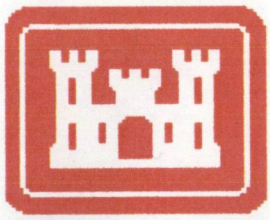
FINAL

CLOSURE PLAN

FOR

THE DEACTIVATION FURNACE AREA (DFA) HAZARDOUS WASTE TREATMENT UNIT RAVENNA ARMY AMMUNITION PLANT RAVENNA, OHIO

PREPARED FOR:



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Delivery Order 0003

February 23, 2001

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Science Applications International Corporation
An Employee-Owned Company

23 February 2001

Mr. Gregory Orr
Ohio Environmental Protection Agency
Northeast District Office
Division of Hazardous Waste Management
2110 E. Aurora Road
Twinsburg, OH 44087

Reference: **Final Closure Plan for the Deactivation Furnace Area Hazardous Waste Treatment Unit at the Ravenna Army Ammunition Plant, Ravenna, Ohio**

Subject: **Final Plan Submittal**

Dear Mr. Orr:

Enclosed for distribution are three copies of the Final Closure Plan for the Deactivation Furnace Area Hazardous Waste Treatment Unit at the Ravenna Army Ammunition Plant. Two of these copies are for your records, and one is for Ms. Eileen Mohr. This deliverable is being submitted in accordance with Task 16 (Deactivation Furnace Closure Plan Revision) of the Ramsdell Quarry Groundwater Investigation task order performed by SAIC for the U.S. Army Corps of Engineers (USACE) Louisville District. Copies of the document are being distributed concurrently to those named below.

If you have any questions, please call me at 918-625-7614, or Steve Selecman at 865-481-8761.

Sincerely,
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kathryn L. Dominic
Environmental Projects Manager

Enclosure

Cc: Mark Patterson – RVAAP (2 copies)
Eileen Mohr - Ohio EPA
Walter Perro – USACE (2 copies)
David Sennett - USACE
LTC Tom Tadsen - OHARNG
Bill Ingold - U. S. Army OSC
Bob Whelove – U. S. Army OSC
Karl Van Keuren - IT Corp.
Ernie Neal – Neal Environmental Services
Kathy Dominic - SAIC
Project File
SAIC CRF

Cc w/o enclosure: Ike Diggs - SAIC

FINAL
Closure Plan
for the Deactivation Furnace Area (DFA)
Hazardous Waste Treatment Unit
Ravenna Army Ammunition Plant
Ravenna, Ohio

Prepared for:
United States Army Corps of Engineers
Louisville District
Louisville, Kentucky 40202

Prepared by:

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February 23, 2001

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
BGS	below ground surface
CERCLA	Chemical Environmental Response, Compensation, and Liability Act
COC	Contaminant of Concern
DNT	Dinitrotoluene
DFA	Deactivation Furnace Area
ECI	Environmental Construction Incoporated
GPD/ft	gallons per day per foot
GPM	gallons per minute
ha	hectares
HASP	Health and Safety Plan
HMX	1,3,5,7-Hexahydro-1,3,5,7-tetranitrotriazine
IRP	Installation Restoration Program
LEL	lower limit exposure
LPD/m	liters per day per meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
mg/kg	milligram per kiligram
mg/L	milligram per liter
NOD	Notice of Deficiency
OAC	Ohio Administrative Code
ODA	Open Detonation Area
OE	ordnance and explosive waste
Ohio EPA	Ohio Environmental Protection Agency
OHARNG	Ohio Army National Guard
OSC	Operations Support Command
PCBs	Polychlorinated biphenyls
PDG	Project Development Group
PID	photo-ionization detector
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RDX	1,3,5-Hexahydro-1,3,5-trinitrohydrazine
RI	remedial investigation
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SAP	Sampling and Analysis Plan
SVOC	semi-volatil organic compound
TCLP	Toxicity Characteristic Leaching Procedure
TSDF	treatement, storage, or disposal facility
TNT	2,4,6-Trinitrotoluene
ug/L	microgram per liter
U.S.	United States
USACE	Unite States Army Corps of Engineers

U.S.EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UXO	Unexploded ordnance
VOC	volatile organic compound
WBG	Winklepeck Burning Ground

DRAFT Closure Plan for the Deactivation Furnace Area Hazardous Waste Treatment Unit

1.0 FACILITY DESCRIPTION

1.1 GENERAL DESCRIPTION

1.1.1 Facility Description

The Ravenna Army Ammunition Plant (RVAAP) is located in the northeastern portion of the State of Ohio, within Portage and Trumbull Counties. The location of the facility is shown in Figure 1-1. The installation covers approximately 8668.3 hectares (21,419 acres), and is approximately 17.7 kilometers (11 miles) long and 5.6 kilometers (3.5 miles) wide as shown in Figure 1-2. During operation, the primary purpose of the facility was to load explosives into medium and major caliber artillery ammunition, bombs, mines, fuses and boosters, primers, and percussion elements. Currently, the munitions facilities are inactive.

1.1.2 Facility Current Status

The Ohio Army National Guard (OHARNG) operates the Ravenna Training and Logistics Site (RTLS) on the eastern portion of RVAAP. Until recently, the OHARNG leased 364 ha (900 acres) within RVAAP from the federal government along the eastern boundary of the facility and in the southeast-central portion of the facility along Newton Falls Road (Figure 1-3). On May 6, 1999, all RVAAP lands outside of "contaminated areas" were transferred to the OHARNG. This includes approximately 7,049 ha (17,419 acres), leaving 1,619 ha (4,000 acres) under the control of the Operations Support Command (OSC), including 41 ha (100 acres) considered to be Areas of Concern (AOCs) under the ongoing Installation Restoration Progarm (IRP). Figure 1-3 shows the current status of all land at the facility. As indicated on the figure, Winklepeck Burning Ground, (WBG) within which the Deactivation Furnace Area (DFA) is situated, is located within the land area retained by the Army OSC. The OSC retains the responsibility for all salvage, demolition, and environmental remediation activities within the contaminated areas.

1.1.3 Historic Deactivation Facilities at Pad #45

Historical records and aerial photographs show that a popping furnace was constructed in 1952 and operated through 1955. Records also indicate that a second deactivation furnace was to be constructed on the same pad, but just east of the original popping furnace. The second (and existing) deactivation furnace was installed in 1965. Much of this furnace, including the east timber crib wall and the furnace itself, was removed in the early 1990s.

Photographs in Figure 1-4 show views of the existing DFA in 1999. At the time the photograph was taken, remnants of the southwest-northeast-aligned ditch of Pad #45, the area adjacent to Building T-3404 (elevated 2 to 3 ft above the surrounding area), and the 12" x 12"

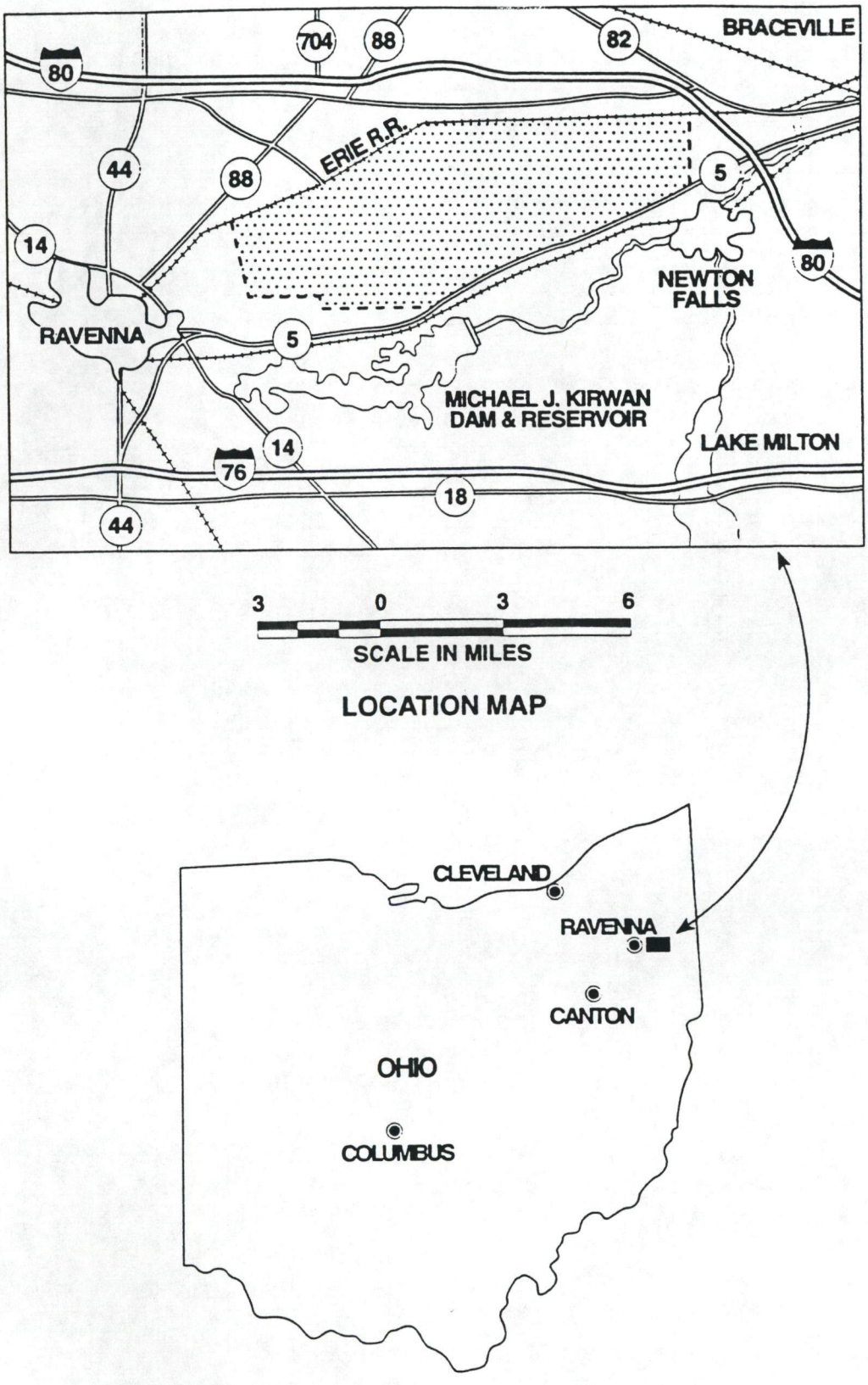
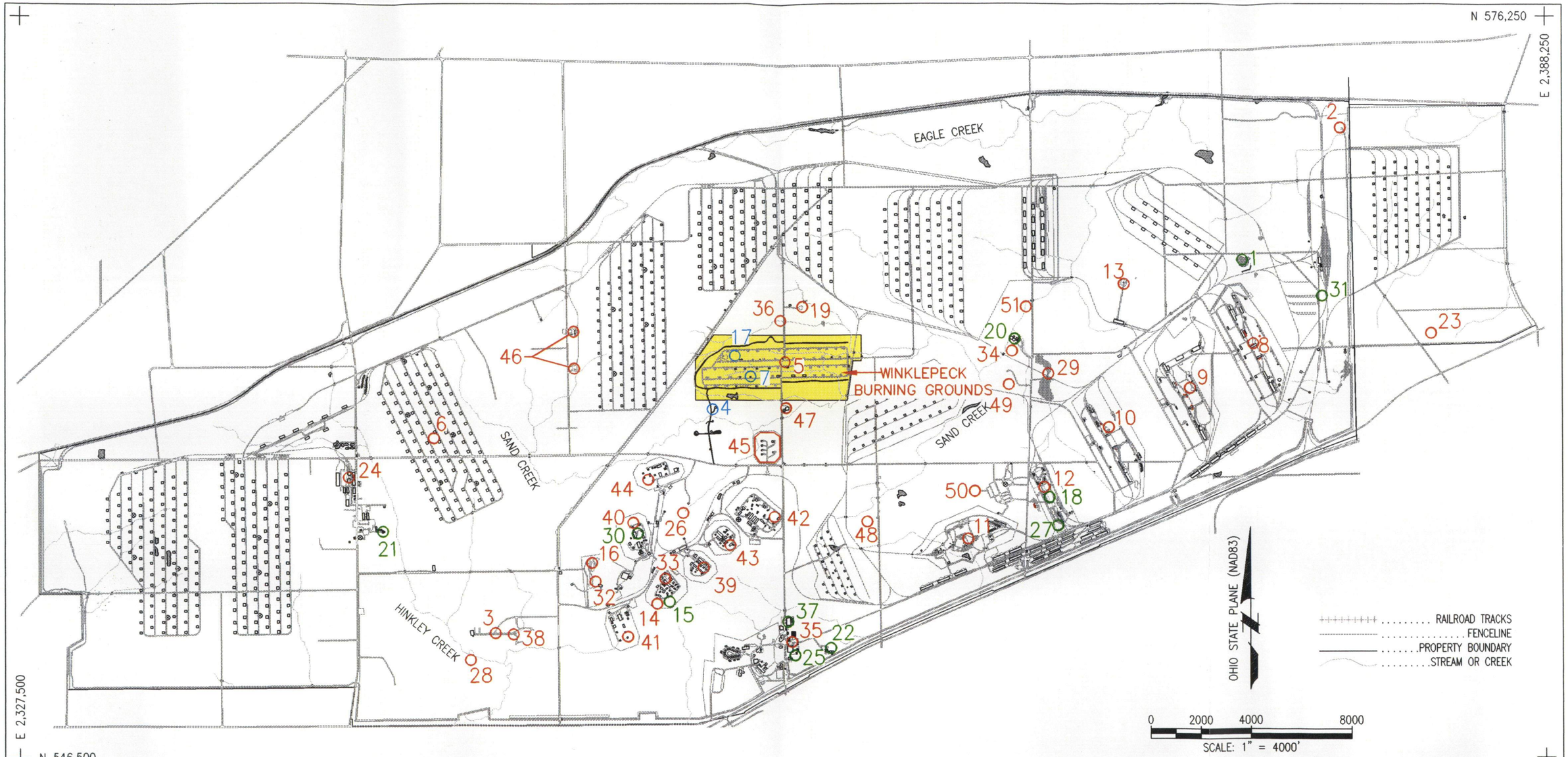


Figure 1-1. General Location and Orientation of RVAAP



LEGEND OF SITES:

1 ..... RAMSDELL QUARRY LANDFILL
2 ..... ERIE BURNING GROUNDS
3 ..... DEMOLITIONS AREA #1
4 ..... DEMOLITIONS AREA #2
5 ..... WINKLEPECK BURNING GROUNDS
6 ..... C BLOCK QUARRY
7 ..... BLDG 1601 HAZARDOUS WASTE STORAGE
8 ..... LOAD LINE 1 AND DILUTION/SETTLING POND
9 ..... LOAD LINE 2 AND DILUTION/SETTLING POND
10 ..... LOAD LINE 3 AND DILUTION/SETTLING POND
11 ..... LOAD LINE 4 AND DILUTION/SETTLING POND
12 ..... LOAD LINE 12 AND DILUTION/SETTLING POND
13 ..... BLDG 1200 AND DILUTION/SETTLING POND
14 ..... LOAD LINE 6, EVAPORATION UNIT
15 ..... LOAD LINE 6, TREATMENT PLANT
16 ..... QUARRY LANDFILL/FORMER FUZE & BOOSTER BURNING PITS
17 ..... DEACTIVATION FURNACE
18 ..... LOAD LINE 12 PINK WASTE WATER TREATMENT
19 ..... LANDFILL NORTH OF WINKLEPECK BURNING GROUND
20 ..... SAND CREEK SEWAGE TREATMENT PLANT
21 ..... DEPOT SEWAGE TREATMENT PLANT
22 ..... GEORGE ROAD SEWAGE TREATMENT PLANT
23 ..... UNIT TRAINING SITE WASTE OIL TANK
24 ..... RESERVE UNIT MAINTENANCE AREA WASTE OIL TANK
25 ..... BLDG 1034 MOTOR POOL WASTE OIL TANK
26 ..... FUZE BOOSTER AREA SETTLING TANKS
27 ..... BLDG 854-PCB STORAGE
28 ..... MUSTARD AGENT BURIAL SITE
29 ..... UPPER AND LOWER COBBS POND COMPLEX
30 ..... LOAD LINE 7 PINK WASTEWATER TREATMENT PLANT
31 ..... ORE PILE RETENTION POND
32 ..... 40 AND 60 MM FIRING RANGE
33 ..... FIRESTONE TEST FACILITY
34 ..... SAND CREEK DISPOSAL ROAD LANDFILL
35 ..... 1037 BUILDING-LAUNDRY WASTEWATER SUMP
36 ..... PISTOL RANGE
37 ..... PESTICIDE STORAGE BUILDING T-4452
38 ..... NACA TEST AREA
39 ..... LOAD LINE 5 / FUZE LINE 1
40 ..... LOAD LINE 7 / BOOSTER LINE 1
41 ..... LOAD LINE 8 / BOOSTER LINE 2
42 ..... LOAD LINE 9 / DETONATOR LINE
43 ..... LOAD LINE 10 / PERCUSSION ELEMENT
44 ..... LOAD LINE 11 / ARTILLERY PRIMER
45 ..... WET STORAGE AREA
46 ..... BUILDING'S F-15 AND F-16
47 ..... BUILDING T-5301 DECONTAMINATION
48 ..... ANCHOR TEST AREA
49 ..... CENTRAL BURN PITS
50 ..... ATLAS SCRAP YARD
51 ..... DUMP ALONG PARIS-WINDHAM ROAD
OXX ..... CERCLA
OXX ..... RCRA
OXX ..... OTHER REGULATORY

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO
INSTALLATION MAP

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV. 1/ 07-13-99	/98026/DWGS/D23SITE

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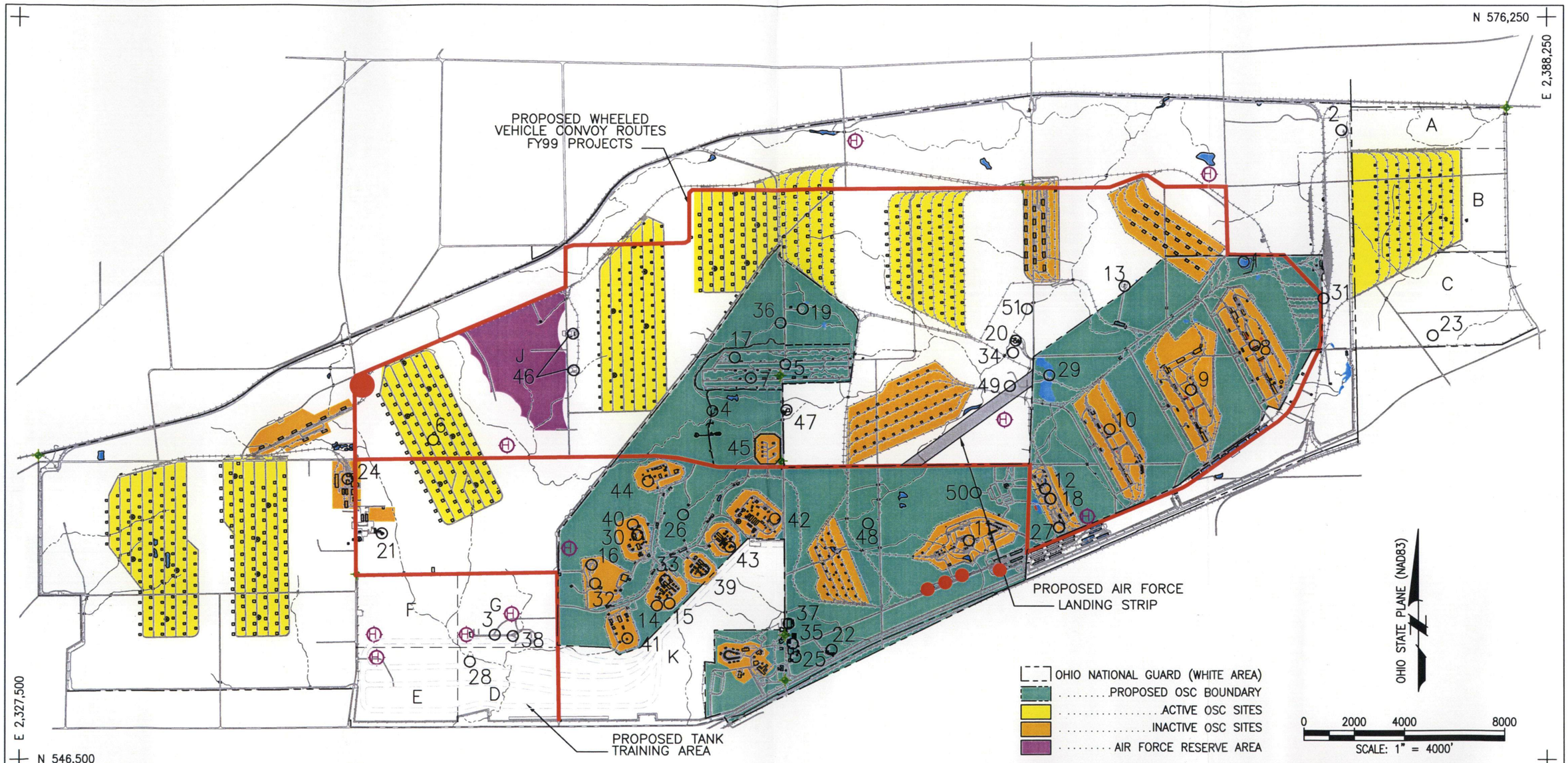
Figure 1-2. Facility Map



LEGEND OF SITES:

1. RAMSDELL QUARRY LANDFILL
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49. CENTRAL BURN PITS
50. ATLAS SCRAP YARD
51. DUMP ALONG PARIS–WINDHAM ROAD

○51 OSC ENVIRONMENTAL AOC
PROPOSED CONVOY ROUTES
Ⓗ PROPOSED HELICOPTER LANDING ZONES
● DEFENSE LOGISTICS AGENCY (DLA) STORAGE

US Army Corps of Engineers Louisville District

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CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO
LAND USE MAP

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV. 1/07–20–99	98026/DWGS/D230SC

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Figure 1–3 Land Use Map

Figure 1-4. View of Deactivation Furnace Area in 1999

DATE OF SUBMISSION: 23 FEBRUARY 2001

concrete piers supporting Building T-3403 were the only obvious remains of the original popping furnace. Based on the presence of the elevated area adjacent to Building T-3403 and the 12" x 12" piers at the corners of Building T-3403, Building T-3403 was at the same location as the canopy area of the original popping furnace. These structures were removed from the site in November 1999 in preparation for closure.

1.1.4 Former Deactivation Furnace

The deactivation furnace was included as a treatment unit on RVAAP's RCRA Part B permit application. The furnace was operated under the interim status requirements while awaiting action on the permit. Operations ceased at the deactivation furnace in 1983, and in 1994, RVAAP requested that the permit application be withdrawn. Complete closure of this unit is required before withdrawal of the Part B permit application can be finalized by Ohio EPA. There is no further information at this time on the status of the Part B permit.

The DFA is located in Winklepeck Burning Ground along Pallet Road D West as shown in Figure 1-3. The entire structure, control room, and earth-filled timber wall measured 6.3 by 14.0 meters (20.5 by 46 feet), with the discharge point for the ash collection conveyor exiting the safety barricade along the west face of the timber wall. The layout of the DFA, including the positions of the former structures, is shown in Figure 1-5.

The deactivation furnace consisted of a No. 2 oil-fired, horizontal, rotary retort furnace operating at a temperature from 538-649 degrees Celsius (1000-1200 degrees Fahrenheit). Explosive waste (D003) which were or could have been treated in the existing furnace included fuse and booster assemblies, ammunition primers, small arms ammunition, and small packets (no greater than 400 grains) of explosives or propellants. These munitions components were loaded and assembled in the primary explosives lines at RVAAP (Load Lines 5 through 11). Treatment in the furnace removed the reactivity characteristic. The charging side of the conveyor was housed in 3.1 by 14.0 meters (10 by 20.5 feet) metal sided building, while the retort was enclosed by a wooden, earth-filled barricade.

Components of the deactivation furnace have been dismantled and decontaminated. The furnace drum, collection conveyor, exhaust stack, and associated piping were dismantled in 1991 after the ash was removed from the furnace. The interiors of these components were pressure washed, and the wash water was collected in 55-gallon drums. The final rinsate was sampled and analyzed for toxicity characteristic metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), TNT, 2,4-DNT, 2,6-DNT, and RDX. Analysis of the rinsate showed that the equipment had been sufficiently decontaminated. These sampling results are included in Appendix A.

