

N61165.AR.004251
CNC CHARLESTON
5090.3a

PHASE III INTERIM MEASURE WORK PLAN ADDITIONAL SOIL REMOVAL IN ACID TANK
ROOM AREA OF CONCERN 620 (AOC 620) SOLID WASTE MANAGEMENT UNIT 36
(SWMU 36) ZONE F WITH TRANSMITTAL CNC CHARLESTON SC
3/5/2002
CH2M HILL

PHASE III INTERIM MEASURE WORK PLAN

Additional Soil Removal in Acid Tank Room Area AOC 620/SWMU 36, Zone F



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



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

PREPARED BY
CH2M-Jones

February 2002

*Revision 0
Contract N62467-99-C-0960
158814.ZF.PR.07*

PHASE III INTERIM MEASURE WORK PLAN

Additional Soil Removal in Acid Tank Room Area AOC 620/SWMU 36, Zone F



*Charleston Naval Complex
North Charleston, South Carolina*

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

PREPARED BY
CH2M-Jones

February 2002

Revision 0
Contract N62467-99-C-0960
158814.ZF.PR.07



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

March 5, 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: Phase III IM Work Plan (Revision 0) – SWMU 36/AOC 620, Zone F

Dear Mr. Scaturo:

Enclosed please find four copies of the Phase III IM Work Plan (Revision 0) for SWMU 36/AOC 620 in Zone F 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 Louise Palmer. Please contact her at 704/329-0073, extension 296, if 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

**Certification Page for Phase III Interim Measure Work Plan
(Revision 0) – AOC 620/SWMU 36, Zone F**

Additional Soil Removal in Acid Tank Room Area

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.

2/27/2002
Date

1 Contents

2 Section	Page
3 Acronyms and Abbreviations	v
4 1.0 Introduction	1-1
5 1.1 Purpose of the Phase III Interim Measure Work Plan.....	1-1
6 1.2 AOC 620/SWMU 36 Background.....	1-2
7 1.3 Organization of the Phase III IM Work Plan	1-2
8 Figure 1-1 Location of AOC 620 in Zone F	1-4
9 Figure 1-2 AOC 620 (Wash Basin Area and the Acid Tank Room).....	1-5
10 2.0 Results of Pre-Excavation Sampling in the Acid Tank Room Area	2-1
11 2.1 Pre-excavation Soil Sampling Description.....	2-2
12 2.2 Soil Lead Concentrations Beneath Building 68	2-2
13 2.3 Soil Lead Concentrations South of Building 68	2-2
14 2.4 SPLP Lead Results.....	2-3
15 2.5 TCLP Lead Results	2-3
16 Table 2-1 Pre-Excavation Sample Results from the Acid Tank Room Area	2-4
17 Figure 2-1 Lead in Soil in the Acid Tank Area	2-6
18 3.0 Technical Approach for the Phase III Interim Measure	3-1
19 3.1 Contaminant Delineation	3-1
20 3.1.1 Beneath Building 68	3-1
21 3.1.2 South of Building 68	3-1
22 3.2 Soil Excavation Beneath the Acid Tank Room Area	3-2
23 3.3 Confirmation Sample Collection	3-2
24 Table 3-1 Lead in Surface Soil in the Acid Tank Area.....	3-3
25 Table 3-2 Lead in Subsurface Soil in the Acid Tank Area	3-4
26 Figure 3-1 Proposed Soil Excavation in the Acid Tank Area	3-5
27 4.0 References	4-1

1 **Acronyms and Abbreviations**

2	ALM	Adult Lead Methodology
3	AOC	area of concern
4	CNC	Charleston Naval Complex
5	DAF	dilution attenuation factor
6	EPA	U.S. Environmental Protection Agency
7	ft bls	feet below land surface
8	IM	interim measure
9	MCS	media cleanup standard
10	$\mu\text{g/L}$	micrograms per liter
11	mg/kg	milligrams per kilogram
12	mg/L	milligrams per liter
13	SCDHEC	South Carolina Department of Health and Environmental Control
14	SPLP	synthetic precipitation leaching procedure
15	SSL	soil screening level
16	SWMU	solid waste management unit
17	TCLP	toxicity characteristic leachate procedure
18	UST	underground storage tank

Section 1.0

1.0 Introduction

1.1 Purpose of the Phase III Interim Measure Work Plan

An Interim Measure (IM) is proposed to remove soils contaminated with lead at Area of Concern (AOC) 620 and Solid Waste Management Unit (SWMU) 36 in Zone F of the Charleston Naval Complex (CNC). Figure 1-1 illustrates the locations of AOC 620 and SWMU 36 within Zone F.

The IM is conducted in the following three phases:

- Phase I —Pre-excavation sampling
- Phase II — Soil removal in Wash Basin Area
- Phase III — Additional soil removal in Acid Tank Room Area, following demolition of Building 68

The Phase I pre-excavation sampling at AOC 620 was conducted in accordance with the *Phase I Interim Measure Work Plan, Pre-Excavation Sampling and Analysis Plan, AOC 620/SWMU 36, Zone F* (CH2M-Jones, 2001a). The Phase II IM involves excavation and removal of soils in the Wash Basin Area of AOC 620, before demolition of Building 68. Phase III of the IM will involve excavation under Building 68 in an area that is not readily accessible, and will occur after building demolition (by other contractors).

This Work Plan for the Phase III IM presents:

- Results of the pre-excavation sampling in the Acid Tank Room Area
- The target soil removal area for the Acid Tank Room Area

The *Phase II Interim Measure Work Plan, Soil Removal at Building 68, AOC 620/SWMU 36, Zone F* (CH2M-Jones, 2001b) presented:

- The results of the pre-excavation sampling as of November 2001
- The derivation of the media cleanup standards (MCSs) for AOC 620
- The target soil excavation area in the Wash Basin Area
- Excavation and stockpiling details, and procedures for waste management
- The proposed content of the IM Completion Report

The South Carolina Department of Health and Environmental Control (SCDHEC) approved the Phase II Interim Measure Work Plan on January 24, 2002.

