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CORRECTIVE ACTION REPORT FOR BUILDING NS-26 AND SITE 36 ZONE I CNC
CHARLESTON SC
08/01/2004
CH2M HILL

CH2M-JONES, LLC.



Mr. Darryl F. Gates
CH2M-Jones
1330 Kilo Street
North Charleston, SC 29405

August 7, 2004

Mr. Michael A. Bishop
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

Subject: Corrective Action Report
Site 36, Building NS26, Zone I
Site ID. No. 00944
Charleston Naval Complex

Dear Mr. Bishop:

CH2M-Jones has completed an Aggressive Fluid Vapor Recovery (AFVR) event at the above-referenced site. The enclosed Corrective Action Report documents the results of the AFVR along with product recovery activities prior to and following the AFVR event. Product levels have been recorded within the impacted monitoring wells since November, 2000. Although the AFVR attributed to the overall reduction of free product at the site, measurable free product is still present within three site monitoring wells.

The extent of free product along with dissolved phase petroleum constituents remain undefined. As a result, additional investigative actions are warranted. CH2M-Jones recommends continued free product recovery and groundwater sampling from select site wells.

Sincerely,

CH2M HILL

A handwritten signature in blue ink that reads "Darryl F. Gates".

Darryl F Gates
Environmental Scientist

RECEIVED

SEP 8 2004

Water Monitoring, Assessment &
Protection Division

**Corrective Action Report
Site 36, Building NS26, Zone I
Charleston Naval Complex
North Charleston, South Carolina
SCDHEC Site ID No. 00944**

Prepared by:

**CH2MHILL
Charleston Naval Complex
1330 Kilo St.
North Charleston, South Carolina 29405**

Prepared for:

**Southern Division Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, South Carolina 29419-9010**

August 2004

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Site 36, Building NS26, Zone I
Charleston Naval Complex
North Charleston, South Carolina

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1 **1.0 Introduction**

2 **1.1 Background**

3 In 1993, Naval Base (NAVBASE) Charleston was added to the list of bases scheduled for
4 closure as part of the Defense Base Realignment and Closure Act, which regulates closure
5 and transition of property to the community. The Charleston Naval Complex (CNC) was
6 formed as a result of the dis-establishment of the Charleston Naval Shipyard and NAVBASE
7 on April 1, 1996. Corrective Action (CA) activities for Site 36, Building NS26, Zone I are
8 being conducted in accordance with the Underground Storage Tank (UST) Program of the
9 South Carolina Department of Health and Environmental Control (SCDHEC).

10 **1.2 General Site Description**

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

18 Building NS26, a vehicle maintenance facility, was a part of the Navy's Shore Intermediate
19 Activity Complex. UST NS26 was utilized to temporarily store used oil. The UST system
20 was installed in 1958, which consisted of a 200-gallon steel tank located adjacent to Building
21 NS26, approximately 60 feet from the northeastern corner of the building and
22 approximately 107 feet from Cooper River (**Figure 2**).

23
24 Between December 15, 1996, and January 8, 1997, UST NS26, accessible piping, and
25 contaminated soil encountered during the UST and piping excavations were removed from
26 the site. The UST and piping excavations were back-filled with clean soil. A SCDHEC UST
27 Assessment Report was completed by SPORTENVDETHASN in 1997. Soil sampling
28 conducted in the tank and piping excavations indicated naphthalene concentrations
29 exceeding the Risk-Based Screening Level (RBSL) established by SCDHEC (Risk-Based

1 Corrective Action For Petroleum Release, January 5, 1998). Groundwater was not
2 encountered in the excavations during the UST removal.

3
4 From June, through September, 1999, TTNUS completed a Rapid Assessment (RA) for Site
5 36. The Rapid Assessment Report (RAR), prepared by TTNUS, dated March 2000, was
6 approved by SCDHEC on March 31, 2000. CH2M-Jones prepared a Corrective Action Plan
7 (CAP), dated November, 2000, which was approved by SCDHEC on December 29, 2000. The
8 CAP proposed the use of passive-floating intake skimmers, bioremediation and Aggressive
9 Fluid Vapor Recovery (AFVR). The AFVR performed on June 17, 2003, was approved by
10 SCDHEC, in-lieu of implementing passive-floating intake skimmers and bioremediation.
11 The following section details free product recovery activities conducted to date.