The ash that was removed from the furnace was characterized prior to disposal. Results of these analyses are shown in Appendix A. Results of the toxicity characteristic leaching procedure (TCLP) performed on the ash showed that the ash exhibited RCRA-characteristic

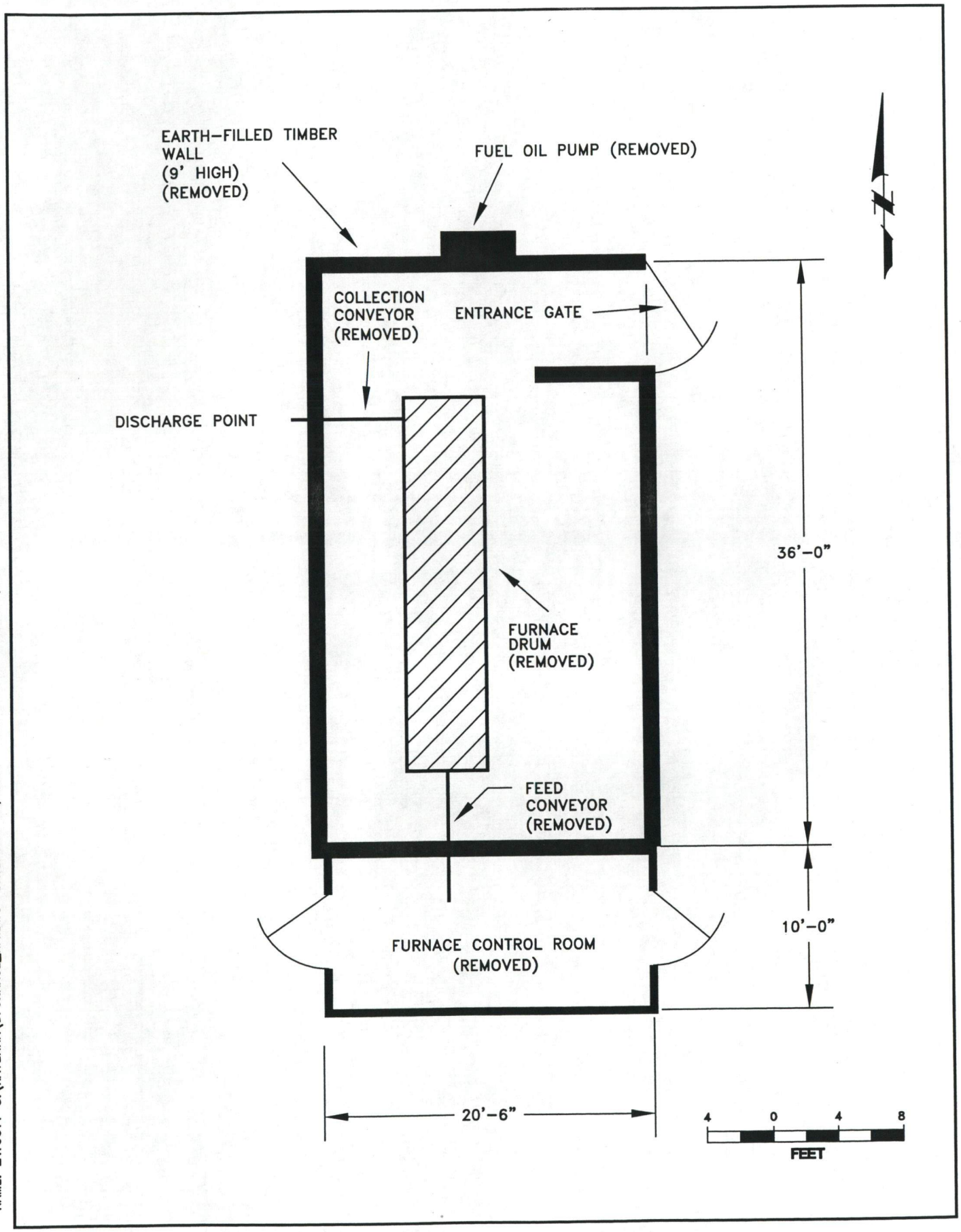


Figure 1–5. Plan of Deactivation Furnace Facility

toxicity for cadmium and lead. The ash was transferred to the Building 1602 90-day storage area Figure 1-5. Plan of Deactivation Furnace Facility and was subsequently shipped to a RCRA-permitted treatment, storage, or disposal facility (TSDF).

The dismantled and decontaminated components of the deactivation furnace were removed from the facility in the spring of 1998. The remaining above-ground structures, including walls, timbers, and transite roofing and siding, were removed from the site and disposed in accordance with state regulatory standards in November 1999 (see Section 1.2).

1.2 CLOSURE ACTIVITIES

Subsequent to cessation of operations at the DFA, a closure plan and several amendments were prepared. The following is a list of the plans that have been submitted and a brief summary of activities that took place from 1989 to present.

Prior to submittal of a closure plan to the Ohio EPA, preliminary sampling took place on December 15, 1989. The preliminary sampling included eighteen composite soil samples obtained from six locations. The samples were analyzed for total metals, TNT, 2,4-DNT, 2,6-DNT, and RDX. Results indicated soils within the furnace barricade (timber walls) and at the collection conveyor discharge area were contaminated with antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, and zinc. Soils within the DFA were not contaminated with TNT, 2,4-DNT, 2,6-DNT, or RDX. The soil contamination appeared to be generally limited to the top three feet of the soil column. The concentrations of the contaminants, in general, appeared to decrease with depth.

The original closure plan, *Closure Plan for Deactivation Furnace, Ravenna Army Ammunition Plant, Ravenna, Ohio* was prepared March 1990, with Revision 1 prepared in December 1990. The plan was submitted to the Ohio EPA and additional site activities were implemented. The plan addressed the final closure activities, which included:

1. Removal of ash residue present in the furnace and associated appurtenances.
2. Decontaminating the furnace, equipment, and structures.
3. Removal and disposal of the furnace and ancillary equipment.
4. Removal and disposal of contaminated timber barrier walls.
5. Excavating and removing contaminated soil around the furnace.
6. Preliminary sampling of the soils, walls, etc.
7. Procedures for disposal or decontamination soils.
8. Procedures for gridding/sampling the area to identify contamination.
9. Procedures for collecting background samples.

Subsequent to the submittal of the plan, the following activities were implemented between March 1990 and May 1993.

1. Removal of ash residue present in the furnace and associated appurtenances.
2. Dismantling and decontaminating the furnace and ancillary equipment, and structures.

3. Dismantling of portions of the timber barrier walls.
4. Gridding/sampling the area to identify contamination and establish background concentrations for target analytes.
5. Preparation of an amended closure plan.

Extensive sampling was conducted in an effort to develop site information and establish the horizontal and vertical extent of contamination. The following paragraphs outline the sampling dates and briefly describe the activity. Table 1-1 summarizes the sampling activities from 1991 through 1997.

Table 1-1. Summary of DFA Sampling Activities

DATE	GRID NUMBER/SAMPLE ID	INTERVAL	NBR
3/11/91	S1-S4, E5-E8, N9-N12, 213-W16 1-1 TO 17-1 1-2 TO 17-2 1-3 TO 17-3	0-3' 0-1' 1-2' 2-3'	16 17 17 17
5/9/91	18A - 23A, 25A - 30A	0-1'	12
7/8-9/91	2E - 6E, 8E, 10E, 11E, 13E, 14E, 17E 18C - 23C, 25C - 30C 31A - 70A	4-5' 2-3' 0-1'	11 12 40
9/16/91	135A, 140A, 146A, 154A, 161A, 166A	0-1'	6
2/3-5/92	11-10, 11-12 S-1, S-2, S-4 135C, 140C, 146C, 154C, 161C, 166C 214A, 218A, 228A, 247A, 252A, 308A, 312A, 326A, 334A, 349A, 354A	10, 12' 0-1' 2-3' 0-1' 0-1'	2 3 6 8 3
3/11/92	140E, 146E, 154E, 166E 417A, 426A, 439A, 449A, 464A, 472A	4-5' 0-1'	4 6
5/5/93	71A, 80A, 82A, 102A, 104A, 107A, 121A, 127A, 129A, 133A, 172A, 174A, 182A, 184A, 186A, 189A, 198A, 206A, 274A, 276A, 279A, 290A, 359A, 361A, 364A, 366A, 370A, 374A, 378A, 381A, 385A, 394A, 398A, 416A, 418A	0-1' 0-1' 0-1' 0-1' 0-1'	8 8 8 8 3
11/21-24/97	SB01 2-FT INTERVALS SS01 SLAG SB02 2-FT INTERVALS SS02 SLAG	0-10' 0-6" 0-10' 0-6"	5 1 5 1
TOTAL			228

On March 11, 1991 a 2.1 by 2.1 meter (7 by 7 feet) grid pattern was established and samples were collected from soil inside the containment walls, soil around the collection conveyor outfall, and sixteen background locations (four each from the north, south, east, and west) approximately 30.5 meters (100 feet) from the barrier walls. The samples were collected from depths ranging from 0-0.92 meters (0-3 feet) below ground surface (BGS). Additionally, samples were collected from the outer timber surface and soil fill material within the barrier walls.

On May 9, 1991 samples were collected from twelve grids immediately adjacent to the exterior timber walls. The samples were collected from 0-0.31 meters (0-1 foot) BGS.

On July 8-9, 1991 samples were collected from eleven of the original grids within the barricade from 1.53-1.83 meters (5-6 feet) BGS and forty (40) grids in the second and third perimeter outside the barrier walls, from 0-0.31 meters (0-1 foot) BGS.

On September 16, 1991 samples were collected from six grids, within the sixth perimeter outside the barrier wall, from 0-0.31 meters (0-1 foot) BGS.

On February 3-5, 1992 samples were collected from four general locations. Two samples were collected from within the barrier wall at 3.05 and 3.66 m (10 and 12 ft). Two samples were collected from south of the building at 0-0.31m (0-1 ft) BGS. Six samples were collected from the sixth perimeter grid at 0.61-0.92 m (2-3 ft) BGS. In addition, twelve samples were collected from six grids in both the eighth and tenth perimeters outside the barrier walls.

On March 11, 1992 samples were collected from six grids in the twelfth perimeter at 0-0.31 m (0-1 ft) BGS and four samples were collected from the sixth perimeter grids at 1.22-1.53 m (4-5 ft) BGS.

On May 5, 1993 samples were collected from thirty-five (35) locations from the 0-0.31 m (0-1 foot) BGS interval. Of the samples collected, eleven were collected to fill void spaces where sampling had not previously been performed, and twenty-four were collected to further define the extent of contamination.

Based on the information collected from March 1990 to May 1993, an *Amended RCRA Closure Plan for Deactivation Furnace* was prepared and submitted to Ohio EPA on July 22, 1993. As stated in the introduction of the amended plan, "The primary area of modification was the criteria used in defining, excavating, and removing contaminated soil from the area on and around the Deactivation Furnace." Remedial action target levels were presented based on background results, site specific risk based calculations, and a proposed lead level. Horizontal and vertical extent of soil excavation were presented based on the above limits, and a confirmation sampling grid was proposed. The amended plan was subsequently review by Ohio EPA and a Notice of Deficiency (NOD) letter, dated May 3, 1994 was issued.

In response to Ohio EPA's NOD, a Modified Amended RCRA Closure Plan for Deactivation Furnace dated September 1, 1994 was submitted to Ohio EPA on September 6, 1994 and a copy dated October 31, 1994 was resubmitted November 2, 1994. The modified amended plan was reformatted and resubmitted as a result of a NOD from Ohio EPA dated October 17, 1994. The modified amended plan responded to technical comments in the NOD letter dated May 3, 1994.

The Ohio EPA did not approve the modified amended plan and informed RVAAP, via Draft Director's Final Finding and Orders, dated March 7, 1996, that RVAAP must satisfactorily address the Agency's comments on the revised amended closure plan.

The Closure Plan for the Deactivation Furnace Area (DFA), Hazardous Waste Treatment Unit, Ravenna Army Ammunition Plant, Ravenna, Ohio was submitted on December 20, 1996, and was intended to be a stand-alone document. An NOD was delivered to RVAAP on March 31, 1997.

During the period from 21 to 24 November 1997, additional sampling was performed within the vicinity of the DFA (USACE 1998a). Two Geoprobe® borings (SB01 and SB02) were advanced to depths of 43 ft at the locations shown on Figure 1-6. Sampling and chemical analyses were performed at two-foot intervals to a depth of 10 ft in both borings. Additionally, two surface samples of slag, SS01 and SS02, were sampled at the locations shown on Figure 1-6 and subjected to chemical analyses. The data from these sampling events have been integrated into two data packages and are presented in Appendices B and C of this closure plan. In 1998, further sampling was conducted at Pad #45 during the Phase II Remedial Investigation (RI) of Winklepeck Burning Ground. These data are discussed and evaluated in Section 2.0.

In 1998, the Army submitted a Construction Work Plan to detail the demolition, decontamination, and disposal activities that were presumed to be required for the closure of the DFA according to the 1997 closure plan (IT Corporation 1998). However, the work was not executed. With the additional 1997 and 1998 data, the draft closure plan for the DFA was again revised in August, 1999. This plan called for the excavation of soils as well as the demolition and disposal of the above-ground structures. It also addressed concerns expressed in the March, 1997 letter from Ohio EPA. Comments were received on August 31 and September 7, 1999. Discussions ensued about the advisability of excavating soils for closure in a unit where unexploded ordnance (UXO) and ordnance explosive wastes (OE) potentially required an even more rigorous removal action.

Closure activities resumed in October 1999 with the removal of the remaining above-ground portions of the deactivation furnace and the structure immediately adjacent to it on the west. The work was conducted in accordance with the 1998 Construction Work Plan (IT Corporation 1998), although not all elements of the plan were executed. The structures were dismantled, tested, and disposed of. In November 1999, samples of the remaining soil were collected and analyzed via SW-846 methods for total metals, explosives, total cyanide, and acid-insoluble sulfide, in order to characterize them for possible future disposal. These samples were

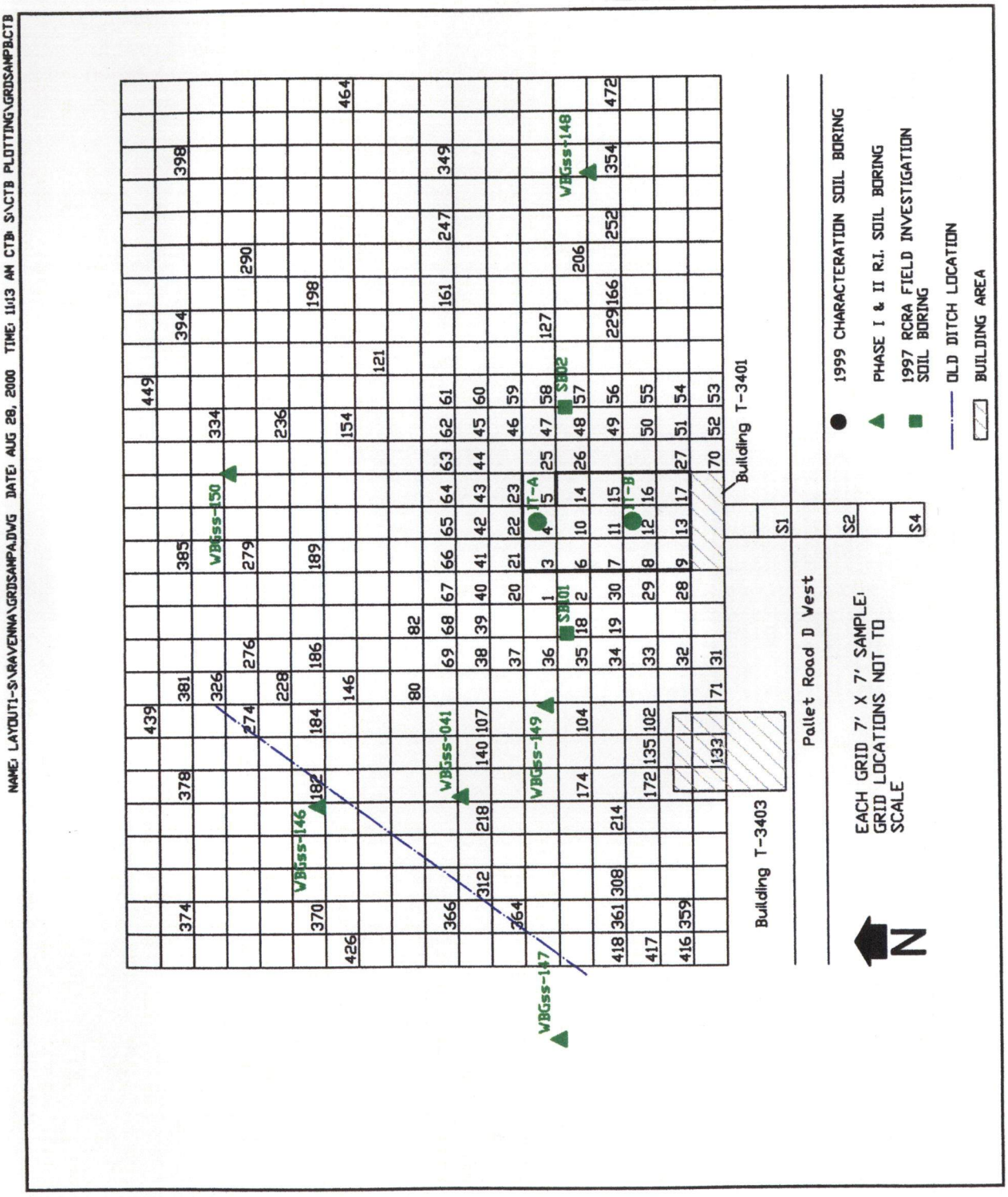


FIGURE 1-6. DFA Sampling Locations

located as shown on Figure 1-6. All sampling, analysis, and quality assurance/quality control was performed in accordance with the Ohio-EPA reviewed Facility-Wide Sampling and Analysis Plan for Ravenna Army Ammunition Plant, Ravenna, Ohio (USACE 1996).

Results for the soil samples collected in 1999 will be presented in the Closure Report. No explosives were present in the soil samples. Cadmium was present at a concentration above the facility-wide background criterion in the 4-6 ft sampling interval at 3.8 mg/kg; in the 2-4-ft interval, there were detections of metals only slightly above the facility-wide background values. A sample analyzed in the TCLP came from a composite of soils from 0 to 4 ft BGS. The TCLP resulted in a characterization of the soils within the deactivation furnace walls as non-hazardous.

The current plan responds to the August and September 1999 comment letters. This plan presents an approach to closure that integrates the findings of the previous work at DFA, recent (1997, 1998, and 1999) sampling at the DFA and WBG, and recently discovered historical information. The approach detailed in the following sections attempts to expedite closure activities at the unit.

1.3 TOPOGRAPHIC MAP

The U.S. Geologic Survey (USGS) topographic map for the portion of the facility upon which this unit is located is shown on Figure 1-7.

1.4 SOLID WASTE MANAGEMENT UNITS

The remaining RCRA-regulated unit that exists at RVAAP that has not yet been certified as closed is the Open Detonation Area (ODA). The ODA, identified as the RCRA-regulated location number 4 on Figure 1-2, is an area approximately 61.0 meters by 76.2 meters (350 feet by 250 feet) in Demolition Area #2. The Open Detonation Area was listed in the RVAAP RCRA Part B Permit Application, which was subsequently withdrawn. Currently the Open Detonation Area and the rest of Demolition Area #2 are undergoing an OE Removal Action in support of closure.

Building 1601 (Container Storage Unit), at location 7 on Figure 1-2, and the Open Burning Grounds, at Pad #37 in Winklepeck Burning Ground, have been certified closed.

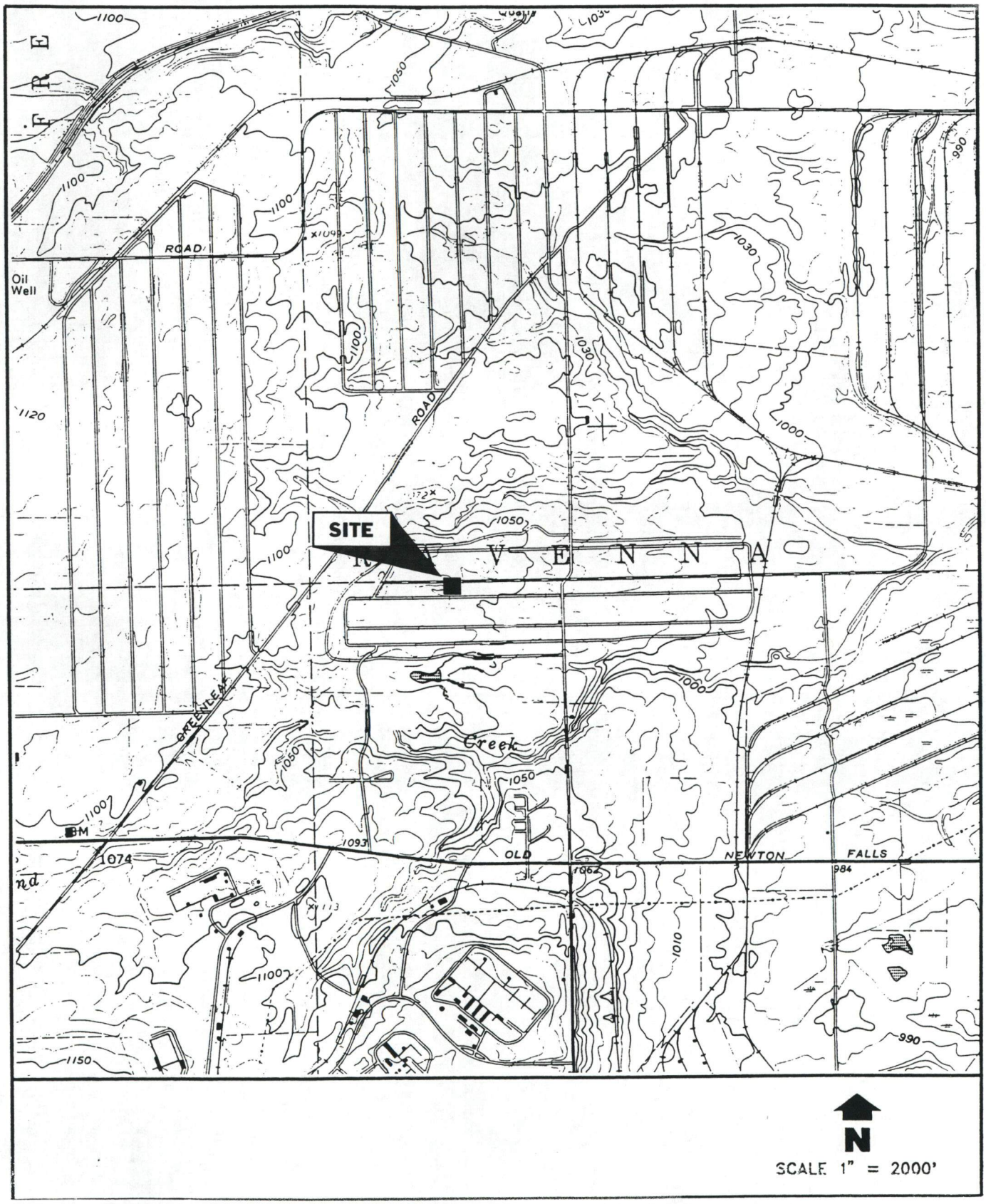


Figure 1-7. Topographic Location Map

1.5 HYDROGEOLOGY INFORMATION

1.5.1 Geologic and Hydrogeologic Settings

1.5.1.1 Geologic Setting

Two glacial advances during the Wisconsin Age of the Pleistocene Epoch resulted in the deposition of a veneer of glacial till over the entire RVAAP installation. The first glacial advance deposited the Kent Till over the facility. The Kent Till consists mostly of sand and silt with a few cobbles and sporadic boulders, and ranges in depth from 6.1 to 12.2 meters (20 to 40 feet) BGS. Although the Kent Till may be present at the site, it is obscured by the overlying Lavery Till. The Lavery consists mostly of clayey silt with sparse cobbles and pebbles, and has an average thickness of 4ft. Glacial materials in the western portion of RVAAP are Lavery Till. The Hiram Till was deposited over the eastern two-thirds of the facility only, which includes the DFA. The Hiram Till consists of approximately 12 percent sand, 41 percent silt, and 47 percent illite and chlorite clay minerals, and ranges in depth from 1.5 to 4.6 meters (5 to 15 feet) BGS. The Hiram Till overlies thin beds of sandy outwash material in the far northeastern corner of the facility. Field observations indicate that overall till thickness is less than 0.6 meters (2 feet) in some areas of RVAAP. The reduced thickness may be due to natural erosion or construction grading operations and is not necessarily the result of deposition.

A buried glacial valley, oriented in a southwest-northeast direction, is located in the central portion of the facility and underlies much of Winklepeck Burning Ground. This valley is filled with glacial outwash consisting of poorly sorted clay, till, gravel, and silty sand. Depths of unconsolidated sediments in the valley range from 30.5 to 60.7 meters (100 to 200 feet) BGS.

The bedrock geology of RVAAP consists of Carboniferous Age sedimentary rocks that lie stratigraphically beneath the glacial deposits of the Lavery and Hiram Tills. The oldest bedrock that outcrops within the facility is the Cuyahoga Formation of the Mississippian Age. The Cuyahoga outcrops in the far northeastern corner of the facility, and generally consists of a blue-gray silty shale with interbedded sandstone.

The remainder of the facility is underlain by bedrock associated with the Pottsville Formation of the Pennsylvanian Age. The Pottsville Formation, which lies unconformably on an erosional surface of the Cuyahoga Formation, is divided into four members: (1) the Sharon, (2) the Connoquenessing Sandstone, (3) the Mercer, and (4) the Homewood Sandstone. The Sharon Member consists of two individual units: the Sharon Conglomerate and the Sharon Shale. The Sharon Conglomerate is a porous, coarse-grained, gray-white sandstone that often exhibits thin layers of milky white quartz pebbles. The Sharon Conglomerate also has locally occurring thin shale lenses in the upper portion of the unit. Due to the differences in lithology between the Sharon Conglomerate and the underlying shales of the Cuyahoga Formation, the contact between the Pottsville and Cuyahoga Formations usually is quite distinct. The Sharon Shale overlies the Sharon Conglomerate and consists of sandy, gray-black, fissile shale with some plant fragments and thin flagstone beds.

The Connoquenessing Sandstone member of the Pottsville Formation unconformably overlies the Sharon Member and is a medium-to-coarse grained, gray-white sandstone with more feldspar and clay than the Sharon Conglomerate. Thin interbeds and partings of sandy shale also are common in the Connoquenessing. The Mercer member of the Pottsville Formation overlies the Connoquenessing and consists of silty to carbonaceous shale with abundant thin, discontinuous sandstone lenses in the upper portion. Regionally, the Mercer also has been noted to contain interbeds of coal. The Homewood Member of the Pottsville Formation unconformably overlies the Mercer member and consists of coarse-grained crossbedded sandstones that contain discontinuous shale lenses.

The Connoquenessing, Mercer, and Homewood members are present only in the western half of the RVAAP facility. The Sharon Conglomerate unit is the upper bedrock surface in most of the eastern half of the RVAAP facility. The regional dip of the Pottsville Formation strata is between 1.5 and 3 meters (5 and 10 feet) per mile to the south.

1.5.1.2 Hydrologic Setting

The largest ground water supplies within Portage County come from two buried valleys that underlie Franklin, Brimfield, and Suffield Townships; and Streetsboro, Shalersville, and Mantua Townships, respectively. The sand and gravel within these buried valleys are favorably situated to receive discharge from surface streams and surface infiltration. The water bearing characteristics for the sand and gravel aquifers in the vicinity of the RVAAP facility are poorly documented. Wells that penetrate these aquifers can yield up to 6080 liters per minute (1600 gallons per minute (GPM)). However, yields from wells penetrating silty or clay till materials are significantly lower. Water from these formations is sufficient for use by business and residential consumers located in the vicinity of RVAAP. At many locations, however, the Lavery and Hiram Tills are too thin and impermeable to produce useful quantities of water.

The most important bedrock sources of ground water in the vicinity of the RVAAP facility are the sandstone/conglomerate members of the Pottsville Formation. These aquifers, together with two other deeper Mississippian/Devonian sandstone aquifers, represent the most important bedrock sources of ground water in Northeastern Ohio.

