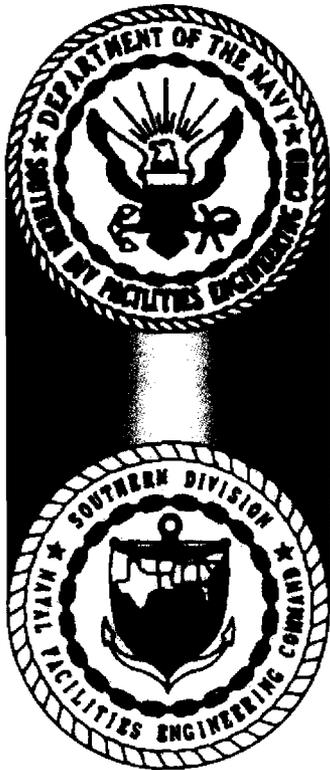


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CNC CHARLESTON
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RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION REPORT
ADDENDUM AREA OF CONCERN 575 (AOC 575) ZONE E CNC CHARLESTON SC
8/21/2002
CH2M HILL

RFI REPORT ADDENDUM

Area of Concern 575, Zone E



***Charleston Naval Complex
North Charleston, South Carolina***

SUBMITTED TO
***U.S. Navy Southern Division
Naval Facilities Engineering Command***

CH2M-Jones

August 2002

Contract N62467-99-C-0960



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: RFI Report Addendum (Revision 0) – AOC 575, Zone E

Dear Mr. Scaturo:

Enclosed please find four copies of the RFI Report Addendum (Revision 0) for AOC 575 in Zone E of the Charleston Naval Complex (CNC). This report has been prepared pursuant to agreements by the CNC BRAC Cleanup Team for completing the RCRA Corrective Action process.

The principal author of this document is Kris Garcia. Please do not hesitate to contact her at 770/604-9182, extension 476, should you have any questions or comments.

Sincerely,

CH2M HILL

Dean Williamson, P.E.

cc: Rob Harrell/Navy, w/att
Gary Foster/CH2M HILL, w/att

RFI REPORT ADDENDUM

Area of Concern 575, Zone E



***Charleston Naval Complex
North Charleston, South Carolina***

SUBMITTED TO
***U.S. Navy Southern Division
Naval Facilities Engineering Command***

PREPARED BY
CH2M-Jones

August 2002

*Revision 0
Contract N62467-99-C-0960
158814.ZE.PR.01*

**Certification Page for RFI Report Addendum (Revision 0) –
AOC 575, Zone E**

I, Dean Williamson, certify that this report has been prepared under my direct supervision. The data and information are, to the best of my knowledge, accurate and correct, and the report has been prepared in accordance with current standards of practice for engineering.

South Carolina

P.E. No. 21428



Dean Williamson, P.E.



Date

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1 Acronyms and Abbreviations

2	AOC	area of concern
3	AST	aboveground storage tank
4	BCT	BRAC Cleanup Team
5	BRAC	Base Realignment and Closure Act
6	CA	corrective action
7	CNC	Charleston Naval Complex
8	COC	chemical of concern
9	COPC	chemical of potential concern
10	CSI	confirmatory sampling investigation
11	DMP	Data Management Plan
12	EnSafe	EnSafe Inc.
13	EPA	U.S. Environmental Protection Agency
14	ESDLOQCM	Environmental Services Division Laboratory Operations and Quality
15		Control Manual
16	ESDSOPQAM	Environmental Services Division Standard Operating Procedures and
17		Quality Assurance Manual
18	ft bls	feet below land surface
19	GIS	geographic information system
20	IM	interim measure
21	LUC	land use control
22	MCL	maximum contaminant level
23	$\mu\text{g}/\text{kg}$	microgram per kilogram
24	mg/kg	milligram per kilogram
25	NAVBASE	Naval Base
26	NFA	no further action
27	OWS	oil/water separator
28	PCB	polychlorinated biphenyl
29	RCRA	Resource Conservation and Recovery Act

1 **Acronyms and Abbreviations, Continued**

2	RFI	RCRA Facility Investigation
3	ROC	run of crusher
4	SCDHEC	South Carolina Department of Health and Environmental Control
5	SWMU	solid waste management unit
6	UST	underground storage tank

1.0 Introduction

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 (BRAC), 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 are being conducted under the Resource Conservation and Recovery Act (RCRA) with the South Carolina Department of Health and Environmental Control (SCDHEC) as the lead agency for CA activities at the CNC. All RCRA CA activities are performed in accordance with the Final Permit (Permit No. SC0 170 022 560).

In April 2000, CH2M-Jones was awarded a contract to provide environmental investigation and remediation services at the CNC. This submittal has been prepared by CH2M-Jones to complete the RCRA Facility Investigation (RFI) for Area of Concern (AOC) 575 in Zone E of the CNC. The site is recommended for No Further Action (NFA). The area of the CNC in which AOC 575 is located is zoned for industrial use (M-2). Figure 1-1 illustrates the location of AOC 575 within Zone E. Figure 1-2 is an aerial photograph of AOC 575 taken in 1997.

