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CORRECTIVE ACTION REPORT FOR BUILDING 640 AND SITE 4 ZONE H CNC
CHARLESTON SC
04/01/2006
CH2M HILL

**Corrective Action Report
Building 640 and Site 4, Zone H
Charleston Naval Complex
North Charleston, South Carolina
SCDHEC Site ID No. 00955**

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**Water Monitoring, Assessment &
Protection Division**

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Charleston Naval Complex
North Charleston, South Carolina

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1.0 Introduction

1.1 Background

In 1993, Naval Base (NAVBASE) Charleston was added to the list of bases scheduled for closure as part of the Defense Base Realignment and Closure Act, which regulates closure and transition of property to the community. The Charleston Naval Complex (CNC) was formed as a result of the dis-establishment of the Charleston Naval Shipyard and NAVBASE on April 1, 1996. Corrective Action (CA) activities for Site 4, Building 640, Zone H are being conducted in accordance with the Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC).

1.2 General Site Description and Background

The CNC is located in the City of North Charleston, on the east and west bank of the Cooper River in Charleston County and Berkley County, South Carolina as shown in **Figure 1**. This installation consists of two major areas: an undeveloped dredge materials area on the east bank of the Cooper River on Daniel Island in Berkley County, and a developed area on the west bank of the Cooper River. The developed portion of the base is on the peninsula bounded on the west by the Ashley River and on the east by the Cooper River. This site is located within the developed portion of the base.

Building 640 was the former Chief Petty Officer Club and Mess. Two petroleum systems, UST 640B and AST 640, were used to supply heating oil to the building. UST 640B was a 3,000 gallon steel tank reportedly installed in 1963. The tank was located approximately 10 feet north of the northwestern corner of Building 640. AST 640 was a 1,000-gallon steel tank reportedly installed more than 25 years ago to replace UST 640B. The tank was located approximately 15 feet west of the northwestern corner of Building 640. Tank locations are shown in **Figure 2**. SCDHEC has designated Building 640, Site 4 with identification number 00955.

In January and February 1997, SPORTENVDETCNASN excavated and removed tanks AST 640 and UST 640B. An Assessment Report for Building 640 was completed by SPORTENVDETCNASN following tank removal activities. During tank closure activities,

Polynuclear aromatic hydrocarbons (PAHs) were identified in soil samples, no groundwater was encountered in any excavations, and mild petroleum odors were observed during excavation activities.

From December 1998 through March 1999, Tetra Tech, NUS (TTNUS) completed a Rapid Assessment (RA) for Sites 4. In SCDHEC's response letter to the RA, dated September 27, 1999, the department recommended a corrective action plan be developed in order to define and remediate the hydrocarbon contamination. CH2M-Jones prepared a Corrective Action Plan (CAP), dated December 2000, which was approved by SCDHEC on January 2, 2001. The plan proposed the installation of passive-floating intake skimmers to recover product from site monitoring wells followed by semi-annual groundwater monitoring.

CH2M-Jones initiated free product recovery on January 17, 2001. Bailers were used to recover the free product in-lieu of a passive floating intake skimmers. Product recovery was completed on July 9, 2001. Approximately one-half gallon of oily-water was recovered using bailers. Please refer to **Table 1** for product thickness and recovery quantities.

Between August 2, 2001, and July 31, 2002, CH2M-Jones submitted four quarterly monitoring reports all of which indicated that hydrocarbon contamination remained below RBSLs in all wells. On May 21, 2002, a No Further Action (NFA) was requested by CH2M-Jones. In SCDHEC's response letter dated, June 14, 2002, the department requested the installation of two additional wells in the vicinity of CNC04-M01 to verify that all free product had been remediated. The monitoring wells were installed on July 2, 2002, as proposed by SCDHEC. Monitoring wells U04GW001 (Alias: CNC04-M01, H640G04W1), U04GW012, and U04GW013 were sampled on July 2 and 3, 2002. On July 31, 2002, CH2M-Jones submitted a monitoring report in which a NFA was requested. On August 19, 2002, SCDHEC accepted the NFA request, closing out the site.

During well abandonment activities performed on September 12, 2002, free product was detected within monitoring wells U04GW001 and CNC04-MW12 and they were not abandoned. The remaining wells onsite were abandoned in accordance with South Carolina

Well Standards and Regulations R. 61-71. Free product recovery activities continue within monitoring wells UO4GW001 and CNC04-MW12 using oil-only absorbent socks. (Table 1)

2.0 Conclusions and Recommendations

CH2M-Jones removed the oil-only absorbent socks from each well on April 5, 2006. The wells were allowed to recharge and subsequently measured for free product thickness on June 14, 2006. No measurable free product was detected within monitoring well CNC04MW12, but the well did display a sheen and a strong odor. Monitoring well UO4GW001 displayed beads of free product along with a strong odor. Free product was also noted on the interface probe upon its removal from the well. The on-going exchange of oil-only absorbent socks in the affected monitoring wells continues to reduce the volume of free product at the site, and CH2M-Jones recommends that free product recovery activities continue. Once the free product has been abated, groundwater samples may be collected to determine if dissolved-phase hydrocarbons are present within the existing wells.