The Sharon Conglomerate is the primary source of ground water at RVAAP and maintains the most significant well yields of the Pottsville Formation members with hydraulic conductivity values of 62 to 24,839 liters per day per meter (LPD/m) (5 to 2000 gallons per day per foot (GPD/ft)). Past studies of the Sharon Conglomerate indicate that the highest yields are associated with the true conglomerate phase (coarse-grained sandstone with abundant quartz pebbles) and with joints and fractures in the bedrock; however, there is no facility-specific information available regarding variations in aquifer properties due to these factors. Where present, the overlying Sharon Shale acts as a relatively impermeable confining layer for the Sharon Conglomerate. Several flowing artesian wells have been noted at the facility.

The Connoquenessing Sandstone and the Homewood Sandstone are the remaining aquifers of the Pottsville Formation and exhibit hydraulic conductivities of 62.1 to 3,725.8 LPD/m (5 to 300 GPD/ft), and 62.1 to 2,483.9 LPD/m (5 to 200 GPD/ft), respectively. Well

yields in the Connoquenessing and Homewood Sandstones, although lower than the Sharon Conglomerate, are high enough to provide significant quantities of water. Several wells at the RVAAP facility have penetrated both the Sharon Conglomerate and the Connoquenessing Sandstone and reportedly produced water from both units.

In general, hydraulic conductivities for the shales of the Sharon and Mercer Members of the Pottsville Formation are low and result in insignificant ground water yields. Where ground water yields are greater, however, water from these formations are sufficient for use by residential and commercial consumers. The primary porosity of the shales is likely secondary, owing to joints and fractures in the bedrock; however, there is no facility-specific information available regarding the occurrence of joints and fractures in these units.

1.6 DEACTIVATION FURNACE UNIT DESCRIPTION

1.6.1 Definition of the RCRA-Regulated Deactivation Furnace

RVAAP defines the RCRA-regulated DFA as shown in Figure 1-8. The land area extending 21 feet to the north and east from the former timber walls surrounding the immediate existing furnace area comprise the northern and eastern boundaries. The southern boundary is Pallet Road D West. The western boundary is a line parallel to and 14 ft away from the former timber wall. The placement of the RCRA unit boundary is supported by three significant facts. First, the site history as presented in Section 1.1.3 above indicates that the RCRA unit boundary is appropriately placed to enclose potential contamination most likely to be caused directly by the waste disposal activities at the existing deactivation furnace, and to eliminate any influences from the Chemical Environmental Response, Compensation, and Liability Act (CERCLA)-regulated Pad #45. Second, the analytical data presented in Appendix B (discussed in Section 1.6.1.1) supports this definition of the RCRA area. Third, a mechanism is already in place for investigating and, if necessary, remediating any contamination outside the delineated RCRA boundary (i.e., the ongoing Installation Restoration Program investigations, which include Winklepeck Burning Ground). CERCLA activities are discussed in Section 1.6.1.2.

1.6.1.1 Evaluation of the Soil Sampling Data

Evaluation of the soil sampling data collected from 1989 to the present clearly indicates the presence of metals contamination in the soils immediately beneath and adjacent to the RCRA unit. Soils were collected from the gridded area shown in Figure 1-6. Grid numbers 3 through 17 were located inside the former bermed walls and exhibit consistently high metal concentrations. Outside the walls, however, trends in the data are less clear. Figures 1-9 and 1-10 show the locations of the twenty highest concentrations detected for cadmium and lead, respectively.

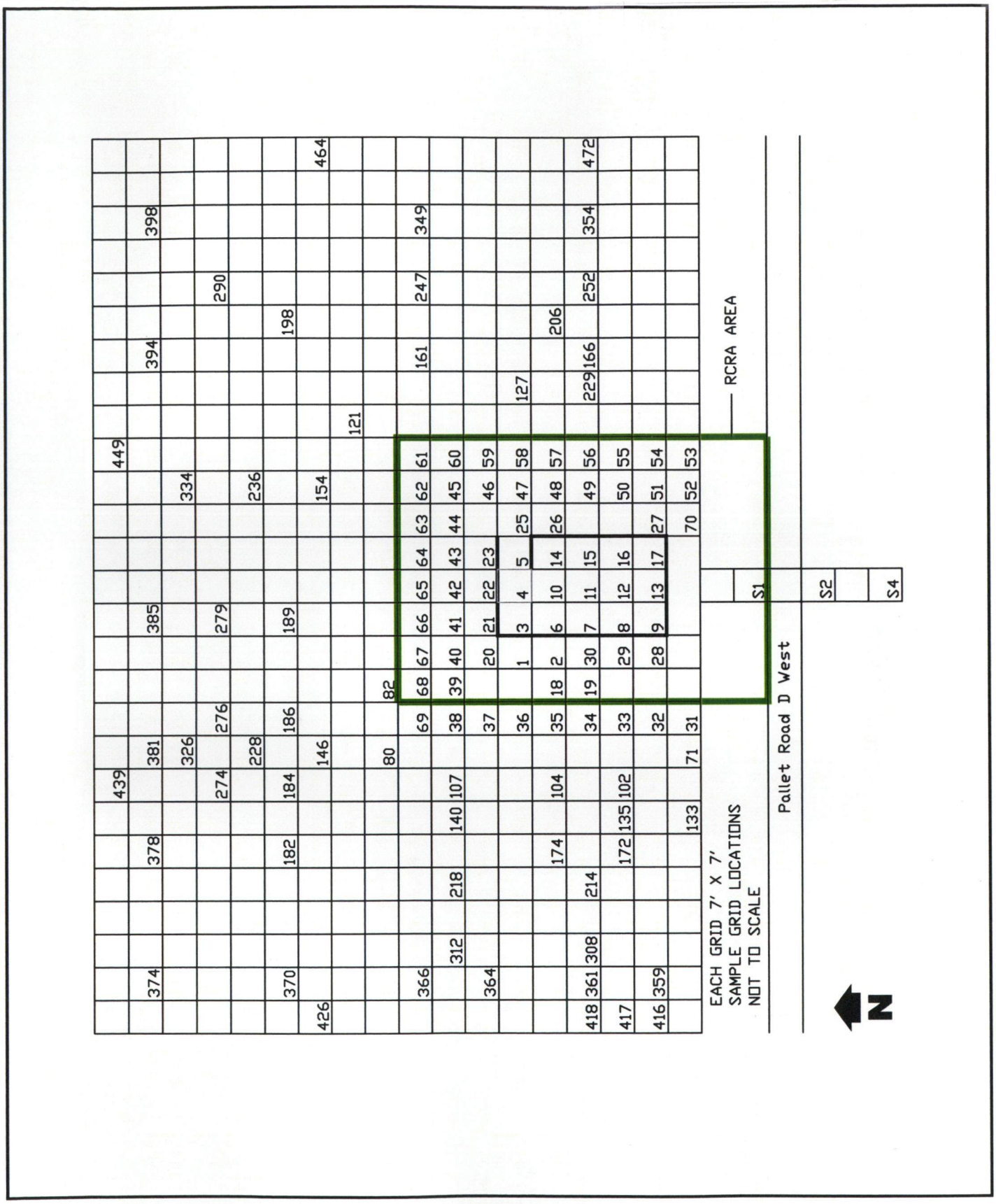


Figure 1–8. Proposed RCRA Boundary

These figures represent the trends in data distribution evident for all metals at the unit and will serve as the basis for the rest of the discussion in this section.

It should be noted that this evaluation of soil sampling data does not rely on comparison to background metal concentrations. The evaluation focuses on the highest concentrations detected, all of which are likely to be well above facility-wide background values. Rather, the use of these data in this closure plan is limited to supporting the identification of a RCRA boundary around the existing DFA, and to illustrating that the existing DFA is not the only possible source for observed soils contamination.

Figure 1-9 shows historical surface soil analytical results for cadmium. Most of the cadmium is concentrated inside the former furnace walls and near the RCRA boundary. The only exception to this trend is the two high detections to the west, between 70 and 80 feet from the furnace. These detections of 157 and 150 mg/kg are consistent with much of the other data. High concentrations of chromium, lead, nickel, zinc, and copper have been detected consistently at these grid locations. The data suggest that the former deactivation furnace is not likely to be the source for these high concentrations of metals. First, several soil samples were collected between the existing furnace and grid locations 312 and 364, and none of these locations show elevated concentrations of cadmium. If the existing deactivation furnace were the source of this contamination, one would expect to see evidence of the transport of the contaminants to the west toward grid locations 312 and 364, but the data do not support this. Further, if air emissions from the existing furnace are the likely source of cadmium contamination outside the unit, one would not expect contamination to occur into the direction of the prevailing winds. In addition, no significant cadmium concentrations were detected in the surface soils in the direction of the prevailing winds. This evidence contradicts the assertion that the existing furnace is a likely source of contamination in soil outside the proposed RCRA boundary.

Figure 1-10 depicts the twenty highest concentrations of lead at the DFA. Lead is detected in the soils immediately beneath the unit, but it is noteworthy that four of the five highest detections occur outside the proposed RCRA boundary. Again, grid locations 312 and 364 exhibit highly elevated concentrations of lead at considerable distance from the existing DFA, further refuting the suggestion that the furnace is the likely source of contamination for the reasons stated above. In addition, the highest concentration of lead in the soils immediately beneath the furnace is less than half of the highest concentration located outside the proposed RCRA boundary, over 80 feet away. It is unlikely that the former deactivation furnace could cause contamination at a distance of 80 feet in excess of the concentrations immediately beneath the unit. This evidence further supports the proposition that the furnace is not the source of elevated metals over the entire DFA. It is likely that other historic activities or features in the area at Pad #45 are the sources of this contamination.

The primary sources of metals contamination not attributable to the DFA include the earlier 1950s popping furnace adjacent to the west side of the former deactivation furnace and the slag (present throughout Winklepeck Burning Ground), which contains measurable elevated metals concentrations. Given the high potential for various other sources of contamination close to the DFA, the RCRA site boundary proposed in Section 1.6.1 is most likely to address contamination from the existing furnace source.

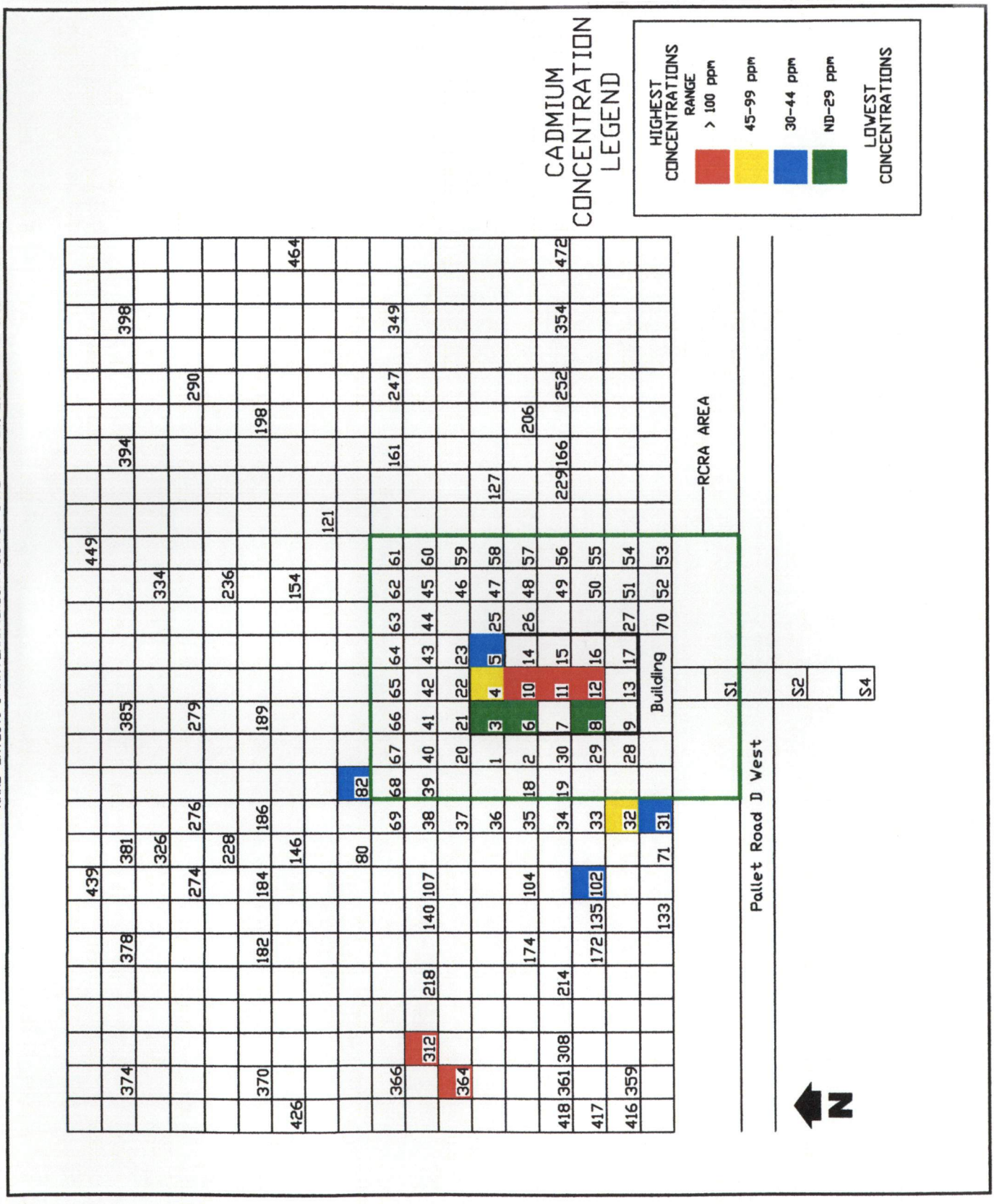


Figure 1-9. Sampling Data at the DFA (Cadmium)

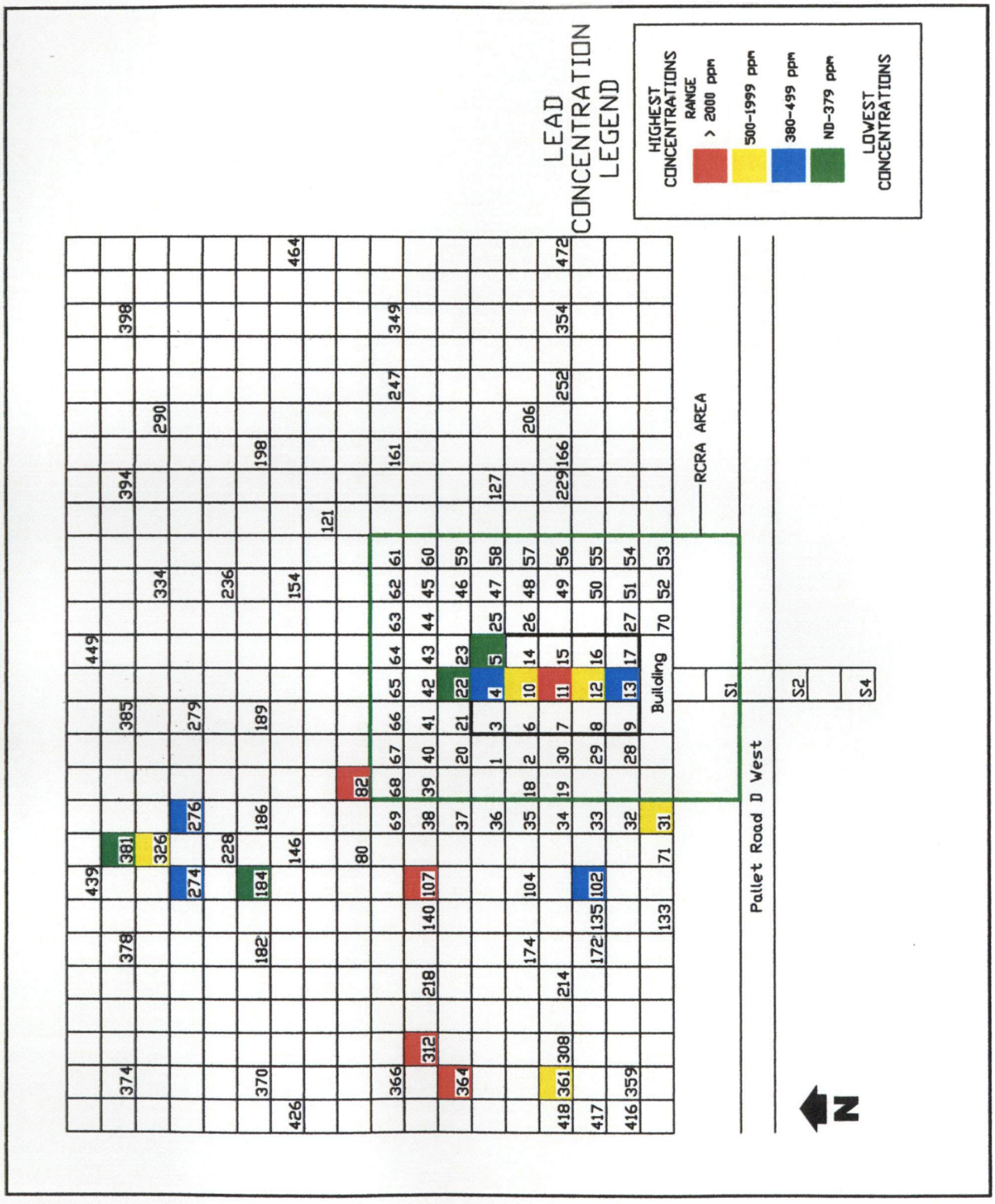


Figure 1-10. Sampling Data at the DFA (Lead)

Surface soil samples collected in the 1997 RCRA Field Investigation (USACE 1998a) were analyzed for metals. Concentrations of sixteen metals were detected in one or more soil samples collected at the DFA in 1997. In addition, two soil borings were sampled in 2-ft intervals to a depth of 10 ft BGS in the RCRA Field Investigation. One sample, from the 2 to 4-ft interval at SB01, was analyzed for explosives; however, none were detected. Metals were detected in both 1997 soil borings in nearly all subsurface intervals. Generally these concentrations were lower than those encountered in the surface soil samples, and concentrations tend to decrease with depth. Metals never detected in the subsurface soils at the DFA include antimony, mercury, selenium, silver, and thallium.

Cadmium was detected in one sample from the 4-6 ft interval. collected inside the former deactivation furnace walls in November 1999. The concentration of 3.8 mg/kg exeeded facility-wide bacgkround.

1.6.1.2 CERCLA Activities at Winklepeck Burning Ground

The former deactivation furnace is located at Pad #45 in Winklepeck Burning Ground, a CERCLA Area of Concern (AOC) in the IRP for RVAAP. The Phase II Remedial Investigation (RI) at WBG was completed in 1999. Both soil and ground water at WBG are slated for further characterization during a feasibility study beginning in October 2000. Phase II of the RI included a baseline risk assessment that assessed the potential risk to human and ecological receptors posed by residual contamination detected at the burning ground. The risk assessment identified Pad #45 as one of the areas at the burning ground posing moderate risk to human and ecological receptors. This information is provided in the Draft Final Phase II RI Report for Winklepeck Burning Ground, Ravenna Army Ammunition Plant, Ravenna, Ohio (USACE 1999).

This closure plan proposes the integration of the closure of the DFA into the ongoing WBG CERCLA activities.

Soil sampling was conducted at the burning ground in both Phases I and II of the RI (USACE 1998b and 1999). Seventy-nine surface soil samples (0 to 2 ft) were collected on and near the burn pads and analyzed for 11 process-related metals and explosives during Phase I (USACE 1998b). Cadmium and lead were the analytes most frequently detected above background in the Phase I samples. Cadmium was detected above Phase I background criteria (0.29 mg/kg) in 39 of the 79 samples collected. Concentrations ranged from 0.34 to 877 mg/kg. This maximum value came from WBGss-034, a sample immediately west of the pad at the Open Burning Ground (Pad #37). Lead was present above background (17.9 mg/kg) in 38 of the WBG samples. The maximum concentration observed came from WBGss-055, the sample at pad 59, northwest of the DFA. Cadmium and lead were detected at WBGss-041 and in other samples within about 400 feet of the DFA as shown in Table 1-2. Phase I and II RI sample locations closest to the former deactivation furnace are shown in Figure 1-6.

Table 1-2. Phase I and II RI Cadmium and Lead Concentrations IN SURFACE SOILS IN THE VICINITY OF THE DFA

SAMPLE I.D.	CADMIUM (MG/KG)	LEAD (MG/KG)	ORIENTATION WITH RESPECT TO DFA
WBGss-040	0.04J	13.7	DUE W OF PAD 44
WBGss-041	1.8	314	DUE N OF DFA
WBGss-042	0.37	12.4	DUE E OF PAD 46
WBGss-055	1.3	916	W OF PAD 59, NW OF DFA
WBGss-056	0.36	39	E OF PAD 59, NW OF DFA
WBGss-057	15.1	721	W OF PAD 60, NE OF DFA
WBGss-058	11.4	522J	E OF PAD 60, NE OF DFA
WBGss-144	1.1	27J	20 FT NE OF RCRA BOUNDARY
WBGss-145	5	359J	20 FT SE OF RCRA BOUNDARY
WBGss-146	234	2200J	20 FT NW OF RCRA BOUNDARY
WBGss-147	0.63	19.6J	20 FT SW 0F RCRA BOUNDARY
WBGss-148	1.8	55.1J	50 FT E OF RCRA BOUNDARY
WBGss-149	7.6	75.2J	50 FT W OF RCRA BOUNDARY
WBGss-150	3.3	85.8J	50 FT N OF RCRA BOUNDARY

J estimated concentration

In the Phase II RI, seven surface soil samples were collected from areas outside the RCRA unit, biased to locations where visible signs of contaminants or OE were observed. Seventeen metals were detected at concentrations exceeding facility-wide background criteria in at least one of the eight surface soil samples collected around the boundary of the DFA in the Phase II RI (USACE 1999). Metals exceeding facility-wide background at the DFA include aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, magnesium, mercury, nickel, selenium, silver, vanadium, and zinc. Of these metals, selenium, silver, and vanadium, were only detected above background criteria in one or two samples. WBGss-146 contains the greatest number of metals detected over background and the highest concentrations of eight of the detected metals, including cadmium, copper, lead, mercury, nickel, selenium, silver, and zinc. The Phase II data for Pad #45 are provided in Appendix C.

Subsurface soils were not collected at Pad #45 and vicinity during the Phase I or Phase II RI.

Beryllium was evaluated in seven samples at WBG during Phase I of the RI (WBGss-008, -021, -029, -051, -066, -072, and -076), and in all of the Phase II samples. Concentrations of beryllium varied from 0.47 mg/kg at WBGss-072 and -076 to a maximum of 2.6 mg/kg at WBGss-029. Beryllium was detected in only one Phase II sample, at 1.2 mg/kg. The samples closest to the DFA, WBGss-144 through -147, had no detectable concentrations of beryllium.

Explosives concentrations in Phase I RI samples WBGss-040, -041, and -042, closest to the DFA, were non-detects. Explosives were not analyzed in surface soils outside the DFA during the Phase II RI, based on those results.

1.6.2 Waste Managed at the Deactivation Furnace Area

Deactivation activities at the DFA were conducted from the 1960s until operations ceased in 1983. Explosive waste (D003) which were or could have been treated in the existing furnace included primarily fuse and booster assemblies, ammunition primers, small arms ammunition, and small packets (no greater than 400 grains) of explosives or propellants. Treatment in the furnace removed the reactivity characteristic. Wastes were not chemically characterized by analysis prior to deactivation because adequate physical and chemical data were obtained from process knowledge. However, analyses of the resulting ash (see Appendix A) showed consistent elevated levels of cadmium and lead.

Although the only RCRA wastes treated at this unit were characteristic for reactivity and the process of burning removed that characteristic, historical sampling of the existing DFA has revealed elevated levels of metals in the soil as a result of operations. The results of the soil sampling described in Section 1.1.2 showed that there are no explosive constituents remaining in the soil at the DFA. Analysis of these samples showed that concentrations of TNT, 2,4-DNT, 2,6-DNT, and RDX were below the limits of detection in all eighteen samples. In addition, five samples taken from the surface soil (0-1 ft) inside the existing furnace walls in March 1991 were analyzed for explosive constituents. These soil samples also had no detectable quantities of explosives. Degradation products of these explosives were not analyzed; however, the absence of these four constituents in all samples collected indicates that no degradation products would be present. These results are also presented in Appendix B. Further sampling in 1999 revealed no detectable quantities of explosives in soils.

The chemicals of concern (COCs) for this closure are presented in Table 1-3. They include 23 metals and nine explosives. Although explosives have not been detected within the RCRA unit soils in sampling events since 1989, they are included because they are known to have been present at the unit, or may have been introduced during the unit's operation.

Table 1-3. Chemicals of Concern for the Deactivation Furnace Area

MEDIUM	POTENTIAL WASTE CODE	CHEMICAL
METALS		
SOIL	NONE	ALUMINUM
SOIL	NONE	ANTIMONY
SOIL	D004	ARSENIC
SOIL	D005	BARIUM
SOIL	NONE	BERYLLIUM
SOIL	D006	CADMIUM
SOIL	NONE	CALCIUM
SOIL	D007	CHROMIUM
SOIL	NONE	COBALT
SOIL	NONE	COPPER
SOIL	NONE	IRON
SOIL	D008	LEAD
SOIL	NONE	MAGNESIUM
SOIL	NONE	MANGANESE
SOIL	D009	MERCURY
SOIL	NONE	NICKEL
SOIL	NONE	POTASSIUM
SOIL	NONE	SELENIUM
SOIL	NONE	SILVER
SOIL	NONE	SODIUM
SOIL	NONE	THALLIUM
SOIL	NONE	VANADIUM
SOIL	NONE	ZINC
EXPLOSIVES		
SOIL	NONE	2,4,5-TRINITROTOLUENE (TNT)

Table 1-3. Chemicals of Concern for the Deactivation Furnace Area Continued

MEDIUM	POTENTIAL WASTE CODE	CHEMICAL
EXPLOSIVES		
SOIL	NONE	1,3,5-TNB
SOIL	NONE	TETRYL

1.6.3 Capacity

The maximum possible capacity for hazardous wastes that were managed at the DFA was limited to the daily treatment capacity of 2720 pounds, according to the air permit that was submitted in August,1985 (340 pounds per hour x 8 hours per day). This information is provided in Appendix E. There is no other documentation that corroborates this quantity. Therefore, the maximum inventory of hazardous waste ever on-site during the active life of the existing facility is 2720 pounds.