1.1 Background

1.1.1 Site History

AOC 575 consists of an electrical substation adjacent to a single story concrete block building constructed over a slab floor (Building 454) (see Figure 1-1). Building 454 is adjacent to the east wall of Building 80, a Machine Shop. Immediately adjacent to Building 454 is a concrete slab mounted with a weatherproof metal enclosure surrounded by a fence. The metal enclosure houses high voltage switches and transformers. The east side of Building 454 houses a battery bank and the west side houses a battery charger. The substation was renovated in 1989 and currently the transformers do not contain dielectric fluid or non-polychlorinated biphenyls (PCBs) dielectric fluid. Information regarding PCB use before 1989 is not available.

A confirmatory sampling investigation (CSI) was recommended due to the possibility of releases of dielectric fluid and lead acid batteries, as noted by the staining observed in the

1 vicinity of the transformer and the battery bank (EnSafe Inc. [EnSafe]/Allen & Hoshall.
2 *Final RCRA Facility Assessment, Naval Base Charleston, Volume II.* 1995).

3 A pre-field investigation comprised of a visual site inspection was performed by CH2M-
4 Jones personnel on July 11, 2001. The transformer sits on a concrete pad. A very narrow
5 strip of exposed soil adjacent to the transformer pad, approximately 9-inches wide along the
6 length and 2- to 3-inches wide at the ends, was observed. Staining was not observed on the
7 pad.

8 The CSI sampling event for AOC 575 was conducted in April 2002. The site area is zoned for
9 industrial use (M-2).

10 **1.1.2 Summary of Interim Measures and UST/AST Removals at AOC 575**

11 **UST/AST Removals**

12 There are no known or suspected underground storage tanks (USTs) or aboveground
13 storage tanks (ASTs) associated with this site.

14 **Interim Measures**

15 No interim measures (IMs) have been conducted at the site.

16 **1.2 Purpose of the RFI Report Addendum**

17 This RFI Report Addendum provides information about AOC 575, including the results of
18 the sampling performed for the CSI. The results of the CSI are presented to complete the
19 nature and extent investigation to identify chemicals of potential concern (COPCs). Based
20 on a review of these results, AOC 575 is recommended for NFA.

21 Prior to changing the status of any site in the CNC RCRA CA permit, the BRAC Cleanup
22 Team (BCT) agreed that the following issues should be considered:

- 23 • Status of the RFI
- 24 • Presence of metals (inorganics) in groundwater
- 25 • Potential linkage to Solid Waste Management Unit (SWMU) 37, Investigated Sanitary
26 Sewers at the CNC
- 27 • Potential linkage to AOC 699, Investigated Storm Sewers at the CNC
- 28 • Potential linkage of AOC 504, Investigated Railroad Lines at the CNC
- 29 • Potential linkage to surface water bodies (Zone J)
- 30 • Potential contamination associated with oil/water separators (OWSs)

- 1 • Relevance or need for land use controls (LUCs) at the site
- 2 Information regarding these issues is provided in this RFI Report Addendum to expedite
- 3 evaluation of closure of the site.
- 4 Provided that the information presented in this report is adequate to address these site
- 5 closeout items, it is expected that the BCT will concur that NFA is appropriate for AOC 575.
- 6 At that time, a Statement of Basis will be prepared and made available for public comment
- 7 in accordance with SCDHEC policy. This will allow for public participation in the final
- 8 remedy selection.

9 **1.3 Report Organization**

10 This RFI Report Addendum consists of the following sections, including this introductory
11 section:

12 **1.0 Introduction** – Presents the purpose and background information relating to this RFI
13 Report Addendum.

14 **2.0 Site Setting** – Summarizes the geologic and hydrogeologic setting of AOC 575.

15 **3.0 Field Investigation and Data Validation** – Summarizes the conclusions from the CSI
16 field investigation and data validation for AOC 575.

17 **4.0 COPC Screening** – Describes the results from the comparison of analytical results to
18 COPC screening criteria.

19 **5.0 COPC/COC Refinement** – Includes the evaluation of COPCs to determine whether they
20 are defined as chemicals of concern (COCs) for AOC 575.

21 **6.0 Summary of Information Related to Site Closeout Issues** – Discusses the various
22 issues that the BCT agreed to evaluate prior to site closeout.