1 The IM at AOC 620 addresses the removal of surface and subsurface (above the water table)
2 soils that exceed the appropriate surface and subsurface soil MCSs for lead. The *Phase II*
3 *Interim Measure Work Plan* presented the target soil excavation area beneath the accessible
4 portion of AOC 620; this *Phase III Interim Measure Work Plan* addresses only the Acid Tank
5 Room Area soil removal. Methods and procedures for the Phase III soil excavation are
6 detailed in the *Phase II Interim Measure Work Plan*.

7 **1.2 AOC 620/SWMU 36 Background**

8 AOC 620/SWMU 36 is located in the industrial area of Zone F, east of Hobson Avenue. The
9 area is zoned for heavy industrial use. AOC 620 is the site of Building 68, the former Battery
10 Shop. SWMU 36 is located within the Acid Tank Room in the south central portion of the
11 building, and is the site of sulfuric acid releases. Because SWMU 36 is a small part of AOC
12 620, the site will be referred to only as AOC 620.

13 On two occasions, the floor drain to the waste acid holding tank south of Building 68
14 separated from the floor, allowing approximately 1,025 gallons of sulfuric acid to discharge
15 to the soil below the Acid Tank Room. Following each spill, a sodium carbonate solution
16 was used to neutralize the soil below the building.

17 Two areas at AOC 620 where lead has been identified at elevated concentrations in soil are:

- 18 • Near two wash basins along the eastern wall in the northeast portion of the building,
19 and the drain line from these basins that extended parallel to the building beneath the
20 eastern loading dock, designated the Wash Basin Area. This area was addressed in the
21 *Phase II Interim Measure Work Plan*.
- 22 • Beneath the Acid Tank Room Area, including the exterior area south of the building,
23 which is designated the Acid Tank Area

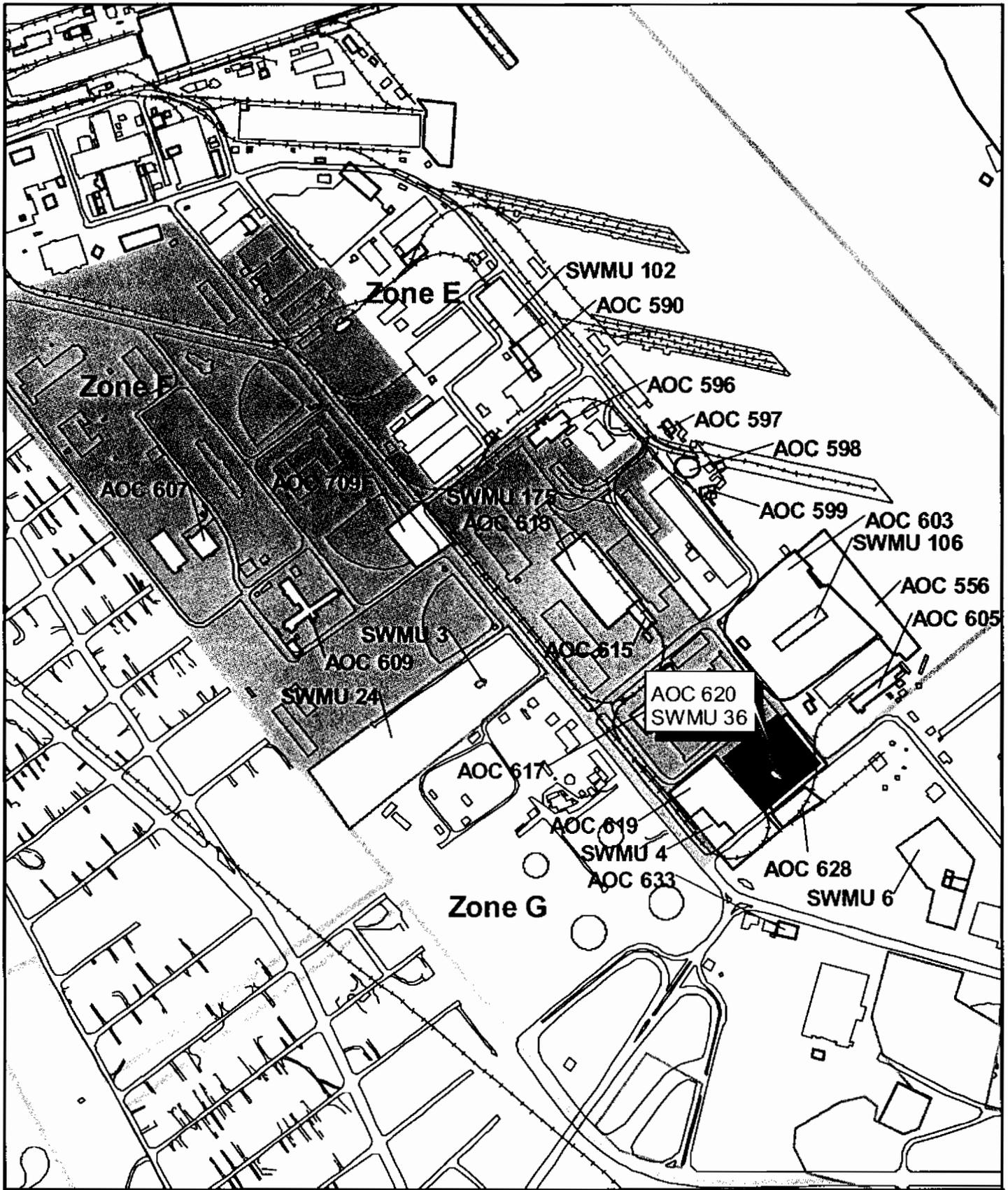
24 Figure 1-2 shows AOC 620, the Wash Basin Area, and the Acid Tank Room. Additional
25 details of the regulatory background and description of AOC 620 are provided in the *Phase*
26 *II Interim Measure Work Plan* (CH2M-Jones, 2001b), the *Phase I Interim Measure Work Plan*
27 (CH2M-Jones, 2001a) and *Zone F RFI Report, Revision 0* (EnSafe Inc. [EnSafe], 1997).