12 **2.0 Free Product Remedial Activities**

13 **2.1 Free Product Recovery (Bailing)**

14 Free product was gauged and then recovered using a disposable bailer within two 1-inch
15 diameter piezometers - CNC36-P01 and CNC36-P03 and one 2-inch diameter monitoring
16 well - CNC36-MW02. The recovery efforts were performed periodically from January 17,
17 2002, through July 10, 2002. Refer to Table 1 for free product thickness, recovery dates and
18 quantities. Approximately 0.10 gallons of free product was recovered from CNC36-P01, 2.1
19 gallons from CNC36-P03 and 1.0 gallon from CNC36-MW02 during bailing activities.
20 Recovered free product was containerized in a DOT-approved drum and stored within a
21 locked compound at building 1824 on CNC.

22 **2.2 Aggressive Fluid Vapor Recovery (AFVR)**

23 On June 17, 2003, CH2M-Jones performed an AFVR event on piezometers CNC36-P01,
24 CNC36-P03 and monitoring well CNC36-MW02. EQ Industrial Services of Atlanta, Georgia,
25 pumped a total of approximately 169 gallons of oily water from the two piezometers and
26 one monitoring well using a vacuum truck. The oily water was consolidated with AFVR
27 fluid extracted from SCDHEC Site Nos. 01311 and 01093 and containerized in a 3,000-gallon
28 truck-mounted tank. The consolidated AFVR fluid from each site totaled approximately 760

1 gallons. The fluid was manifested as non-hazardous oily water and transported off site for
2 proper disposal. A copy of the disposal manifest is provide in Appendix A.

3 **2.3 Free Product Recovery (Absorbent Socks)**

4 On October 3, 2003, piezometers CNC36-P01 and CNC36-P03 and monitoring well CNC36-
5 MW02 were gauged for the presence of free product, which was detected at each location,
6 **Table 1.** Oil-only absorbent socks with the capacity to absorb approximately 0.25 gallon of
7 free product each were installed within the two piezometers and one well and replaced
8 periodically. On December 12, 2003, while attempting to retrieve and replace the absorbent
9 sock from Piezometer CNC36-P01, the sock's lanyard broke, and to date, it remains lodged
10 in place. A total of approximately 1.0 gallon of free product has been recovered from the
11 two piezometers and one well.