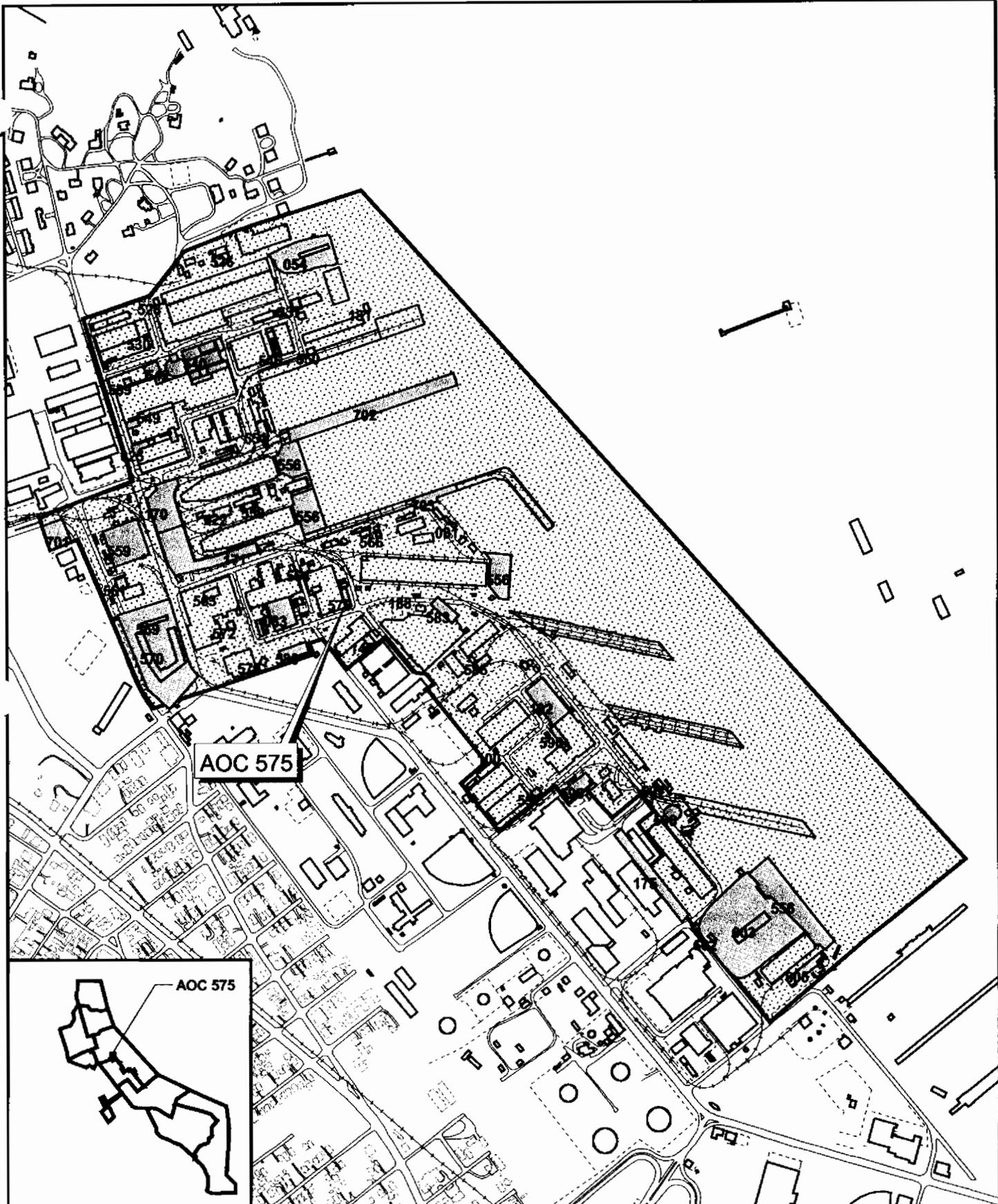
23 **7.0 Conclusions and Recommendations** – Summarizes the conclusions and
24 recommendations of the CSI field investigation at AOC 575.

25 **8.0 References** – Lists the references used in this document.

26 **Appendix A** contains a technical memorandum that describes the attempts made to
27 conduct the field investigation at AOC 575.

28 **Appendix B** contains photo documentation of field conditions at AOC 575.

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



AOC 575

AOC 575

-  Zone E Boundary
-  SWMU/AOC Within Zone E Boundary



0 800 1600 Feet



1 inch = 800 feet

Figure 1-1
 Zone E Within CNC
 AOC 575, Zone E
 Charleston Naval Complex

CH2MHILL



Figure 1-2
 Site Map
 AOC 575, Zone E
 Charleston Naval Complex

1 **2.0 Site Setting**

2 The regional physiographic and geologic setting for the CNC area is described in the *Final*
3 *Zone A RFI Report, Revision 0* (EnSafe/Allen & Hoshall, 1996). The regional hydrology and
4 hydrogeology for the CNC area is also described in the Zone A RFI Report.

5 **2.1 Geologic Setting**

6 Detailed descriptions of the Quaternary- and Tertiary-age sediments encountered during
7 the Zone E RFI, along with a detailed discussion of the various lithologic units encountered
8 in Zone E, are presented in Section 2.2.1 of the *Zone E RFI Report, Revision 0* (EnSafe, 1997).

9 Due to extensive surface soil disturbance at the CNC during its operational history,
10 approximately the upper 5 feet (ft) of the subsurface are typically a mixture of artificial fill
11 and native sediments. However, the extent of fill placement varies within Zone E. Areas
12 where extensive excavations have been performed or where native soils may have been
13 unsuitable for foundation support may have undergone more extensive fill placement.

14 Detailed descriptions of the soil types encountered in Zone E are presented in Section 2.2.3.3
15 of the RFI report.

16 A review of the historical maps from 1909 to the present indicates that the overall area has
17 been subjected to a complex series of construction, demolition, and expansion activities over
18 the years. Some type of structure has been present where Building 454 is located since at
19 least the early 1960s. Building 80 was constructed sometime between 1940 and 1955. After
20 1955, but before 1962, Building 454 appeared along the eastern outdoor wall of Building 80.
21 From 1962 to at least 1987, several small structures were built and demolished in the
22 immediate area. The 1998 public works map shows the area in configuration with current
23 conditions.