Tables

Table 1
Free Product Measurement and Collection Quantities

Well No.	Date	DTP	DTW	FP Column (ft)	Comments
CNC04M01	01/17/2001	6.46	not obtained	not obtained	.01 gallons bailed
	02/15/2001	6.33	6.42	0.09	.01 gallons bailed
	03/05/2001	not obtained	not obtained	not obtained	.01 gallons bailed
	03/26/2001	5.84	5.84	0.0	.01 gallons bailed
	04/30/2001	6.65	6.70	0.05	.01 gallons bailed
	07/09/2001	not obtained	not obtained	n/m	.01 gallons bailed
	07/10/2001	6.34	6.35	0.01	No product removed
	05/01/2003	5.10	5.17	0.07	Installed absorbent sock
	05/15/2003	not obtained	not obtained	not obtained	Replace absorbent sock
	10/03/2003	no product present	5.49	0.0	Replace absorbent sock
	12/12/2003	no product present	5.51	0.0	Replace absorbent sock
	01/12/2004	no product present	6.22	0.0	Replace absorbent sock
	02/12/2004	no product present	5.31	0.0	Sock 1/2 full
	05/28/2004	no product present	5.71	0.0	Replace absorbent sock
	07/14/2004	no product present	3.88	0.0	Sock 1/4 full
	08/20/2004	4.59	4.61	0.02	Replace absorbent sock
	10/25/2004	no product present	5.84	0.0	Replace absorbent sock
	02/07/2005	no product present	5.04	0.00	Replace absorbent sock
	05/04/2005	sheen	5.25	0.0	Replace absorbent sock
	06/10/2005	4.8	4.8	0.0	Replace absorbent sock
	07/01/2005	3.8	3.8	0.0	Remove absorbent sock
	08/04/2005	sheen	4.55	0.0	Installed absorbent sock
	09/30/2005	4.15	4.15	0.0	Replace absorbent sock
	10/21/2005	beads	4.01	0.0	Sock 1/2 full
	12/23/2005				Remove absorbent sock
	12/27/2005	sheen	4.7	0.0	sheen / odor
	02/17/2006	beads	4.39	0.0	Replace absorbent sock
	04/05/2006	beads	5.06	0.0	Sock 1/8 full / remove sock
	06/14/2006	beads	5.26	0.0	beads of free product
	CNC04M12	05/01/2003	5.55	5.55	0.0
05/15/2003		not obtained	not obtained	not obtained	Replace absorbent sock
10/03/2003		no product present	5.87	0.0	Replace absorbent sock
12/12/2003		no product present	5.97	0.0	Replace absorbent sock
01/12/2004		no product present	6.65	0.0	Replace absorbent sock
02/12/2004		no product present	5.79	0.0	Sock 1/3 full
05/28/2004		no product present	6.10	0.0	Sock 1/3 full
07/14/2004		no product present	4.20	0.0	Replace absorbent sock
08/20/2004		Beads of FP Present	5.3	0.0	Replace absorbent sock
10/25/2004		no product present	5.87	0.0	Replace absorbent sock
02/07/2005		no product present	5.45	0.0	Replace absorbent sock
05/04/2005		sheen	6.25	0.0	Replace absorbent sock
06/10/2005		5.65	5.65	0.0	Replace absorbent sock
07/01/2005		4.15	4.15	0.0	Remove absorbent sock
08/04/2005		sheen	5.73	0.0	Installed absorbent sock
09/30/2005		5.55	5.55	0.0	Replace absorbent sock
10/21/2005		beads	5.25	0.0	Sock 1/2 full
12/23/2005					Remove absorbent sock
12/27/2005		5.10	5.11	0.01	beads of free product
02/17/2006		4.98	4.98	0	Installed absorbent sock
04/05/2006	0	5.55	0	Remove absorbent sock	
06/14/2006	0	5.7	0	sheen	