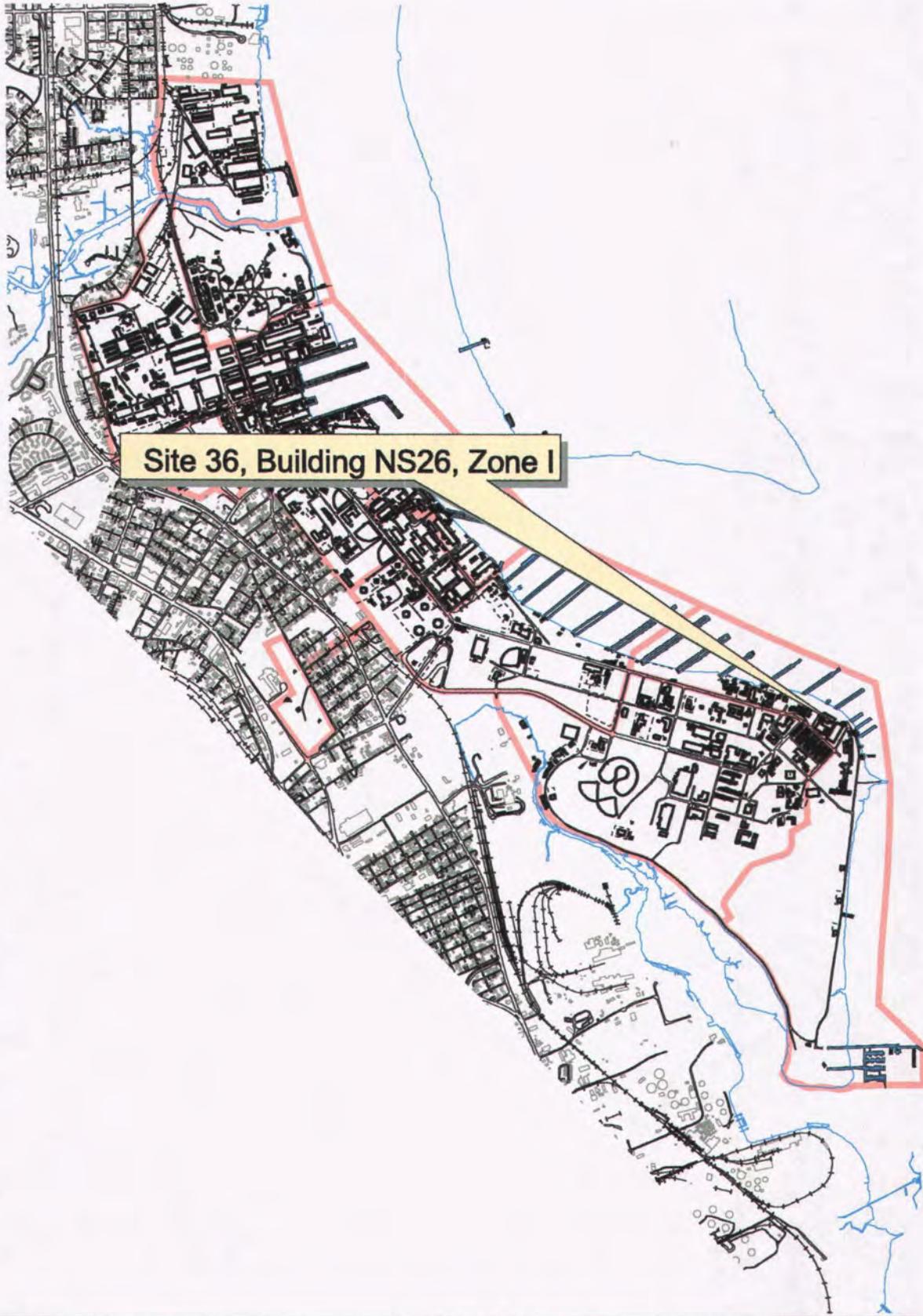
12 **3.0 Conclusions and Recommendations**

13 A measurable thickness of free product remains within piezometers CNC36-P01 and
14 CNC36-P03 and monitoring well CNC36-MW02. Piezometer CNC36-P01 has been
15 rendered unusable due to a non-retrievable absorbent sock. On-going attempts to remove
16 the sock have been unsuccessful, and CH2M-Jones recommends that the piezometer's
17 screen and casing be removed and the bore hole properly abandoned. The on-going
18 exchange of oil-only absorbent socks in CNC36-PO3 and CNC36-MW02 appears to be
19 reducing the volume of free product at the site. CH2M-Jones recommends that free product
20 recovery activities continue. Additionally, groundwater samples should be collected from
21 monitoring wells CNC36-MW01, CNC36-MW07D, CNC36-MW03, CNC36-MW05 and
22 CNC36-MW06 and analyzed for VOCs and SVOCs to determine the extent of dissolved-
23 phase constituents in the vicinity of the abandoned UST. Following the collection of
24 groundwater samples, a groundwater monitoring report should be prepared characterizing
25 the extent of the dissolved-phase plume, aquifer characteristics and free product recovery
26 progress.

