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SAMPLING AND ANALYSIS PLAN ADDENDUM AREA OF CONCERN 680 (AOC 680) ZONE I
WITH TRANSMITTAL CNC CHARLESTON SC
5/1/2002
CH2M HILL

ROC 680 ZONE I

SAMPLING and ANALYSIS PLAN (RO) APPENDUM 1

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May 10, 2002

Mr. David Scaturo
Division of Hazardous and Infectious Wastes
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 – AOC 680, Zone I

Dear Mr. Scaturo:

Enclosed are four copies of the Sampling and Analysis Plan Addendum (Revision 0) for AOC 680 in Zone I of the Charleston Naval Complex (CNC). This sampling plan has been prepared to complete the Zone I Corrective Measures Study (CMS) Work Plan 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 Ms. Garcia at 770/604-9182, extension 476, or me, at 352-335-5877, extension 2280, if you have any questions or comments.

Sincerely,

CH2M HILL



c: Dann Spariosu /EPA, w/att
Rob Harrell/Navy, w/att
Gary Foster/CH2M HILL, w/att
Kris Garcia/CH2M HILL w/o att

*Sampling and Analysis
Plan Addendum*

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

May 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

1.0 Introduction

1.1 Background

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

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

Following their review of the Zone I CMS Work Plan, EPA suggested that collection and analysis of additional soil samples should be considered in the immediate vicinity of soil sample location I680SB005, which is collocated with existing monitoring well E680GW004, and evaluated for the presence of 1,2-dichloroethene. CH2M-Jones agreed that this work

1 should be conducted. This Sampling and Analysis Plan (SAP) Addendum provides the
2 procedures that will be used to collect and analyze the soil samples.

3 Figure 1-1 illustrates the location of Zone I within the Charleston Naval Complex (CNC)
4 and Figure 1-2 is an aerial photograph of AOC 680.

5 **1.2 Organization of the Sampling and Analysis Plan**

6 This SAP Addendum consists of the following sections, including this introductory section:

7 **1.0 Introduction** – Presents the purpose of the SAP and background information regarding
8 the site.

9 **2.0 Proposed Sampling and Analysis** – Describes the investigative approach for delineation
10 of chemicals of potential concern (COPCs) to complete the RFI.

11 **3.0 References** – Lists the references used in this document.