Figures



Building 640, Site 4

-  Fence
-  Roads - Lines
-  Pavement
-  Buildings

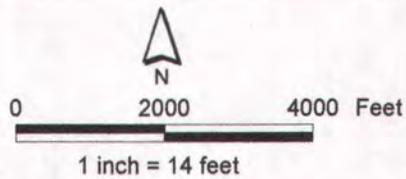
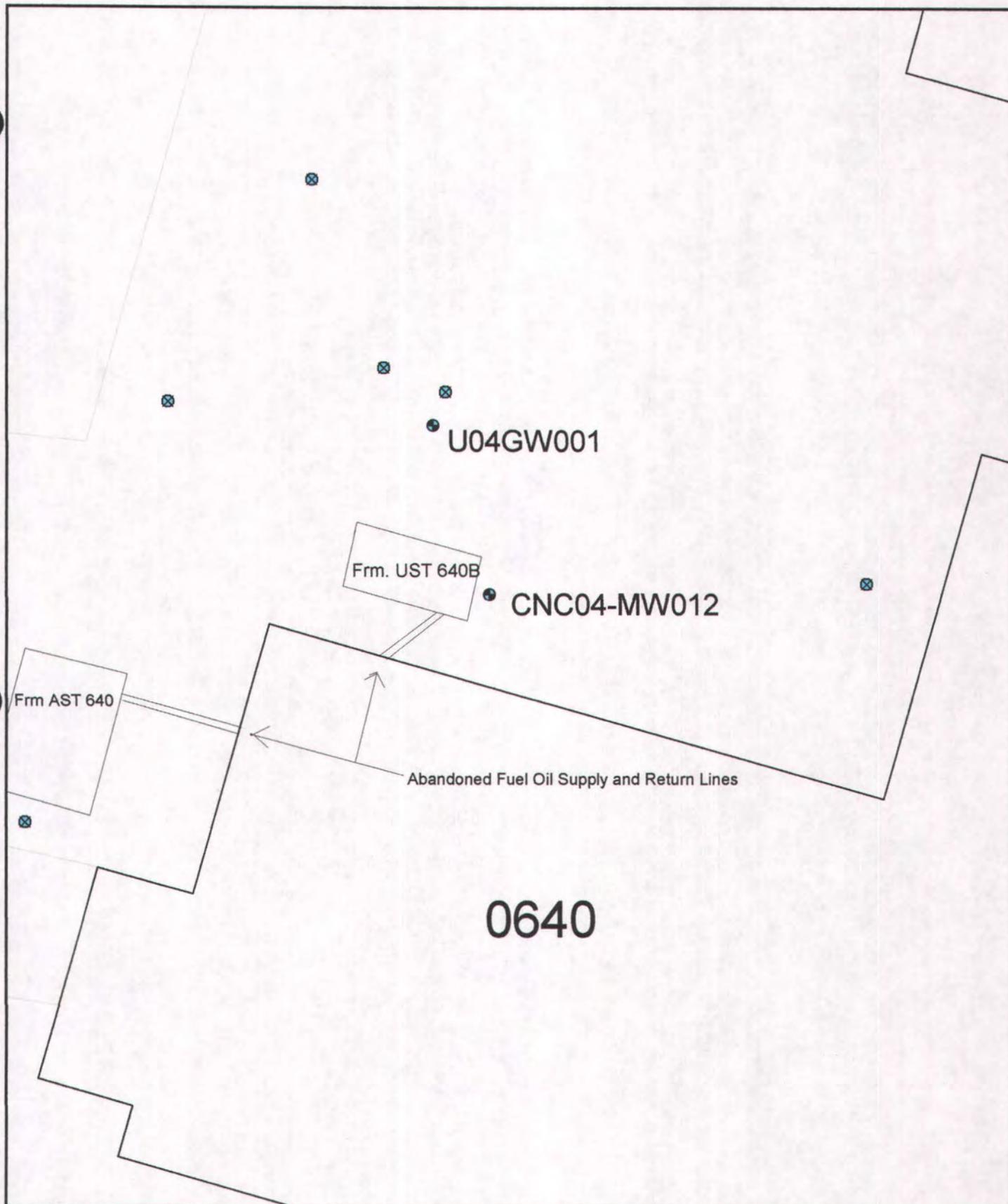


Figure 1
Location Map
Building 640, site 4, ZONE H
Charleston Naval Complex



- ⊗ Abandoned
- Active
- - - Fence
- ~ Roads - Lines
- ▨ Pavement
- ▭ Buildings

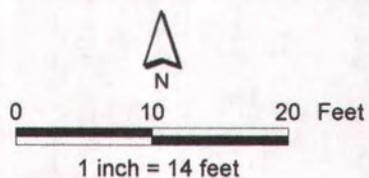


Figure 2
 Site Map
 Building 640, site 4, ZONE H
 Charleston Naval Complex