27 **8.0 References**

28 Tetra Tech NUS, Inc. [TTNUS] Rapid Assessment Report [RA], 2000.

Figures



Site 36, Building NS26, Zone I

-  Roads - Lines
-  Shoreline
-  Buildings
-  Surrounding Area
-  Zone Boundary

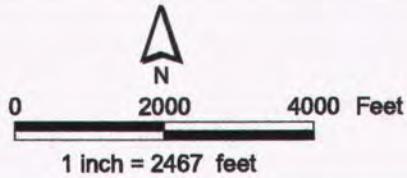
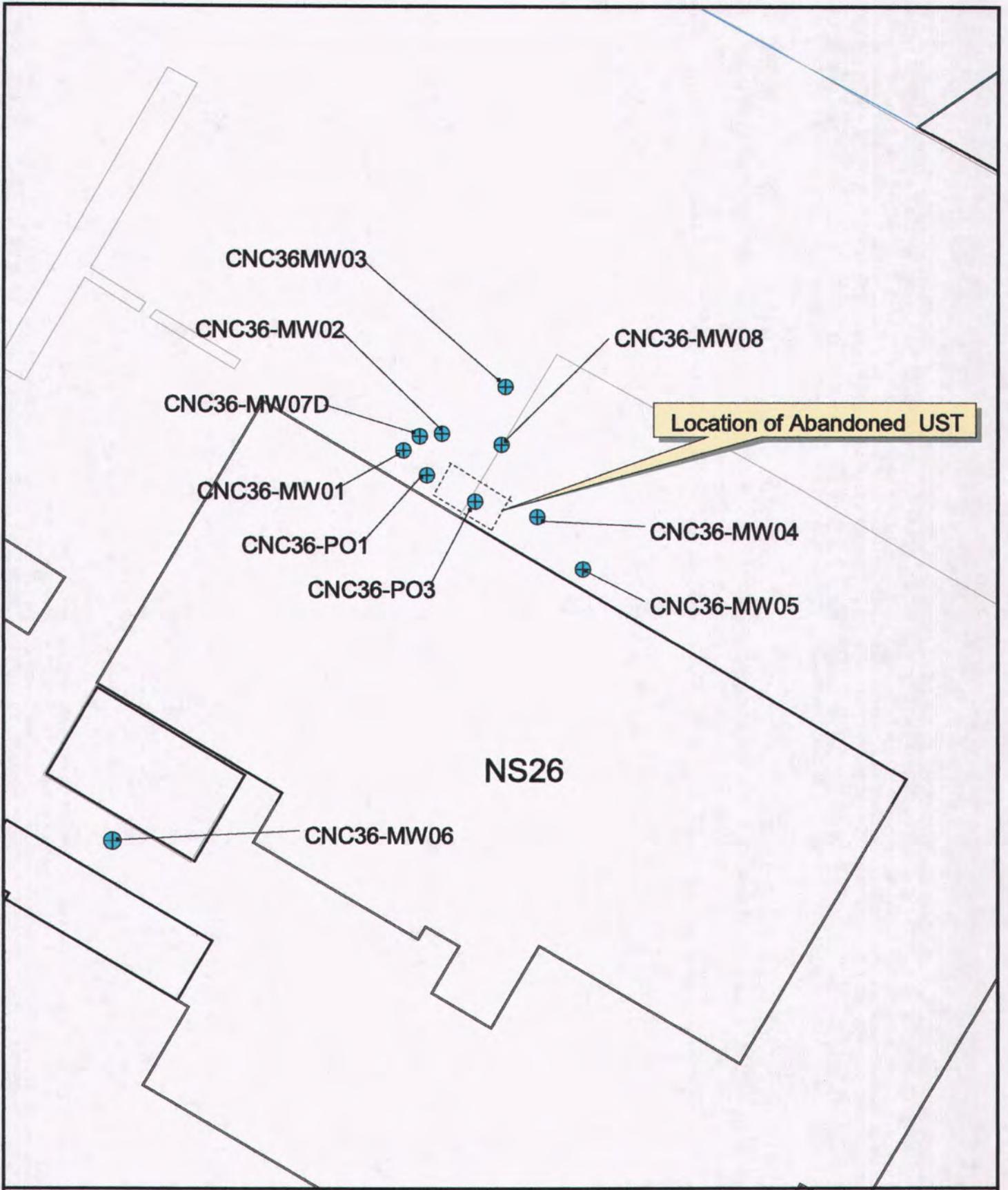


Figure 1
 Site Location Map
 Site 36, Building NS26, Zone I
 Charleston Naval Complex



- ⊕ Active Well Locations
- Pavement
- Shoreline
- ▭ Buildings
- Surrounding Area

