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SAMPLING AND ANALYSIS PLAN ADDENDUM AREA OF CONCERN 680 (AOC 680) ZONE I
ADDENDUM 2 WITH TRANSMITTAL CNC CHARLESTON SC

8/1/2002
CH2M HILL

ROC 680 Zone I

SAMPLING and ANALYSIS PLAN (RO) ADDENDUM 2

CH2MHILL

CH2M HILL
3011 S.W. Williston Road
Gainesville, FL
32608-3928
Mailing address:
P.O. Box 147009
Gainesville, FL
32614-7009
Tel 352.335.7991
Fax 352.335.2959

August 21, 2002

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

Re: Sampling and Analysis Plan – Addendum 2 for AOC 680, Zone I

Dear Mr. Scaturo:

Enclosed please find two copies of the Sampling and Analysis Plan (SAP) – Addendum 2 for AOC 680 in Zone I of the Charleston Naval Complex (CNC). This SAP has been prepared to complete the RCRA Facility Investigation (RFI) activities and to provide information that can be used to make decisions regarding the need for corrective measures at the site.

The principal author of this document is Kris Garcia. Please contact her at (770) 604-9182, extension 476, if you have any questions or comments.

Sincerely,

CH2M HILL



Dean Williamson, P.E.

cc: Tim Frederick/Gannett Fleming, Inc., w/att
Rob Harrell/Navy, w/att
Gary Foster/CH2M HILL, w/att

*Sampling and Analysis
Plan-Addendum 2*

Area of Concern 680, Zone I

**Charleston Naval Complex
North Charleston, SC**

Prepared for
**U.S. Navy Southern Division
Naval Facilities Engineering Command**

Prepared by
CH2M-Jones

August 2002

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1 Acronyms and Abbreviations

2	1,1-DCA	1,1-dichloroethane
3	1,2-DCE	1,2-dichloroethene
4	AOC	Area of concern
5	BRC	Background reference concentration
6	CMS	Corrective Measures Study
7	CNC	Charleston Naval Complex
8	COC	Chemical of concern
9	COPC	Chemical of potential concern
10	CSAP	Comprehensive Sampling and Analysis Plan
11	DMP	Data Management Plan
12	EGIS	Environmental Geographic Information System
13	EnSafe	EnSafe Inc.
14	EPA	U.S. Environmental Protection Agency
15	GPS	Global Positioning System
16	mg/kg	Milligram per kilogram
17	PCE	Tetrachloroethene
18	PPE	Personal protective equipment.
19	QA/QC	Quality Assurance/Quality Control
20	QAP	Quality Assurance Plan
21	RCRA	Resource Conservation and Recovery Act
22	RFA	RCRA Facility Assessment
23	RFI	RCRA Facility Investigation
24	SAP	Sampling and Analysis Plan
25	SCDHEC	South Carolina Department of Health and Environmental Control
26	SSL	Soil screening level
27	TCE	Trichloroethene
28	VOC	Volatile organic compound

1 1.0 Introduction

2 1.1 Background

3 Area of Concern (AOC) 680 is an area located on the south side of Building NS-26 that was
4 formerly used for brake repair and welding. Building NS-26 is a single-story, 22,322 square-
5 foot building constructed in 1958 and renovated in 1985. At the time of the Resource
6 Conservation and Recovery Act (RCRA) Facility Investigation (RFI), the building housed
7 offices, a carpentry shop, a ship-fitter shop, a welding shop, several smaller shops, and a non-
8 destructive testing lab. In August 2001, CH2M-Jones submitted the *Zone I RFI Report*
9 *Addendum and Responses to SCDHEC Comments, Revision 0* (CH2M-Jones, August 2001),
10 which included AOC 680. On November 25, 2001, the South Carolina Department of Health
11 and Environmental Control (SCDHEC) issued a letter accepting the *Zone I RFI Report*
12 *Addendum and Responses to SCDHEC Comments, Revision 0* for completion of the RFI process
13 for the sites in Zone I. In accordance with the RCRA site evaluation process, a Zone I
14 Corrective Measures Study (CMS) Work Plan was submitted to the U.S. Environmental
15 Protection Agency (EPA)/SCDHEC review team on February 25, 2002.