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

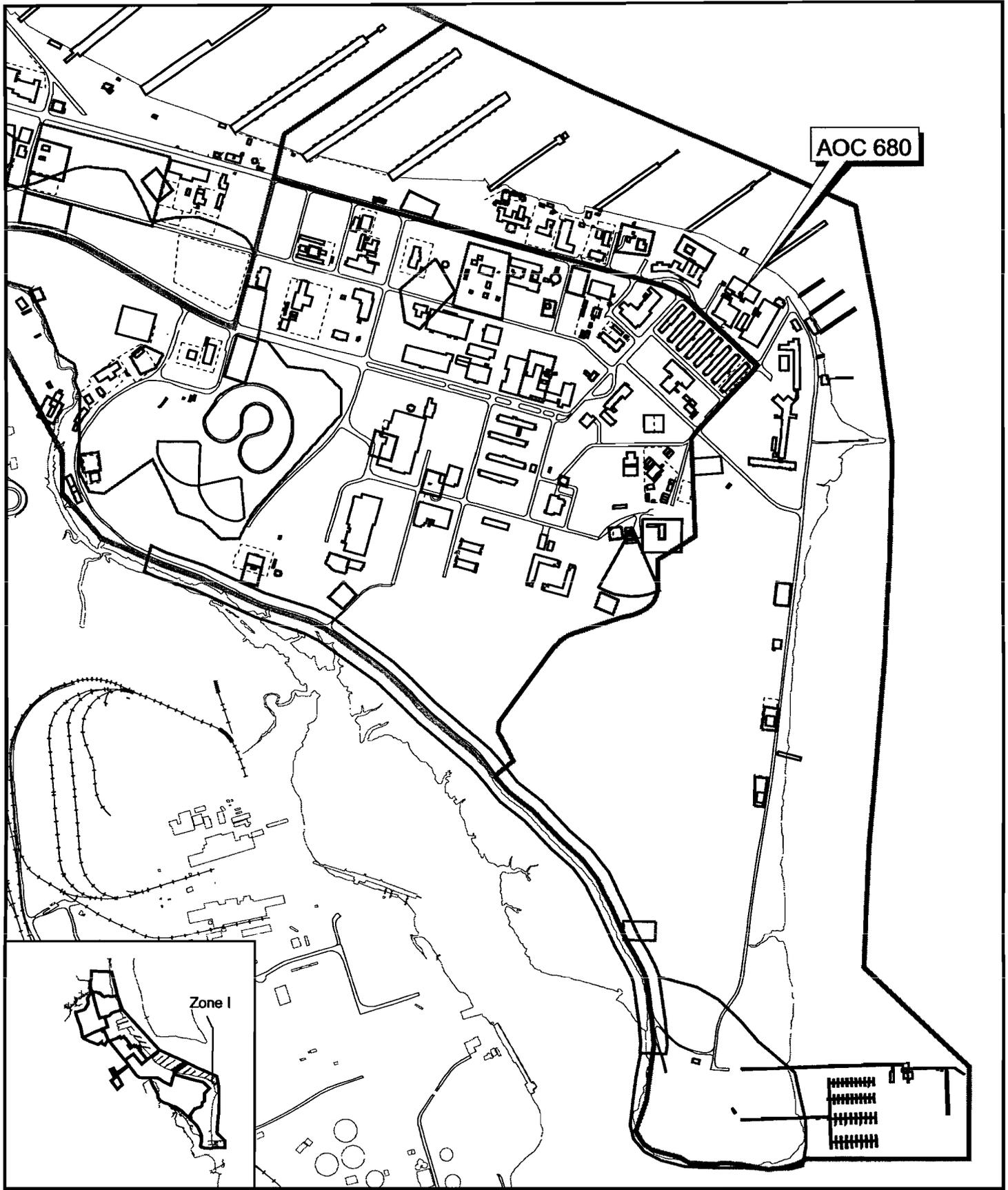
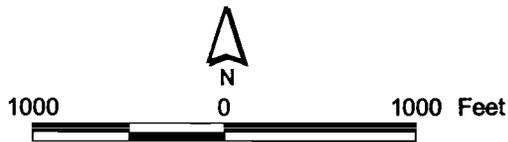


Figure 1-1
 AOC 680 within Zone I
 Charleston Naval Complex



NOTE: Aerial Photo Date is 1997



Groundwater Sample	∩ Roads	0 40 80 Feet	
⊙ Groundwater Probe	∩ Shoreline		
⊙ Surface Soil Sample	▭ AOC Boundary		1 inch = 50 feet
▭ Subsurface Soil Sample	▭ Buildings		
∩ Fence			
∩ Railroads			

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

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2.0 Proposed Sampling and Analysis

Surface soil and subsurface soil samples will be collected for analysis, as described below, to evaluate the presence of 1,2-DCE in soils in the vicinity of sample location I680SB005.

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

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

2.1 Soil Sampling

To further evaluate the nature and extent of VOCs detected in the surface soil collected from sample location I680SB005, a total of four soil borings will be advanced at soil sample location I680SB005 and in the immediate vicinity (see Figure 2-1). Both shallow (0 to 1 ft) and deep (3 to 5 ft) soil samples will be collected at each location. The three borings adjacent to I680SB005 will be collected within a 20-ft radius. The samples will be analyzed for VOCs using EPA Method 8260B.

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

2.2 Groundwater Sampling

Historically, VOCs have not been COPCs for groundwater in the vicinity of monitoring well I680MW004, which is collocated with soil sample location I680SB005. To confirm that groundwater remains unimpacted, monitoring well I680MW004 will be resampled (see Figure 2-2). Prior to sampling, the well will be purged using the low flow method and sampled in accordance with South Carolina regulations.

