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CNC CHARLESTON
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REGULATORY COMMITTEE RESPONSE TO SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL COMMENTS REGARDING AREA OF
CONCERN 710 (AOC 710) ZONE F CNC CHARLESTON SC

4/9/2003
CH2M HILL

AOC 7/10 Zone F

Ltr requesting transfer to Subtitle "I" or NFA



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April 9, 2003

Mr. David Scaturro
South Carolina Department of Health and
Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Re: AOC 710, Zone F, Charleston Naval Complex

Dear Mr. Scaturro:

The former Fuel Distribution System (FDS) Sites FDS 12, 13, and 14 were previously investigated as part of the Charleston Naval Complex (CNC) Zone G FDS contamination assessment conducted by the Navy. The FDS encompasses the entire fuel pipeline distribution system and transverse portions of Zones E, F, and G at the CNC. Because the contamination associated with the FDS is largely petroleum-related, the FDS was transferred from the RCRA Corrective Action (CA) program to the South Carolina Underground Storage Tank (UST) program, as agreed to by the CNC BRAC Cleanup Team (BCT).

The findings of the FDS contamination assessment field investigations were presented in the FDS Contamination Assessment Report (CAR) (EnSafe, 1998). The CAR indicated that little fuel-related contamination above the applicable UST program cleanup standards was identified at FDS Sites 12, 13, or 14. These sites were recommended for intrinsic corrective action for soil. Excerpts related to these sites from the FDS CAR are provided as an attachment to this letter.

However, because of the detection of arsenic in several groundwater samples at these FDS sites at concentrations greater than the Drinking Water Maximum Contaminant Level (MCL) of 50 micrograms per liter ($\mu\text{g}/\text{L}$), Sites 12, 13, and 14 were transferred back to the RCRA CA program for further evaluation of arsenic in groundwater. These FDS sites became collectively identified as Area of Concern (AOC) 710 for the RCRA program.

CH2M-Jones has previously provided information in the form of technical memoranda to SCDHEC which presents a strong correlation between the occurrence of arsenic in groundwater samples at the CNC (at concentrations greater than 50 $\mu\text{g}/\text{L}$) with geochemical conditions indicative of iron-reducing conditions (see *Draft Technical Memorandum: A Discussion of the Occurrence of Arsenic in Background Groundwater at the CNC* [CH2M-Jones, 2002]). A review of the groundwater data for AOC 710 suggests that these detected occurrences of arsenic in groundwater at concentrations greater than 50 $\mu\text{g}/\text{L}$ at AOC 710 are likely related to iron-reducing conditions.

Mr. David Scaturro, SCDHEC
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Table 1, which is attached to this letter, provides a summary of arsenic and iron concentrations detected in groundwater samples collected at AOC 710. The table demonstrates that all samples containing arsenic above 50 µg/L also have iron concentrations greater than 1,000 µg/L, which is the level of iron that EPA uses as an indicator of iron-reducing conditions. For this reason, it does not appear that arsenic is a site-related contaminant in groundwater at AOC 710, but rather is occurring at elevated concentrations in a limited number of groundwater samples due to naturally occurring geochemical conditions. We believe that the original recommendation proposed for these sites in the FDS CAR (i.e., intrinsic corrective action for soil) is still an appropriate recommendation.

Provided that SCHDEC concurs with this conclusion, CH2M-Jones respectfully requests that AOC 710 be transferred to the UST program. Alternately, it may be feasible to simply close out the site within the RCRA CA program, since the level of soil contamination is minimal. Please contact me if there are any issues related to AOC 710 that need further clarification.

Sincerely,

CH2M HILL



Dean Williamson, P.E.

cc: Jerry Stamps/SCDHEC, w/att
Dann Spariosu/USEPA, w/att

Rob Harrell/Navy, w/att
Gary Foster/SCDHEC, w/att

References:

CH2M-Jones. *Draft Technical Memorandum: A Discussion of the Occurrence of Arsenic in Background Groundwater at the CNC*. November 25, 2002.