16 As discussed in the *Zone I CMS Work Plan, Revision 0* (CH2M-Jones, February 2002),
17 perchloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethane (1,1-DCA), and 1,2-
18 dichloroethene (1,2-DCE) were found to be present in a single surface soil sample
19 (I680SB005) at relatively low concentrations above their respective soil screening levels
20 (SSLs). These volatile organic compounds (VOCs) were not detected in any subsurface soil
21 samples, which included the collocated subsurface soil sample, with the single exception of
22 1,2-DCE. 1,2-DCE was present in the subsurface sample collected at boring I680SB005 at a
23 concentration of 0.24 milligrams per kilogram (mg/kg), which exceeds its SSL of
24 0.03 mg/kg. None of these constituents were detected in the collocated shallow
25 groundwater monitoring well I680GW004. For these reasons, PCE, TCE, and 1,1-DCA were
26 not considered chemicals of concern (COCs) at AOC 680.

27 Following their review of the *Zone I CMS Work Plan*, EPA suggested that collection and
28 analysis of additional soil samples for 1,1-DCE should be considered in the immediate
29 vicinity of soil sample location I680SB005, which is collocated with existing monitoring well
30 E680GW004. CH2M-Jones agreed that this work should be conducted and field sampling
31 was completed in May 2002.

1 Following review of the analytical data from the May 2002 sample investigation, one sample
2 location (I680SB007) appeared to have surface soil and subsurface soil concentrations of 1,2-
3 DCE, PCE, and TCE at concentrations greater than their respective SSLs. This Sampling and
4 Analysis Plan (SAP) - Addendum 2 provides the procedures that will be used to further
5 collect and analyze additional soil samples in the vicinity of I680SB007 in order to complete
6 the nature and extent delineation.

7 Figure 1-1 illustrates the location of Zone I within the Charleston Naval Complex (CNC).

8 Figure 1-2 is an aerial photograph of AOC 680.

9 **1.2 Organization of the Sampling and Analysis Plan**

10 This SAP - Addendum 2 consists of the following sections, including this introductory
11 section:

12 **1.0 Introduction** - Presents the purpose of the SAP and background information regarding
13 the site.

14 **2.0 Proposed Sampling and Analysis** - Describes the investigative approach for delineation
15 of chemicals of potential concern (COPCs) to complete the RFI.

16 **3.0 References** - Lists the references used in this document.

17 All tables and figures appear at the end of their respective sections.

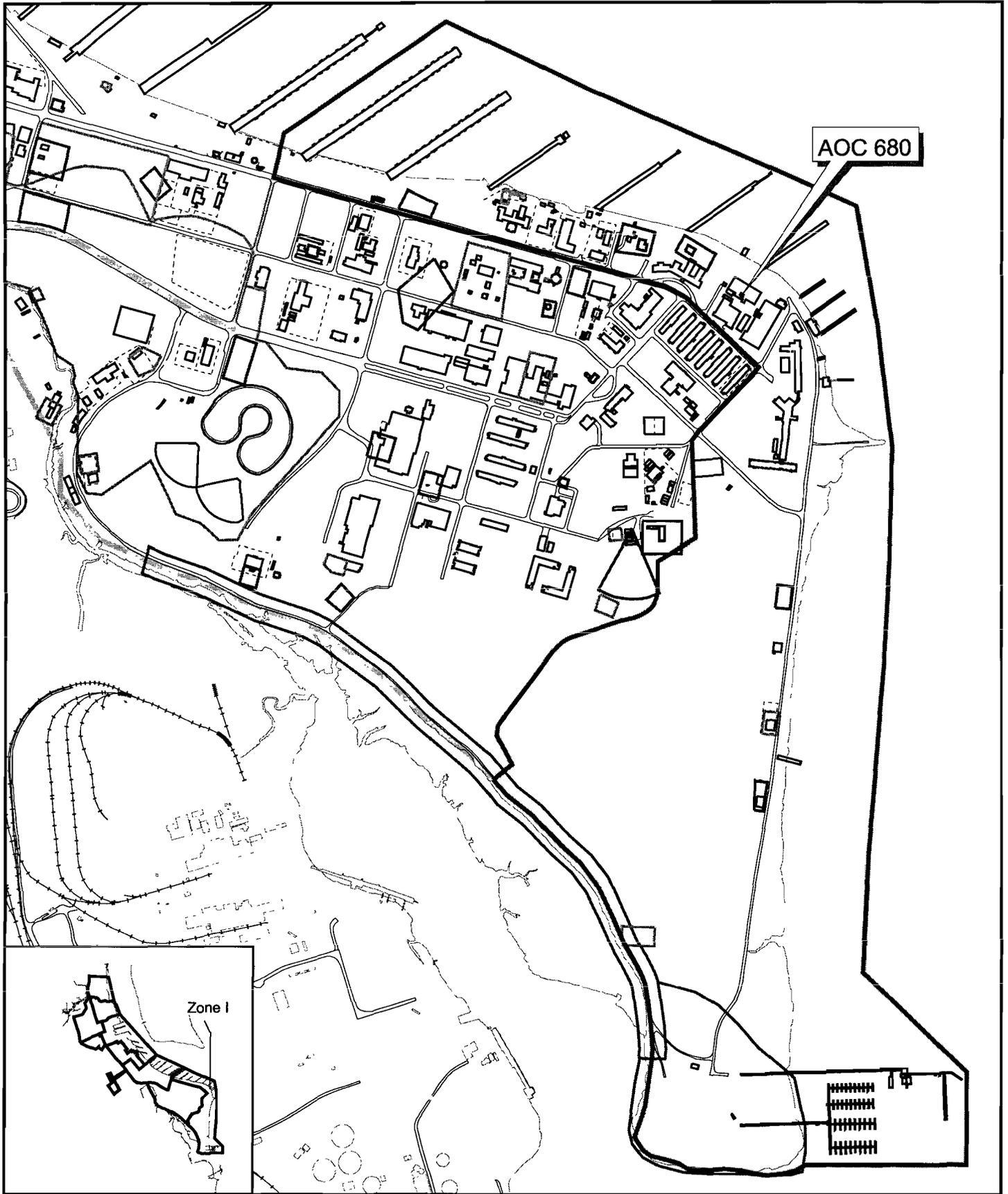
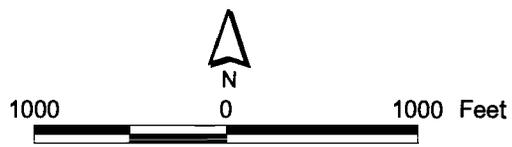