24 **2.2 Hydrogeologic Setting**

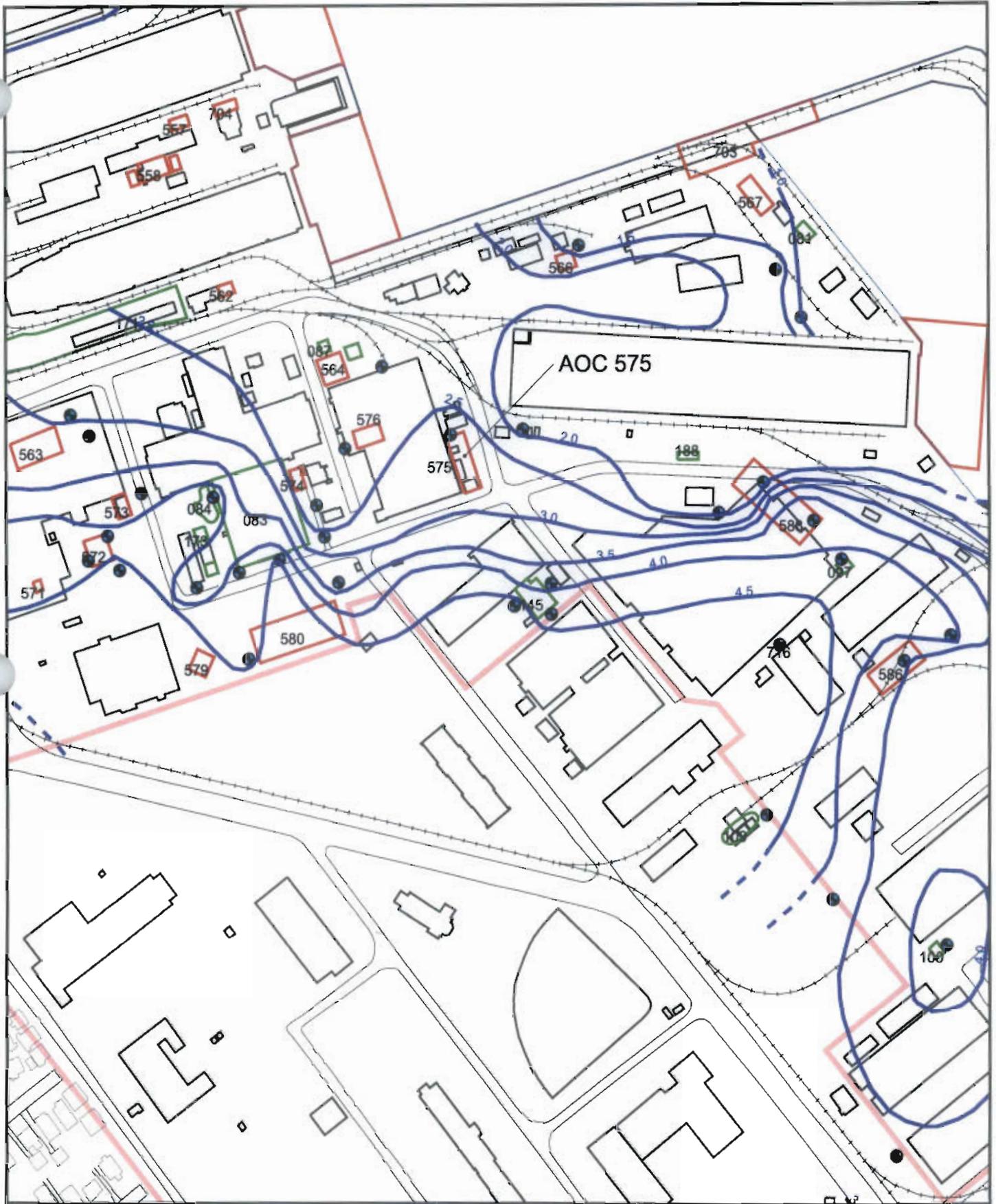
25 Based on information presented in Section 2.3 of the RFI report and a recent re-evaluation of
26 the groundwater flow patterns in the area, it appears that the groundwater flow
27 environment in Zone E is complex and is influenced by several factors:

- 28 • The eastern boundary of Zone E is the Cooper River, a regional groundwater discharge
29 zone

- 1 • The Cooper River is tidally influenced
- 2 • The shallow subsurface has been heavily disturbed by anthropogenic activities related
- 3 to industrial work within Zone E in the form of utilities, non-native fill material, support
- 4 pilings, railroad lines, crane rails, etc.
- 5 • Geologic heterogeneity predominates the subsurface

6 Detailed descriptions of the surficial aquifer, groundwater flow patterns, horizontal and
7 vertical hydraulic gradients, horizontal hydraulic conductivities, grain-size distribution,
8 and tidal influences are presented in Section 2.3 of the RFI report. The types of information,
9 documentation and descriptions of various methodologies used in developing this
10 information are also presented in Section 2.3 of the RFI report.

11 A recent shallow groundwater contour map has been developed for Zone E, using
12 contemporaneous water level elevation data collected in April 2002 (see Figure 2-1). Based
13 on the data, groundwater in the vicinity of AOC 575 appears to ultimately flow generally
14 north or east toward the Cooper River; however, there are be some strongly localized effects
15 due to the presence of the concrete walls of Dry Dock 5, which is located to the east. The
16 man-made structures control the local groundwater flow patterns in this area. Depth to
17 groundwater in the vicinity of AOC 575 is estimated to be approximately 4 ½ to 5 feet below
18 land surface (ft bls).