EnSafe Inc. *Zone G Fuel Distribution System Contamination Assessment Report, NAVBASE Charleston*. North Charleston, South Carolina. 1998.

TABLE 1
 Arsenic and Iron Concentrations at AOC 710
 AOC 710, Zone F, Charleston Naval Complex

Well	First sampling event		Second Sampling event	
	Arsenic	Iron	Arsenic	Iron
FDS12A	6.55	10,800	22.95	19,850
FDS12B	28	18,500	49.3	32,200
FDS13A	27	14,700	210	37,200
FDS13B	5.2	2,100	16.8	9,150
FDS13C	3.9	73,800	6	64,500
FDS13D	ND	4,640	16.7	8,280
FDS13E	22.5	10,700	29.9	19,000
FDS14A	50.3	20,100	21.8	15,600
FDS14B	6.9	4,240	22.5	25,600
FDS14C	14	2,830	24.9	4,930
GDG002	7.8	28,200	10	35,700

All values in micrograms per liter ($\mu\text{g/L}$).

ND Not detected

Attachment

Fuel Distribution System Contamination Assessment Report
 NAVBASE Charleston
 Section 4 — Investigation Results
 Revision: 0

Table 4.8.2
Analytes Detected in Shallow Groundwater
Areas 12, 13, & 14
Fuel Distribution System

Parameters	Location	First Sampling Event	Second Sampling Event	RBSL/Tap Water RBC (µg/L)	Shallow Background
Iron (Fe)	FDS12A	10800	19850	NL/NL	NL
	FDS12B	18500	32200		
	FDS13A	14700	37200		
	FDS13B	2110	9150		
	FDS13C	73800	64500		
	FDS13D	4640	8280		
	FDS13E	10700	19000		
	FDS14A	20100	15600		
	FDS14B	4240	25600		
	FDS14C	2830	4930		
	GDOG002	28200	35700		
Lead (Pb)	FDS13A	ND	1	15/15	4.6
	FDS13D	ND	1.9		
	FDS13E	ND	1.3		
	FDS14A	ND	3.5		
Magnesium (Mg)	FDS12A	58000	53400	NL/NL	NL
	FDS12B	106000	112000		
	FDS13A	203000	75700		
	FDS13B	428000	214000		
	FDS13C	153000	113000		
	FDS13D	6130	2730		
	FDS13E	131000	137000		
	FDS14A	257000	281000		
	FDS14B	266000	217000		
	FDS14C	170000	197000		
	GDOG002	100000	81000		
Manganese (Mn)	FDS12A	3650	3190	NL/84	2906
	FDS12B	3370	3240		
	FDS13A	1370	2480		
	FDS13B	286	292		
	FDS13C	1680	1300		
	FDS13D	163	73.7		
	FDS13E	1540	1660		
	FDS14A	607	354		
	FDS14B	329	405		
	FDS14C	3360	1510		
	GDOG002	2630	2820		
Nickel (Ni)	FDS12A	9.2	4.85	NL/73	4.08
	FDS12B	9.6	6.2		
	FDS13A	11	ND		
	FDS13B	7.7	4		
	FDS13C	10.5	7.9		
	FDS13D	4.8	2.2		
	FDS13E	.94	.82		
	FDS14A	ND	4.8		
	FDS14B	7.7	1.4		
	FDS14C	ND	2.3		
	GDOG002	2	ND		

Fuel Distribution System Contamination Assessment Report
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Table 4.8.2
Analytes Detected in Shallow Groundwater
Areas 12, 13, & 14
Fuel Distribution System