28 **1.3 Organization of the Phase III IM Work Plan**

29 This Phase III IM Work Plan (IM WP) consists of the following sections, including this
30 introductory section.

31 **1.0 Introduction** — Presents the purpose of the Phase III IM WP, as well as background
32 information regarding the site.

- 1 **2.0 Results of Pre-Excavation Sampling in the Acid Tank Room Area** – Presents the results
- 2 of the Phase I IM pre-excavation sampling in the Acid Tank Room Area.
- 3 **3.0 Technical Approach for the Phase III Interim Measure**—Identifies the proposed Phase
- 4 III excavation area and confirmation sample procedures.
- 5 **4.0 References** — Lists the references used in this document.
- 6 All tables and figures are presented at the end of their respective sections.



- Railroads
- Roads
- AOC Boundary
- SWMU Boundary
- Buildings
- Zone Boundary

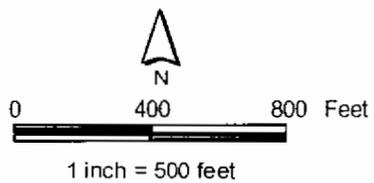
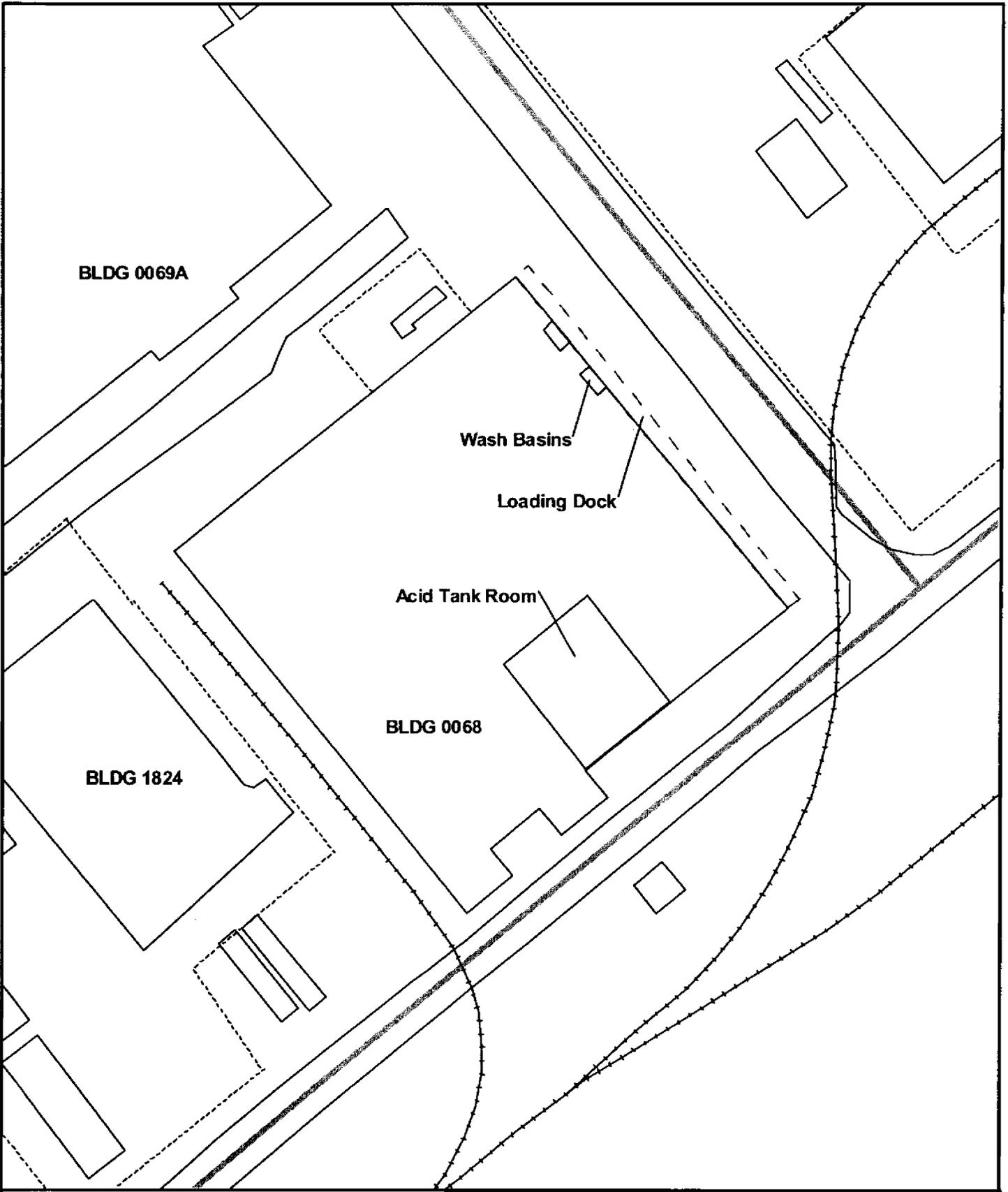


Figure 1-1
 Location of AOC 620 in Zone F
 AOC 620 IM Work Plan - Phase III
 Charleston Naval Complex