2.3 Health and Safety

CH2M-Jones places significant emphasis on the health and safety of our personnel, our subcontractors, and the local community. Once all personnel have arrived on site as part of

1 the mobilization phase of the SAP, a project briefing and health and safety orientation meet-
2 ing will be held. All work completed as part of this SAP will be performed in accordance
3 with the CH2M-Jones Site-Specific Health and Safety Plan (CH2M-Jones, 2000).

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

6 **2.4 Site Clearance**

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

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

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

15 **2.5 Waste Management and Disposal**

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

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

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

24 **2.6 Equipment Decontamination**

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

1 **2.7 Quality Assurance/Quality Control**

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

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

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

12 **2.7.1 Sample Analysis Protocols**

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

18 **2.7.2 Data Verification and Validation**

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

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

- 24 • *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA,
25 1994a)
- 26 • *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA,
27 1994b)

28 **2.7.3 Data Management**

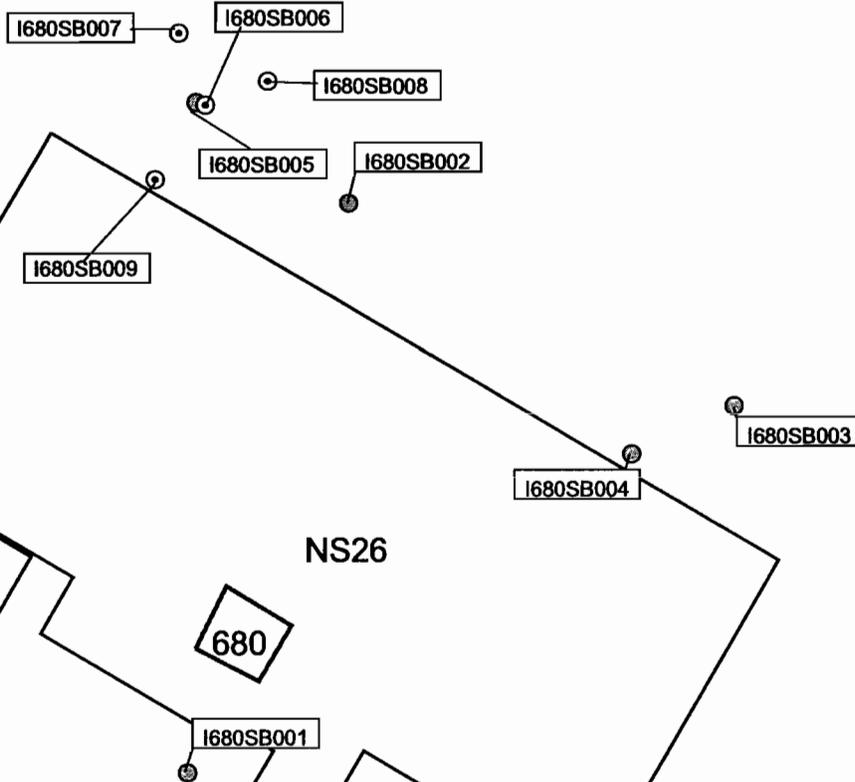
29 Recordkeeping and data management practices for both field data and analytical data will
30 be consistent with the DMP in the approved CSAP to verify that all information and data
31 are properly recorded and documented. Electronic data will be maintained in a database by
32 CH2M-Jones for data storage and management.