Figure 1-1
 AOC 680 within Zone I
 Charleston Naval Complex



NOTE: Aerial Photo Date is 1997

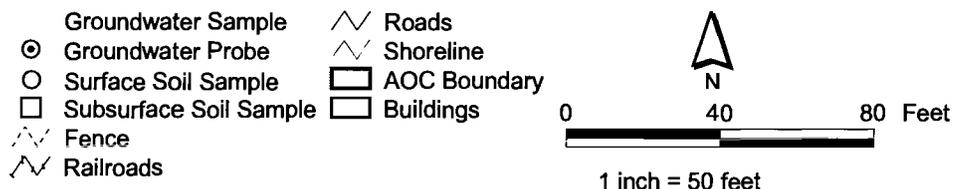
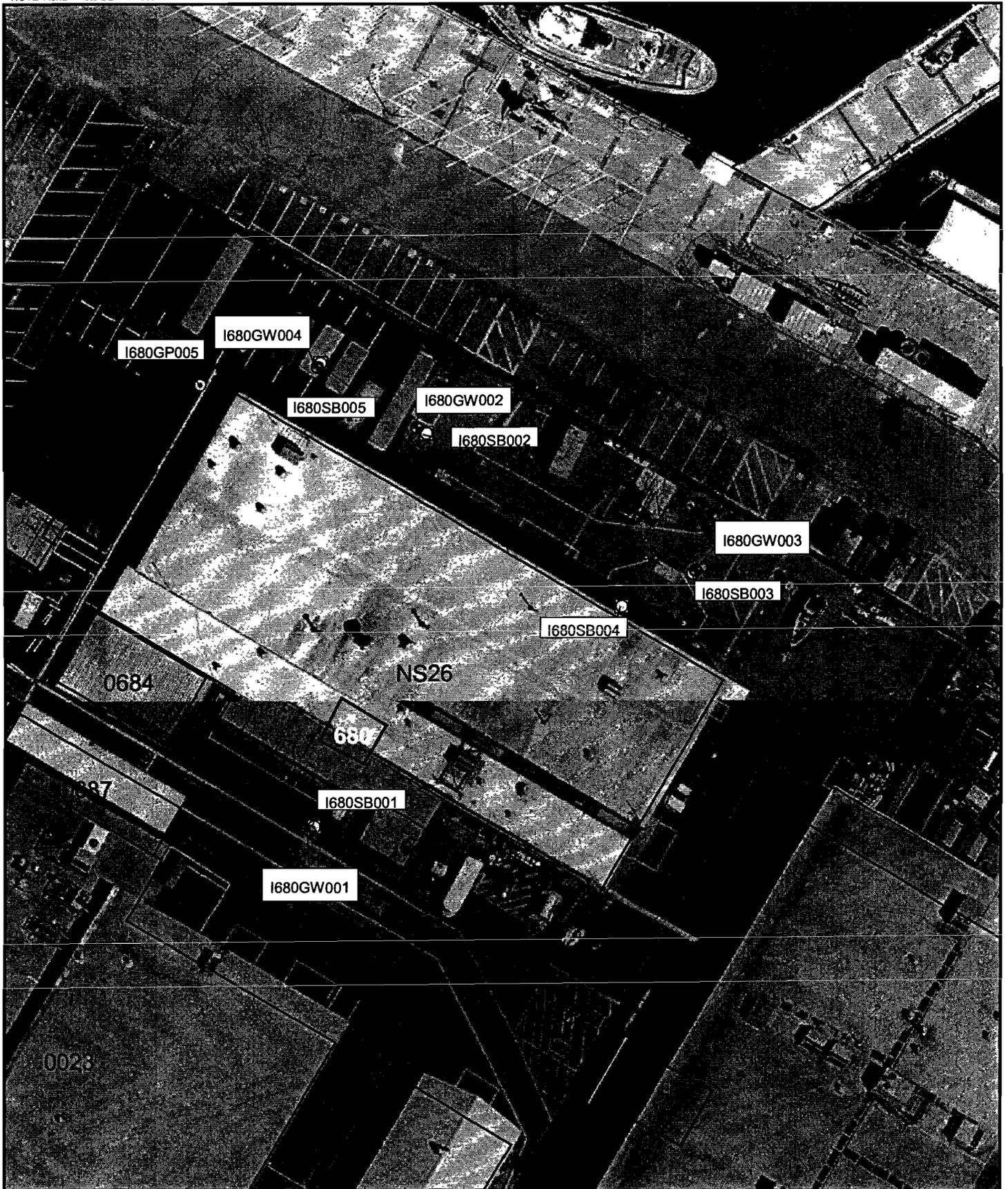