CH2MHILL

NOTE: Original figure created in color



- Railroads
- Fence
- Roads
- Buildings
- Zone Boundary

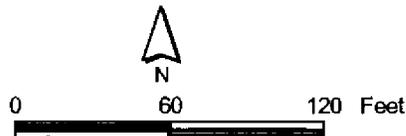


Figure 1-2
AOC 620
AOC 620 IM Work Plan - Phase III
Charleston Naval Complex

CH2MHILL

Section 2.0

2.0 Results of Pre-Excavation Soil Sampling in the Acid Tank Room Area

This section presents the results of the pre-excavation soil sampling in the Acid Tank Room Area, which was conducted under Phase I of the IM. The *Phase II Interim Measure Work Plan* (CH2M-Jones, 2001b) described the results of soil and groundwater samples collected before December 2001 for both areas within AOC 620. This section of the Phase III IM WP addresses only the soil samples from the Acid Tank Room Area, including those collected in January 2002. Details regarding the purpose of the Phase I IM samples are provided in the *Phase I Interim Measure Work Plan*, (CH2M-Jones, 2001a). Section 3.0 of this Phase III IM WP discusses these samples as well as the samples that were collected for the RFI, from 1996 to 1999.

Samples collected from the Acid Tank Room Area were analyzed for lead in soil. Leachate generated by the synthetic precipitation leaching procedure (SPLP) and the toxicity characteristic leachate procedure (TCLP) was also analyzed for lead. The soil sample results are compared to the Acid Tank Room Area MCSs, which are 1,220 milligrams per kilogram (mg/kg) in surface soil (0 to 1 foot below land surface (ft bls)), and 3,200 mg/kg for subsurface soil (greater than 1 ft bls).

The MCS derivation was presented in the *Phase II Interim Measure Work Plan* (CH2M-Jones, 2001b). The surface soil MCS, derived using the Adult Lead Methodology (ALM), is protective of adult workers exposed to an industrial setting. AOC 620 is zoned for heavy industrial use, and land use restrictions are planned to be compatible with this usage. The subsurface soil MCS is a site-specific soil screening level (SSL) protective of groundwater, and is based on the lead partitioning coefficients measured from soil in the Acid Tank Room Area and the site-specific dilution attenuation factor (DAF) for AOC 620. The DAF was derived under the assumption that the area would be unpaved.

During the pre-excavation sampling, one groundwater sample collected in the Acid Tank Room Area was analyzed for lead, with a result within normal background levels. Details of the groundwater sampling are provided in the *Phase II Interim Measure Work Plan*.

2.1 Pre-excavation Soil Sampling Description

The Phase I IM involved collecting surface and subsurface soil samples to further delineate the extent of soils exceeding the MCS. Figure 2-1 presents the locations of soil samples collected in the Acid Tank Room Area. Soil samples previously collected by EnSafe and CH2M-Jones for the AOC 620 and SWMU 36 RFI are also shown on the figure.

Twenty surface soil (0 to 1 ft bls) and 20 subsurface soil (2 to 3 ft bls) samples were collected for the pre-excavation sampling in the Acid Tank Room Area. Subsurface soil samples were collected at 2 to 3 ft bls because historic water level measurements indicated that the groundwater table in the AOC 620 area is approximately 4 ft bls. Samples from soil borings F620SB036 through F620SB046, and F620SB058 through F620SB067, were collected in the Acid Tank Room Area. Soil samples designated F620SB058 and F620SB059 were collected at the previous sample locations, F620SB036 through F620SB038, for waste disposal evaluation.

All soil samples were analyzed for lead, except for F620SB058 and F620SB059, which were analyzed for TCLP lead. Four samples from the Acid Tank Room Area were also analyzed for SPLP lead, in order to establish a site-specific partitioning coefficient for lead. The rationale for choosing which samples to analyze for SPLP and TCLP is discussed in detail in the *Phase II Interim Measure Work Plan*.

Table 2-1 lists the results of analyses performed on the Phase I IM surface and subsurface soil from the Acid Tank Room Area.

2.2 Soil Lead Concentrations Beneath Building 68

Figure 2-1 shows lead concentrations in the Acid Tank Room Area. As seen on Figure 2-1 and in Table 2-1, soil samples collected beneath the Acid Tank Room Area had lead concentrations ranging from 14.8 to 3,880 mg/kg, with some samples exceeding the MCS. The pre-excavation samples collected west of the Acid Tank Room Area contained lead concentrations ranging from 33.7 to 242 mg/kg, all below the MCS, and the samples collected east of the Acid Tank Room Area had lead concentrations ranging from 3.26 to 11.4 mg/kg, also below the MCS.

2.3 Soil Lead Concentrations South of Building 68

Pre-excavation samples F620SB042 through F620SB046 and F620SB060, which included both surface and subsurface soil, were collected outside of Building 68 in the general vicinity of the acid underground storage tank (UST) and piping. Surface and subsurface soil samples

1 were also collected from location F620SB041, adjacent to the previous RFI sample F620SB004
2 (where lead was reported at 4,250 mg/kg). Lead concentrations in the samples collected
3 outside of the building were below the MCS.

4 **2.4 SPLP Lead Results**

5 SPLP leachate from samples collected beneath the Acid Tank Room Area was analyzed for
6 lead. As discussed in the *Phase II IM Work Plan*, the SPLP test results were used to derive a
7 soil lead concentration (3,200 mg/kg), which is protective of groundwater in the Acid Tank
8 Room Area.

9 **2.5 TCLP Lead Results**

10 Lead was tested in the leachate created by the TCLP on two samples from the Acid Tank
11 Room Area. Subsurface soil was composited from sample locations F620SB036 and
12 F620SB038 to form sample F620SB058. This sample contained lead in the leachate at 1.98
13 milligrams per liter (mg/L). The TCLP leachate regulatory limit is 5 mg/L. The surface soil
14 from sample location F620SB037 was re-sampled to form sample F620SB059; no lead was
15 detected in the TCLP leachate from this sample.