1.7 REFERENCES TO OTHER ENVIRONMENTAL PERMITS

The RVAAP facility has ceased all manufacturing operations. RVAAP has requested that the RCRA Part B Permit application be withdrawn, which has required the closure of all formerly operated RCRA-regulated units. There is no further information on the status of the RCRA Part B Permit at this time.

1.8 ANTICIPATED WAIVERS OR EXEMPTIONS

No waivers or exemptions are anticipated to be requested or required for the closure of this facility. The RVAAP facility, including Deactivation Furnace Area, is owned by the U.S. Department of Defense, a Federal Agency.

1.9 CLOSURE AND POST-CLOSURE COST ESTIMATES

In accordance with Ohio Administrative Code (OAC) 3745-55-40(C), closure and post-closure cost estimates are not required for this Federal Facility.

1.10 FINANCIAL ASSURANCE

In accordance with OAC 3745-55-40(C), financial assurance is not required for this Federal Facility.

Production Based Support funds have been identified as the type of funds that will fund the closure. However, the funds have not been identified at this time.

1.11 LIABILITY COVERAGE

In accordance with OAC 3745-55-40(C), liability coverage is not required for this Federal Facility.

2.0 CLOSURE PROCEDURES

2.1 SCOPE OF CLOSURE

The historical records and soil sampling data collected within and around the DFA illustrate that the DFA is not the only source of observed metals contamination. The RCRA unit lies wholly within a CERCLA Area of Concern, which is also known to have isolated areas of contamination with metals, explosives, and other compounds. The areas within the CERCLA AOC that require cleanup (potentially including Pad #45) will be remediated according to risk-based criteria, assuming future use of the site by the OHARNG. Because the RCRA unit is surrounded and completely enclosed by an AOC that is still in the process of identifying a cleanup strategy, it is prudent to integrate the existing DFA closure into the general CERCLA remediation framework for the surrounding Pad #45 and WBG. Clearly, a closure for the DFA that results in a more stringent cleanup than that for the surrounding CERCLA AOC, or that is inconsistent with the Army requirements for removal of UXO, is an undesirable outcome. Therefore, the following scope is proposed to effect the closure of the existing DFA:

- Dismantle, demolish, decontaminate, and remove both existing structures (Buildings T-3401 and T-3403) and all other miscellaneous materials on the entire Pad #45 (completed November 1999).
- Provide OE support for all of Pad #45 during the demolition process, including site clearance and disposition of UXO (completed November 1999).
- Conduct sampling and analysis of soils within the DFA to a depth of 6 feet to characterize the soils within the DFA (completed November 1999).
- If soils within the DFA are not hazardous, transfer the remediation of the DFA from the RCRA program to the CERCLA program for Winklepeck Burning Ground.
- If soils within the DFA are hazardous, prepare a supplemental closure plan to complete remediation according to RCRA criteria.

Results of the November 1999 sampling and analysis determined that the soils inside the former deactivation furnace walls were non-hazardous, as discussed in Section 1.2.

2.2 CONSTRUCTION WORK PLAN

A construction work plan was prepared that contains all necessary specifications and procedures that the contractor used to remove the buildings and structures from the site in support of closure (IT Corporation 1998). The work plan includes the following details and specifications:

- plan views of the DFA with topographic detail, which maps the limits of construction, requirements for clearing and grubbing (if any), requirements for demolition of existing structures, and the location of the decontamination area;
- plan view of the DFA that shows the delineated extent of contamination, both laterally and vertically;

- construction details of the decontamination pad;
- construction details for installation of sediment control and other ancillary equipment; and
- all notes required to clarify the content of the construction drawings.

The sections that follow briefly describe how some of the important issues related to the closure of the DFA have been handled. The reader is referred to the Closre Activities Work Plan and the UXO Plan appended to this document (Appendix F) for further details.

2.3 ORDNANCE AND EXPLOSIVES (OE) SUPPORT

The demolition contractor provided, as part of the Work Plan, an Ordnance and Explosives (OE) Support Plan that addresses measures to locate and means to dispose of any OE within the area needed to perform demolition work. This Plan was reviewed and approved by the USACE Center of OE Expertise in Huntsville, Alabama. A Safety Submission was not required for the demolition and soil sampling project.

A UXO technician was present to perform surface and subsurface clearing of soil sampling locations, using visual observation and hand-held magnetometer readings. The sampling effort was conducted after the demolition was completed and all demolition debris was removed from the unit.

UXO was removed from the DFA in 1999 in accordance with the *Unexploded Ordnance (UXO) Construction Support for Closure Activities Work Plan for the Deactivation Furnace Area at the Ravenna Army Ammunition Plant – Ravenna, Ohio* (IT Corporation,1999). Suspected live UXO was then detonated on-site on November 9, 1999 by the 731st Explosive Ordnance Company from Wright-Patterson Air Force Base. The remainder of the ordnance scrap (inert) was placed in a marked 55-gallon drum and placed in a bunker near Demolition Area #2. The Army, as part of the ongoing OE removal activities at Demolition Area #2, will coordinate disposal of this material.

As part of the OE support, an evaluation of the remaining structures was made prior to their demolition. The potential for the demolished structures to require management as hazardous waste was assessed. No items were removed that harbored potentially hazardous quantities of explosives.

2.4 DEMOLITION OF EXISTING STRUCTURES

2.4.1 Waste Characterization

Some structures at the DFA were characterized via sampling prior to demolition (on October 25, 1999) to determine if the debris must be managed as hazardous waste. The construction work plan includes the results of this evaluation and details related to the demolition of the structures. The two buildings or partial buildings at the DFA were sampled by collecting composite samples of the building walls, the walls surrounding the furnace, and the wooden

debris at the site. The composite samples were then analyzed for TCLP VOCs by SW846 Method 8260B, TCLP SVOCs by SW846 Method 8270C, TCLP pesticides/herbicides by SW846 Method 1311, TCLP metals, and cyanide. The wood from the structures and debris were determined to be non-hazardous.

An attempt was made to sample a capacitor located in the eastern building. Upon opening the capacitor it was found to be a dry capacitor. A manual type transformer starter, located in the western building, was labeled as a non-PCB unit. To ensure proper disposal, the unit was drained and the fluid sampled and analyzed for PCBs by SW846 Method 8082. The fluid was found not to contain PCBs.

2.4.2 Demolition Activities

The demolition process was concluded on November 9, 1999. Prior to the 1999 closure activities, the following items had been demolished and removed from the RCRA unit in support of closure: small tanks and above-ground piping, small support buildings, segments of the timber walls, and abandoned electrical utilities. Demolition of the deactivation furnace itself consisted of removal and disposal of the control room and earth-filled timber wall. These structures were leveled by using available onsite equipment such as a track hoe excavator and bulldozer. Once the structures were leveled, they were loaded into roll off boxes and temporarily stored onsite until disposal. No underground piping or culverts were demolished or removed during the 1999 demolition. The floor slab of the deactivation furnace building remains intact. Building demolition activities were performed by Environmental Construction Incorporated (ECI). Transite wallboards located on the exterior of the deactivation furnace building were removed by the Project Development Group (PDG), a licensed asbestos abatement contractor.

During demolition activities, air quality was measured using anlower exposure limit (LEL) meter, photo-ionization detector (PID), and Mini-Ram aerosol detector. Results of air monitoring were such that dust suppression was not necessary during site demolition activities.

2.4.3 Waste Disposal

All building demolition debris, the capacitor, and the transformer starter were disposed at American Waste Landfill, a Waste Management, Inc. facility located in Waynesburg, Ohio. Triad Trucking, Inc. and Patrick Trucking, a subcontractor to Triad, transported the waste to the facility.

The asbestos-containing materials were packaged according to applicable state and federal regulations and disposed of at Kelly Run Sanitation, a sanitary landfill located in Elizabeth, PA.

The mineral oil drained from the transformer starter was transferred to Permafix Inc. for disposal.

2.5 REMEDIATION OF SOIL

Historic waste management activities at the DFA have resulted in the presence of hazardous waste constituents in the soil. Metals have been detected in the soil at concentrations above naturally occurring background. As proposed in Section 2.0, remediation of any contaminated soil at the DFA will be performed as part of the CERCLA remedy for Pad #45 at Winklepeck Burning Ground.

2.6 DECONTAMINATION EFFORTS

Characterization of items to be demolished in November 1999 resulted in non-hazardous classifications for debris materials. All wastes from the recent demolition of the DFA were disposed at special-waste landfills. As such, no decontamination was necessary during demolition and removal of the above-ground structures.

2.7 EVALUATION OF POTENTIAL FOR GROUNDWATER CONTAMINATION

The groundwater beneath the DFA is part of the flow system that underlies Winklepeck Burning Ground. The potential for soil contamination from the DFA to have adversely affected groundwater quality will be evaluated during the ongoing CERCLA investigation of Winklepeck Burning Ground. This evaluation will be accomplished by collecting further data on groundwater occurrence and quality in the AOC in the fall of 2000. The maximum depth of contamination at the RCRA unit has been determined with soil borings. The depths to the water table at the existing DFA were determined in the two 1997 borings to be 9.5 and 12 ft BGS (USACE 1998a).

2.8 AIR AND WASTE WATER

There were no air-quality issues resulting from the demolition of above-ground structures at the DFA in November 1999. Airborne dust levels were not sufficient to require dust suppression.

No waste water was generated during the 1999 demolition activities for this closure.

2.9 DESCRIPTION OF SECURITY SYSTEM

RVAAP is a controlled access facility with fencing, gates, and numerous other features that contribute to the safety and security of the facility. Security is maintained by a staff of trained security guards 24 hours a day. Routine patrols of areas outside the main complex are conducted. All security guards are equipped with two-way radios and have direct communication with other RVAAP protection personnel. Employees are required to show identification badges when entering all main complex gates. Visitors and contractors entering the main complex must sign a log sheet and obtain proper passes.

2.10 CLOSURE CERTIFICATION

Within sixty (60) days of final closure, the owner/operator and an Independent Registered Professional Engineer will submit a certification of closure to the Ohio EPA Director by registered mail, assuring that the closure has been performed and is in accordance with the approved closure plan.

2.10.1 Criteria for Evaluating Adequacy

The information generated during closure will be evaluated by an Independent Registered Professional Engineer. The Independent Registered Professional Engineer will be required to submit a report of findings and recommendations.

2.10.2 Schedule of Inspections

All observations and inspection activities will be recorded in the Project Superintendent's log book. This record will be maintained from start of waste characterization through the completion of the removal of debris for disposal. Additionally, oversight will be provided by the Corps of Engineers' Contracting Representative. The area where demolition is to occur will be inspected by an independent Registered Professsional Engineer. The OEPA will be notified at least five (5) days prior to any critical activity.

2.10.3 Types of Documentation

Documentation that will be included in the closure certification will include sample analysis information, volume of waste generated during closure, waste shipping records, spill/leak reports, all sample documentation (chain-of-custody, sampling logs, etc.), routine and special inspection records, photographs, the approved closure plan, and other related documents. In addition, the closure certification will contain any correspondence with outside agencies and independent evaluations that relate to the closure activity. The Environmental Coordinator at RVAAP will maintain this documentation.

2.10.4 Future Use

Upon certification of closure, there are no specific plans to use the DFA. Facility-wide, however, RVAAP's future use is as a training facility for the OHARNG.

3.0 CLOSURE SCHEDULE

3.1 EXPECTED YEAR OF CLOSURE

The DFA Hazardous Waste Treatment Unit closure activities began in October 1999. Completion of the demolition and disposal of demolition debris was accomplished in November 1999. Closure of the RCRA-regulated unit per Section 3.4 of this plan will take place in 2001.

3.2 FREQUENCY OF PARTIAL CLOSURE

Structures at the existing DFA Hazardous Waste Treatment Unit were removed in 1999. The soil and groundwater remediation will be accomplished (if necessary) at a date to be determined, as part of the remediation of Winklepeck Burning Ground.

3.3 WASTE REMOVAL

Demolition waste generated during November 1999 closure activities was managed according to applicable RCRA requirements. No further waste generation is expected as part of this closure.

3.4 CLOSURE COMPLETION

Closure of the RCRA unit consists of accomplishing the following milestones:

- clearance of UXO and OE for soil sampling and disposal of buildings
- removal and disposal of buildings and other above-ground structures
- sampling of soils for possible waste characterization
- deferral of contaminated groundwater to the CERCLA program for Winklepeck Burning Ground
- deferral of contaminated soils to the CERCLA program for Winklepeck Burning Ground.

These activities are complete as of the date of submittal of this closure plan.

3.5 CERTIFICATION OF CLOSURE

Within 60 days of successful completion of the prescribed closure, RVAAP will submit to the Director of the Ohio EPA by registered mail a certification that the DFA has been closed in accordance with the specifications in the approved closure plan. In addition, the Regional Administrator, U.S. EPA Region 5 will be sent a copy. The certification statement will include the exact wording found in OAC 3745-50-42(D) (see Section 5). The certification will be signed by the owner and by the Independent Registered Professional Engineer responsible for closure oversight, registered in the State of Ohio.

3.6 SURVEY PLAT

A survey plat will be submitted to the Portage County Recorder's Office and the Director of the Ohio EPA, which indicates the location and dimensions of the unit with respect to permanent survey benchmarks. The plat will be prepared and certified by a professional land surveyor. The plat will contain a note, prominently displayed, which states the owners' obligation to restrict disturbance of the hazardous waste unit. As part of the CERCLA AOC, the DFA will be subject to the land use restrictions that apply to the remedy for Winklepeck Burning Ground.

3.7 REQUEST FOR EXTENSION TO DEADLINES FOR COMPLETING CLOSURE

No requests for an extension of time to complete closure are anticipated, unless RVAAP determines to amend the closure plan. In that instance, an amended closure plan will be submitted. RVAAP will notify Ohio EPA of its intentions to submit an amended closure plan.

3.8 MILESTONES

Closure will begin within 30 days of Ohio EPA approval of this closure plan. The proposed schedule of projected activities is provided below:

TASK	DATE
Submit Draft Construction Work Plan to Ohio EPA	July 1998
Submit Construction Work Plan to Ohio EPA	August 1998
Receive Approval of Construction Work Plan from Ohio EPA	NA
Waste Characterization Sampling	October 1999
UXO Clearance Activities	October-November 1999
Asbestos Removal	November 1999
PCB Sampling	November 1999
Demolition of Existing Structures	November 1999
Submit Closure Certification to Ohio EPA	
Detonation of Suspected Live UXO	November 1999
Disposal of Demolished Structure	November 1999
Collection of Soil Samples	November 1999
Receipt of Soil Sampling Results	December 1999
Submission of Soil Sample Results to Ohio EPA	July 2000
Approval of Closure Plan	April 2001
Inspection of DFA	September 27, 2000

TASK	DATE
SUBMIT CLOSURE CERTIFICATION TO OHIO EPA	April 2001

RVAAP will contact the facility inspector from the Ohio EPA District Office at least 5 days in advance of certain critical activities (e.g., sampling) so that the inspector may be present to observe the activity, obtain split samples, or inspect other items.

4.0 HEALTH AND SAFETY PLAN

The RVAAP Facility-wide Health and Safety Plan (HASP) and the Phase II RI WBG Site Safety and Health Plan (USACE 1996 and 1998c) contain the basis of general requirements for protecting workers during the implementation of this closure. The plans include the following elements:

- Hazard/risk analysis
- Staff organization, qualifications, and responsibilities
- Training
- Personal protective equipment
- Medical surveillance
- Exposure monitoring program
- Head/cold stress
- Standard operating safety procedures
- Site control measures
- Personnel hygiene and decontamination
- Equipment decontamination
- Emergency procedures and equipment
- Logs, reports, and record keeping

The construction work plan provides a HASP Addendum addressing specific aspects of the closure implementation not addressed in the referenced plans. The HASP Addendum is presented in Appendix F.

5.0 CLOSURE PLAN CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, and of those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____

(Signature) (Owner/Operator) (Date)

6.0 REFERENCES

IT Corporation, 1998. Construction Work Plan for Closure Activities at the Deactivation Furnace Area, Ravenna Army Ammunition Plant, Ravenna, Ohio.

IT Corporation. 1999. Unexploded Ordnance (UXO) Construction Support for Closure Activities Work Plan for the Deactivation Furnace Area at the Ravenna Army Ammunition Plant – Ravenna, Ohio. October 1999.

Ohio EPA, 1999. Closure Plan Review Guidance for RCRA Facilities. Part I and Part II. March, 1999.

USACE, 1996. Facility-wide Safety and Health Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio. February, 1996 (under revision).

USACE, 1998a. RCRA Closure Field Investigation Report for the Deactivation Furnace Area, Open Detonation Area, Building 1601, and Pesticides Building, Ravenna Army Ammunition Plant, Ravenna, Ohio. Final. June 1998.

USACE, 1998b. Phase I Remedial Investigation Report for the High-Priority Areas of Concern, Ravenna Army Ammunition Plant, Ravenna, Ohio. Final. February 1998.

USACE, 1998c. Site Safety and Health Plan Addendum for the Phase II Remedial Investigation of Winklepeck Burning Grounds, Ravenna Army Ammunition Plant, Ravenna, Ohio. Final. April 1998.

USACE, 1999. Phase II Remedial Investigation Report for Winklepeck Burning Grounds, Ravenna Army Ammunition Plant, Ravenna, Ohio. Draft Final. August 1999.

USACE 2000. Closure Report for the Deactivation Furnace Area, Ravenna Army Ammunition Plant, Ravenna, Ohio. Ocotber 2000.

APPENDIX A

ANALYTICAL RESULTS FOR DEACTIVATION FURNACE ASH AND DECONTAMINATION RINSATE

AMERICAN ANALYTICAL LABORATORIES, INC.

INDUSTRIAL HYGIENE AND ENVIRONMENTAL SCIENCES

840 S. MAIN STREET
AKRON, OHIO 44311
(216) 535-1300

WORK ORDER #: 91-03-1

SAMPLES RECEIVED: 03/14/9
ANALYSIS REPORTED: 04/22/9

SAMPLE ANALYSIS REPORT

SAMPLE ID / AAL LAB #	DATE COLLECTED / PARAMETER(S)	RESULT(S)	UNITS	METHOD(S)
#73	03/14/91	continued		
9103155-10				
	Nickel	17.2	mg/Kg	EPA_7520
	Zinc	10.2	mg/Kg	EPA_7950
#76	03/14/91			
9103155-13				
DESCRIPTION: Incinerator Ash				
	TCLP Metal - Arsenic	0.013	mg/L	EPA_7060
	TCLP Metal - Barium	0.353	mg/L	EPA_7080
	TCLP Metal - Cadmium	51.3	mg/L	EPA_7130
	TCLP Metal - Chromium	0.043	mg/L	EPA_7190
	TCLP Metal - Lead	6.95	mg/L	EPA_7420
	TCLP Metal - Mercury	BDL	mg/L	EPA_7471
	TCLP Metal - Nickel	0.520	mg/L	EPA_7520
	TCLP Metal - Selenium	BDL	mg/L	EPA_7740
	TCLP Metal - Silver	0.011	mg/L	EPA_7760
#77 (107)	03/14/91			
9103155-14				
DESCRIPTION: Final Rinse				
	2,4,-dinitrotoluene	< 0.25	ug/L	AAL_SPEC
	2,4,6-trinitrotoluene	< 1.29	ug/L	AAL_SPEC
	2,6,-dinitrotoluene	< 1.29	ug/L	AAL_SPEC
	RDX	< 2.48	ug/L	AAL_SPEC
	Ignitability (flashpoint)	> 212	F	SW846_10
	Arsenic	0.012	mg/L	EPA_206_
	Barium	0.130	mg/L	EPA_208_
	Cadmium	0.040	mg/L	EPA_213_
	Chromium	< 0.025	mg/L	EPA_218_
	Lead	< 0.025	mg/L	EPA_239_
	Mercury	< 0.0002	mg/L	EPA_245_
	Nickel	< 0.013	mg/L	EPA_249_
	Selenium	< 0.005	mg/L	EPA_270_
	Silver	< 0.010	mg/L	EPA_272_

APPENDIX B

DEACTIVATION FURNACE AREA HISTORICAL ANALYTICAL DATA

Results of Preliminary Sampling (December 1989)

2,4,6-trinitrotoluene

Grid:	P1	0-1 ft.	0.15	ppm	U
Grid:	P1	1-2 ft.	0.15	ppm	U
Grid:	P1	2-3 ft.	0.15	ppm	U
Grid:	P1	3-4 ft.	0.15	ppm	U
Grid:	P2	0-1 ft.	0.15	ppm	U
Grid:	P2	1-2 ft.	0.15	ppm	U
Grid:	P2	2-3 ft.	0.15	ppm	U
Grid:	P2	3-4 ft.	0.15	ppm	U
Grid:	P3	0-1 ft.	0.15	ppm	U
Grid:	P3	1-2 ft.	0.15	ppm	U
Grid:	P3	2-3 ft.	0.15	ppm	U
Grid:	P3	3-4 ft.	0.15	ppm	U
Grid:	P4	0-1 ft.	0.15	ppm	U
Grid:	P4	1-2 ft.	0.15	ppm	U
Grid:	P4	2-3 ft.	0.15	ppm	U
Grid:	P4	3-4 ft.	0.15	ppm	U
Grid:	P5	0-1 ft.	0.15	ppm	U
Grid:	P6	0-1 ft.	0.15	ppm	U

2,4-dinitrotoluene

Grid:	P1	0-1 ft.	0.33	ppm	U
Grid:	P1	1-2 ft.	0.33	ppm	U
Grid:	P1	2-3 ft.	0.33	ppm	U
Grid:	P1	3-4 ft.	0.33	ppm	U
Grid:	P2	0-1 ft.	0.33	ppm	U
Grid:	P2	1-2 ft.	0.33	ppm	U
Grid:	P2	2-3 ft.	0.33	ppm	U
Grid:	P2	3-4 ft.	0.33	ppm	U
Grid:	P3	0-1 ft.	0.33	ppm	U
Grid:	P3	1-2 ft.	0.33	ppm	U
Grid:	P3	2-3 ft.	0.33	ppm	U
Grid:	P3	3-4 ft.	0.33	ppm	U
Grid:	P4	0-1 ft.	0.33	ppm	U
Grid:	P4	1-2 ft.	0.33	ppm	U
Grid:	P4	2-3 ft.	0.33	ppm	U
Grid:	P4	3-4 ft.	0.33	ppm	U
Grid:	P5	0-1 ft.	0.33	ppm	U
Grid:	P6	0-1 ft.	0.33	ppm	U

2,6-dinitrotoluene

Grid:	P1	0-1 ft.	1.44	ppm	U
Grid:	P1	1-2 ft.	1.44	ppm	U
Grid:	P1	2-3 ft.	1.44	ppm	U
Grid:	P1	3-4 ft.	1.44	ppm	U
Grid:	P2	0-1 ft.	1.44	ppm	U
Grid:	P2	1-2 ft.	1.44	ppm	U
Grid:	P2	2-3 ft.	1.44	ppm	U
Grid:	P2	3-4 ft.	1.44	ppm	U
Grid:	P3	0-1 ft.	1.44	ppm	U
Grid:	P3	1-2 ft.	1.44	ppm	U
Grid:	P3	2-3 ft.	1.44	ppm	U
Grid:	P3	3-4 ft.	1.44	ppm	U
Grid:	P4	0-1 ft.	1.44	ppm	U
Grid:	P4	1-2 ft.	1.44	ppm	U
Grid:	P4	2-3 ft.	1.44	ppm	U
Grid:	P4	3-4 ft.	1.44	ppm	U
Grid:	P5	0-1 ft.	1.44	ppm	U
Grid:	P6	0-1 ft.	1.44	ppm	U

Antimony

Grid:	P1	0-1 ft.	27.00	ppm	
Grid:	P2	0-1 ft.	10.00	ppm	U
Grid:	P5	0-1 ft.	1.80	ppm	
Grid:	P2	1-2 ft.	1.30	ppm	
Grid:	P1	1-2 ft.	1.10	ppm	

Grid:	P1	2-3 ft.	1.00	ppm	U
Grid:	P1	3-4 ft.	1.00	ppm	U
Grid:	P2	2-3 ft.	1.00	ppm	U
Grid:	P2	3-4 ft.	1.00	ppm	U
Grid:	P3	0-1 ft.	1.00	ppm	U
Grid:	P3	1-2 ft.	1.00	ppm	U
Grid:	P3	2-3 ft.	1.00	ppm	U
Grid:	P3	3-4 ft.	1.00	ppm	U
Grid:	P4	0-1 ft.	1.00	ppm	U
Grid:	P4	1-2 ft.	1.00	ppm	U
Grid:	P4	2-3 ft.	1.00	ppm	U
Grid:	P4	3-4 ft.	1.00	ppm	U
Grid:	P6	0-1 ft.	1.00	ppm	U

Arsenic

Grid:	P1	0-1 ft.	69.00	ppm	
Grid:	P3	2-3 ft.	36.00	ppm	
Grid:	P3	0-1 ft.	25.00	ppm	
Grid:	P4	1-2 ft.	22.00	ppm	
Grid:	P2	3-4 ft.	21.00	ppm	
Grid:	P1	1-2 ft.	18.00	ppm	
Grid:	P2	1-2 ft.	17.00	ppm	
Grid:	P3	3-4 ft.	17.00	ppm	
Grid:	P2	2-3 ft.	16.00	ppm	
Grid:	P4	0-1 ft.	16.00	ppm	
Grid:	P1	2-3 ft.	15.00	ppm	
Grid:	P5	0-1 ft.	14.00	ppm	
Grid:	P6	0-1 ft.	14.00	ppm	
Grid:	P4	2-3 ft.	13.00	ppm	
Grid:	P1	3-4 ft.	12.00	ppm	
Grid:	P3	1-2 ft.	12.00	ppm	
Grid:	P4	3-4 ft.	3.60	ppm	
Grid:	P2	0-1 ft.	1.70	ppm	