- Known Shallow Groundwater Contour (5/14/02)
- Inferred Shallow Groundwater Contour (5/14/02)
- Fence
- Railroads
- Roads
- Groundwater Well
- AOC Boundary
- SWMU Boundary
- Buildings
- Zone Boundary



0 200 400 Feet

1 inch = 250 feet

Figure 2-1
Shallow Groundwater Contours
AOC 575, Zone E
Charleston Naval Complex

1 In response, CH2M-Jones tasked a drilling subcontractor, Columbia Technologies, to
2 attempt to conduct DPT sampling. The Columbia driller attempted to punch through the
3 subsurface obstructions utilizing a cone tip. After some hammering, the cone tip was able to
4 break through a 0.5-foot layer of asphalt (3 to 3.5 ft bls), but immediately encountered hard
5 quartz-like material that was believed to be concrete at 3.5 ft bls. The material that was
6 encountered below the buried asphalt prevented further penetration, despite attempts
7 made at two sample locations (E575SB001 and E575SB003) (see Appendix A).

8 Attempts were made to identify other acceptable sample locations. However, the presence
9 of a high voltage power source made any other locations impractical from both an access
10 and from a health and safety standpoint (see Appendix B).

11 In response to the review of the Zone E RFI Addendum Sampling Plan for the
12 Uninvestigated Units, one specifically relevant comment that addressed similar field
13 conditions was received from SCDHEC:

14 *Comment 4, Section 3.4.1, Page 3-2: This section states that coring will be conducted through*
15 *concrete that may be up to several feet thick to collect soil samples. If the staining is minimal*
16 *and intermittent, and there is no reason to believe that penetration through the concrete has*
17 *occurred, then coring thorough such a thick slab of concrete may be unnecessary. The*
18 *Department will not require this sampling; therefore, it is up to CH2M-Jones's discretion*
19 *whether or not to collect these soil samples.*

20 No surface or subsurface soil samples could be collected at AOC 575 due to the presence of
21 buried thick pavement and subsurface obstructions. In addition, visual observation of
22 conditions at this site did not reveal any evidence that a release had occurred. For these
23 reasons, CH2M-Jones determined that sample collection was not practical at this site.

24 Each location attempted was surveyed for positioning in the CNC geographic information
25 system (GIS). Coordinate information is presented in Table 3-1.

26 **3.2.3 Decontamination Procedures**

27 All decontamination activities were conducted in accordance with the procedures outlined
28 in the *Final Comprehensive RFI Work Plan* (EnSafe/Allen & Hoshall, 1994) and the *RFI*
29 *Addendum Sampling Plan: Uninvestigated Sites - Zone E, Revision 1* (CH2M-Jones, December
30 2001).

31 **3.3 Soil Analytes**

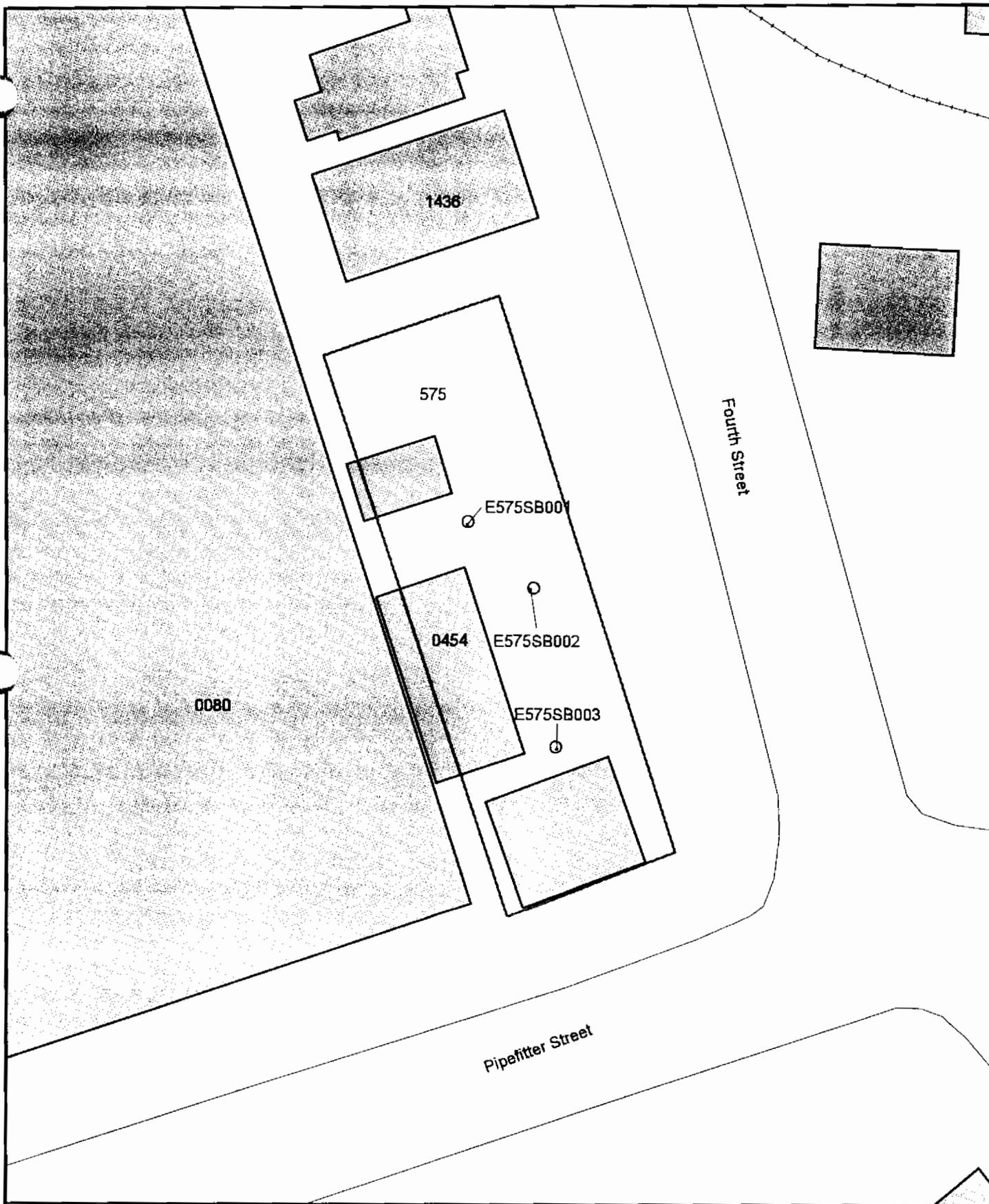
32 No soil samples were obtained for analysis.