TABLE 2-1
 Pre-Excavation Sample Results from the Acid Tank Room Area
 Phase III IM Work Plan, AOC 620/SWMU 36, Zone F, Charleston Naval Complex

Soil Sample Location	Soil Sample Type	Lead Concentration (mg/kg)	SPLP Leachate (µg/L)	TCLP Leachate (µg/L)	Media Cleanup Standard (mg/kg)
F620SB036	Surface	570 =			1,220
	Subsurface	3,880 =	17.2 U		3,200
F620SB037	Surface	2,350 =			1,220
	Subsurface	497 =	17.2 U		3,200
F620SB038	Surface	952 =			1,220
	Subsurface	3,270 =	138 J		3,200
F620SB039	Surface	145 =			1,220
	Subsurface	242 =			3,200
F620SB040	Surface	93.5 =			1,220
	Subsurface	57.5 =			3,200
F620SB041	Surface	736 =			1,220
	Subsurface	94.8 =			3,200
F620SB042	Surface	2.81 =			1,220
	Subsurface	295 =			3,200
F620SB043	Surface	632 =	61.1 J		1,220
	Subsurface	736 =			3,200
F620SB044	Surface	224 =			1,220
	Subsurface	376 =			3,200
F620SB045	Surface	239 =			1,220
	Subsurface	159 =			3,200
F620SB046	Surface	195 =			1,220
	Subsurface	137 =			3,200
F620SB058 (Composite)	Subsurface			1,980 =	
F620SB059	Surface			17.2 U	
F620SB060	Surface	406 =			1,220
	Subsurface	40.7 =			3,200
F620SB061	Surface	39.0 =			1,220
	Subsurface	33.7 =			3,200
F620SB062	Surface	94.0 =			1,220
	Subsurface	66.8 =			3,200
F620SB063	Surface	70.5 =			1,220
	Subsurface	106 =			3,200

TABLE 2-1
 Pre-Excavation Sample Results from the Acid Tank Room Area
 Phase III IM Work Plan, AOC 620/SWMU 36, Zone F, Charleston Naval Complex

Soil Sample Location	Soil Sample Type	Lead Concentration (mg/kg)	SPLP Leachate ($\mu\text{g/L}$)	TCLP Leachate ($\mu\text{g/L}$)	Media Cleanup Standard (mg/kg)
F620SB064	Surface	209 =			1,220
	Subsurface	14.8 =			3,200
F620SB065	Surface	3.26 =			1,220
	Subsurface	4.84 =			3,200
F620SB066	Surface	5.94 =			1,220
	Subsurface	11.4 =			3,200
F620SB067	Surface	4.18 =			1,220
	Subsurface	6.76 =			3,200

Values exceeding the media cleanup standard (MCS) are presented in **bold** text and outlined within the table.

= Indicates that the analyte is detected at the concentration shown.

J Indicates that the analyte is detected at a concentration below the method detection limit (MDL), the concentration is estimated.