Figure 1-2
Historical Sampling Locations
AOC 680, Zone I
Charleston Naval Complex

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1 **2.0 Proposed Sampling and Analysis**

2 Surface and subsurface soil samples will be collected for analysis, as described below, to
3 evaluate the presence of 1,2-DCE in soils in the vicinity of sample location I680SB007.

4 Following completion of the sampling and evaluation of the data, as presented herein,
5 CH2M-Jones will submit an addendum to the *Zone I CMS Work Plan* to present the results of
6 the sampling and analysis.

7 All investigative work will be performed in accordance with the Comprehensive Sampling
8 and Analysis Plan (CSAP) portion of the *Final Zone I RFI Work Plan, Revision 1* (EnSafe Inc.
9 [EnSafe]/Allen & Hoshall, 1996).

10 **2.1 Soil Sampling**

11 To further evaluate the nature and extent of VOCs detected in the surface soil collected from
12 sample location I680SB007, two additional soil borings will be advanced in the immediate
13 vicinity (within a 20-ft radius) of the original sample location (see Figure 2-1). Both shallow
14 (0 to 1 foot below land surface [ft bls]) and deep (3 to 5 ft bls) soil samples will be collected
15 at each location. The samples will be analyzed for VOCs using EPA Method 8260B.

16 All sample locations will be surveyed for positioning in the CNC Environmental
17 Geographic Information System (EGIS).

18 **2.2 Groundwater Sampling**

19 No groundwater sampling will be conducted under this SAP - Addendum 2.

20 **2.3 Health and Safety**

21 CH2M-Jones places significant emphasis on the health and safety of our personnel, our
22 subcontractors, and the local community. Once all personnel have arrived on site as part of
23 the mobilization phase of the SAP, a project briefing and health and safety orientation
24 meeting will be held. All work completed as part of this SAP will be performed in
25 accordance with the CH2M-Jones Site-Specific Health and Safety Plan (CH2M-Jones, 2000).

26 Personnel working at the site will be required to comply with Level D personal protective
27 equipment (PPE) requirements, as specified in the Health and Safety Plan.

2.4 Site Clearance

Soil boring and temporary well locations will be marked or staked in the field using coordinates derived from the CNC EGIS tool and utilizing the Global Positioning System (GPS) equipment. Table 2-1 shows the coordinates for the soil sampling locations.