TABLE 2-1
Coordinates for proposed sampling locations
Sampling and Analysis Plan Addendum, AOC 680, Zone I, Charleston Naval Complex

New Sample ID	Northing	Easting
New Soil Borings to be Sampled		
I680SB006	371,025	2,326,378
I680SB007	371,045	2,326,377
I680SB008	371,041	2,326,394
I680SB009	371,024	2,326,377

Cooper River

Pier



Figur 2-1
 Proposed Supplemental Soil Sampling Locations
 AOC 680, Zone I
 Charleston Naval Complex

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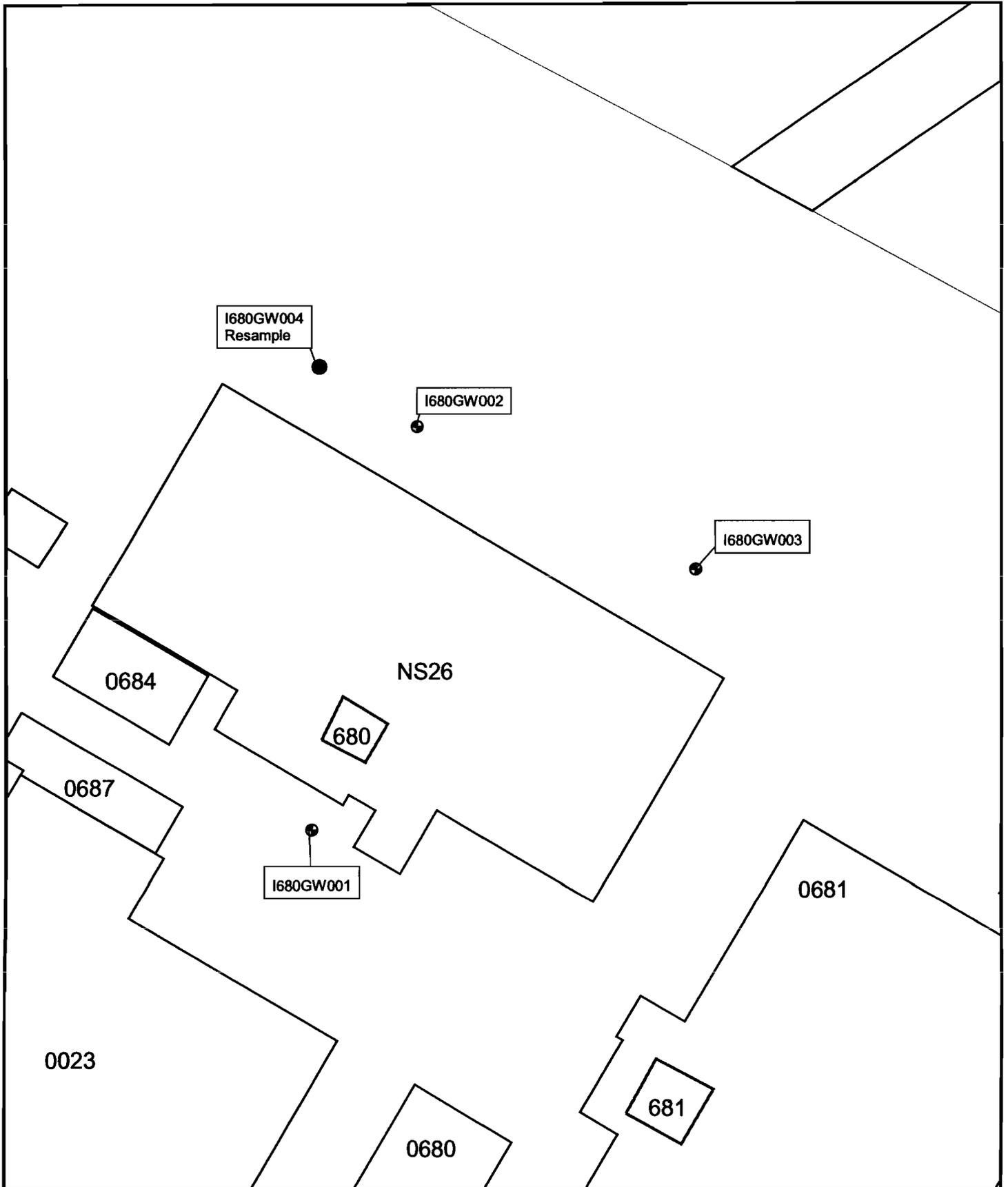


Figure 2-2
 Proposed Groundwater Sampling Point
 AOC 680, Zone I
 Charleston Naval Complex

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.