Barium

Grid:	P1	0-1 ft.	290.00	ppm	
Grid:	P2	0-1 ft.	200.00	ppm	
Grid:	P4	2-3 ft.	106.00	ppm	
Grid:	P1	1-2 ft.	96.00	ppm	
Grid:	P2	1-2 ft.	89.00	ppm	
Grid:	P3	2-3 ft.	82.00	ppm	
Grid:	P4	3-4 ft.	81.00	ppm	
Grid:	P1	2-3 ft.	69.00	ppm	
Grid:	P3	0-1 ft.	69.00	ppm	
Grid:	P3	1-2 ft.	68.00	ppm	
Grid:	P3	3-4 ft.	66.00	ppm	
Grid:	P2	3-4 ft.	55.00	ppm	
Grid:	P4	0-1 ft.	54.00	ppm	
Grid:	P2	2-3 ft.	49.00	ppm	
Grid:	P5	0-1 ft.	48.00	ppm	
Grid:	P6	0-1 ft.	47.00	ppm	
Grid:	P1	3-4 ft.	45.00	ppm	
Grid:	P4	1-2 ft.	45.00	ppm	

Beryllium

Grid:	P2	0-1 ft.	2.90	ppm	
Grid:	P1	1-2 ft.	2.40	ppm	
Grid:	P1	0-1 ft.	1.80	ppm	
Grid:	P2	1-2 ft.	1.20	ppm	
Grid:	P3	1-2 ft.	0.80	ppm	
Grid:	P4	2-3 ft.	0.80	ppm	
Grid:	P3	3-4 ft.	0.70	ppm	
Grid:	P4	3-4 ft.	0.70	ppm	
Grid:	P1	2-3 ft.	0.60	ppm	
Grid:	P2	2-3 ft.	0.60	ppm	
Grid:	P2	3-4 ft.	0.60	ppm	
Grid:	P3	2-3 ft.	0.60	ppm	
Grid:	P1	3-4 ft.	0.50	ppm	U
Grid:	P3	0-1 ft.	0.50	ppm	U

Grid:	P4	0-1 ft.	0.50	ppm	U
Grid:	P4	1-2 ft.	0.50	ppm	U
Grid:	P5	0-1 ft.	0.50	ppm	U
Grid:	P6	0-1 ft.	0.50	ppm	U

Cadmium

Grid:	P1	0-1 ft.	180.00	ppm	
Grid:	P2	0-1 ft.	35.00	ppm	
Grid:	P1	1-2 ft.	6.40	ppm	
Grid:	P2	1-2 ft.	2.80	ppm	
Grid:	P3	0-1 ft.	2.20	ppm	
Grid:	P5	0-1 ft.	1.20	ppm	
Grid:	P1	2-3 ft.	0.78	ppm	
Grid:	P6	0-1 ft.	0.25	ppm	
Grid:	P3	1-2 ft.	0.22	ppm	
Grid:	P1	3-4 ft.	0.20	ppm	U
Grid:	P2	2-3 ft.	0.20	ppm	U
Grid:	P2	3-4 ft.	0.20	ppm	U
Grid:	P3	2-3 ft.	0.20	ppm	U
Grid:	P3	3-4 ft.	0.20	ppm	U
Grid:	P4	0-1 ft.	0.20	ppm	U
Grid:	P4	1-2 ft.	0.20	ppm	U
Grid:	P4	2-3 ft.	0.20	ppm	U
Grid:	P4	3-4 ft.	0.20	ppm	U

Chromium

Grid:	P1	0-1 ft.	34.00	ppm
Grid:	P6	0-1 ft.	24.00	ppm
Grid:	P4	2-3 ft.	22.00	ppm
Grid:	P4	3-4 ft.	22.00	ppm
Grid:	P1	1-2 ft.	20.00	ppm
Grid:	P3	2-3 ft.	19.00	ppm
Grid:	P3	1-2 ft.	18.00	ppm
Grid:	P3	3-4 ft.	18.00	ppm
Grid:	P3	0-1 ft.	17.00	ppm
Grid:	P2	2-3 ft.	16.00	ppm
Grid:	P4	1-2 ft.	16.00	ppm
Grid:	P5	0-1 ft.	15.00	ppm
Grid:	P1	3-4 ft.	13.00	ppm
Grid:	P2	1-2 ft.	13.00	ppm
Grid:	P4	0-1 ft.	12.00	ppm
Grid:	P1	2-3 ft.	10.00	ppm
Grid:	P2	3-4 ft.	10.00	ppm
Grid:	P2	0-1 ft.	9.30	ppm

Cobalt

Grid:	P4	2-3 ft.	20.00	ppm
Grid:	P3	1-2 ft.	15.00	ppm
Grid:	P3	2-3 ft.	15.00	ppm
Grid:	P4	3-4 ft.	15.00	ppm
Grid:	P1	1-2 ft.	13.00	ppm
Grid:	P3	3-4 ft.	12.00	ppm
Grid:	P1	2-3 ft.	11.00	ppm
Grid:	P2	2-3 ft.	11.00	ppm
Grid:	P1	3-4 ft.	10.00	ppm
Grid:	P2	3-4 ft.	10.00	ppm
Grid:	P3	0-1 ft.	10.00	ppm
Grid:	P4	0-1 ft.	10.00	ppm
Grid:	P2	1-2 ft.	9.00	ppm
Grid:	P6	0-1 ft.	8.00	ppm
Grid:	P4	1-2 ft.	7.00	ppm
Grid:	P5	0-1 ft.	6.00	ppm
Grid:	P1	0-1 ft.	5.00	ppm
Grid:	P2	0-1 ft.	4.00	ppm

Copper

Grid:	P1	0-1 ft.	7209.00	ppm
Grid:	P1	1-2 ft.	340.00	ppm

Grid:	P2	1-2 ft.	89.00	ppm	
Grid:	P2	0-1 ft.	86.00	ppm	
Grid:	P3	0-1 ft.	85.00	ppm	
Grid:	P1	2-3 ft.	26.00	ppm	
Grid:	P6	0-1 ft.	25.00	ppm	
Grid:	P1	3-4 ft.	23.00	ppm	
Grid:	P3	1-2 ft.	21.00	ppm	
Grid:	P5	0-1 ft.	20.00	ppm	
Grid:	P3	2-3 ft.	19.00	ppm	
Grid:	P4	2-3 ft.	19.00	ppm	
Grid:	P3	3-4 ft.	18.00	ppm	
Grid:	P2	2-3 ft.	16.00	ppm	
Grid:	P2	3-4 ft.	16.00	ppm	
Grid:	P4	3-4 ft.	16.00	ppm	
Grid:	P4	1-2 ft.	14.00	ppm	
Grid:	P4	0-1 ft.	13.00	ppm	

Lead

Grid:	P1	0-1 ft.	750.00	ppm	
Grid:	P3	0-1 ft.	100.00	ppm	
Grid:	P1	1-2 ft.	70.00	ppm	
Grid:	P5	0-1 ft.	53.00	ppm	
Grid:	P2	0-1 ft.	47.00	ppm	
Grid:	P2	1-2 ft.	43.00	ppm	
Grid:	P1	2-3 ft.	42.00	ppm	
Grid:	P3	1-2 ft.	38.00	ppm	
Grid:	P3	3-4 ft.	36.00	ppm	
Grid:	P2	2-3 ft.	35.00	ppm	
Grid:	P4	1-2 ft.	35.00	ppm	
Grid:	P6	0-1 ft.	35.00	ppm	
Grid:	P2	3-4 ft.	31.00	ppm	
Grid:	P4	0-1 ft.	31.00	ppm	
Grid:	P4	2-3 ft.	31.00	ppm	
Grid:	P4	3-4 ft.	30.00	ppm	
Grid:	P3	2-3 ft.	27.00	ppm	
Grid:	P1	3-4 ft.	20.00	ppm	

Mercury

Grid:	P6	0-1 ft.	0.04	ppm	
Grid:	P3	0-1 ft.	0.04	ppm	
Grid:	P4	1-2 ft.	0.03	ppm	
Grid:	P4	0-1 ft.	0.03	ppm	
Grid:	P5	0-1 ft.	0.02	ppm	
Grid:	P1	0-1 ft.	0.02	ppm	U
Grid:	P1	1-2 ft.	0.02	ppm	U
Grid:	P1	2-3 ft.	0.02	ppm	U
Grid:	P1	3-4 ft.	0.02	ppm	U
Grid:	P2	0-1 ft.	0.02	ppm	U
Grid:	P2	1-2 ft.	0.02	ppm	U
Grid:	P2	2-3 ft.	0.02	ppm	U
Grid:	P2	3-4 ft.	0.02	ppm	U
Grid:	P3	1-2 ft.	0.02	ppm	U
Grid:	P3	2-3 ft.	0.02	ppm	U
Grid:	P3	3-4 ft.	0.02	ppm	U
Grid:	P4	2-3 ft.	0.02	ppm	U
Grid:	P4	3-4 ft.	0.02	ppm	U

Nickel

Grid:	P4	2-3 ft.	32.00	ppm
Grid:	P1	1-2 ft.	29.00	ppm
Grid:	P3	2-3 ft.	29.00	ppm
Grid:	P3	1-2 ft.	25.00	ppm
Grid:	P3	3-4 ft.	25.00	ppm
Grid:	P2	2-3 ft.	24.00	ppm
Grid:	P2	3-4 ft.	24.00	ppm
Grid:	P1	2-3 ft.	21.00	ppm
Grid:	P1	3-4 ft.	21.00	ppm
Grid:	P4	3-4 ft.	20.00	ppm
Grid:	P4	1-2 ft.	17.00	ppm

Grid:	P2	1-2 ft.	16.00	ppm	
Grid:	P3	0-1 ft.	15.00	ppm	
Grid:	P5	0-1 ft.	12.00	ppm	
Grid:	P1	0-1 ft.	11.00	ppm	
Grid:	P4	0-1 ft.	11.00	ppm	
Grid:	P2	0-1 ft.	5.70	ppm	
Grid:	P6	0-1 ft.	0.75	ppm	

RDX

Grid:	P1	0-1 ft.	3.25	ppm	U
Grid:	P1	1-2 ft.	3.25	ppm	U
Grid:	P1	2-3 ft.	3.25	ppm	U
Grid:	P1	3-4 ft.	3.25	ppm	U
Grid:	P2	0-1 ft.	3.25	ppm	U
Grid:	P2	1-2 ft.	3.25	ppm	U
Grid:	P2	2-3 ft.	3.25	ppm	U
Grid:	P2	3-4 ft.	3.25	ppm	U
Grid:	P3	0-1 ft.	3.25	ppm	U
Grid:	P3	1-2 ft.	3.25	ppm	U
Grid:	P3	2-3 ft.	3.25	ppm	U
Grid:	P3	3-4 ft.	3.25	ppm	U
Grid:	P4	0-1 ft.	3.25	ppm	U
Grid:	P4	1-2 ft.	3.25	ppm	U
Grid:	P4	2-3 ft.	3.25	ppm	U
Grid:	P4	3-4 ft.	3.25	ppm	U
Grid:	P5	0-1 ft.	3.25	ppm	U
Grid:	P6	0-1 ft.	3.25	ppm	U

Selenium

Grid:	P1	0-1 ft.	5.00	ppm	
Grid:	P1	1-2 ft.	5.00	ppm	U
Grid:	P1	2-3 ft.	5.00	ppm	U
Grid:	P1	3-4 ft.	5.00	ppm	U
Grid:	P2	0-1 ft.	5.00	ppm	U
Grid:	P2	1-2 ft.	5.00	ppm	U
Grid:	P2	2-3 ft.	5.00	ppm	U
Grid:	P2	3-4 ft.	5.00	ppm	U
Grid:	P3	0-1 ft.	5.00	ppm	U
Grid:	P3	1-2 ft.	5.00	ppm	U
Grid:	P3	2-3 ft.	5.00	ppm	U
Grid:	P3	3-4 ft.	5.00	ppm	U
Grid:	P4	0-1 ft.	5.00	ppm	U
Grid:	P4	1-2 ft.	5.00	ppm	U
Grid:	P4	2-3 ft.	5.00	ppm	U
Grid:	P4	3-4 ft.	5.00	ppm	U
Grid:	P5	0-1 ft.	5.00	ppm	U
Grid:	P6	0-1 ft.	5.00	ppm	U

Silver

Grid:	P3	0-1 ft.	10.00	ppm	U
Grid:	P2	0-1 ft.	5.00	ppm	U
Grid:	P4	0-1 ft.	0.50	ppm	U
Grid:	P5	0-1 ft.	0.50	ppm	U
Grid:	P6	0-1 ft.	0.50	ppm	U
Grid:	P1	0-1 ft.	0.05	ppm	U
Grid:	P1	1-2 ft.	0.05	ppm	U
Grid:	P1	2-3 ft.	0.05	ppm	U
Grid:	P1	3-4 ft.	0.05	ppm	U
Grid:	P2	1-2 ft.	0.05	ppm	U
Grid:	P2	2-3 ft.	0.05	ppm	U
Grid:	P2	3-4 ft.	0.05	ppm	U
Grid:	P3	1-2 ft.	0.05	ppm	U
Grid:	P3	2-3 ft.	0.05	ppm	U
Grid:	P3	3-4 ft.	0.05	ppm	U
Grid:	P4	1-2 ft.	0.05	ppm	U
Grid:	P4	2-3 ft.	0.05	ppm	U
Grid:	P4	3-4 ft.	0.05	ppm	U

Thallium

Grid:	P1	0-1 ft.	10.00	ppm	U
Grid:	P1	1-2 ft.	10.00	ppm	U
Grid:	P1	2-3 ft.	10.00	ppm	U
Grid:	P1	3-4 ft.	10.00	ppm	U
Grid:	P2	0-1 ft.	10.00	ppm	U
Grid:	P2	1-2 ft.	10.00	ppm	U
Grid:	P2	2-3 ft.	10.00	ppm	U
Grid:	P2	3-4 ft.	10.00	ppm	U
Grid:	P3	0-1 ft.	10.00	ppm	U
Grid:	P3	1-2 ft.	10.00	ppm	U
Grid:	P3	2-3 ft.	10.00	ppm	U
Grid:	P3	3-4 ft.	10.00	ppm	U
Grid:	P4	0-1 ft.	10.00	ppm	U
Grid:	P4	1-2 ft.	10.00	ppm	U
Grid:	P4	2-3 ft.	10.00	ppm	U
Grid:	P4	3-4 ft.	10.00	ppm	U
Grid:	P5	0-1 ft.	10.00	ppm	U
Grid:	P6	0-1 ft.	10.00	ppm	U

Tin

Grid:	P1	0-1 ft.	57.00	ppm	
Grid:	P1	1-2 ft.	21.00	ppm	
Grid:	P2	3-4 ft.	21.00	ppm	
Grid:	P4	2-3 ft.	19.00	ppm	
Grid:	P6	0-1 ft.	19.00	ppm	
Grid:	P4	1-2 ft.	15.00	ppm	
Grid:	P4	3-4 ft.	15.00	ppm	
Grid:	P2	2-3 ft.	14.00	ppm	
Grid:	P3	1-2 ft.	14.00	ppm	
Grid:	P3	2-3 ft.	14.00	ppm	
Grid:	P1	2-3 ft.	13.00	ppm	
Grid:	P3	0-1 ft.	13.00	ppm	
Grid:	P5	0-1 ft.	13.00	ppm	
Grid:	P2	1-2 ft.	12.00	ppm	
Grid:	P3	3-4 ft.	12.00	ppm	
Grid:	P1	3-4 ft.	11.00	ppm	
Grid:	P4	0-1 ft.	8.70	ppm	
Grid:	P2	0-1 ft.	1.00	ppm	U

Vanadium

Grid:	P4	1-2 ft.	44.00	ppm	
Grid:	P4	3-4 ft.	36.00	ppm	
Grid:	P1	2-3 ft.	34.00	ppm	
Grid:	P3	3-4 ft.	34.00	ppm	
Grid:	P5	0-1 ft.	32.00	ppm	
Grid:	P1	3-4 ft.	30.00	ppm	
Grid:	P2	2-3 ft.	30.00	ppm	
Grid:	P2	3-4 ft.	30.00	ppm	
Grid:	P3	1-2 ft.	30.00	ppm	
Grid:	P3	2-3 ft.	30.00	ppm	
Grid:	P4	2-3 ft.	30.00	ppm	
Grid:	P6	0-1 ft.	30.00	ppm	
Grid:	P3	0-1 ft.	26.00	ppm	
Grid:	P4	0-1 ft.	26.00	ppm	
Grid:	P1	1-2 ft.	24.00	ppm	
Grid:	P2	1-2 ft.	14.00	ppm	
Grid:	P1	0-1 ft.	10.00	ppm	U
Grid:	P2	0-1 ft.	10.00	ppm	

Zinc

Grid:	P1	0-1 ft.	4200.00	ppm	
Grid:	P1	1-2 ft.	440.00	ppm	
Grid:	P3	0-1 ft.	320.00	ppm	
Grid:	P2	0-1 ft.	170.00	ppm	
Grid:	P2	1-2 ft.	140.00	ppm	
Grid:	P5	0-1 ft.	130.00	ppm	
Grid:	P6	0-1 ft.	85.00	ppm	
Grid:	P3	1-2 ft.	80.00	ppm	

Grid:	P4	2-3 ft.	79.00	ppm
Grid:	P1	2-3 ft.	73.00	ppm
Grid:	P4	3-4 ft.	72.00	ppm
Grid:	P3	2-3 ft.	68.00	ppm
Grid:	P2	3-4 ft.	66.00	ppm
Grid:	P3	3-4 ft.	63.00	ppm
Grid:	P2	2-3 ft.	62.00	ppm
Grid:	P1	3-4 ft.	59.00	ppm
Grid:	P4	0-1 ft.	59.00	ppm
Grid:	P4	1-2 ft.	58.00	ppm

Soil Sampling Results at the Deactivation Furnace Area
(March 1991 - May 1993)

2,4,6-trinitrotoluene

Inside RCRA Furnace Walls

Grid:	14	0-1 ft.	1.00	ppm	U
Grid:	15	0-1 ft.	1.00	ppm	U
Grid:	16	0-1 ft.	1.00	ppm	U
Grid:	17	0-1 ft.	1.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	1	0-1 ft.	1.00	ppm	U

2,4-dinitrotoluene

Inside RCRA Furnace Walls

Grid:	14	0-1 ft.	0.00	ppm	U
Grid:	15	0-1 ft.	0.00	ppm	U
Grid:	16	0-1 ft.	0.00	ppm	U
Grid:	17	0-1 ft.	0.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	1	0-1 ft.	0.00	ppm	U

2,6-dinitrotoluene

Inside RCRA Furnace Walls

Grid:	14	0-1 ft.	1.00	ppm	U
Grid:	15	0-1 ft.	1.00	ppm	U
Grid:	16	0-1 ft.	1.00	ppm	U
Grid:	17	0-1 ft.	1.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	1	0-1 ft.	1.00	ppm	U

Antimony

Inside RCRA Furnace Walls

Grid:	4	5-6 ft.	195.60	ppm	
Grid:	17	5-6 ft.	190.30	ppm	
Grid:	10	5-6 ft.	186.90	ppm	
Grid:	6	5-6 ft.	182.10	ppm	
Grid:	13	5-6 ft.	178.00	ppm	
Grid:	3	5-6 ft.	161.30	ppm	
Grid:	14	5-6 ft.	159.60	ppm	
Grid:	5	5-6 ft.	156.80	ppm	
Grid:	8	5-6 ft.	133.20	ppm	
Grid:	11	5-6 ft.	105.10	ppm	
Grid:	4	5-6 ft.	84.00	ppm	
Grid:	11	5-6 ft.	79.10	ppm	
Grid:	11	12 ft.	54.00	ppm	U
Grid:	11	10 ft.	53.00	ppm	U
Grid:	10	0-1 ft.	22.50	ppm	
Grid:	4	1-2 ft.	10.00	ppm	
Grid:	11	0-1 ft.	8.12	ppm	
Grid:	11	1-2 ft.	7.00	ppm	
Grid:	3	1-2 ft.	5.91	ppm	
Grid:	3	2-3 ft.	5.00	ppm	U
Grid:	3	0-1 ft.	5.00	ppm	U
Grid:	4	2-3 ft.	5.00	ppm	U
Grid:	4	0-1 ft.	5.00	ppm	U
Grid:	5	2-3 ft.	5.00	ppm	U
Grid:	5	1-2 ft.	5.00	ppm	U
Grid:	5	0-1 ft.	5.00	ppm	U

Grid:	6	2-3 ft.	5.00	ppm	U
Grid:	6	1-2 ft.	5.00	ppm	U
Grid:	6	0-1 ft.	5.00	ppm	U
Grid:	7	2-3 ft.	5.00	ppm	U
Grid:	7	1-2 ft.	5.00	ppm	U
Grid:	7	0-1 ft.	5.00	ppm	U
Grid:	8	2-3 ft.	5.00	ppm	U
Grid:	8	1-2 ft.	5.00	ppm	U
Grid:	8	0-1 ft.	5.00	ppm	U
Grid:	9	2-3 ft.	5.00	ppm	U
Grid:	9	1-2 ft.	5.00	ppm	U
Grid:	9	0-1 ft.	5.00	ppm	U
Grid:	10	2-3 ft.	5.00	ppm	U
Grid:	10	1-2 ft.	5.00	ppm	U
Grid:	11	2-3 ft.	5.00	ppm	U
Grid:	12	2-3 ft.	5.00	ppm	U
Grid:	12	1-2 ft.	5.00	ppm	U
Grid:	12	0-1 ft.	5.00	ppm	
Grid:	13	2-3 ft.	5.00	ppm	U
Grid:	13	1-2 ft.	5.00	ppm	U
Grid:	13	0-1 ft.	5.00	ppm	U
Grid:	14	2-3 ft.	5.00	ppm	U
Grid:	14	1-2 ft.	5.00	ppm	U
Grid:	15	2-3 ft.	5.00	ppm	U
Grid:	15	1-2 ft.	5.00	ppm	U
Grid:	16	2-3 ft.	5.00	ppm	U
Grid:	16	1-2 ft.	5.00	ppm	U
Grid:	17	2-3 ft.	5.00	ppm	U
Grid:	17	1-2 ft.	5.00	ppm	U
Grid:	14	0-1 ft.	1.74	ppm	
Grid:	15	0-1 ft.	1.00	ppm	U
Grid:	16	0-1 ft.	1.00	ppm	U
Grid:	17	0-1 ft.	1.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	42	0-1 ft.	159.50	ppm
Grid:	41	0-1 ft.	149.00	ppm
Grid:	44	0-1 ft.	139.20	ppm
Grid:	2	5-6 ft.	134.90	ppm
Grid:	55	0-1 ft.	134.60	ppm
Grid:	67	0-1 ft.	131.20	ppm
Grid:	19	2-3 ft.	127.10	ppm
Grid:	35	0-1 ft.	126.90	ppm
Grid:	48	0-1 ft.	125.30	ppm
Grid:	43	0-1 ft.	123.20	ppm
Grid:	46	0-1 ft.	114.00	ppm
Grid:	60	0-1 ft.	111.60	ppm
Grid:	40	0-1 ft.	108.30	ppm
Grid:	20	2-3 ft.	102.80	ppm
Grid:	47	0-1 ft.	101.50	ppm
Grid:	28	2-3 ft.	100.30	ppm
Grid:	30	2-3 ft.	98.40	ppm
Grid:	37	0-1 ft.	96.70	ppm
Grid:	36	0-1 ft.	95.20	ppm
Grid:	38	0-1 ft.	92.90	ppm
Grid:	57	0-1 ft.	92.00	ppm
Grid:	21	2-3 ft.	91.10	ppm
Grid:	25	2-3 ft.	90.70	ppm
Grid:	69	0-1 ft.	90.00	ppm
Grid:	45	0-1 ft.	89.40	ppm
Grid:	54	0-1 ft.	87.80	ppm
Grid:	62	0-1 ft.	86.00	ppm
Grid:	49	0-1 ft.	85.70	ppm
Grid:	26	2-3 ft.	85.30	ppm
Grid:	50	0-1 ft.	83.70	ppm
Grid:	47	0-1 ft.	81.90	ppm
Grid:	34	0-1 ft.	80.60	ppm
Grid:	32	0-1 ft.	78.20	ppm
Grid:	23	2-3 ft.	77.40	ppm
Grid:	61	0-1 ft.	74.30	ppm

Grid:	29	2-3 ft.	73.20	ppm	
Grid:	31	0-1 ft.	73.00	ppm	
Grid:	18	2-3 ft.	70.40	ppm	
Grid:	66	0-1 ft.	67.60	ppm	
Grid:	33	0-1 ft.	67.50	ppm	
Grid:	53	0-1 ft.	67.50	ppm	
Grid:	22	2-3 ft.	67.10	ppm	
Grid:	59	0-1 ft.	66.10	ppm	
Grid:	64	0-1 ft.	65.90	ppm	
Grid:	63	0-1 ft.	65.10	ppm	
Grid:	56	0-1 ft.	64.10	ppm	
Grid:	27	2-3 ft.	63.00	ppm	
Grid:	51	0-1 ft.	56.80	ppm	
Grid:	68	0-1 ft.	56.40	ppm	
Grid:	65	0-1 ft.	56.20	ppm	
Grid:	52	0-1 ft.	56.10	ppm	
Grid:	39	0-1 ft.	50.90	ppm	
Grid:	58	0-1 ft.	29.00	ppm	U
Grid:	70	0-1 ft.	28.00	ppm	U
Grid:	1	2-3 ft.	5.00	ppm	U
Grid:	1	1-2 ft.	5.00	ppm	U
Grid:	2	2-3 ft.	5.00	ppm	U
Grid:	2	1-2 ft.	5.00	ppm	U
Grid:	2	0-1 ft.	5.00	ppm	U
Grid:	18	0-1 ft.	5.00	ppm	U
Grid:	19	0-1 ft.	5.00	ppm	U
Grid:	20	0-1 ft.	5.00	ppm	U
Grid:	21	0-1 ft.	5.00	ppm	U
Grid:	22	0-1 ft.	5.00	ppm	U
Grid:	23	0-1 ft.	5.00	ppm	U
Grid:	25	0-1 ft.	5.00	ppm	U
Grid:	26	0-1 ft.	5.00	ppm	U
Grid:	27	0-1 ft.	5.00	ppm	U
Grid:	28	0-1 ft.	5.00	ppm	U
Grid:	29	0-1 ft.	5.00	ppm	U
Grid:	30	0-1 ft.	5.00	ppm	U
Grid:	54	0-1 ft.	1.00	ppm	U
Grid:	1	0-1 ft.	1.00	ppm	U