To prepare for the start of onsite operations, CH2M-Jones will notify the necessary agencies and departments regarding planned activities at the project site.

CH2M-Jones will examine the site for existing water, electrical, natural gas, telephone, and other utility lines that are potential hazards at the site. Utilities will be clearly marked and identified.

2.5 Waste Management and Disposal

Four waste streams will be generated as part of this SAP: pavement debris, soil cuttings, decontamination wastes, and used PPE. Soil cuttings will be drummed and characterized in accordance with South Carolina Hazardous Waste Management Regulations (SCDHEC R.61-79.261) and disposed in accordance with all applicable regulations and permits.

Decontamination wastes and used PPE will also be disposed in accordance with applicable regulations.

Pavement debris will be transported offsite for disposal. Offsite transportation and disposal will be performed by properly permitted and licensed subcontractors.

2.6 Equipment Decontamination

Decontamination of personnel, sampling and removal equipment, and materials will be in accordance with the CH2M-Jones Site-Specific Project Health and Safety Plan.

2.7 Quality Assurance/Quality Control

Sample quality will be maintained consistent with the procedures identified in the EPA's *Environmental Services Division Standard Operating Procedures and Quality Assurance Manual* (ESDSOPQAM) (EPA, 1996a).

In addition, quality assurance/quality control (QA/QC) practices will be implemented consistently with the Quality Assurance Plan (QAP) and Data Management Plan (DMP) of the approved CSAP included in the *Final Comprehensive RFI Work Plan* (EnSafe/Allen & Hoshall, 1994) to verify that data are properly validated.

1 The samples will be hand delivered or sent via overnight carrier to an offsite laboratory,
2 where they will be analyzed on a standard turnaround time for both hard copy and
3 electronic deliverables.

4 **2.7.1 Sample Analysis Protocols**

5 Sample analysis will be conducted consistent with the guidance in the EPA's *Test Methods*
6 *for Evaluating Solid Waste, SW-846, Revision 4*, Office of Solid Waste and Emergency
7 Response (SW846) (1996b) and in the EPA's *Environmental Services Division Laboratory*
8 *Operations and Quality Control Manual (ESDLOQCM)* (EPA, 1997). The analysis will also
9 follow the procedures provided in the approved CSAP.

10 **2.7.2 Data Verification and Validation**

11 Data verification and validation practices will be consistent with QAP and DMP in the
12 approved CSAP portion of the *Final Comprehensive RFI Work Plan* to verify that all
13 information and data are valid and properly documented.

14 In addition, verification and validation procedures will be conducted consistently with the
15 following guidelines:

- 16 • *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA,
17 1994a)
- 18 • *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA,
19 1994b)

20 **2.7.3 Data Management**

21 Record keeping and data management practices for both field data and analytical data will
22 be consistent with the DMP in the approved CSAP to verify that all information and data
23 are properly recorded and documented. Electronic data will be maintained in a database by
24 CH2M-Jones for data storage and management.

TABLE 2-1
Coordinates for Proposed Sampling Locations
Sampling and Analysis Plan - Addendum 2, AOC 680, Zone I, Charleston Naval Complex

New Sample ID	Northing	Easting
New Soil Borings to be Sampled		
I680SB010	371,062	2,326,347
I680SB011	371,060	2,326,389

