
- M. Jonnet, Tetra Tech
- M. Boerio, Tetra Tech
- J. Johnson, Tetra Tech (1 copy for Information Repository)

CERTIFICATION

The information contained herein is based on the investigation data and information obtained from previously submitted reports. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information on the information described in this report. This Work Plan for Groundwater Sampling Using Direct Push Technology was submitted for OU 2, Site 5 at Former Naval Air Station Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.



REFERENCES

BCT (Base Realignment and Closure Cleanup Team), 2011. Minutes of Meeting. Minutes Reference No. 2718, Decision No. 830 and 835, November 9.

FDEP (Florida Department of Environmental Protection), 2008. DEP-SOP-001/01, FS 2200 Groundwater Sampling, December.

Tetra Tech (Tetra Tech NUS, Inc), 2000. Amended Record of Decision, Operable Unit 2, Site 5, Naval Air Station Cecil Field, Jacksonville, Florida, January.

Tetra Tech, 2011. Third Five Year Review, Naval Air Station Cecil Field, Jacksonville, Florida. April.

TABLE

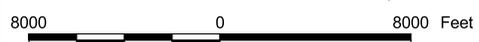
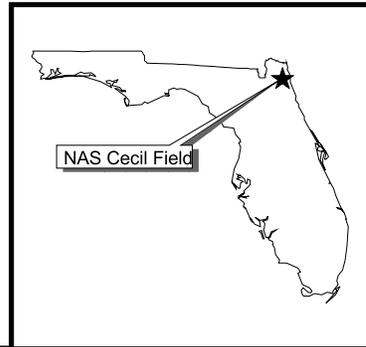
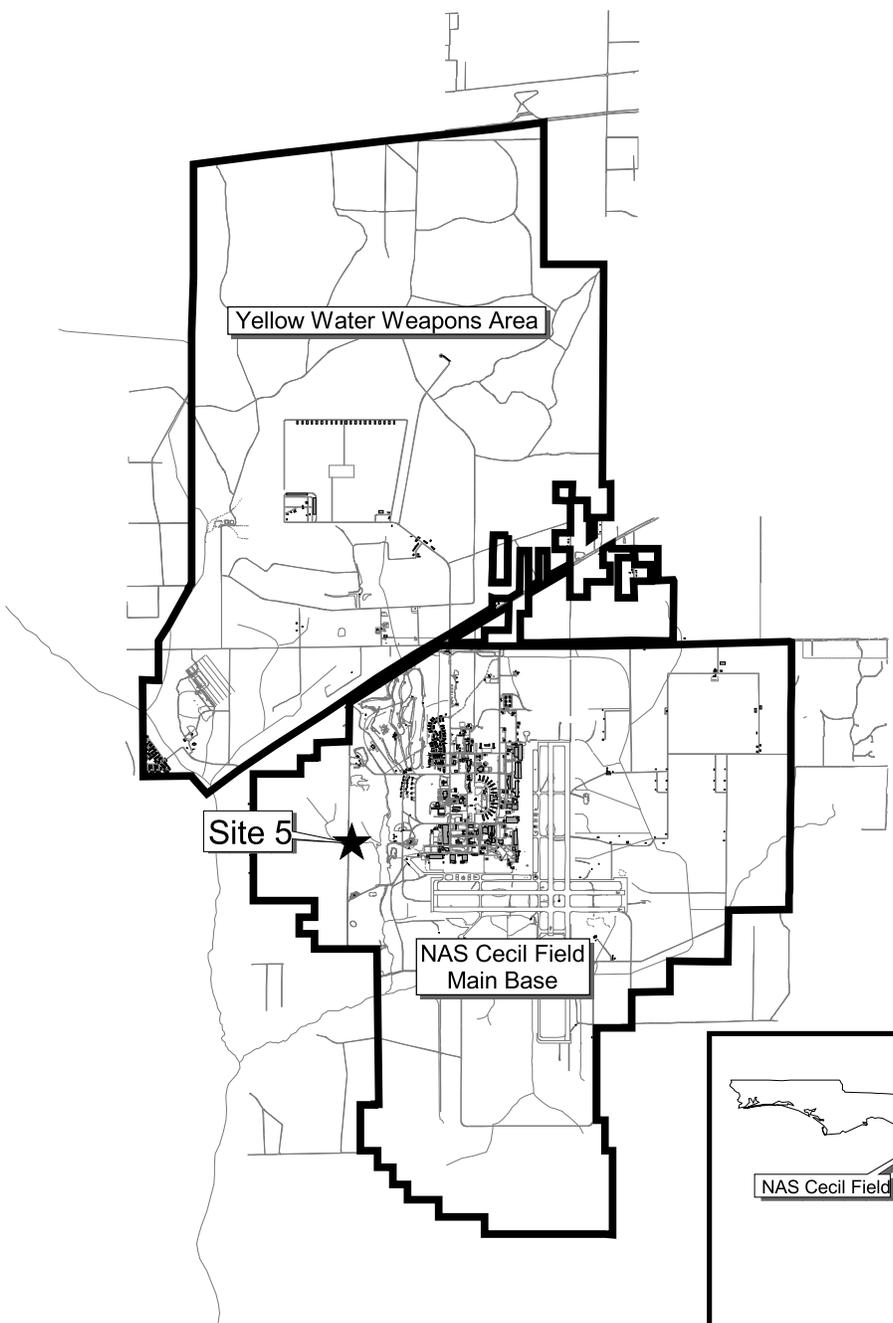
Table 1
Groundwater Sample IDs