Outside RCRA Area

Grid:	312	0-1 ft.	64.00	ppm	U
Grid:	161	2-3 ft.	62.00	ppm	U
Grid:	326	0-1 ft.	62.00	ppm	U
Grid:	S2	0-1 ft.	61.00	ppm	U
Grid:	354	0-1 ft.	61.00	ppm	U
Grid:	214	0-1 ft.	61.00	ppm	U
Grid:	334	0-1 ft.	60.00	ppm	U
Grid:	252	0-1 ft.	60.00	ppm	U
Grid:	236	0-1 ft.	60.00	ppm	U
Grid:	146	2-3 ft.	60.00	ppm	U
Grid:	349	0-1 ft.	59.00	ppm	U
Grid:	154	2-3 ft.	59.00	ppm	U
Grid:	166	2-3 ft.	58.00	ppm	U
Grid:	140	2-3 ft.	58.00	ppm	U
Grid:	146	0-1 ft.	58.00	ppm	U
Grid:	218	0-1 ft.	58.00	ppm	U
Grid:	228	0-1 ft.	58.00	ppm	U
Grid:	166	0-1 ft.	58.00	ppm	U
Grid:	S1	0-1 ft.	58.00	ppm	U
Grid:	247	0-1 ft.	58.00	ppm	U
Grid:	308	0-1 ft.	57.00	ppm	U
Grid:	135	2-3 ft.	56.00	ppm	U
Grid:	154	0-1 ft.	55.00	ppm	U
Grid:	135	0-1 ft.	54.00	ppm	U
Grid:	140	0-1 ft.	54.00	ppm	U
Grid:	161	0-1 ft.	51.00	ppm	U
Grid:	146	5-6 ft.	2.60	ppm	
Grid:	439	0-1 ft.	1.80	ppm	
Grid:	154	5-6 ft.	1.00	ppm	U
Grid:	426	0-1 ft.	1.00	ppm	U

Grid:	140	5-6 ft.	1.00	ppm	U
Grid:	166	5-6 ft.	1.00	ppm	U
Grid:	449	0-1 ft.	1.00	ppm	U
Grid:	464	0-1 ft.	1.00	ppm	U
Grid:	472	0-1 ft.	1.00	ppm	U
Grid:	S4	0-1 ft.	1.00	ppm	U
Grid:	417	0-1 ft.	0.90	ppm	

Arsenic

Inside RCRA Furnace Walls

Grid:	12	0-1 ft.	49.00	ppm	
Grid:	10	0-1 ft.	36.00	ppm	
Grid:	13	0-1 ft.	30.00	ppm	
Grid:	11	0-1 ft.	28.00	ppm	
Grid:	4	0-1 ft.	25.00	ppm	
Grid:	17	5-6 ft.	22.00	ppm	
Grid:	4	5-6 ft.	20.00	ppm	
Grid:	3	5-6 ft.	19.00	ppm	
Grid:	8	5-6 ft.	18.00	ppm	
Grid:	14	5-6 ft.	18.00	ppm	
Grid:	5	5-6 ft.	18.00	ppm	
Grid:	6	0-1 ft.	17.00	ppm	
Grid:	5	0-1 ft.	17.00	ppm	
Grid:	3	2-3 ft.	16.00	ppm	
Grid:	9	0-1 ft.	16.00	ppm	
Grid:	10	5-6 ft.	15.00	ppm	
Grid:	7	0-1 ft.	15.00	ppm	
Grid:	5	1-2 ft.	14.00	ppm	
Grid:	6	5-6 ft.	14.00	ppm	
Grid:	8	1-2 ft.	11.00	ppm	
Grid:	3	0-1 ft.	11.00	ppm	
Grid:	4	1-2 ft.	11.00	ppm	
Grid:	11	1-2 ft.	11.00	ppm	
Grid:	13	5-6 ft.	11.00	ppm	
Grid:	4	2-3 ft.	10.00	ppm	
Grid:	11	12 ft.	10.00	ppm	
Grid:	5	2-3 ft.	10.00	ppm	
Grid:	8	0-1 ft.	10.00	ppm	
Grid:	14	0-1 ft.	10.00	ppm	
Grid:	7	2-3 ft.	9.00	ppm	
Grid:	11	5-6 ft.	9.00	ppm	
Grid:	12	1-2 ft.	8.00	ppm	
Grid:	3	1-2 ft.	8.00	ppm	
Grid:	12	2-3 ft.	8.00	ppm	
Grid:	11	10 ft.	8.00	ppm	
Grid:	6	1-2 ft.	8.00	ppm	
Grid:	7	1-2 ft.	7.00	ppm	
Grid:	13	2-3 ft.	7.00	ppm	
Grid:	8	2-3 ft.	7.00	ppm	
Grid:	14	2-3 ft.	7.00	ppm	
Grid:	6	2-3 ft.	7.00	ppm	
Grid:	13	1-2 ft.	7.00	ppm	
Grid:	15	0-1 ft.	6.00	ppm	
Grid:	10	1-2 ft.	6.00	ppm	
Grid:	17	0-1 ft.	6.00	ppm	
Grid:	10	2-3 ft.	6.00	ppm	
Grid:	15	2-3 ft.	6.00	ppm	
Grid:	15	1-2 ft.	6.00	ppm	
Grid:	16	2-3 ft.	6.00	ppm	
Grid:	9	2-3 ft.	6.00	ppm	
Grid:	9	1-2 ft.	5.00	ppm	
Grid:	17	2-3 ft.	5.00	ppm	
Grid:	16	0-1 ft.	5.00	ppm	U
Grid:	14	1-2 ft.	5.00	ppm	
Grid:	11	2-3 ft.	5.00	ppm	
Grid:	17	1-2 ft.	5.00	ppm	
Grid:	16	1-2 ft.	5.00	ppm	

Inside RCRA Area, But Outside Walls

Grid:	55	0-1 ft.	25.00	ppm
Grid:	45	0-1 ft.	25.00	ppm
Grid:	28	2-3 ft.	24.00	ppm
Grid:	58	0-1 ft.	22.00	ppm
Grid:	29	2-3 ft.	21.00	ppm
Grid:	56	0-1 ft.	21.00	ppm
Grid:	26	2-3 ft.	21.00	ppm
Grid:	40	0-1 ft.	20.00	ppm
Grid:	64	0-1 ft.	19.00	ppm
Grid:	37	0-1 ft.	19.00	ppm
Grid:	2	5-6 ft.	19.00	ppm
Grid:	42	0-1 ft.	18.00	ppm
Grid:	27	2-3 ft.	17.00	ppm
Grid:	33	0-1 ft.	17.00	ppm
Grid:	19	2-3 ft.	17.00	ppm
Grid:	41	0-1 ft.	16.00	ppm
Grid:	43	0-1 ft.	16.00	ppm
Grid:	19	0-1 ft.	16.00	ppm
Grid:	47	0-1 ft.	16.00	ppm
Grid:	48	0-1 ft.	16.00	ppm
Grid:	57	0-1 ft.	15.00	ppm
Grid:	49	0-1 ft.	15.00	ppm
Grid:	18	2-3 ft.	15.00	ppm
Grid:	44	0-1 ft.	15.00	ppm
Grid:	53	0-1 ft.	15.00	ppm
Grid:	21	2-3 ft.	15.00	ppm
Grid:	51	0-1 ft.	14.00	ppm
Grid:	36	0-1 ft.	14.00	ppm
Grid:	60	0-1 ft.	14.00	ppm
Grid:	30	2-3 ft.	14.00	ppm
Grid:	32	0-1 ft.	14.00	ppm
Grid:	34	0-1 ft.	14.00	ppm
Grid:	59	0-1 ft.	14.00	ppm
Grid:	69	0-1 ft.	14.00	ppm
Grid:	54	0-1 ft.	13.00	ppm
Grid:	46	0-1 ft.	13.00	ppm
Grid:	61	0-1 ft.	13.00	ppm
Grid:	38	0-1 ft.	12.00	ppm
Grid:	52	0-1 ft.	12.00	ppm
Grid:	63	0-1 ft.	12.00	ppm
Grid:	20	2-3 ft.	12.00	ppm
Grid:	22	2-3 ft.	12.00	ppm
Grid:	65	0-1 ft.	12.00	ppm
Grid:	25	0-1 ft.	11.00	ppm
Grid:	23	2-3 ft.	11.00	ppm
Grid:	35	0-1 ft.	10.00	ppm
Grid:	62	0-1 ft.	10.00	ppm
Grid:	25	2-3 ft.	10.00	ppm
Grid:	39	0-1 ft.	9.00	ppm
Grid:	68	0-1 ft.	9.00	ppm
Grid:	70	0-1 ft.	9.00	ppm
Grid:	67	0-1 ft.	9.00	ppm
Grid:	66	0-1 ft.	8.00	ppm
Grid:	1	1-2 ft.	8.00	ppm
Grid:	1	2-3 ft.	7.00	ppm
Grid:	1	0-1 ft.	7.00	ppm
Grid:	2	0-1 ft.	7.00	ppm
Grid:	20	0-1 ft.	6.00	ppm
Grid:	21	0-1 ft.	6.00	ppm
Grid:	50	0-1 ft.	6.00	ppm
Grid:	29	0-1 ft.	6.00	ppm
Grid:	26	0-1 ft.	6.00	ppm
Grid:	27	0-1 ft.	6.00	ppm
Grid:	28	0-1 ft.	6.00	ppm
Grid:	30	0-1 ft.	6.00	ppm
Grid:	22	0-1 ft.	6.00	ppm
Grid:	2	2-3 ft.	5.00	ppm
Grid:	2	1-2 ft.	5.00	ppm
Grid:	31	0-1 ft.	5.00	ppm
Grid:	23	0-1 ft.	5.00	ppm

Grid:	18	0-1 ft.	5.00	ppm	
Grid:	54	0-1 ft.	1.00	ppm	

Outside RCRA Area

Grid:	326	0-1 ft.	34.00	ppm	
Grid:	166	2-3 ft.	25.00	ppm	
Grid:	166	5-6 ft.	24.00	ppm	
Grid:	71	0-1 ft.	24.00	ppm	
Grid:	140	0-1 ft.	23.00	ppm	
Grid:	154	5-6 ft.	23.00	ppm	
Grid:	166	0-1 ft.	23.00	ppm	
Grid:	214	0-1 ft.	22.00	ppm	
Grid:	S2	0-1 ft.	21.00	ppm	
Grid:	140	5-6 ft.	21.00	ppm	
Grid:	146	5-6 ft.	19.00	ppm	
Grid:	127	0-1 ft.	18.00	ppm	
Grid:	154	2-3 ft.	18.00	ppm	
Grid:	146	2-3 ft.	17.00	ppm	
Grid:	140	2-3 ft.	16.00	ppm	
Grid:	247	0-1 ft.	16.00	ppm	
Grid:	236	0-1 ft.	16.00	ppm	
Grid:	154	0-1 ft.	15.00	ppm	
Grid:	129	0-1 ft.	15.00	ppm	
Grid:	349	0-1 ft.	15.00	ppm	
Grid:	161	2-3 ft.	14.00	ppm	
Grid:	102	0-1 ft.	14.00	ppm	
Grid:	133	0-1 ft.	14.00	ppm	
Grid:	172	0-1 ft.	14.00	ppm	
Grid:	279	0-1 ft.	14.00	ppm	
Grid:	385	0-1 ft.	14.00	ppm	
Grid:	334	0-1 ft.	14.00	ppm	
Grid:	146	0-1 ft.	13.00	ppm	
Grid:	416	0-1 ft.	13.00	ppm	
Grid:	161	0-1 ft.	12.00	ppm	
Grid:	218	0-1 ft.	12.00	ppm	
Grid:	198	0-1 ft.	12.00	ppm	
Grid:	418	0-1 ft.	12.00	ppm	
Grid:	228	0-1 ft.	12.00	ppm	
Grid:	135	0-1 ft.	10.00	ppm	
Grid:	80	0-1 ft.	10.00	ppm	
Grid:	354	0-1 ft.	10.00	ppm	
Grid:	S1	0-1 ft.	10.00	ppm	
Grid:	366	0-1 ft.	10.00	ppm	
Grid:	312	0-1 ft.	9.00	ppm	
Grid:	252	0-1 ft.	9.00	ppm	
Grid:	394	0-1 ft.	8.00	ppm	
Grid:	82	0-1 ft.	8.00	ppm	
Grid:	184	0-1 ft.	8.00	ppm	
Grid:	189	0-1 ft.	8.00	ppm	
Grid:	104	0-1 ft.	7.00	ppm	
Grid:	135	2-3 ft.	7.00	ppm	
Grid:	121	0-1 ft.	7.00	ppm	
Grid:	174	0-1 ft.	6.00	ppm	
Grid:	364	0-1 ft.	6.00	ppm	U
Grid:	290	0-1 ft.	5.00	ppm	
Grid:	374	0-1 ft.	5.00	ppm	
Grid:	378	0-1 ft.	5.00	ppm	
Grid:	381	0-1 ft.	5.00	ppm	
Grid:	182	0-1 ft.	4.00	ppm	
Grid:	274	0-1 ft.	4.00	ppm	
Grid:	370	0-1 ft.	4.00	ppm	
Grid:	107	0-1 ft.	4.00	ppm	
Grid:	276	0-1 ft.	4.00	ppm	
Grid:	398	0-1 ft.	4.00	ppm	
Grid:	186	0-1 ft.	4.00	ppm	
Grid:	206	0-1 ft.	4.00	ppm	
Grid:	359	0-1 ft.	4.00	ppm	
Grid:	361	0-1 ft.	2.00	ppm	
Grid:	449	0-1 ft.	2.00	ppm	
Grid:	308	0-1 ft.	2.00	ppm	

Grid:	426	0-1 ft.	2.00	ppm	
Grid:	464	0-1 ft.	2.00	ppm	
Grid:	S4	0-1 ft.	1.00	ppm	
Grid:	439	0-1 ft.	1.00	ppm	
Grid:	472	0-1 ft.	1.00	ppm	
Grid:	417	0-1 ft.	1.00	ppm	

Beryllium

Inside RCRA Furnace Walls

Grid:	4	5-6 ft.	6.00	ppm	U
Grid:	3	5-6 ft.	6.00	ppm	U
Grid:	5	5-6 ft.	6.00	ppm	U
Grid:	6	5-6 ft.	6.00	ppm	U
Grid:	10	5-6 ft.	6.00	ppm	U
Grid:	13	5-6 ft.	6.00	ppm	U
Grid:	14	5-6 ft.	6.00	ppm	U
Grid:	17	5-6 ft.	6.00	ppm	U
Grid:	8	5-6 ft.	6.00	ppm	U
Grid:	11	5-6 ft.	6.00	ppm	U
Grid:	11	12 ft.	5.00	ppm	U
Grid:	11	10 ft.	5.00	ppm	U
Grid:	3	2-3 ft.	5.00	ppm	U
Grid:	3	1-2 ft.	5.00	ppm	U
Grid:	3	0-1 ft.	5.00	ppm	U
Grid:	4	2-3 ft.	5.00	ppm	U
Grid:	4	1-2 ft.	5.00	ppm	U
Grid:	4	0-1 ft.	5.00	ppm	U
Grid:	5	2-3 ft.	5.00	ppm	U
Grid:	5	1-2 ft.	5.00	ppm	U
Grid:	5	0-1 ft.	5.00	ppm	U
Grid:	6	2-3 ft.	5.00	ppm	U
Grid:	6	1-2 ft.	5.00	ppm	U
Grid:	6	0-1 ft.	5.00	ppm	U
Grid:	7	2-3 ft.	5.00	ppm	U
Grid:	7	1-2 ft.	5.00	ppm	U
Grid:	7	0-1 ft.	5.00	ppm	U
Grid:	8	2-3 ft.	5.00	ppm	U
Grid:	8	1-2 ft.	5.00	ppm	U
Grid:	8	0-1 ft.	5.00	ppm	U
Grid:	9	2-3 ft.	5.00	ppm	U
Grid:	9	1-2 ft.	5.00	ppm	U
Grid:	9	0-1 ft.	5.00	ppm	U
Grid:	10	2-3 ft.	5.00	ppm	U
Grid:	10	1-2 ft.	5.00	ppm	U
Grid:	10	0-1 ft.	5.00	ppm	U
Grid:	11	2-3 ft.	5.00	ppm	U
Grid:	11	1-2 ft.	5.00	ppm	U
Grid:	11	0-1 ft.	5.00	ppm	U
Grid:	12	2-3 ft.	5.00	ppm	U
Grid:	12	1-2 ft.	5.00	ppm	U
Grid:	12	0-1 ft.	5.00	ppm	U
Grid:	13	2-3 ft.	5.00	ppm	U
Grid:	13	1-2 ft.	5.00	ppm	U
Grid:	13	0-1 ft.	5.00	ppm	U
Grid:	14	2-3 ft.	5.00	ppm	U
Grid:	14	1-2 ft.	5.00	ppm	U
Grid:	14	0-1 ft.	5.00	ppm	U
Grid:	15	2-3 ft.	5.00	ppm	U
Grid:	15	1-2 ft.	5.00	ppm	U
Grid:	15	0-1 ft.	5.00	ppm	U
Grid:	16	2-3 ft.	5.00	ppm	U
Grid:	16	1-2 ft.	5.00	ppm	U
Grid:	16	0-1 ft.	5.00	ppm	U
Grid:	17	2-3 ft.	5.00	ppm	U
Grid:	17	1-2 ft.	5.00	ppm	U
Grid:	17	0-1 ft.	5.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	35	0-1 ft.	9.00	ppm	
Grid:	54	0-1 ft.	7.00	ppm	
Grid:	54	0-1 ft.	6.00	ppm	U
Grid:	2	5-6 ft.	6.00	ppm	U
Grid:	27	2-3 ft.	6.00	ppm	U
Grid:	47	0-1 ft.	6.00	ppm	U
Grid:	37	0-1 ft.	6.00	ppm	U
Grid:	45	0-1 ft.	6.00	ppm	U
Grid:	48	0-1 ft.	6.00	ppm	U
Grid:	60	0-1 ft.	6.00	ppm	U
Grid:	22	2-3 ft.	6.00	ppm	U
Grid:	23	2-3 ft.	6.00	ppm	U
Grid:	26	2-3 ft.	6.00	ppm	U
Grid:	55	0-1 ft.	6.00	ppm	U
Grid:	59	0-1 ft.	6.00	ppm	U
Grid:	62	0-1 ft.	6.00	ppm	U
Grid:	20	2-3 ft.	6.00	ppm	U
Grid:	21	2-3 ft.	6.00	ppm	U
Grid:	25	2-3 ft.	6.00	ppm	U
Grid:	28	2-3 ft.	6.00	ppm	U
Grid:	29	2-3 ft.	6.00	ppm	U
Grid:	33	0-1 ft.	6.00	ppm	U
Grid:	34	0-1 ft.	6.00	ppm	U
Grid:	38	0-1 ft.	6.00	ppm	U
Grid:	49	0-1 ft.	6.00	ppm	U
Grid:	51	0-1 ft.	6.00	ppm	U
Grid:	67	0-1 ft.	6.00	ppm	U
Grid:	18	2-3 ft.	6.00	ppm	U
Grid:	19	2-3 ft.	6.00	ppm	U
Grid:	30	2-3 ft.	6.00	ppm	U
Grid:	31	0-1 ft.	6.00	ppm	U
Grid:	36	0-1 ft.	6.00	ppm	U
Grid:	56	0-1 ft.	6.00	ppm	U
Grid:	57	0-1 ft.	6.00	ppm	U
Grid:	58	0-1 ft.	6.00	ppm	U
Grid:	61	0-1 ft.	6.00	ppm	U
Grid:	69	0-1 ft.	6.00	ppm	U
Grid:	44	0-1 ft.	6.00	ppm	U
Grid:	50	0-1 ft.	6.00	ppm	U
Grid:	64	0-1 ft.	6.00	ppm	U
Grid:	68	0-1 ft.	6.00	ppm	U
Grid:	70	0-1 ft.	6.00	ppm	U
Grid:	40	0-1 ft.	6.00	ppm	U
Grid:	41	0-1 ft.	6.00	ppm	U
Grid:	42	0-1 ft.	6.00	ppm	U
Grid:	43	0-1 ft.	6.00	ppm	U
Grid:	46	0-1 ft.	6.00	ppm	U
Grid:	53	0-1 ft.	6.00	ppm	U
Grid:	63	0-1 ft.	6.00	ppm	U
Grid:	66	0-1 ft.	6.00	ppm	U
Grid:	32	0-1 ft.	5.00	ppm	U
Grid:	52	0-1 ft.	5.00	ppm	U
Grid:	65	0-1 ft.	5.00	ppm	U
Grid:	39	0-1 ft.	5.00	ppm	U
Grid:	1	2-3 ft.	5.00	ppm	U
Grid:	1	1-2 ft.	5.00	ppm	U
Grid:	1	0-1 ft.	5.00	ppm	U
Grid:	2	2-3 ft.	5.00	ppm	U
Grid:	2	1-2 ft.	5.00	ppm	U
Grid:	2	0-1 ft.	5.00	ppm	U
Grid:	18	0-1 ft.	5.00	ppm	U
Grid:	19	0-1 ft.	5.00	ppm	U
Grid:	20	0-1 ft.	5.00	ppm	U
Grid:	21	0-1 ft.	5.00	ppm	U
Grid:	22	0-1 ft.	5.00	ppm	U
Grid:	23	0-1 ft.	5.00	ppm	U
Grid:	25	0-1 ft.	5.00	ppm	U
Grid:	26	0-1 ft.	5.00	ppm	U
Grid:	27	0-1 ft.	5.00	ppm	U
Grid:	28	0-1 ft.	5.00	ppm	U

Grid:	29	0-1 ft.	5.00	ppm	U
Grid:	30	0-1 ft.	5.00	ppm	U

Outside RCRA Area

Grid:	308	0-1 ft.	7.00	ppm	
Grid:	154	5-6 ft.	7.00	ppm	U
Grid:	426	0-1 ft.	7.00	ppm	U
Grid:	312	0-1 ft.	6.00	ppm	U
Grid:	161	2-3 ft.	6.00	ppm	U
Grid:	326	0-1 ft.	6.00	ppm	U
Grid:	417	0-1 ft.	6.00	ppm	U
Grid:	464	0-1 ft.	6.00	ppm	U
Grid:	472	0-1 ft.	6.00	ppm	U
Grid:	S4	0-1 ft.	6.00	ppm	U
Grid:	146	5-6 ft.	6.00	ppm	U
Grid:	166	5-6 ft.	6.00	ppm	U
Grid:	214	0-1 ft.	6.00	ppm	U
Grid:	354	0-1 ft.	6.00	ppm	U
Grid:	439	0-1 ft.	6.00	ppm	U
Grid:	449	0-1 ft.	6.00	ppm	U
Grid:	S2	0-1 ft.	6.00	ppm	U
Grid:	140	5-6 ft.	6.00	ppm	U
Grid:	146	2-3 ft.	6.00	ppm	U
Grid:	236	0-1 ft.	6.00	ppm	U
Grid:	252	0-1 ft.	6.00	ppm	U
Grid:	334	0-1 ft.	6.00	ppm	U
Grid:	154	2-3 ft.	6.00	ppm	U
Grid:	349	0-1 ft.	6.00	ppm	U
Grid:	140	2-3 ft.	6.00	ppm	U
Grid:	146	0-1 ft.	6.00	ppm	U
Grid:	166	2-3 ft.	6.00	ppm	U
Grid:	166	0-1 ft.	6.00	ppm	U
Grid:	218	0-1 ft.	6.00	ppm	U
Grid:	228	0-1 ft.	6.00	ppm	U
Grid:	247	0-1 ft.	6.00	ppm	U
Grid:	S1	0-1 ft.	6.00	ppm	U
Grid:	135	2-3 ft.	6.00	ppm	U
Grid:	154	0-1 ft.	6.00	ppm	U
Grid:	135	0-1 ft.	5.00	ppm	U
Grid:	140	0-1 ft.	5.00	ppm	U
Grid:	161	0-1 ft.	5.00	ppm	U

Cadmium

Inside RCRA Furnace Walls

Grid:	11	0-1 ft.	1615.00	ppm	
Grid:	12	0-1 ft.	353.00	ppm	
Grid:	10	0-1 ft.	199.00	ppm	
Grid:	11	1-2 ft.	135.00	ppm	
Grid:	11	2-3 ft.	120.00	ppm	
Grid:	13	0-1 ft.	86.00	ppm	
Grid:	4	1-2 ft.	47.00	ppm	
Grid:	5	0-1 ft.	38.00	ppm	
Grid:	4	0-1 ft.	35.00	ppm	
Grid:	6	0-1 ft.	27.00	ppm	
Grid:	3	0-1 ft.	25.00	ppm	
Grid:	12	1-2 ft.	24.00	ppm	
Grid:	9	0-1 ft.	19.00	ppm	
Grid:	5	1-2 ft.	19.00	ppm	
Grid:	3	1-2 ft.	10.00	ppm	
Grid:	3	5-6 ft.	6.00	ppm	U
Grid:	4	5-6 ft.	6.00	ppm	U
Grid:	5	5-6 ft.	6.00	ppm	U
Grid:	6	5-6 ft.	6.00	ppm	U
Grid:	8	5-6 ft.	6.00	ppm	U
Grid:	10	5-6 ft.	6.00	ppm	U
Grid:	11	5-6 ft.	6.00	ppm	U
Grid:	13	5-6 ft.	6.00	ppm	U
Grid:	14	5-6 ft.	6.00	ppm	U