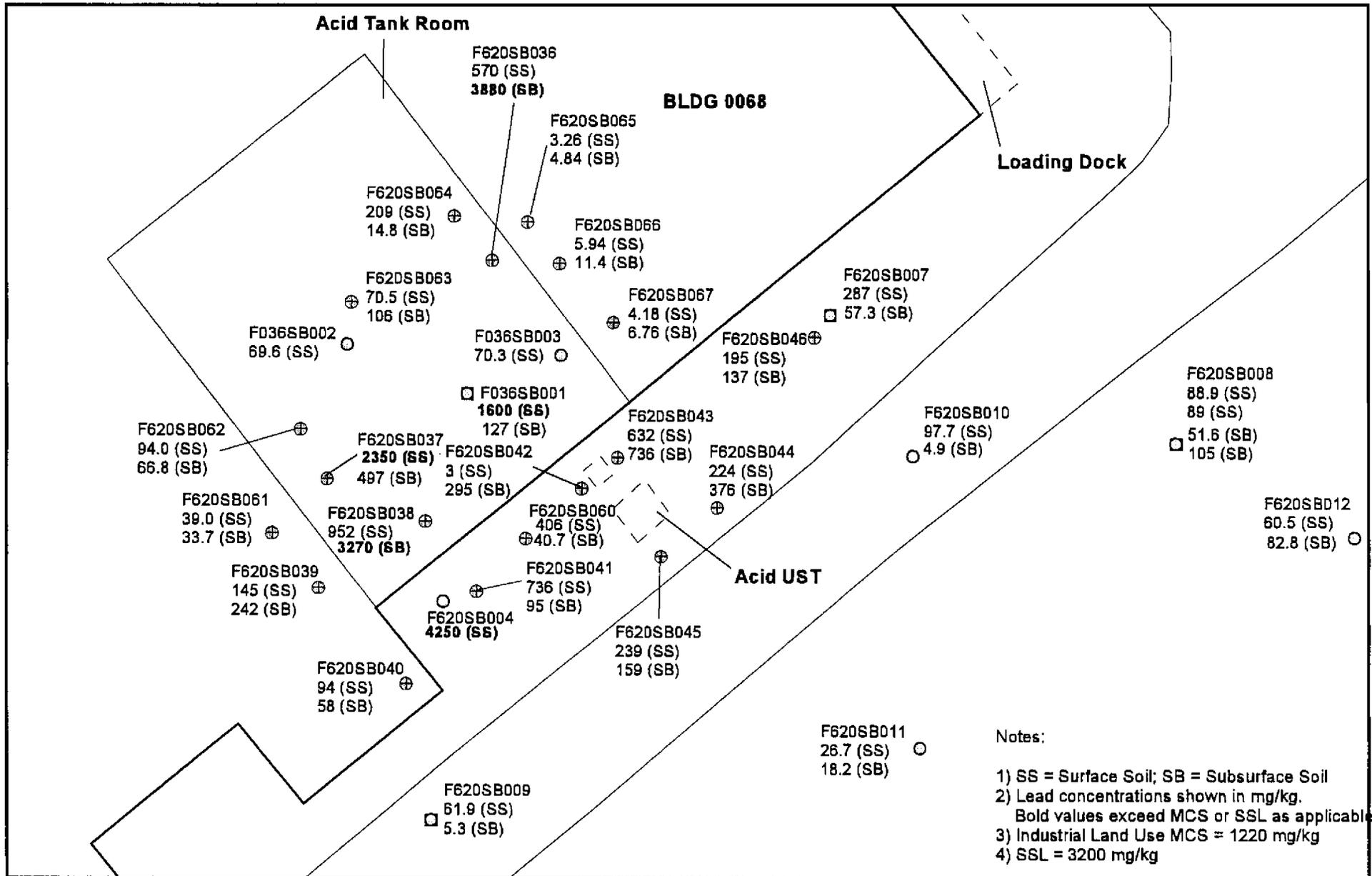
$\mu\text{g/L}$ Micrograms per liter

mg/kg Milligrams per kilogram

U Indicates that the analyte is not detected; the concentration shown is the MDL.

SPLP Synthetic Precipitation Leaching Procedure

TCLP Toxicity Characteristic Leaching Procedure



- RFI Surface Soil Sample
- RFI Subsurface Soil Sample
- ⊕ IM Pre-Excavation Samples
- ∩ Roads
- ▭ Buildings

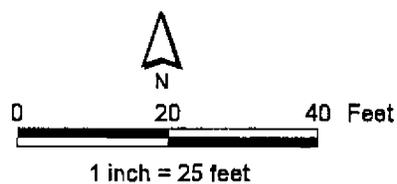


Figure 2-1
Lead in Soil in Acid Tank Area
 AOC 620 IM Work Plan - Phase III
 Charleston Naval Complex

Section 3.0

3.0 Technical Approach for the Phase III Interim Measure

This section outlines the technical approach to the removal of lead-contaminated soil in the Acid Tank Room Area, where lead concentrations were detected above the MCS.

3.1 Contaminant Delineation

A comprehensive list of lead concentrations in surface soil in the Acid Tank Room Area of AOC 620 is presented in Table 3-1, and a similar list for subsurface soil is presented in Table 3-2. These data include samples collected during the RFI from 1996 to 1999, as well as pre-excavation samples that were collected in 2001 and 2002 (see Figure 2-1 for lead concentrations within the Acid Tank Room Area). The lead concentrations in surface soil samples presented in Table 3-1 were screened against a CNC-specific MCS of 1,220 mg/kg for industrial land use. The lead concentrations in subsurface soil samples shown in Table 3-2 were screened against the area-specific SSL of 3,200 mg/kg.

The extent of contamination in the Acid Tank Room Area has been evaluated to estimate the area for soil removal for the Phase III IM. The data from the RFI and the pre-excavation sampling are briefly discussed below.

3.1.1 Beneath Building 68

As seen in Tables 3-1 and 3-2, a total of two surface soil samples and two subsurface soil samples from beneath the Acid Tank Room have lead concentrations greater than the health-based MCS of 1,220 mg/kg in surface soil, and the SSL-based MCS of 3,200 mg/kg in subsurface soil. The lateral extent of the area with elevated lead concentrations is defined in Figure 3-1. This area is confined to the southern two-thirds of the Acid Tank Room.

3.1.2 South of Building 68

The soil outside of Building 68, south and east of the Acid Tank Room, has lead concentrations ranging from 3 mg/kg to 736 mg/kg, with one exception at F620SB004 (4,250 mg/kg), where monitoring well F620GW004 was installed. The field duplicate sample collected from this location had a lead concentration of 1,070 mg/kg. The average of these two values (2,660 mg/kg) is used to evaluate area-wide lead concentrations outside of the building in the Acid Tank Room Area.

1 The mean lead concentration was calculated for surface soil south and east of Building 68,
2 including RFI sample locations identified for AOC 620. In an approximately 200 by 110-ft
3 area (one-half acre) adjacent to Building 68, with the perimeter defined by sample locations
4 F620SB004, F620SB040, F620SB009, F620SB011, F620SB012, and F620SB007, the mean surface
5 soil lead concentration is 387 mg/kg, which is less than both the unrestricted (residential)
6 land use health-based and SSL-based MCSs (400 mg/kg and 3,200 mg/kg, respectively).
7 Therefore, surface soil outside of Building 68 in the Acid Tank Room Area does not require
8 further action. Likewise, subsurface soil outside of Building 68 in the Acid Tank Room Area
9 has a mean lead concentration of 153 mg/kg, and does not require further action.

10 **3.2 Soil Excavation Beneath the Acid Tank Room Area**

11 Figure 3-1 shows the extent of surface and subsurface soils exceeding the MCS beneath the
12 footprint of Building 68. The soil removal area is also presented in Figure 3-1. After the
13 building is demolished, the soil in the removal area will be excavated to a 4-ft depth below
14 grade, or to groundwater if the groundwater level is shallower than 4 feet. Soil excavation
15 will not be conducted beneath below-grade walls or pile caps.

16 Dust control and runoff control measures, soil backfill procedures, and waste management
17 and disposal procedures are provided in the *Phase II Interim Measure Work Plan* (CH2M-
18 Jones, 2001b).