Work Plan for Groundwater Sampling Using Direct Push Technology
Operable Unit 2, Site 5
Naval Air Station Cecil Field
Jacksonville, Florida

Sample ID	DPT Location ID	Sample Depth (bgs)
CEF-005-DPT01-10	DPT-01	10
CEF-005-DPT02-10	DPT-02	10
CEF-005-DPT03-10	DPT-03	10
CEF-005-DPT04-10	DPT-04	10
CEF-005-DPT05-10	DPT-05	10
CEF-005-DPT06-10	DPT-06	10
CEF-005-DPT07-10	DPT-07	10
CEF-005-DPT07-20	DPT-07	20
CEF-005-DPT08-10	DPT-08	10
CEF-005-DPT08-20	DPT-08	20
CEF-005-DPT09-10	DPT-09	10
CEF-005-DPT10-10	DPT-10	10
CEF-005-DPT11-10	DPT-11	10
CEF-005-DPT12-10	DPT-12	10
CEF-005-DPT12-20	DPT-12	20
CEF-005-DPT13-10	DPT-13	10
CEF-005-DPT13-20	DPT-13	20
CEF-005-DPT14-10	DPT-14	10

bgs = Below ground surface.

FIGURES



DRAWN BY MJJ	DATE 15Dec11
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	

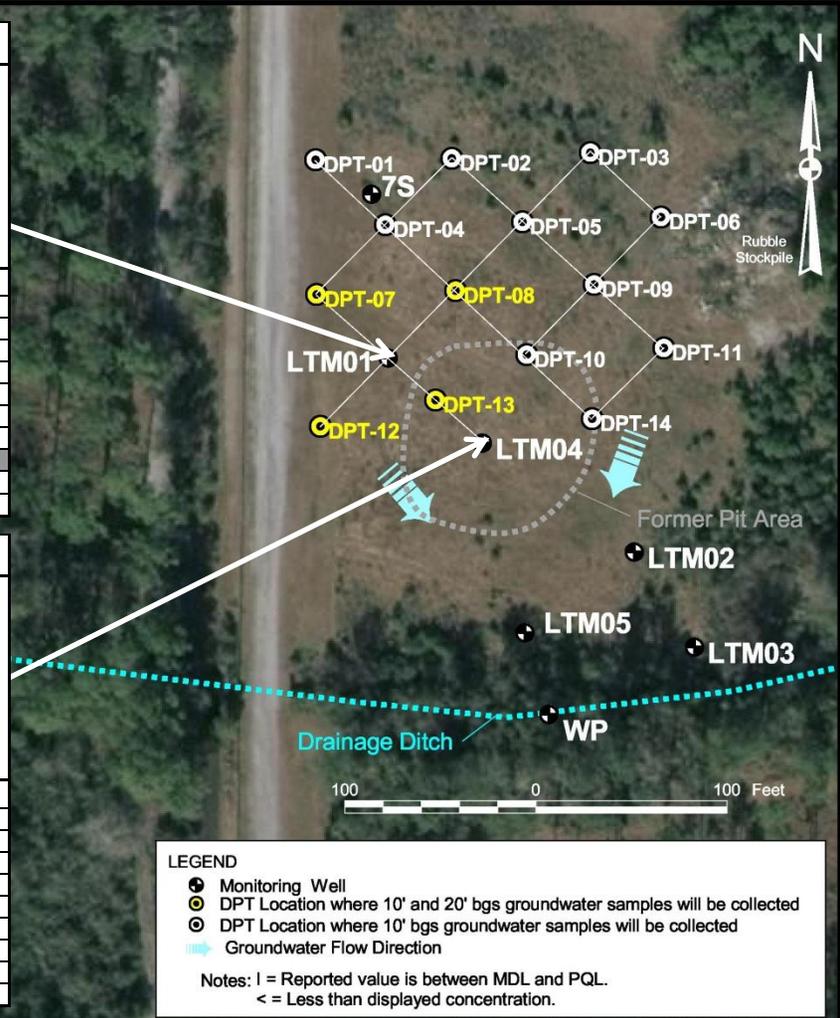


GENERAL LOCATION MAP
OPERABLE UNIT 2, SITE 5
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NUMBER 2267	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV 0

Well ID	Sample Date	VOCs (µg/L)					SVOCs (µg/L)	
		Benzene	cis-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Xylenes (total)	Naphthalene	2-Methylnaphthalene
GCTL (µg/L)		1	70	3	1	20	14	28
CEF-005-LTM01	07/05/2005	0.7	10.6	10.2	<0.50	11.9	14.5	15.8