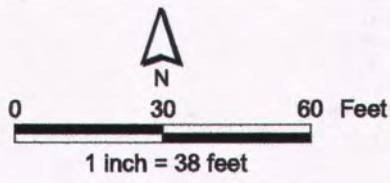


Figure 2
 Site 36, NS26, Zone I
 UST Location Map
 Charleston Naval Complex

Tables

TABLE 1
Free Product Measurement and Collection Quantities

Well No.	Date	Product	DTW	FP Column (ft.)	Comments
CNC36-PO1	11/27/2000	6.3	6.75	0.45	No product recovered
	01/17/2001	6.68	6.77	0.09	Beads of product in bailer
	01/29/2001	6.77	6.81	0.04	Beads of product in bailer
	02/09/2001	nm	nm	nm	.10 gallons bailed
	02/15/2001	6.65	6.67	0.02	Sheen present in bailer
	03/05/2001	nm	nm	nm	Sheen present in bailer
	03/26/2001	0	5.9	nm	Beads of product in bailer
	04/12/2001	nm	nm	nm	Beads of product in bailer
	04/30/2001	0	6.46	nm	Beads of product in bailer
	06/06/2001	0	6.87	nm	Beads of product in bailer
	08/29/2001	nm	nm	nm	Beads of product in bailer
	09/10/2001	nm	nm	nm	Beads of product in bailer
	01/23/2002	6.69	6.73	0.04	No product recovered
	01/29/2002	6.68	6.79	0.11	Beads of product in bailer
	02/18/2002	6.32	6.48	0.16	Beads of product in bailer
	02/25/2002	nm	nm	nm	Beads of product in bailer
	03/27/2002	nm	nm	nm	Beads of product in bailer
	07/10/2002	nm	nm	nm	No product recovered
	01/24/2003	0	5.76	nm	No product recovered
	02/14/2003	0	6.05	nm	No product recovered
	06/17/2003	nm	nm	nm	Performed AFVR
	07/28/2003	4.3	4.34	0.04	No product recovered
	10/03/2003	5.55	5.73	0.18	Initiate absorbent socks
	12/12/2003	5.91	6	0.09	Replace absorbent sock / .25 gallon recovered
	01/12/2004	nm	nm	nm	non-retrievable sock
	02/12/2004	nm	nm	nm	non-retrievable sock
05/28/2004	nm	nm	nm	non-retrievable sock	
CNC36-PO3	11/27/2000	6.04	6.75	0.71	No product recovered
	01/17/2001	6.36	7.13	0.77	.20 gallons bailed
	01/29/2001	6.85	7.25	0.4	.20 gallons bailed
	02/09/2001	nm	nm	nm	.20 gallons bailed
	02/15/2001	6.54	6.62	0.08	.10 gallons bailed
	03/05/2001	nm	nm	nm	.20 gallons bailed
	03/26/2001	sheen	4.49	nm	Beads of product in bailer
	04/12/2001	nm	nm	nm	Beads of product in bailer
	04/30/2001	6.24	6.25	0.01	Beads of product in bailer
	06/06/2001	6.82	not measured	nm	Beads of product in bailer
	08/29/2001	nm	nm	nm	Beads of product in bailer
	09/10/2001	nm	nm	nm	.10 gallons bailed
	01/23/2002	7.01	7.8	0.79	.20 gallons bailed
	01/29/2002	6.58	6.8	0.22	.20 gallons bailed
	02/18/2002	6.28	6.91	0.63	.20 gallons bailed
	02/25/2002	nm	nm	nm	.10 gallons bailed
	03/27/2002	nm	nm	nm	.20 gallons bailed
	06/03/2002	nm	nm	nm	.10 gallons bailed
	07/10/2002	nm	nm	nm	.10 gallons bailed
	01/24/2003	5.67	5.79	0.12	No product recovered
	06/17/2003	nm	nm	nm	Performed AFVR
	07/28/2003	4.21	4.55	0.34	No product recovered
	10/03/2003	5.43	6.05	0.62	Initiate absorbent socks

TABLE 1

Free Product Measurement and Collection Quantities (cont.)