Parameters	Location	First Sampling Event	Second Sampling Event	RBSL/Tap Water RBC (µg/L)	Shallow Background			
Semi-volatile Organic Compounds (µg/L)								
Total PAHs	FDS13A	1	5	25/NL	NA			
2-Methylnaphthalene	FDS13A	1	5	10/150	NA			
4-Nitrophenol	FDS14A	ND	1	NL/230	NA			
Benzoic acid	FDS13A	2	ND	NL/15000	NA			
	FDS13B	2	ND					
	FDS14A	ND	2					
	FDS14B	ND	1					
Inorganics (µg/L)								
Aluminum (Al)	FDS12A	514	288	NL/3700	692			
	FDS12B	ND	213					
	FDS13A	1360	692					
	FDS13B	787	74.4					
	FDS13C	1730	1600					
	FDS13D	1830	2820					
	FDS13E	215	1290					
	FDS14A	ND	2940					
	FDS14B	ND	201					
	FDS14C	738	250					
	GDO002	176	ND					
	Antimony (Sb)	FDS13E	3.4			ND	NL/1.5	4.85
		GDG002	ND			3.8		
Arsenic (As)	FDS12A	6.55	22.95	50/0.045	17.8			
	FDS12B	28	49.3					
	FDS13A	27	210					
	FDS13B	5.2	16.8					
	FDS13C	3.9	6					
	FDS13D	ND	16.7					
	FDS13E	22.5	29.9					
	FDS14A	50.3	21.8					
	FDS14B	6.9	22.5					
	FDS14C	14	24.9					
	GDG002	7.8	10					
Barium (Ba)	FDS12A	268	196.5	2000/260	31			
	FDS12B	78.9	70.4					
	FDS13A	138	28.1					
	FDS13B	144	29.8					
	FDS13C	27.3	17					
	FDS13D	35.6	31.9					
	FDS13E	32.9	30.4					
	FDS14A	45.2	59.6					
	FDS14B	52	46.2					
	FDS14C	51.5	33.1					
	GDG002	13.6	17.4					
Beryllium (Be)	FDS13B	.45	ND	NL/0.016	ND			
	FDS13C	.53	ND					
	FDS14C	.64	ND					

RBSL of 210 $\mu\text{g}/\text{kg}$. This was the only soil exceedance at the combined site. Intrinsic remediation is recommended to address the total naphthalenes detected in soil. No groundwater RBSLs were exceeded. No further action is recommended for groundwater at the combined site.