1 **3.4 Data Management**

2 Record keeping and data management practices for both field data and analytical data
3 collected during the initial RFI investigation in 1995 were maintained consistent with the
4 Data Management Plan (DMP) in the approved *Final Comprehensive RFI Work Plan*
5 (EnSafe/Allen & Hoshall, 1994) to verify that all information and data were properly
6 recorded and documented. Electronic data will be maintained in a database by CH2M-Jones
7 for long-term data storage and management.

TABLE 3-1
Sampling Location Coordinates
RFI Report Addendum, AOC 575, Zone E, Charleston Naval Complex

New Sample ID	Northing	Easting
I575SB001	375,664.6	2,317,870.6
I575SB002	375,652.3	2,317,883.0
I575SB003	375,622.8	2,317,887.2



- Soil Boring
- ⋈ Fence
- ⋈ Railroads
- ⋈ Roads
- AOC Boundary
- Buildings

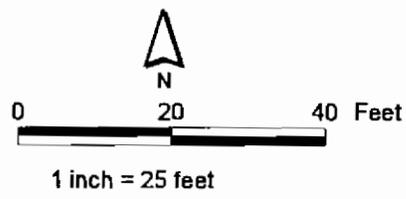


Figure 3-1
 Soil Sample Locations
 AOC 575, Zone E
 Charleston Naval Complex

1 **4.0 COPC Screening**

2 Due to site conditions, CH2M-Jones was unable to collect soil samples for analysis and
3 screening. The narrative provided in Appendix A describes attempts that were made to
4 obtain surface and subsurface soil samples at this site.

1 **5.0 COPC/COC Refinement**

- 2 No CSI analytical results were available for AOC 575; therefore, no COPCs were identified
- 3 and no detailed screening was conducted.

1 **6.0 Summary of Information Related to Site** 2 **Closeout Issues**

3 **6.1 RFI Status**

4 The CSI investigation findings, as reported herein, satisfy the requirements of the RFI.
5 Based on field conditions observed during the CSI field investigation conducted in April
6 2002, the nature and extent of the COPCs has been adequately defined.

7 AOC 575 was not included in the *Zone E RFI Report, Revision 0* (EnSafe, 1997). Thus, there
8 have been no RFI comments issued with respect to this unit. With submittal of this RFI
9 Report Addendum, the RFI requirements are considered to be complete.

10 The remaining subsections address the issues that the BCT agreed to evaluate prior to site
11 closeout.

12 **6.2 Presence of Inorganics in Groundwater**

13 For the purpose of site closeout documentation, the inorganics in groundwater issue refers
14 to the occasional or intermittent detection of several metals (primarily arsenic, thallium, and
15 antimony) in groundwater at concentrations above the applicable maximum contaminant
16 level (MCL), preceded or followed by detections of these same metals below the MCL or
17 below the practicable quantitation limit. Groundwater is not a medium of concern at AOC
18 575. No additional evaluation of this issue is warranted.

19 **6.3 Potential Linkage to SWMU 37, Investigated Sanitary** 20 **Sewers at the CNC**

21 The sanitary sewer investigation (SMWU 37) was designed to include segments of the
22 sewer where releases of contamination were known or considered likely to have occurred.
23 Investigations related to SWMU 37 were not conducted in the vicinity in association with
24 Building 454 or AOC 575. A sewer manhole is present within the footprint of AOC 575, but
25 this area was not investigated. However, there is no known or suspected linkage between
26 SWMU 37 and AOC 575. Further evaluation of this issue is not warranted.

6.4 Potential Linkage to AOC 699, Investigated Storm Sewers at the CNC

Investigated segments of the storm sewer (AOC 699) were identified in the *Zone L RFI Report, Revision 0* (EnSafe, 1998). A stormwater line flows beneath AOC 575. The nearest manholes are located approximately 50 feet northwest and 65 feet southwest of AOC 575. The sections of the stormwater sewer system in the vicinity of the site were not investigated as part of the AOC 699 investigations. There are no data or information to suggest that AOC 575 has impacted the storm sewer system and groundwater is not a medium of concern at this site. Further investigation of a linkage between the storm sewer system and AOC 575 is not warranted.

6.5 Potential Linkage to AOC 504, Investigated Railroad Lines at the CNC

Investigated segments of the CNC railroad lines (AOC 504) were identified in the *Zone L RFI Report, Revision 0* (EnSafe, 1998). No investigations related to AOC 504 were conducted at AOC 575.