Grid:	17	5-6 ft.	6.00	ppm	U
Grid:	3	2-3 ft.	5.00	ppm	U
Grid:	4	2-3 ft.	5.00	ppm	U
Grid:	5	2-3 ft.	5.00	ppm	U
Grid:	6	2-3 ft.	5.00	ppm	U
Grid:	6	1-2 ft.	5.00	ppm	U
Grid:	7	2-3 ft.	5.00	ppm	U
Grid:	7	1-2 ft.	5.00	ppm	U
Grid:	7	0-1 ft.	5.00	ppm	U
Grid:	8	2-3 ft.	5.00	ppm	U
Grid:	8	1-2 ft.	5.00	ppm	U
Grid:	8	0-1 ft.	5.00	ppm	U
Grid:	9	2-3 ft.	5.00	ppm	U
Grid:	9	1-2 ft.	5.00	ppm	U
Grid:	10	2-3 ft.	5.00	ppm	U
Grid:	10	1-2 ft.	5.00	ppm	U
Grid:	12	2-3 ft.	5.00	ppm	U
Grid:	13	2-3 ft.	5.00	ppm	U
Grid:	13	1-2 ft.	5.00	ppm	U
Grid:	14	2-3 ft.	5.00	ppm	U
Grid:	14	1-2 ft.	5.00	ppm	U
Grid:	14	0-1 ft.	5.00	ppm	U
Grid:	15	2-3 ft.	5.00	ppm	U
Grid:	15	1-2 ft.	5.00	ppm	U
Grid:	15	0-1 ft.	5.00	ppm	U
Grid:	16	2-3 ft.	5.00	ppm	U
Grid:	16	1-2 ft.	5.00	ppm	U
Grid:	16	0-1 ft.	5.00	ppm	U
Grid:	17	2-3 ft.	5.00	ppm	U
Grid:	17	1-2 ft.	5.00	ppm	U
Grid:	17	0-1 ft.	5.00	ppm	U
Grid:	11	12 ft.	3.00	ppm	U
Grid:	11	10 ft.	3.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	32	0-1 ft.	66.00	ppm	
Grid:	31	0-1 ft.	45.00	ppm	
Grid:	25	0-1 ft.	15.00	ppm	
Grid:	22	0-1 ft.	14.00	ppm	
Grid:	20	0-1 ft.	7.00	ppm	
Grid:	23	0-1 ft.	7.00	ppm	
Grid:	41	0-1 ft.	7.00	ppm	
Grid:	2	5-6 ft.	6.00	ppm	U
Grid:	18	2-3 ft.	6.00	ppm	U
Grid:	19	2-3 ft.	6.00	ppm	U
Grid:	20	2-3 ft.	6.00	ppm	U
Grid:	21	2-3 ft.	6.00	ppm	U
Grid:	22	2-3 ft.	6.00	ppm	U
Grid:	23	2-3 ft.	6.00	ppm	U
Grid:	25	2-3 ft.	6.00	ppm	U
Grid:	26	2-3 ft.	6.00	ppm	U
Grid:	27	2-3 ft.	6.00	ppm	U
Grid:	28	2-3 ft.	6.00	ppm	U
Grid:	29	2-3 ft.	6.00	ppm	U
Grid:	30	2-3 ft.	6.00	ppm	U
Grid:	33	0-1 ft.	6.00	ppm	U
Grid:	34	0-1 ft.	6.00	ppm	U
Grid:	35	0-1 ft.	6.00	ppm	U
Grid:	36	0-1 ft.	6.00	ppm	U
Grid:	37	0-1 ft.	6.00	ppm	U
Grid:	38	0-1 ft.	6.00	ppm	U
Grid:	40	0-1 ft.	6.00	ppm	U
Grid:	42	0-1 ft.	6.00	ppm	U
Grid:	43	0-1 ft.	6.00	ppm	U
Grid:	44	0-1 ft.	6.00	ppm	U
Grid:	45	0-1 ft.	6.00	ppm	U
Grid:	46	0-1 ft.	6.00	ppm	U
Grid:	47	0-1 ft.	6.00	ppm	U
Grid:	48	0-1 ft.	6.00	ppm	U
Grid:	50	0-1 ft.	6.00	ppm	U

Grid:	51	0-1 ft.	6.00	ppm	U
Grid:	53	0-1 ft.	6.00	ppm	U
Grid:	54	0-1 ft.	6.00	ppm	U
Grid:	55	0-1 ft.	6.00	ppm	U
Grid:	56	0-1 ft.	6.00	ppm	U
Grid:	57	0-1 ft.	6.00	ppm	U
Grid:	58	0-1 ft.	6.00	ppm	U
Grid:	59	0-1 ft.	6.00	ppm	U
Grid:	60	0-1 ft.	6.00	ppm	U
Grid:	61	0-1 ft.	6.00	ppm	U
Grid:	62	0-1 ft.	6.00	ppm	U
Grid:	63	0-1 ft.	6.00	ppm	U
Grid:	64	0-1 ft.	6.00	ppm	U
Grid:	66	0-1 ft.	6.00	ppm	U
Grid:	68	0-1 ft.	6.00	ppm	U
Grid:	69	0-1 ft.	6.00	ppm	U
Grid:	70	0-1 ft.	6.00	ppm	U
Grid:	67	0-1 ft.	6.00	ppm	
Grid:	49	0-1 ft.	6.00	ppm	
Grid:	1	2-3 ft.	5.00	ppm	U
Grid:	1	1-2 ft.	5.00	ppm	U
Grid:	1	0-1 ft.	5.00	ppm	U
Grid:	2	2-3 ft.	5.00	ppm	U
Grid:	2	1-2 ft.	5.00	ppm	U
Grid:	2	0-1 ft.	5.00	ppm	U
Grid:	18	0-1 ft.	5.00	ppm	U
Grid:	19	0-1 ft.	5.00	ppm	U
Grid:	21	0-1 ft.	5.00	ppm	U
Grid:	26	0-1 ft.	5.00	ppm	U
Grid:	27	0-1 ft.	5.00	ppm	U
Grid:	28	0-1 ft.	5.00	ppm	U
Grid:	29	0-1 ft.	5.00	ppm	U
Grid:	30	0-1 ft.	5.00	ppm	U
Grid:	39	0-1 ft.	5.00	ppm	U
Grid:	52	0-1 ft.	5.00	ppm	U
Grid:	65	0-1 ft.	5.00	ppm	U
Grid:	54	0-1 ft.	1.00	ppm	U

Outside RCRA Area

Grid:	312	0-1 ft.	157.00	ppm	
Grid:	364	0-1 ft.	150.00	ppm	
Grid:	102	0-1 ft.	35.00	ppm	
Grid:	82	0-1 ft.	29.00	ppm	
Grid:	274	0-1 ft.	16.00	ppm	
Grid:	326	0-1 ft.	10.00	ppm	
Grid:	228	0-1 ft.	9.00	ppm	
Grid:	381	0-1 ft.	9.00	ppm	
Grid:	184	0-1 ft.	7.00	ppm	
Grid:	146	0-1 ft.	6.00	ppm	U
Grid:	154	0-1 ft.	6.00	ppm	U
Grid:	166	0-1 ft.	6.00	ppm	U
Grid:	107	0-1 ft.	6.00	ppm	
Grid:	135	0-1 ft.	5.00	ppm	U
Grid:	140	0-1 ft.	5.00	ppm	U
Grid:	161	0-1 ft.	5.00	ppm	U
Grid:	182	0-1 ft.	5.00	ppm	
Grid:	146	2-3 ft.	5.00	ppm	
Grid:	104	0-1 ft.	5.00	ppm	
Grid:	146	5-6 ft.	5.00	ppm	
Grid:	S2	0-1 ft.	5.00	ppm	
Grid:	276	0-1 ft.	4.00	ppm	
Grid:	218	0-1 ft.	4.00	ppm	
Grid:	135	2-3 ft.	3.00	ppm	U
Grid:	140	2-3 ft.	3.00	ppm	U
Grid:	154	2-3 ft.	3.00	ppm	U
Grid:	161	2-3 ft.	3.00	ppm	U
Grid:	166	2-3 ft.	3.00	ppm	U
Grid:	214	0-1 ft.	3.00	ppm	U
Grid:	236	0-1 ft.	3.00	ppm	U
Grid:	247	0-1 ft.	3.00	ppm	U

Grid:	252	0-1 ft.	3.00	ppm	U
Grid:	308	0-1 ft.	3.00	ppm	U
Grid:	334	0-1 ft.	3.00	ppm	U
Grid:	349	0-1 ft.	3.00	ppm	U
Grid:	354	0-1 ft.	3.00	ppm	U
Grid:	472	0-1 ft.	3.00	ppm	U
Grid:	S1	0-1 ft.	3.00	ppm	U
Grid:	361	0-1 ft.	3.00	ppm	
Grid:	416	0-1 ft.	3.00	ppm	
Grid:	71	0-1 ft.	2.00	ppm	U
Grid:	80	0-1 ft.	2.00	ppm	U
Grid:	121	0-1 ft.	2.00	ppm	U
Grid:	127	0-1 ft.	2.00	ppm	U
Grid:	129	0-1 ft.	2.00	ppm	U
Grid:	133	0-1 ft.	2.00	ppm	U
Grid:	172	0-1 ft.	2.00	ppm	U
Grid:	174	0-1 ft.	2.00	ppm	U
Grid:	186	0-1 ft.	2.00	ppm	U
Grid:	189	0-1 ft.	2.00	ppm	U
Grid:	198	0-1 ft.	2.00	ppm	U
Grid:	206	0-1 ft.	2.00	ppm	U
Grid:	279	0-1 ft.	2.00	ppm	U
Grid:	290	0-1 ft.	2.00	ppm	U
Grid:	359	0-1 ft.	2.00	ppm	U
Grid:	366	0-1 ft.	2.00	ppm	U
Grid:	370	0-1 ft.	2.00	ppm	U
Grid:	374	0-1 ft.	2.00	ppm	U
Grid:	378	0-1 ft.	2.00	ppm	U
Grid:	385	0-1 ft.	2.00	ppm	U
Grid:	394	0-1 ft.	2.00	ppm	U
Grid:	398	0-1 ft.	2.00	ppm	U
Grid:	418	0-1 ft.	2.00	ppm	U
Grid:	140	5-6 ft.	1.00	ppm	U
Grid:	154	5-6 ft.	1.00	ppm	U
Grid:	166	5-6 ft.	1.00	ppm	U
Grid:	417	0-1 ft.	1.00	ppm	U
Grid:	426	0-1 ft.	1.00	ppm	U
Grid:	439	0-1 ft.	1.00	ppm	U
Grid:	449	0-1 ft.	1.00	ppm	U
Grid:	464	0-1 ft.	1.00	ppm	U
Grid:	S4	0-1 ft.	1.00	ppm	U

Chromium

Inside RCRA Furnace Walls

Grid:	12	0-1 ft.	166.00	ppm
Grid:	11	0-1 ft.	138.00	ppm
Grid:	10	0-1 ft.	88.00	ppm
Grid:	11	2-3 ft.	52.00	ppm
Grid:	17	5-6 ft.	52.00	ppm
Grid:	6	5-6 ft.	45.00	ppm
Grid:	12	1-2 ft.	43.00	ppm
Grid:	11	5-6 ft.	43.00	ppm
Grid:	13	5-6 ft.	43.00	ppm
Grid:	10	5-6 ft.	42.00	ppm
Grid:	11	1-2 ft.	42.00	ppm
Grid:	8	5-6 ft.	41.00	ppm
Grid:	4	1-2 ft.	40.00	ppm
Grid:	3	5-6 ft.	38.00	ppm
Grid:	14	5-6 ft.	38.00	ppm
Grid:	4	5-6 ft.	36.00	ppm
Grid:	13	1-2 ft.	34.00	ppm
Grid:	5	5-6 ft.	33.00	ppm
Grid:	16	0-1 ft.	33.00	ppm
Grid:	9	1-2 ft.	32.00	ppm
Grid:	6	0-1 ft.	32.00	ppm
Grid:	13	0-1 ft.	31.00	ppm
Grid:	9	2-3 ft.	31.00	ppm
Grid:	12	2-3 ft.	30.00	ppm
Grid:	8	2-3 ft.	30.00	ppm

Grid:	5	0-1 ft.	30.00	ppm
Grid:	4	0-1 ft.	30.00	ppm
Grid:	8	1-2 ft.	29.00	ppm
Grid:	9	0-1 ft.	28.00	ppm
Grid:	17	0-1 ft.	28.00	ppm
Grid:	8	0-1 ft.	28.00	ppm
Grid:	5	1-2 ft.	28.00	ppm
Grid:	10	2-3 ft.	27.00	ppm
Grid:	10	1-2 ft.	26.00	ppm
Grid:	7	2-3 ft.	25.00	ppm
Grid:	5	2-3 ft.	25.00	ppm
Grid:	13	2-3 ft.	24.00	ppm
Grid:	7	0-1 ft.	24.00	ppm
Grid:	11	12 ft.	23.00	ppm
Grid:	6	2-3 ft.	23.00	ppm
Grid:	4	2-3 ft.	23.00	ppm
Grid:	11	10 ft.	22.00	ppm
Grid:	3	2-3 ft.	21.00	ppm
Grid:	14	0-1 ft.	21.00	ppm
Grid:	6	1-2 ft.	20.00	ppm
Grid:	17	1-2 ft.	20.00	ppm
Grid:	3	0-1 ft.	20.00	ppm
Grid:	15	1-2 ft.	20.00	ppm
Grid:	17	2-3 ft.	20.00	ppm
Grid:	16	2-3 ft.	19.00	ppm
Grid:	15	0-1 ft.	19.00	ppm
Grid:	15	2-3 ft.	19.00	ppm
Grid:	16	1-2 ft.	18.00	ppm
Grid:	14	2-3 ft.	16.00	ppm
Grid:	7	1-2 ft.	16.00	ppm
Grid:	3	1-2 ft.	15.00	ppm
Grid:	14	1-2 ft.	10.00	ppm

Inside RCRA Area, But Outside Walls

Grid:	67	0-1 ft.	100.00	ppm
Grid:	54	0-1 ft.	74.00	ppm
Grid:	47	0-1 ft.	69.00	ppm
Grid:	45	0-1 ft.	69.00	ppm
Grid:	35	0-1 ft.	60.00	ppm
Grid:	46	0-1 ft.	60.00	ppm
Grid:	25	2-3 ft.	58.00	ppm
Grid:	21	2-3 ft.	56.00	ppm
Grid:	42	0-1 ft.	55.00	ppm
Grid:	43	0-1 ft.	53.00	ppm
Grid:	19	2-3 ft.	52.00	ppm
Grid:	40	0-1 ft.	52.00	ppm
Grid:	28	2-3 ft.	51.00	ppm
Grid:	41	0-1 ft.	51.00	ppm
Grid:	20	2-3 ft.	51.00	ppm
Grid:	22	0-1 ft.	48.00	ppm
Grid:	22	2-3 ft.	48.00	ppm
Grid:	55	0-1 ft.	48.00	ppm
Grid:	54	0-1 ft.	46.00	ppm
Grid:	48	0-1 ft.	45.00	ppm
Grid:	2	1-2 ft.	45.00	ppm
Grid:	33	0-1 ft.	44.00	ppm
Grid:	29	2-3 ft.	44.00	ppm
Grid:	37	0-1 ft.	44.00	ppm
Grid:	18	2-3 ft.	44.00	ppm
Grid:	18	0-1 ft.	42.00	ppm
Grid:	30	2-3 ft.	41.00	ppm
Grid:	61	0-1 ft.	40.00	ppm
Grid:	63	0-1 ft.	39.00	ppm
Grid:	44	0-1 ft.	39.00	ppm
Grid:	56	0-1 ft.	39.00	ppm
Grid:	59	0-1 ft.	38.00	ppm
Grid:	51	0-1 ft.	38.00	ppm
Grid:	65	0-1 ft.	38.00	ppm
Grid:	62	0-1 ft.	37.00	ppm
Grid:	38	0-1 ft.	37.00	ppm

Grid:	64	0-1 ft.	37.00	ppm
Grid:	50	0-1 ft.	37.00	ppm
Grid:	60	0-1 ft.	37.00	ppm
Grid:	69	0-1 ft.	36.00	ppm
Grid:	36	0-1 ft.	36.00	ppm
Grid:	26	2-3 ft.	36.00	ppm
Grid:	34	0-1 ft.	35.00	ppm
Grid:	52	0-1 ft.	34.00	ppm
Grid:	27	2-3 ft.	34.00	ppm
Grid:	25	0-1 ft.	33.00	ppm
Grid:	28	0-1 ft.	32.00	ppm
Grid:	49	0-1 ft.	32.00	ppm
Grid:	70	0-1 ft.	32.00	ppm
Grid:	53	0-1 ft.	31.00	ppm
Grid:	2	5-6 ft.	31.00	ppm
Grid:	23	2-3 ft.	30.00	ppm
Grid:	1	0-1 ft.	30.00	ppm
Grid:	29	0-1 ft.	29.00	ppm
Grid:	30	0-1 ft.	29.00	ppm
Grid:	58	0-1 ft.	28.00	ppm
Grid:	66	0-1 ft.	28.00	ppm
Grid:	26	0-1 ft.	28.00	ppm
Grid:	31	0-1 ft.	28.00	ppm
Grid:	57	0-1 ft.	27.00	ppm
Grid:	19	0-1 ft.	26.00	ppm
Grid:	21	0-1 ft.	26.00	ppm
Grid:	27	0-1 ft.	25.00	ppm
Grid:	23	0-1 ft.	25.00	ppm
Grid:	20	0-1 ft.	25.00	ppm
Grid:	68	0-1 ft.	21.00	ppm
Grid:	32	0-1 ft.	20.00	ppm
Grid:	39	0-1 ft.	20.00	ppm
Grid:	1	1-2 ft.	18.00	ppm
Grid:	2	2-3 ft.	17.00	ppm
Grid:	1	2-3 ft.	15.00	ppm
Grid:	2	0-1 ft.	11.00	ppm

Outside RCRA Area

Grid:	312	0-1 ft.	99.00	ppm
Grid:	82	0-1 ft.	82.00	ppm
Grid:	154	5-6 ft.	70.00	ppm
Grid:	464	0-1 ft.	66.00	ppm
Grid:	334	0-1 ft.	64.00	ppm
Grid:	S2	0-1 ft.	62.00	ppm
Grid:	154	2-3 ft.	61.00	ppm
Grid:	140	2-3 ft.	61.00	ppm
Grid:	449	0-1 ft.	59.00	ppm
Grid:	236	0-1 ft.	58.00	ppm
Grid:	228	0-1 ft.	57.00	ppm
Grid:	247	0-1 ft.	56.00	ppm
Grid:	198	0-1 ft.	55.00	ppm
Grid:	349	0-1 ft.	54.00	ppm
Grid:	172	0-1 ft.	54.00	ppm
Grid:	326	0-1 ft.	53.00	ppm
Grid:	426	0-1 ft.	53.00	ppm
Grid:	S1	0-1 ft.	52.00	ppm
Grid:	214	0-1 ft.	51.00	ppm
Grid:	439	0-1 ft.	48.00	ppm
Grid:	S4	0-1 ft.	46.00	ppm
Grid:	154	0-1 ft.	46.00	ppm
Grid:	129	0-1 ft.	45.00	ppm
Grid:	385	0-1 ft.	45.00	ppm
Grid:	182	0-1 ft.	44.00	ppm
Grid:	279	0-1 ft.	43.00	ppm
Grid:	290	0-1 ft.	43.00	ppm
Grid:	166	0-1 ft.	42.00	ppm
Grid:	252	0-1 ft.	42.00	ppm
Grid:	354	0-1 ft.	42.00	ppm
Grid:	133	0-1 ft.	42.00	ppm
Grid:	418	0-1 ft.	42.00	ppm

Grid:	146	2-3 ft.	41.00	ppm	
Grid:	161	0-1 ft.	41.00	ppm	
Grid:	127	0-1 ft.	41.00	ppm	
Grid:	366	0-1 ft.	41.00	ppm	
Grid:	472	0-1 ft.	40.00	ppm	
Grid:	71	0-1 ft.	40.00	ppm	
Grid:	381	0-1 ft.	40.00	ppm	
Grid:	140	0-1 ft.	40.00	ppm	
Grid:	184	0-1 ft.	38.00	ppm	
Grid:	274	0-1 ft.	38.00	ppm	
Grid:	218	0-1 ft.	38.00	ppm	
Grid:	146	5-6 ft.	37.00	ppm	
Grid:	398	0-1 ft.	37.00	ppm	
Grid:	166	5-6 ft.	35.00	ppm	
Grid:	206	0-1 ft.	35.00	ppm	
Grid:	417	0-1 ft.	34.00	ppm	
Grid:	135	0-1 ft.	34.00	ppm	
Grid:	189	0-1 ft.	33.00	ppm	
Grid:	359	0-1 ft.	32.00	ppm	
Grid:	146	0-1 ft.	31.00	ppm	
Grid:	370	0-1 ft.	31.00	ppm	
Grid:	374	0-1 ft.	31.00	ppm	
Grid:	416	0-1 ft.	31.00	ppm	
Grid:	80	0-1 ft.	30.00	ppm	
Grid:	104	0-1 ft.	30.00	ppm	
Grid:	276	0-1 ft.	30.00	ppm	
Grid:	378	0-1 ft.	30.00	ppm	
Grid:	140	5-6 ft.	29.00	ppm	
Grid:	361	0-1 ft.	29.00	ppm	
Grid:	107	0-1 ft.	28.00	ppm	
Grid:	121	0-1 ft.	28.00	ppm	
Grid:	166	2-3 ft.	25.00	ppm	
Grid:	186	0-1 ft.	25.00	ppm	
Grid:	394	0-1 ft.	23.00	ppm	
Grid:	135	2-3 ft.	22.00	ppm	
Grid:	102	0-1 ft.	18.00	ppm	
Grid:	308	0-1 ft.	18.00	ppm	
Grid:	174	0-1 ft.	16.00	ppm	
Grid:	161	2-3 ft.	13.00	ppm	U
Grid:	364	0-1 ft.	12.00	ppm	U

Copper

Inside RCRA Furnace Walls

Grid:	11	0-1 ft.	34000.00	ppm
Grid:	11	1-2 ft.	4280.00	ppm
Grid:	12	0-1 ft.	2300.00	ppm
Grid:	10	0-1 ft.	1470.00	ppm
Grid:	5	0-1 ft.	1280.00	ppm
Grid:	11	2-3 ft.	1220.00	ppm
Grid:	4	0-1 ft.	1100.00	ppm
Grid:	4	1-2 ft.	1060.00	ppm
Grid:	3	0-1 ft.	1006.00	ppm
Grid:	4	2-3 ft.	927.00	ppm
Grid:	13	0-1 ft.	745.00	ppm
Grid:	7	0-1 ft.	714.00	ppm
Grid:	11	10 ft.	400.00	ppm
Grid:	3	1-2 ft.	308.00	ppm
Grid:	13	1-2 ft.	273.00	ppm
Grid:	10	1-2 ft.	254.00	ppm
Grid:	5	1-2 ft.	243.00	ppm
Grid:	14	5-6 ft.	232.00	ppm
Grid:	7	1-2 ft.	192.00	ppm
Grid:	12	1-2 ft.	186.00	ppm
Grid:	6	1-2 ft.	182.00	ppm
Grid:	9	0-1 ft.	178.00	ppm
Grid:	4	5-6 ft.	162.00	ppm
Grid:	8	5-6 ft.	151.00	ppm
Grid:	8	0-1 ft.	151.00	ppm
Grid:	6	0-1 ft.	120.00	ppm

Grid:	5	5-6 ft.	81.00	ppm	
Grid:	10	5-6 ft.	64.00	ppm	
Grid:	17	0-1 ft.	56.00	ppm	
Grid:	10	2-3 ft.	54.00	ppm	
Grid:	14	0-1 ft.	43.00	ppm	
Grid:	13	2-3 ft.	40.00	ppm	
Grid:	17	2-3 ft.	35.00	ppm	
Grid:	3	2-3 ft.	33.00	ppm	
Grid:	14	2-3 ft.	31.00	ppm	
Grid:	3	5-6 ft.	29.00	ppm	
Grid:	15	1-2 ft.	28.00	ppm	
Grid:	17	1-2 ft.	28.00	ppm	
Grid:	16	1-2 ft.	27.00	ppm	
Grid:	5	2-3 ft.	27.00	ppm	
Grid:	9	1-2 ft.	27.00	ppm	
Grid:	6	2-3 ft.	27.00	ppm	
Grid:	14	1-2 ft.	26.00	ppm	
Grid:	6	5-6 ft.	26.00	ppm	
Grid:	12	2-3 ft.	26.00	ppm	
Grid:	16	0-1 ft.	26.00	ppm	
Grid:	16	2-3 ft.	24.00	ppm	
Grid:	17	5-6 ft.	24.00	ppm	
Grid:	7	2-3 ft.	24.00	ppm	
Grid:	8	2-3 ft.	23.00	ppm	
Grid:	11	12 ft.	23.00	ppm	
Grid:	15	2-3 ft.	23.00	ppm	
Grid:	9	2-3 ft.	23.00	ppm	
Grid:	13	5-6 ft.	23.00	ppm	
Grid:	11	5-6 ft.	21.00	ppm	
Grid:	15	0-1 ft.	12.00	ppm	
Grid:	8	1-2 ft.	5.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	31	0-1 ft.	3621.00	ppm
Grid:	41	0-1 ft.	1410.00	ppm
Grid:	21	0-1 ft.	729.00	ppm
Grid:	67	0-1 ft.	476.00	ppm
Grid:	68	0-1 ft.	474.00	ppm
Grid:	23	0-1 ft.	344.00	ppm
Grid:	49	0-1 ft.	300.00	ppm
Grid:	55	0-1 ft.	226.00	ppm
Grid:	66	0-1 ft.	219.00	ppm
Grid:	19	0-1 ft.	197.00	ppm
Grid:	32	0-1 ft.	187.00	ppm
Grid:	42	0-1 ft.	163.00	ppm
Grid:	25	0-1 ft.	162.00	ppm
Grid:	22	0-1 ft.	153.00	ppm
Grid:	52	0-1 ft.	135.00	ppm
Grid:	40	0-1 ft.	133.00	ppm
Grid:	20	0-1 ft.	120.00	ppm
Grid:	27	0-1 ft.	106.00	ppm
Grid:	54	0-1 ft.	99.00	ppm
Grid:	46	0-1 ft.	83.00	ppm
Grid:	59	0-1 ft.	79.00	ppm
Grid:	1	0-1 ft.	74.00	ppm
Grid:	64	0-1 ft.	74.00	ppm
Grid:	56	0-1 ft.	69.00	ppm
Grid:	53	0-1 ft.	69.00	ppm
Grid:	39	0-1 ft.	65.00	ppm
Grid:	35	0-1 ft.	63.00	ppm
Grid:	43	0-1 ft.	63.00	ppm
Grid:	30	0-1 ft.	60.00	ppm
Grid:	29	0-1 ft.	56.00	ppm
Grid:	18	0-1 ft.	50.00	ppm
Grid:	34	0-1 ft.	45.00	ppm
Grid:	33	0-1 ft.	45.00	ppm
Grid:	47	0-1 ft.	41.00	ppm
Grid:	65	0-1 ft.	40.00	ppm
Grid:	26	0-1 ft.	39.00	ppm
Grid:	2	2-3 ft.	38.00	ppm