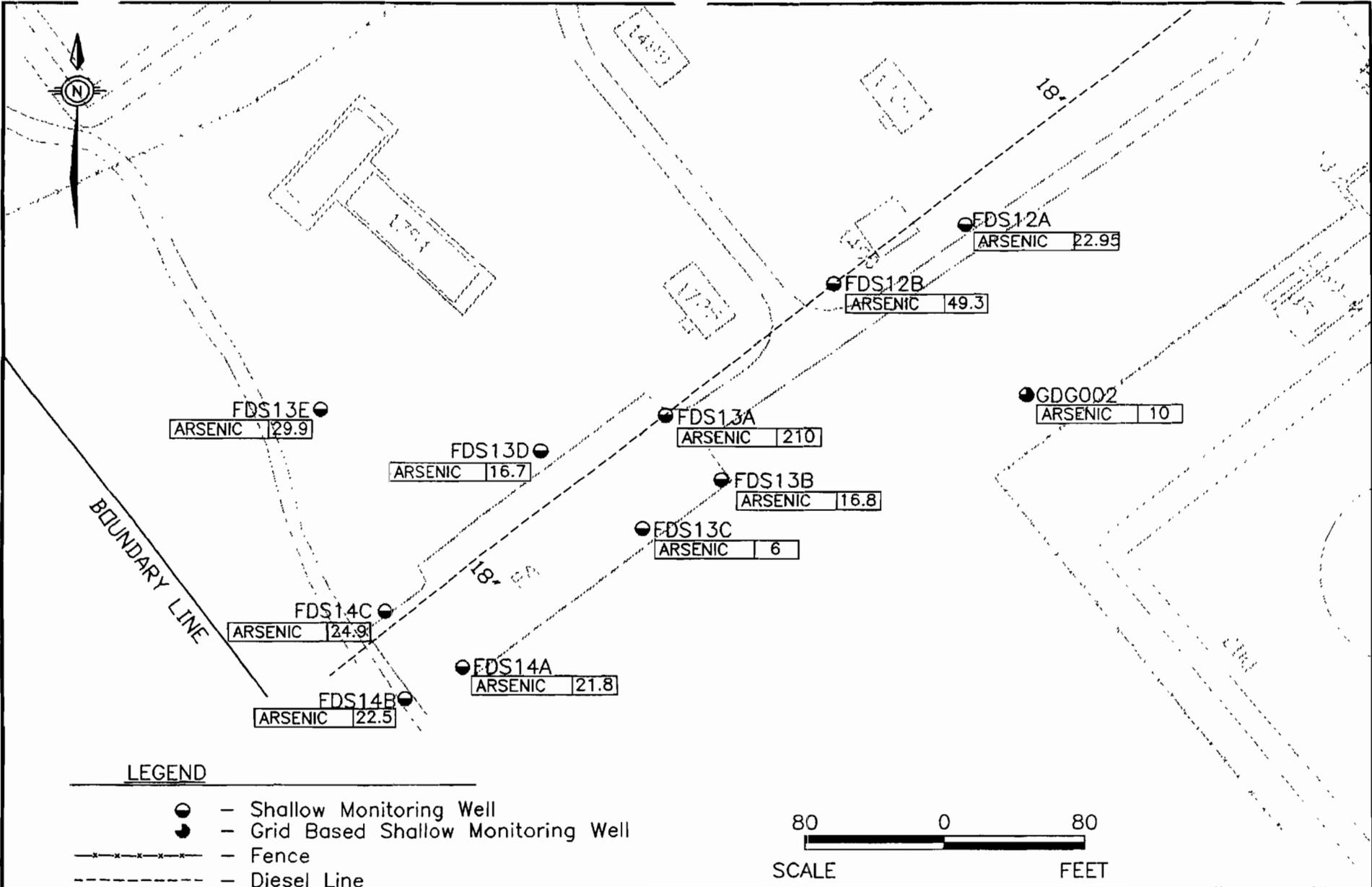
5.6 Area 11

Area 11 exhibits no soil or groundwater contamination attributable to the FDS. No soil or groundwater RBSLs were exceeded in any Area 11 samples. No further action is recommended for soil and groundwater in this area.

5.7 Areas 12, 13, and 14

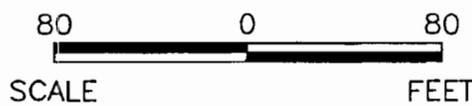
Areas 12, 13, and 14 exhibit limited soil contamination attributable to the FDS. The soil RBSL for total naphthalenes was exceeded at only two locations. No other soil RBSL was exceeded. No individual naphthalene SSLs were exceeded, suggesting low probability of leaching to groundwater. Intrinsic corrective action is recommended to address the soil at Areas 12, 13, and 14.

The groundwater RBSL for arsenic was exceeded in the second sampling event at one Area 13 well, FDS13A. A preliminary risk assessment determined a risk to human health of approximately $5\text{E-}03$ based on this single arsenic detection. When compared to the previous arsenic concentration at this well, the detection of 210 $\mu\text{g}/\text{L}$ seems anomalous. No other groundwater RBSLs were exceeded in any of the Areas 12, 13, and 14 monitoring wells. Although wells FDS13B and FDS14B are directly downgradient of the soil locations that exhibited elevated total naphthalenes, neither of these wells detected any naphthalene compounds. Monitoring well FDS13A should be resampled for arsenic, if the result is below the RBSL no further action will be recommended for groundwater.



LEGEND

- - Shallow Monitoring Well
- - Grid Based Shallow Monitoring Well
- - - - - Fence
- - - - - Diesel Line



All Concentrations in ug/L
 Concentrations present are from the most recent sampling event
 Groundwater RBSL for Arsenic = 50 ug/L
 (SCDHEC January 5, 1998)



FUEL DISTRIBUTION SYSTEM
 CONTAMINATION
 ASSESSMENT REPORT
 NAVAL BASE CHARLESTON
 CHARLESTON, S.C.

FIGURE 4.8-5
 AREAS 12, 13, AND 14
 ARSENIC IN GROUNDWATER

DWG DATE: 06/01/98 | DWG NAME: 2907N021

AOC 710 - FDS 12, 13, 14