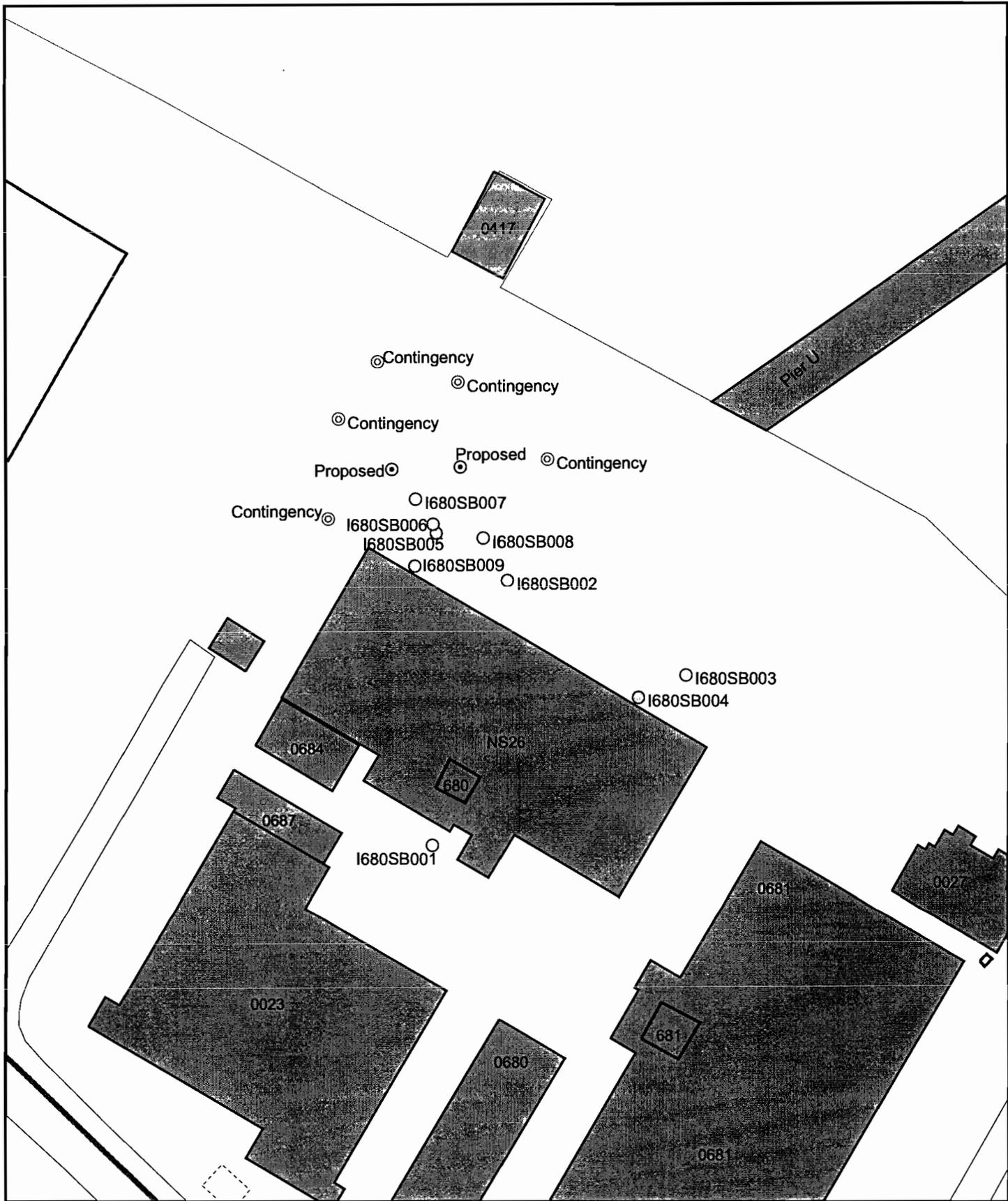


Figure 2-1
 Proposed Additional Sampling Locations
 AOC 680, Zone I
 Charleston Naval Complex

1 3.0 References

- 2 CH2M-Jones. *Zone I RFI Report Addendum and Responses to SCDHEC Comments, Revision 0.*
3 August 2001.
- 4 CH2M-Jones. *Zone I CMS Work Plan, Revision 0.* February 2002.
- 5 EnSafe Inc. *Zone I RFI Report, Revision 0. NAVBASE Charleston.* March 1999.
- 6 EnSafe Inc./Allen & Hoshall. *Final Comprehensive RFI Work Plan.* 1994.
- 7 EnSafe Inc./Allen & Hoshall. *Final Zone I RFI Work Plan, Revision 1.* 1996.
- 8 EnSafe Inc. *RFA Naval Base Charleston.* June 1995.
- 9 U.S. Environmental Protection Agency (EPA). *Contract Laboratory Program National*
10 *Functional Guidelines for Organic Data Review.* 1994a.
- 11 U.S. Environmental Protection Agency (EPA). *Contract Laboratory Program National*
12 *Functional Guidelines for Inorganic Data Review.* 1994b.
- 13 U.S. Environmental Protection Agency (EPA). *Environmental Services Division Standard*
14 *Operating Procedures and Quality Assurance Manual (ESDSOPQAM).* 1996a.
- 15 U.S. Environmental Protection Agency (EPA). *Test Methods for Evaluating Solid Waste, SW-*
16 *846.* Revision 4. Office of Solid Waste and Emergency Response (SW846). 1996b.
- 17 U.S. Environmental Protection Agency (EPA). *Environmental Services Division Laboratory*
18 *Operations and Quality Control Manual (ESDLOQCM).* 1997.