Based on review of historical public works maps in the vicinity of AOC 575, the original railroad lines were constructed sometime between 1920 and 1922. These lines included a northeast to southwest rail that passed immediately adjacent to the southeastern corner of Building 80, which is where AOC 575 is currently located. Sometime between 1929 and 1935, these original railroad lines were removed. There were no railroad lines in this area until at least 1962. Between 1962 and 1967, a new railroad line was constructed immediately northeast of AOC 575. This railroad line serves Dry Dock No. 5 and remains in service at this time. There is no known linkage between AOC 575 and the investigated railroad lines. Further evaluation of this issue is not warranted.

6.6 Potential Migration Pathways to Surface Water Bodies at the CNC

The nearest surface water body to AOC 575 is the Cooper River, which lies approximately 850 feet to the east. There were no COCs identified for soil. Therefore, there are no migration pathways of concern. Further evaluation of this issue is not warranted.

1 **6.7 Potential Contamination in Oil/Water Separators**

2 There are no OWSs known to be associated with this site. In addition, there is no reference
3 made to an OWS at this facility in the *Oil Water Separator Data* report (Department of the
4 Navy, September 2000). Further evaluation of OWSs is not warranted.

5 **6.8 Land Use Controls (LUCs)**

6 There were no COCs identified under an unrestricted land use scenario during the risk-
7 based screening of the data from AOC 575. Therefore, no land use restrictions are needed
8 for AOC 575. This site is zoned M-2 (marine-industrial) and will likely be used for non-
9 residential future land use.

10 Regardless, the CNC BCT has agreed that all of Zone E will have at least some LUCs and
11 restrictions. At a minimum, these LUCs are likely to include restrictions against residential
12 land use. Because there are no COCs at this particular site, no LUCs are necessary. The site
13 is recommended for NFA.

Section 7.0

1 **7.0 Conclusions and Recommendations**

2 AOC 575 consists of an electrical substation adjacent to a single story concrete block
3 building constructed over a slab floor (Building 454) (see Figure 1-2). Building 454 is
4 adjacent to the east wall of Building 80, Machine Shop. Immediately adjacent to Building
5 454 is a concrete slab mounted with a weatherproof metal enclosure surrounded by a fence.
6 The metal enclosure houses high voltage switches and transformers. The east side of
7 Building 454 houses a battery bank and the west side houses a battery charger. The
8 substation was renovated in 1989 and currently the transformers do not contain dielectric
9 fluid or non- PCBs dielectric fluid.

10 Evaluation of the site conditions observed during the CSI is summarized in Section 3.0. No
11 COPCs were identified for this site. It was not necessary to conduct a site-specific human
12 health or ecological risk assessment because no COCs were identified.

13 The conclusion for soils at AOC 575 is that there are no COCs identified for surface or
14 subsurface soil. This site is zoned M-2 (marine-industrial) and will likely be designated for
15 commercial/industrial future use. No actions are required to control exposures/risks under
16 current or future unrestricted land use. This site is recommended for NFA.

17 The BCT has agreed that LUCs will be applied across the entire Zone E of the CNC. These
18 LUCs are expected to include, at a minimum, restrictions limiting the future land use to
19 non-residential activities. Because AOC 575 is located within Zone E, these LUCs will apply
20 at this unit.

Section 8.0

1 8.0 References

- 2 CH2M-Jones. *RFI Addendum Sampling Plan: Uninvestigated Sites – Zone E, Revision 1.*
3 December 2001.
- 4 CH2M-Jones. *Charleston Naval Complex Project Team Notebook and Instructions, Revision 1A.*
5 December 2001.
- 6 EnSafe Inc./Allen & Hoshall. *Final Comprehensive RFI Work Plan.* 1994.
- 7 EnSafe Inc./Allen & Hoshall. *Final RCRA Facility Assessment, Naval Base Charleston, Volume*
8 *II.* June 6, 1995.
- 9 EnSafe Inc./Allen & Hoshall. *Final Zone A RFI Report, Revision 0.* 1996.
- 10 EnSafe Inc. *Zone E RFI Report, Revision 0.* November 1997.
- 11 EnSafe Inc. *Zone L RFI Report, Revision 0.* December 18, 1998.
- 12 U.S. Environmental Protection Agency (EPA). *Contract Laboratory Program National*
13 *Functional Guidelines for Organic Data Review.* 1994a.
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15 *Functional Guidelines for Inorganic Data Review.* 1994b.
- 16 U.S. Environmental Protection Agency (EPA). *Standard Operating Procedures and Quality*
17 *Assurance Manual (ESDSOPQAM).* 1996a.
- 18 U.S. Environmental Protection Agency (EPA). Office of Solid Waste and Emergency
19 Response (SW846). *Test Methods for Evaluating Solid Waste, SW-846.* Revision 4. 1996b.
- 20 U.S. Environmental Protection Agency (EPA). *Soil Screening Guidance: Technical Background*
21 *Document.* May 1996.
- 22 U.S. Environmental Protection Agency (EPA). *Laboratory Operations and Quality Control*
23 *Manual (ESDLOQCM).* 1997.
- 24 U.S. Environmental Protection Agency (EPA). *EPA Region III Risk-Based Concentration Table.*
25 October 2000.
- 26 U.S. Navy. *Oil Water Separator Data.* September 2000.