Well No.	Date	Product	DTW	FP Column (ft.)	Comments
CNC36-P03 (cont.)	01/12/2003	6.13	7.34	1.21	Removed absorbent sock / .25 gallon recovered
	02/12/2004	5.5	6.84	1.34	Gauged only
	05/28/2004	5.59	8.01	2.42	Replace absorbent sock
CNC36-MW02	11/27/2000	6.11	6.38	0.27	No product recovered
	01/17/2001	6.45	7.4	0.95	.25 gallons bailed
	01/29/2001	6.55	6.84	0.29	.25 gallons bailed
	02/09/2001	nm	nm	nm	.20 gallons bailed
	02/15/2001	6.44	6.55	0.11	.10 gallons bailed
	03/05/2001	nm	nm	nm	Sheen present in bailer
	03/26/2001	6.8	6.81	0.01	Beads of product in bailer
	04/12/2001	nm	nm	nm	Beads of product in bailer
	04/30/2001	0	6.26	nm	Beads of product in bailer
	06/06/2001	6.55	6.58	0.03	Beads of product in bailer
	08/29/2001	nm	nm	nm	Beads of product in bailer
	09/10/2001	nm	nm	nm	Beads of product in bailer
	01/23/2002	6.43	6.55	0.12	.10 gallons bailed
	01/29/2002	6.43	6.54	0.11	.10 gallons bailed
	02/18/2002	6.12	6.12	0	No product recovered
	02/25/2002	nm	nm	nm	Beads of product in bailer
	03/27/2002	nm	nm	nm	Beads of product in bailer
	07/10/2002	nm	nm	nm	No product recovered
	01/24/2003	0	5.58	nm	No product recovered
	06/17/2003	nm	nm	nm	Performed AFVR
	07/28/2003	4.15	4.34	0.19	No product recovered
	10/03/2003	5.34	5.55	0.21	Initiate absorbent sock
	12/12/2003	5.71	5.72	0.01	Replace absorbent sock / .25 gallon recovered
	01/12/2003	nm	nm	nm	Replace absorbent sock / .25 gallon recovered
	02/12/2004	nm	nm	nm	Replace absorbent sock / .25 gallon recovered
	05/28/2004	nm	nm	nm	Replace absorbent sock / .25 gallon recovered

Appendix A
Waste Disposal Manifest

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pin) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. SC0170022560	Manifest Document No. 61703	Page 1 of 1
3. Generator's Name and Mailing Address US NAVY- CHARLESTON NAVAL SHIPYARD 1849 AVE F N. CHARLESTON, SC 29405				
4. Generator's Phone 843 921-9825				
5. Transporter 1 Company Name EQ Industrial Services	6. US EPA ID Number MI0 000 131 292	A. State Transporter's ID		
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter 1 Phone 800 275 6629		
8. Designated Facility Name and Site Address EQ INDUSTRIAL SERVICES OF ATLANTA 6800 FULTON INDUSTRIAL, SW ATLANTA, GA 30336		C. State Transporter's ID		
		D. Transporter 2 Phone		
		E. State Facility's ID		
		F. Facility's Phone 404-494-3820		

11. WASTE DESCRIPTION	12. Containers		13. Total Quantity	14. Unit Wt./Vol.
	No.	Type		
a. <input type="checkbox"/> NON-REGULATED MATERIAL NON-HAZARDOUS (OILY WATER)	1	TT	760	9
b. <input type="checkbox"/>				
c. <input type="checkbox"/>				
d. <input type="checkbox"/>				

G. Additional Descriptions for Materials Listed Above 11a: Approval # ATL4024ALV-1 11b:	H. Handling Codes for Wastes Listed Above
------------------------------------------------------------------------------------------------------	-------------------------------------------

15. Special Handling **IN CASE OF EMERGENCY CONTACT
EQIS 1-800-275-6629**

#311
#60411

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name Ned Heames	Signature <i>[Signature]</i>	Date 6/17/03
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Willie Tucker	Signature <i>[Signature]</i>	Date 06/17/03
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	Signature	Date

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in Item 19.

Printed/Typed Name Danielle Washe	Signature <i>[Signature]</i>	Date 07/01/03
---------------------------------------------	---------------------------------	-------------------------

NON-HAZARDOUS WASTE

RECEIVED BY FACILITY