19 **3.3 Confirmation Sample Collection**

20 Although the area with soil concentrations exceeding the MCSs is identified in Figure 3-1, it
21 is anticipated that the building demolition process could shift some surface soils from the
22 proposed excavation area to outside of the delineation area. Therefore, after building
23 demolition, and before IM excavation, confirmation samples will be collected in surface soil
24 surrounding the excavation area and tested for lead. Samples will be collected at 50-ft
25 intervals around the perimeter of the excavation, for a total of four samples. Proposed
26 confirmation sample locations are presented in Figure 3-1. If lead concentrations in the
27 confirmation samples exceed the MCS, then further excavation will be conducted for the
28 surface (0 to 1 ft bls) soil, and additional confirmation samples will be collected.

TABLE 3-1
 Lead in Surface Soil in the Acid Tank Area
 Phase III IM Work Plan, AOC 620/SWMU 36, Zone F, Charleston Naval Complex

Sample Location	Sample Date	Lead Concentration (mg/kg)		Media Cleanup Standard (mg/kg)	Location
F036SB001	10/09/1996	1,600	=	1,220	Beneath Building 68
F036SB002	10/08/1996	69.6	=	1,220	Beneath Building 68
F036SB003	10/09/1996	70.3	=	1,220	Beneath Building 68
F620SB004	09/10/1996	4,250	=	1,220	Outside of Building 68
F620SB007	01/09/1997	287	=	1,220	Outside of Building 68
F620SB008	01/09/1997	89	=	1,220	Outside of Building 68
F620SB008	10/15/1999	89	=	1,220	Outside of Building 68
F620SB009	01/10/1997	62	=	1,220	Outside of Building 68
F620SB010	11/17/1999	98	J	1,220	Outside of Building 68
F620SB011	11/16/1999	27	J	1,220	Outside of Building 68
F620SB012	11/16/1999	61	J	1,220	Outside of Building 68
F620SB036	10/10/2001	570	=	1,220	Beneath Building 68
F620SB037	10/10/2001	2,350	=	1,220	Beneath Building 68
F620SB038	10/10/2001	952	=	1,220	Beneath Building 68
F620SB039	10/10/2001	145	=	1,220	Beneath Building 68
F620SB040	10/10/2001	93.5	=	1,220	Beneath Building 68
F620SB041	10/10/2001	736	=	1,220	Outside of Building 68
F620SB042	10/10/2001	2.81	=	1,220	Outside of Building 68
F620SB043	10/10/2001	632	=	1,220	Outside of Building 68
F620SB044	10/10/2001	224	=	1,220	Outside of Building 68
F620SB045	10/10/2001	239	=	1,220	Outside of Building 68
F620SB046	10/10/2001	195	=	1,220	Outside of Building 68
F620SB060	11/26/2001	406	=	1,220	Outside of Building 68
F620SB061	02/07/2002	39.0	=	1,220	Beneath Building 68
F620SB062	02/07/2002	94.0	=	1,220	Beneath Building 68
F620SB063	02/07/2002	70.5	=	1,220	Beneath Building 68
F620SB064	02/07/2002	209	=	1,220	Beneath Building 68
F620SB065	02/07/2002	3.26	=	1,220	Beneath Building 68
F620SB066	02/07/2002	5.94	=	1,220	Beneath Building 68
F620SB067	02/07/2002	4.18	=	1,220	Beneath Building 68

Values exceeding the media cleanup standard (MCS) are presented in **bold** text and outlined within the table.

Media cleanup standard (MCS) is based on industrial exposure, Adult Lead Methodology (ALM).

= Indicates that the analyte is detected at the concentration shown.

J Indicates that the analyte is detected at a concentration below the method detection limit (MDL), the concentration is estimated.

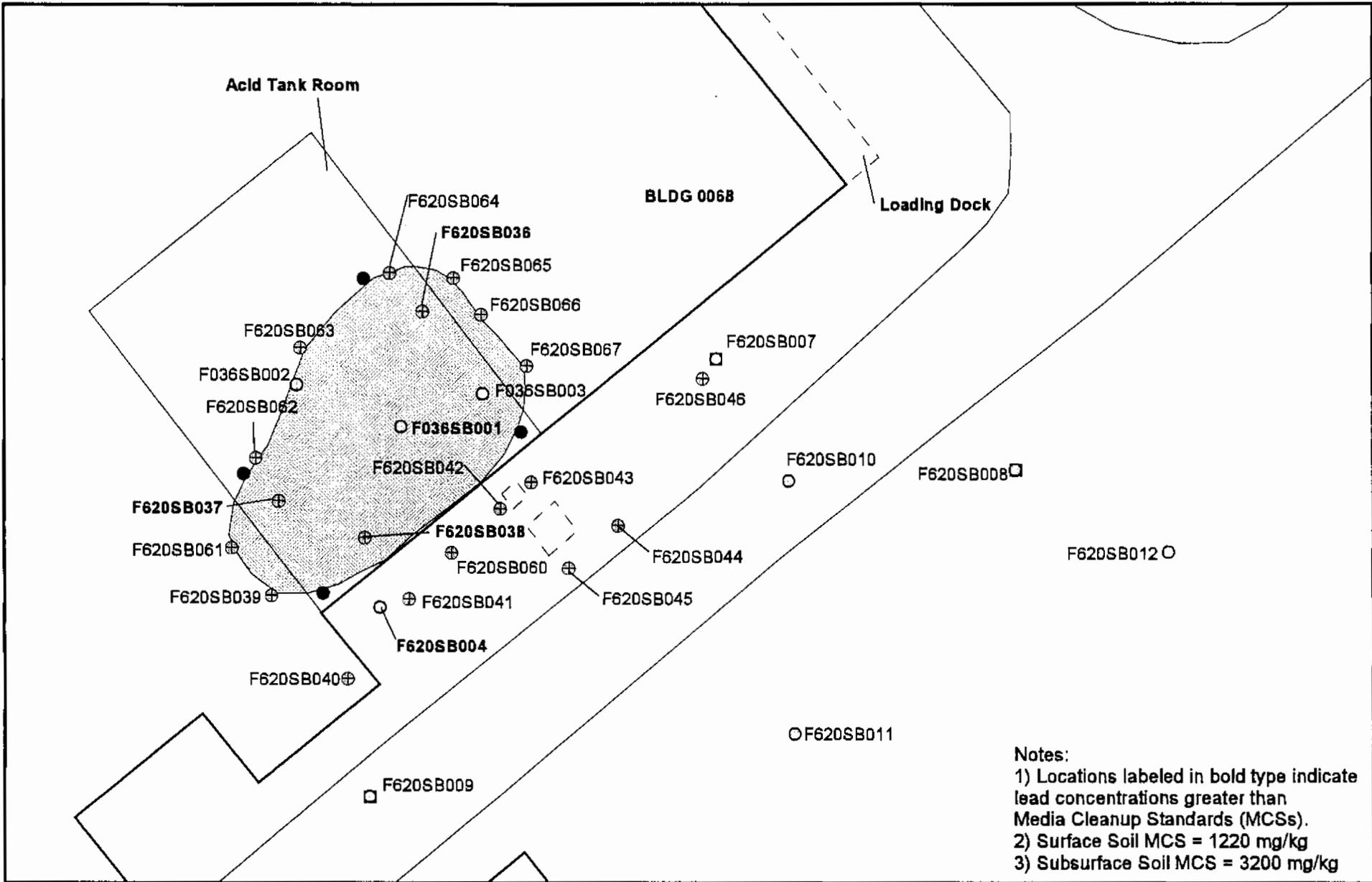
TABLE 3-2
 Lead in Subsurface Soil in the Acid Tank Area
 Phase III IM Work Plan, AOC 620/SWMU 36, Zone F, Charleston Naval Complex