Appendix A

Charleston Naval Complex - Zone E - RFI Field Investigation at AOC 575

PREPARED FOR: File

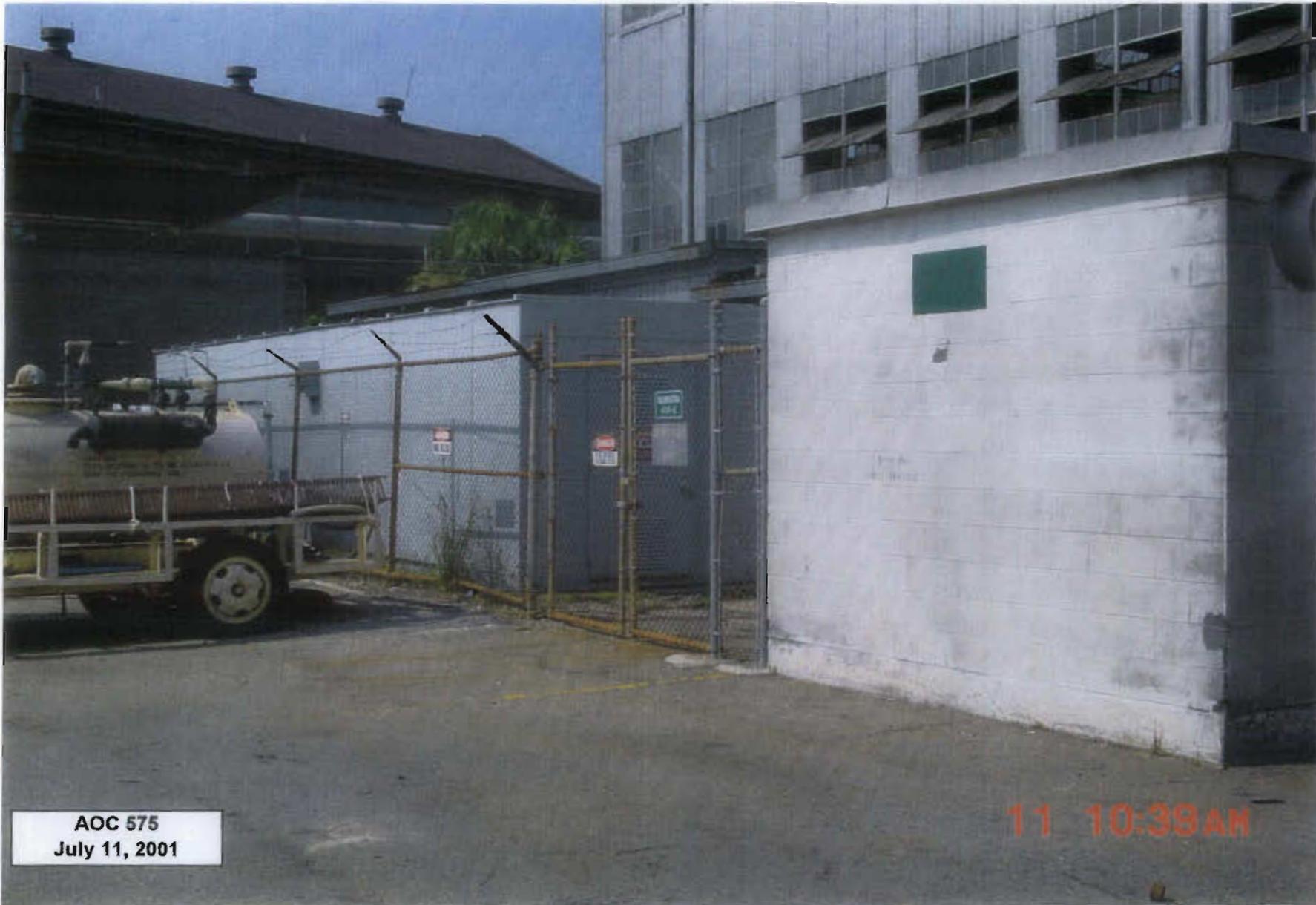
PREPARED BY: Jed Heames/ CH2M-Jones *Jed Heames 3-2-02*

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Tom Beisel, CH2M-Jones
Gary Foster, CH2M-Jones
Kris Garcia, CH2M-Jones

DATE: August 2, 2002

On the morning of 18 April 2002, Brian Crawford/CH2M HILL-Jones mobilized the field team at AOC 575. The team was scheduled to collect surface and subsurface soil samples at three locations: E575SB001, E575SB002, E575SB003. A subcontractor (Penhall) was also present onsite to core through asphalt and a sublayer of run of crusher (ROC) to reach the soils. After the coring was completed and the holes established, Brian used a hand auger to about 3 feet below land surface where he encountered obstructions at each location. In no instance was Brian able to penetrate the obstruction.

In response, Brian contacted Darryl Gates/CH2M HILL-Jones, who was utilizing a subcontractor, Columbia Technologies, conducting DPT sampling at another site. The personnel from Columbia brought their equipment to AOC 575 to try to punch through the subsurface obstructions utilizing a cone tip. Columbia commenced hammering and broke through a layer of asphalt and immediately encountered hard quartz like material (possibly concrete) at 3.5 feet that prevented further penetration. This was attempted at two sample locations (E575SB001 and E575SB003) with the same results. Brian then contacted Sam Naik/CH2M HILL-Jones, who agreed that subsurface conditions precluded any further efforts to collect the samples.



AOC 575
July 11, 2001

11 10:39 AM



AOC 575
July 11, 2001

11 10:40 AM



AOC 575
July 11, 2001