	01/05/2006	1.8	50.5	45.3	0.56	32.6	NA	NA
	07/10/2006	1.1	13.8	21.5	<1	12.1	21.4	18.8
	01/16/2007	1.7	6	23.9	<0.50	7.4	14.8	10
	07/17/2007	5	29.7	54.4	<0.50	11.9	5.7	2.7
	10/12/2008	4.6	157	2.5	0.82 I	16.8	17.1	13.5
	9/19/2009	4.6	190	9.6	1.1 I	22.2	35.2	21.7
	9/19/2010	4.7	103	5.2	<0.56	21.7	38.3	31.4
	9/12/2011	11.3	46.3	21.1	0.39 I	24.4	24.5	12.6
	11.7	47.1	21.1	0.34 I	25.5	20.5	10.6	

Well ID	Sample Date	VOCs (µg/L)					SVOCs (µg/L)	
		Benzene	cis-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Xylenes (total)	Naphthalene	2-Methylnaphthalene
GCTL (µg/L)		1	70	3	1	20	14	28
CEF-005-LTM04	07/05/2005	1.3	26.4	<0.50	11.2	15.5	14.1	8.5
	01/05/2006	2.1	12.3	<0.50	16.5	4.5	NA	NA
	07/11/2006	3.9	34.2	<1	5.7	27	<5.3	<5.3
	01/16/2007	2.5	18.4	<0.50	1.8	12.8	12.6	4.2
	07/17/2007	1	10.4	<0.50	2.4	1.9	5.7	4
	10/12/2008	1.3	3.9	<0.32	1.5	<1.2	4.3 I	<0.96
	9/19/2009	1.1	3.2	<0.32	2	<1.2	4.4 I	<0.96
	9/19/2010	5.8	8.5	<0.24	1.6	2.2 I	40.7	7.3
	9/12/2011	8.6	4.8	<0.26	0.43 I	6.3	102	24.4



DRAWN BY	DATE
MJJ	15Dec11
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



DPT LOCATION MAP
 OPERABLE UNIT 2, SITE 5
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 2267	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV 0