Sample Location	Sample Date	Lead Concentration (mg/kg)		Media Cleanup Standard (mg/kg)	Location
F036SB001	10/09/1996	127	=	3,200	Beneath Building 68
F620SB007	01/09/1997	57.3	=	3,200	Outside of Building 68
F620SB008	01/09/1997	51.6	=	3,200	Outside of Building 68
F620SB008	10/15/1999	105	J	3,200	Outside of Building 68
F620SB009	01/10/1997	5.3	=	3,200	Outside of Building 68
F620SB010	11/17/1999	4.9	J	3,200	Outside of Building 68
F620SB011	11/16/1999	18.2	J	3,200	Outside of Building 68
F620SB012	11/16/1999	82.8	J	3,200	Outside of Building 68
F620SB036	10/10/2001	3,880	=	3,200	Beneath Building 68
F620SB037	10/10/2001	497	=	3,200	Beneath Building 68
F620SB038	10/10/2001	3,270	=	3,200	Beneath Building 68
F620SB039	10/10/2001	242	=	3,200	Beneath Building 68
F620SB040	10/10/2001	57.5	=	3,200	Beneath Building 68
F620SB041	10/10/2001	94.8	=	3,200	Outside of Building 68
F620SB042	10/10/2001	295	=	3,200	Outside of Building 68
F620SB043	10/10/2001	736	=	3,200	Outside of Building 68
F620SB044	10/10/2001	376	=	3,200	Outside of Building 68
F620SB045	10/10/2001	159	=	3,200	Outside of Building 68
F620SB046	10/10/2001	137	=	3,200	Outside of Building 68
F620SB060	11/26/2001	40.7	=	3,200	Outside of Building 68
F620SB061	02/07/2002	33.7	=	3,200	Beneath Building 68
F620SB062	02/07/2002	66.8	=	3,200	Beneath Building 68
F620SB063	02/07/2002	106	=	3,200	Beneath Building 68
F620SB064	02/07/2002	14.8	=	3,200	Beneath Building 68
F620SB065	02/07/2002	4.84	=	3,200	Beneath Building 68
F620SB066	02/07/2002	11.4	=	3,200	Beneath Building 68
F620SB067	02/07/2002	6.76	=	3,200	Beneath Building 68

Values exceeding the media cleanup standard (MCS) are presented in **bold text** and outlined within the table.

Media cleanup standard (MCS) is based on area-specific soil screening level (SSL).

- = Indicates that the analyte is detected at the concentration shown.
- J Indicates that the analyte is detected at a concentration below the method detection limit (MDL), the concentration is estimated.



- Proposed Confirmation Surface Soil Sample
- RFI Surface Soil Sample
- RFI Subsurface Soil Sample
- ⊕ IM Pre-Excavation Samples
- ∧ Roads
- ▭ Buildings
- ▨ Excavation Area

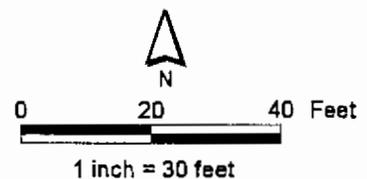


Figure 3-1
 Proposed Soil Excavation in Acid Tank Area
 AOC 620 IM Work Plan - Phase III
 Charleston Naval Complex

Section 4.0

1 **4.0 References**

- 2 CH2M-Jones. *Phase I Interim Measure Work Plan, Pre-Excavation Sampling and Analysis Plan,*
- 3 *AOC 620/SWMU 36, Zone F. Revision 0. September 2001a.*
- 4 CH2M-Jones. *The Phase II Interim Measure Work Plan, Soil Removal at Building 68, AOC*
- 5 *620/SWMU 36, Zone F. Revision 0. December 2001b.*
- 6 EnSafe Inc. *Zone F RFI Report, NAVBASE Charleston. Revision 0. December 31, 1997.*