Grid:	45	0-1 ft.	38.00	ppm
Grid:	50	0-1 ft.	36.00	ppm
Grid:	63	0-1 ft.	32.00	ppm
Grid:	2	0-1 ft.	30.00	ppm
Grid:	28	0-1 ft.	29.00	ppm
Grid:	2	1-2 ft.	29.00	ppm
Grid:	58	0-1 ft.	29.00	ppm
Grid:	60	0-1 ft.	29.00	ppm
Grid:	44	0-1 ft.	28.00	ppm
Grid:	1	1-2 ft.	27.00	ppm
Grid:	54	0-1 ft.	26.00	ppm
Grid:	51	0-1 ft.	26.00	ppm
Grid:	25	2-3 ft.	26.00	ppm
Grid:	61	0-1 ft.	26.00	ppm
Grid:	37	0-1 ft.	26.00	ppm
Grid:	69	0-1 ft.	24.00	ppm
Grid:	2	5-6 ft.	24.00	ppm
Grid:	38	0-1 ft.	23.00	ppm
Grid:	36	0-1 ft.	23.00	ppm
Grid:	19	2-3 ft.	22.00	ppm
Grid:	1	2-3 ft.	22.00	ppm
Grid:	22	2-3 ft.	21.00	ppm
Grid:	30	2-3 ft.	21.00	ppm
Grid:	62	0-1 ft.	21.00	ppm
Grid:	18	2-3 ft.	21.00	ppm
Grid:	21	2-3 ft.	20.00	ppm
Grid:	57	0-1 ft.	18.00	ppm
Grid:	23	2-3 ft.	17.00	ppm
Grid:	27	2-3 ft.	17.00	ppm
Grid:	29	2-3 ft.	16.00	ppm
Grid:	28	2-3 ft.	16.00	ppm
Grid:	70	0-1 ft.	14.00	ppm
Grid:	48	0-1 ft.	13.00	ppm
Grid:	26	2-3 ft.	8.00	ppm
Grid:	20	2-3 ft.	7.00	ppm

Outside RCRA Area

Grid:	364	0-1 ft.	380000.00	ppm
Grid:	312	0-1 ft.	12800.00	ppm
Grid:	326	0-1 ft.	4100.00	ppm
Grid:	274	0-1 ft.	1600.00	ppm
Grid:	82	0-1 ft.	1300.00	ppm
Grid:	146	2-3 ft.	1200.00	ppm
Grid:	146	5-6 ft.	1011.00	ppm
Grid:	276	0-1 ft.	920.00	ppm
Grid:	184	0-1 ft.	830.00	ppm
Grid:	102	0-1 ft.	750.00	ppm
Grid:	182	0-1 ft.	740.00	ppm
Grid:	381	0-1 ft.	710.00	ppm
Grid:	228	0-1 ft.	600.00	ppm
Grid:	107	0-1 ft.	400.00	ppm
Grid:	417	0-1 ft.	353.00	ppm
Grid:	361	0-1 ft.	340.00	ppm
Grid:	S2	0-1 ft.	321.00	ppm
Grid:	S1	0-1 ft.	243.00	ppm
Grid:	104	0-1 ft.	220.00	ppm
Grid:	146	0-1 ft.	168.00	ppm
Grid:	140	0-1 ft.	131.00	ppm
Grid:	370	0-1 ft.	120.00	ppm
Grid:	218	0-1 ft.	120.00	ppm
Grid:	186	0-1 ft.	110.00	ppm
Grid:	439	0-1 ft.	108.00	ppm
Grid:	366	0-1 ft.	76.00	ppm
Grid:	308	0-1 ft.	72.00	ppm
Grid:	161	0-1 ft.	67.00	ppm
Grid:	418	0-1 ft.	65.00	ppm
Grid:	154	5-6 ft.	57.00	ppm
Grid:	252	0-1 ft.	56.00	ppm
Grid:	154	0-1 ft.	56.00	ppm
Grid:	166	0-1 ft.	52.00	ppm

Grid:	416	0-1 ft.	48.00	ppm
Grid:	385	0-1 ft.	36.00	ppm
Grid:	449	0-1 ft.	35.00	ppm
Grid:	279	0-1 ft.	34.00	ppm
Grid:	135	0-1 ft.	34.00	ppm
Grid:	247	0-1 ft.	34.00	ppm
Grid:	378	0-1 ft.	32.00	ppm
Grid:	133	0-1 ft.	32.00	ppm
Grid:	464	0-1 ft.	31.00	ppm
Grid:	426	0-1 ft.	31.00	ppm
Grid:	174	0-1 ft.	31.00	ppm
Grid:	71	0-1 ft.	31.00	ppm
Grid:	154	2-3 ft.	30.00	ppm
Grid:	166	5-6 ft.	30.00	ppm
Grid:	127	0-1 ft.	28.00	ppm
Grid:	334	0-1 ft.	27.00	ppm
Grid:	166	2-3 ft.	27.00	ppm
Grid:	349	0-1 ft.	27.00	ppm
Grid:	140	5-6 ft.	27.00	ppm
Grid:	140	2-3 ft.	26.00	ppm
Grid:	S4	0-1 ft.	26.00	ppm
Grid:	198	0-1 ft.	26.00	ppm
Grid:	236	0-1 ft.	25.00	ppm
Grid:	172	0-1 ft.	25.00	ppm
Grid:	129	0-1 ft.	24.00	ppm
Grid:	80	0-1 ft.	24.00	ppm
Grid:	472	0-1 ft.	23.00	ppm
Grid:	161	2-3 ft.	22.00	ppm
Grid:	290	0-1 ft.	21.00	ppm
Grid:	214	0-1 ft.	21.00	ppm
Grid:	398	0-1 ft.	19.00	ppm
Grid:	374	0-1 ft.	17.00	ppm
Grid:	359	0-1 ft.	16.00	ppm
Grid:	354	0-1 ft.	15.00	ppm
Grid:	135	2-3 ft.	15.00	ppm
Grid:	189	0-1 ft.	14.00	ppm
Grid:	394	0-1 ft.	10.00	ppm
Grid:	121	0-1 ft.	10.00	ppm
Grid:	206	0-1 ft.	9.00	ppm

Lead

Inside RCRA Furnace Walls

Grid:	11	0-1 ft.	4286.00	ppm
Grid:	12	0-1 ft.	1472.00	ppm
Grid:	10	0-1 ft.	942.00	ppm
Grid:	13	0-1 ft.	405.00	ppm
Grid:	4	1-2 ft.	382.00	ppm
Grid:	11	1-2 ft.	375.00	ppm
Grid:	5	0-1 ft.	364.00	ppm
Grid:	7	0-1 ft.	293.00	ppm
Grid:	12	1-2 ft.	215.00	ppm
Grid:	11	2-3 ft.	153.00	ppm
Grid:	6	0-1 ft.	150.00	ppm
Grid:	10	1-2 ft.	150.00	ppm
Grid:	5	1-2 ft.	147.00	ppm
Grid:	11	5-6 ft.	106.00	ppm
Grid:	3	1-2 ft.	99.00	ppm
Grid:	8	5-6 ft.	91.00	ppm
Grid:	10	2-3 ft.	90.00	ppm
Grid:	5	5-6 ft.	44.00	ppm
Grid:	9	0-1 ft.	42.00	ppm
Grid:	3	5-6 ft.	40.00	ppm
Grid:	7	1-2 ft.	40.00	ppm
Grid:	10	5-6 ft.	40.00	ppm
Grid:	4	5-6 ft.	38.00	ppm
Grid:	14	5-6 ft.	37.00	ppm
Grid:	5	2-3 ft.	35.00	ppm
Grid:	14	0-1 ft.	35.00	ppm
Grid:	4	0-1 ft.	28.00	ppm

Grid:	6	5-6 ft.	27.00	ppm	
Grid:	8	0-1 ft.	27.00	ppm	
Grid:	6	1-2 ft.	25.00	ppm	
Grid:	3	0-1 ft.	25.00	ppm	
Grid:	17	0-1 ft.	25.00	ppm	
Grid:	17	5-6 ft.	23.00	ppm	
Grid:	13	5-6 ft.	22.00	ppm	
Grid:	16	0-1 ft.	19.00	ppm	
Grid:	17	2-3 ft.	15.00	ppm	
Grid:	15	0-1 ft.	15.00	ppm	
Grid:	16	1-2 ft.	13.00	ppm	
Grid:	17	1-2 ft.	13.00	ppm	
Grid:	16	2-3 ft.	12.00	ppm	
Grid:	15	2-3 ft.	12.00	ppm	
Grid:	4	2-3 ft.	12.00	ppm	
Grid:	11	10 ft.	11.00	ppm	U
Grid:	11	12 ft.	11.00	ppm	U
Grid:	3	2-3 ft.	10.00	ppm	U
Grid:	6	2-3 ft.	10.00	ppm	U
Grid:	7	2-3 ft.	10.00	ppm	U
Grid:	8	2-3 ft.	10.00	ppm	U
Grid:	8	1-2 ft.	10.00	ppm	U
Grid:	9	2-3 ft.	10.00	ppm	U
Grid:	9	1-2 ft.	10.00	ppm	U
Grid:	12	2-3 ft.	10.00	ppm	U
Grid:	13	2-3 ft.	10.00	ppm	U
Grid:	13	1-2 ft.	10.00	ppm	U
Grid:	14	2-3 ft.	10.00	ppm	U
Grid:	14	1-2 ft.	10.00	ppm	U
Grid:	15	1-2 ft.	10.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	31	0-1 ft.	617.00	ppm
Grid:	22	0-1 ft.	339.00	ppm
Grid:	49	0-1 ft.	328.00	ppm
Grid:	23	0-1 ft.	226.00	ppm
Grid:	67	0-1 ft.	225.00	ppm
Grid:	68	0-1 ft.	178.00	ppm
Grid:	32	0-1 ft.	172.00	ppm
Grid:	41	0-1 ft.	159.00	ppm
Grid:	55	0-1 ft.	122.00	ppm
Grid:	19	0-1 ft.	118.00	ppm
Grid:	21	0-1 ft.	113.00	ppm
Grid:	20	0-1 ft.	98.00	ppm
Grid:	46	0-1 ft.	71.00	ppm
Grid:	53	0-1 ft.	67.00	ppm
Grid:	1	0-1 ft.	66.00	ppm
Grid:	44	0-1 ft.	64.00	ppm
Grid:	54	0-1 ft.	61.00	ppm
Grid:	34	0-1 ft.	56.00	ppm
Grid:	42	0-1 ft.	56.00	ppm
Grid:	66	0-1 ft.	55.00	ppm
Grid:	50	0-1 ft.	55.00	ppm
Grid:	40	0-1 ft.	53.00	ppm
Grid:	25	0-1 ft.	53.00	ppm
Grid:	18	2-3 ft.	50.00	ppm
Grid:	20	2-3 ft.	49.00	ppm
Grid:	52	0-1 ft.	44.00	ppm
Grid:	18	0-1 ft.	40.00	ppm
Grid:	29	0-1 ft.	39.00	ppm
Grid:	25	2-3 ft.	39.00	ppm
Grid:	22	2-3 ft.	36.00	ppm
Grid:	47	0-1 ft.	35.00	ppm
Grid:	45	0-1 ft.	35.00	ppm
Grid:	27	0-1 ft.	34.00	ppm
Grid:	56	0-1 ft.	32.00	ppm
Grid:	43	0-1 ft.	29.00	ppm
Grid:	26	2-3 ft.	27.00	ppm
Grid:	39	0-1 ft.	27.00	ppm
Grid:	29	2-3 ft.	25.00	ppm

Grid:	27	2-3 ft.	25.00	ppm	
Grid:	2	5-6 ft.	24.00	ppm	
Grid:	28	2-3 ft.	23.00	ppm	
Grid:	19	2-3 ft.	21.00	ppm	
Grid:	30	0-1 ft.	21.00	ppm	
Grid:	59	0-1 ft.	21.00	ppm	
Grid:	64	0-1 ft.	20.00	ppm	
Grid:	26	0-1 ft.	18.00	ppm	
Grid:	70	0-1 ft.	16.00	ppm	
Grid:	23	2-3 ft.	15.00	ppm	
Grid:	62	0-1 ft.	14.00	ppm	
Grid:	63	0-1 ft.	14.00	ppm	
Grid:	2	1-2 ft.	13.00	ppm	
Grid:	69	0-1 ft.	13.00	ppm	
Grid:	21	2-3 ft.	12.00	ppm	U
Grid:	35	0-1 ft.	12.00	ppm	U
Grid:	36	0-1 ft.	12.00	ppm	U
Grid:	33	0-1 ft.	12.00	ppm	U
Grid:	38	0-1 ft.	12.00	ppm	U
Grid:	51	0-1 ft.	12.00	ppm	U
Grid:	37	0-1 ft.	12.00	ppm	U
Grid:	48	0-1 ft.	12.00	ppm	U
Grid:	57	0-1 ft.	12.00	ppm	U
Grid:	54	0-1 ft.	12.00	ppm	U
Grid:	60	0-1 ft.	12.00	ppm	U
Grid:	65	0-1 ft.	11.00	ppm	U
Grid:	30	2-3 ft.	11.00	ppm	U
Grid:	58	0-1 ft.	11.00	ppm	U
Grid:	61	0-1 ft.	11.00	ppm	U
Grid:	1	2-3 ft.	10.00	ppm	U
Grid:	1	1-2 ft.	10.00	ppm	U
Grid:	2	2-3 ft.	10.00	ppm	U
Grid:	2	0-1 ft.	10.00	ppm	U
Grid:	28	0-1 ft.	10.00	ppm	U

Outside RCRA Area

Grid:	364	0-1 ft.	13000.00	ppm
Grid:	82	0-1 ft.	6600.00	ppm
Grid:	312	0-1 ft.	4900.00	ppm
Grid:	107	0-1 ft.	2300.00	ppm
Grid:	326	0-1 ft.	1700.00	ppm
Grid:	361	0-1 ft.	560.00	ppm
Grid:	276	0-1 ft.	550.00	ppm
Grid:	274	0-1 ft.	540.00	ppm
Grid:	102	0-1 ft.	420.00	ppm
Grid:	381	0-1 ft.	380.00	ppm
Grid:	184	0-1 ft.	340.00	ppm
Grid:	146	5-6 ft.	335.00	ppm
Grid:	146	2-3 ft.	260.00	ppm
Grid:	228	0-1 ft.	199.00	ppm
Grid:	182	0-1 ft.	195.00	ppm
Grid:	S2	0-1 ft.	168.00	ppm
Grid:	104	0-1 ft.	160.00	ppm
Grid:	140	0-1 ft.	154.00	ppm
Grid:	161	0-1 ft.	151.00	ppm
Grid:	218	0-1 ft.	147.00	ppm
Grid:	154	0-1 ft.	137.00	ppm
Grid:	135	0-1 ft.	121.00	ppm
Grid:	418	0-1 ft.	120.00	ppm
Grid:	417	0-1 ft.	115.00	ppm
Grid:	146	0-1 ft.	96.00	ppm
Grid:	166	0-1 ft.	93.00	ppm
Grid:	S1	0-1 ft.	77.00	ppm
Grid:	366	0-1 ft.	67.00	ppm
Grid:	252	0-1 ft.	48.00	ppm
Grid:	186	0-1 ft.	44.00	ppm
Grid:	370	0-1 ft.	44.00	ppm
Grid:	172	0-1 ft.	42.00	ppm
Grid:	174	0-1 ft.	41.00	ppm
Grid:	439	0-1 ft.	34.00	ppm

Grid:	378	0-1 ft.	30.00	ppm	
Grid:	308	0-1 ft.	29.00	ppm	
Grid:	416	0-1 ft.	29.00	ppm	
Grid:	80	0-1 ft.	25.00	ppm	
Grid:	279	0-1 ft.	23.00	ppm	
Grid:	359	0-1 ft.	23.00	ppm	
Grid:	385	0-1 ft.	23.00	ppm	
Grid:	426	0-1 ft.	22.00	ppm	
Grid:	449	0-1 ft.	22.00	ppm	
Grid:	472	0-1 ft.	20.00	ppm	
Grid:	71	0-1 ft.	19.00	ppm	
Grid:	154	5-6 ft.	18.00	ppm	
Grid:	354	0-1 ft.	18.00	ppm	
Grid:	334	0-1 ft.	16.00	ppm	
Grid:	166	5-6 ft.	15.00	ppm	
Grid:	161	2-3 ft.	13.00	ppm	U
Grid:	154	2-3 ft.	13.00	ppm	
Grid:	394	0-1 ft.	13.00	ppm	
Grid:	398	0-1 ft.	13.00	ppm	
Grid:	247	0-1 ft.	12.00	ppm	U
Grid:	140	2-3 ft.	12.00	ppm	U
Grid:	166	2-3 ft.	12.00	ppm	U
Grid:	140	5-6 ft.	12.00	ppm	U
Grid:	236	0-1 ft.	12.00	ppm	U
Grid:	349	0-1 ft.	12.00	ppm	U
Grid:	S4	0-1 ft.	12.00	ppm	U
Grid:	121	0-1 ft.	12.00	ppm	U
Grid:	127	0-1 ft.	12.00	ppm	U
Grid:	129	0-1 ft.	12.00	ppm	U
Grid:	198	0-1 ft.	12.00	ppm	U
Grid:	206	0-1 ft.	12.00	ppm	U
Grid:	290	0-1 ft.	12.00	ppm	U
Grid:	374	0-1 ft.	12.00	ppm	U
Grid:	214	0-1 ft.	12.00	ppm	U
Grid:	464	0-1 ft.	12.00	ppm	U
Grid:	189	0-1 ft.	11.00	ppm	U
Grid:	135	2-3 ft.	11.00	ppm	U
Grid:	133	0-1 ft.	10.00	ppm	

Nickel

Inside RCRA Furnace Walls

Grid:	11	2-3 ft.	55.00	ppm
Grid:	10	0-1 ft.	47.00	ppm
Grid:	3	5-6 ft.	44.00	ppm
Grid:	8	2-3 ft.	43.00	ppm
Grid:	17	1-2 ft.	43.00	ppm
Grid:	6	5-6 ft.	43.00	ppm
Grid:	14	5-6 ft.	42.00	ppm
Grid:	17	5-6 ft.	42.00	ppm
Grid:	10	5-6 ft.	42.00	ppm
Grid:	9	2-3 ft.	41.00	ppm
Grid:	5	5-6 ft.	41.00	ppm
Grid:	11	5-6 ft.	40.00	ppm
Grid:	15	2-3 ft.	40.00	ppm
Grid:	4	5-6 ft.	40.00	ppm
Grid:	4	2-3 ft.	39.00	ppm
Grid:	13	5-6 ft.	39.00	ppm
Grid:	16	1-2 ft.	39.00	ppm
Grid:	8	1-2 ft.	38.00	ppm
Grid:	10	2-3 ft.	38.00	ppm
Grid:	7	2-3 ft.	38.00	ppm
Grid:	12	2-3 ft.	38.00	ppm
Grid:	17	2-3 ft.	37.00	ppm
Grid:	16	2-3 ft.	36.00	ppm
Grid:	11	1-2 ft.	36.00	ppm
Grid:	9	1-2 ft.	35.00	ppm
Grid:	15	1-2 ft.	35.00	ppm
Grid:	5	1-2 ft.	34.00	ppm
Grid:	6	2-3 ft.	34.00	ppm

Grid:	5	2-3 ft.	33.00	ppm
Grid:	3	2-3 ft.	33.00	ppm
Grid:	13	2-3 ft.	33.00	ppm
Grid:	4	1-2 ft.	33.00	ppm
Grid:	8	5-6 ft.	32.00	ppm
Grid:	13	1-2 ft.	31.00	ppm
Grid:	14	2-3 ft.	31.00	ppm
Grid:	12	0-1 ft.	29.00	ppm
Grid:	12	1-2 ft.	27.00	ppm
Grid:	3	1-2 ft.	21.00	ppm
Grid:	10	1-2 ft.	20.00	ppm
Grid:	13	0-1 ft.	20.00	ppm
Grid:	3	0-1 ft.	20.00	ppm
Grid:	6	1-2 ft.	19.00	ppm
Grid:	8	0-1 ft.	19.00	ppm
Grid:	5	0-1 ft.	18.00	ppm
Grid:	9	0-1 ft.	18.00	ppm
Grid:	4	0-1 ft.	17.00	ppm
Grid:	17	0-1 ft.	17.00	ppm
Grid:	16	0-1 ft.	17.00	ppm
Grid:	6	0-1 ft.	16.00	ppm
Grid:	14	1-2 ft.	16.00	ppm
Grid:	7	1-2 ft.	16.00	ppm
Grid:	11	0-1 ft.	14.00	ppm
Grid:	7	0-1 ft.	13.00	ppm
Grid:	11	10 ft.	12.00	ppm
Grid:	15	0-1 ft.	12.00	ppm
Grid:	14	0-1 ft.	11.00	ppm
Grid:	11	12 ft.	9.00	ppm

Inside RCRA Area, But Outside Walls

Grid:	67	0-1 ft.	124.00	ppm
Grid:	27	2-3 ft.	53.00	ppm
Grid:	64	0-1 ft.	53.00	ppm
Grid:	63	0-1 ft.	50.00	ppm
Grid:	65	0-1 ft.	49.00	ppm
Grid:	69	0-1 ft.	49.00	ppm
Grid:	45	0-1 ft.	47.00	ppm
Grid:	38	0-1 ft.	47.00	ppm
Grid:	20	2-3 ft.	46.00	ppm
Grid:	58	0-1 ft.	45.00	ppm
Grid:	41	0-1 ft.	44.00	ppm
Grid:	37	0-1 ft.	44.00	ppm
Grid:	36	0-1 ft.	44.00	ppm
Grid:	34	0-1 ft.	43.00	ppm
Grid:	60	0-1 ft.	43.00	ppm
Grid:	30	2-3 ft.	43.00	ppm
Grid:	22	2-3 ft.	43.00	ppm
Grid:	28	2-3 ft.	42.00	ppm
Grid:	42	0-1 ft.	42.00	ppm
Grid:	66	0-1 ft.	42.00	ppm
Grid:	19	2-3 ft.	42.00	ppm
Grid:	29	2-3 ft.	42.00	ppm
Grid:	23	2-3 ft.	41.00	ppm
Grid:	59	0-1 ft.	41.00	ppm
Grid:	47	0-1 ft.	40.00	ppm
Grid:	18	2-3 ft.	40.00	ppm
Grid:	2	5-6 ft.	40.00	ppm
Grid:	25	2-3 ft.	40.00	ppm
Grid:	26	2-3 ft.	40.00	ppm
Grid:	55	0-1 ft.	38.00	ppm
Grid:	56	0-1 ft.	38.00	ppm
Grid:	33	0-1 ft.	38.00	ppm
Grid:	44	0-1 ft.	37.00	ppm
Grid:	28	0-1 ft.	37.00	ppm
Grid:	26	0-1 ft.	37.00	ppm
Grid:	62	0-1 ft.	37.00	ppm
Grid:	61	0-1 ft.	36.00	ppm
Grid:	22	0-1 ft.	36.00	ppm
Grid:	29	0-1 ft.	34.00	ppm

Grid:	43	0-1 ft.	34.00	ppm
Grid:	1	1-2 ft.	33.00	ppm
Grid:	48	0-1 ft.	32.00	ppm
Grid:	35	0-1 ft.	32.00	ppm
Grid:	18	0-1 ft.	32.00	ppm
Grid:	2	1-2 ft.	31.00	ppm
Grid:	30	0-1 ft.	31.00	ppm
Grid:	1	2-3 ft.	31.00	ppm
Grid:	49	0-1 ft.	31.00	ppm
Grid:	2	2-3 ft.	30.00	ppm
Grid:	57	0-1 ft.	29.00	ppm
Grid:	19	0-1 ft.	29.00	ppm
Grid:	31	0-1 ft.	28.00	ppm
Grid:	54	0-1 ft.	28.00	ppm
Grid:	46	0-1 ft.	26.00	ppm
Grid:	40	0-1 ft.	26.00	ppm
Grid:	21	2-3 ft.	25.00	ppm
Grid:	2	0-1 ft.	25.00	ppm
Grid:	25	0-1 ft.	24.00	ppm
Grid:	68	0-1 ft.	24.00	ppm
Grid:	21	0-1 ft.	24.00	ppm
Grid:	50	0-1 ft.	23.00	ppm
Grid:	32	0-1 ft.	23.00	ppm
Grid:	51	0-1 ft.	23.00	ppm
Grid:	23	0-1 ft.	22.00	ppm
Grid:	52	0-1 ft.	21.00	ppm
Grid:	70	0-1 ft.	21.00	ppm
Grid:	20	0-1 ft.	20.00	ppm
Grid:	53	0-1 ft.	20.00	ppm
Grid:	1	0-1 ft.	19.00	ppm
Grid:	27	0-1 ft.	18.00	ppm
Grid:	54	0-1 ft.	16.00	ppm
Grid:	39	0-1 ft.	14.00	ppm

Outside RCRA Area

Grid:	312	0-1 ft.	81.00	ppm
Grid:	140	2-3 ft.	40.00	ppm
Grid:	154	2-3 ft.	34.00	ppm
Grid:	S2	0-1 ft.	31.00	ppm
Grid:	154	5-6 ft.	27.00	ppm
Grid:	198	0-1 ft.	27.00	ppm
Grid:	334	0-1 ft.	26.00	ppm
Grid:	364	0-1 ft.	25.00	ppm
Grid:	166	5-6 ft.	24.00	ppm
Grid:	172	0-1 ft.	24.00	ppm
Grid:	154	0-1 ft.	24.00	ppm
Grid:	349	0-1 ft.	24.00	ppm
Grid:	182	0-1 ft.	23.00	ppm
Grid:	161	0-1 ft.	22.00	ppm
Grid:	464	0-1 ft.	22.00	ppm
Grid:	449	0-1 ft.	21.00	ppm
Grid:	71	0-1 ft.	21.00	ppm
Grid:	146	0-1 ft.	21.00	ppm
Grid:	166	2-3 ft.	21.00	ppm
Grid:	247	0-1 ft.	21.00	ppm
Grid:	166	0-1 ft.	20.00	ppm
Grid:	82	0-1 ft.	20.00	ppm
Grid:	184	0-1 ft.	20.00	ppm
Grid:	228	0-1 ft.	20.00	ppm
Grid:	236	0-1 ft.	19.00	ppm
Grid:	439	0-1 ft.	19.00	ppm
Grid:	274	0-1 ft.	19.00	ppm
Grid:	279	0-1 ft.	19.00	ppm
Grid:	385	0-1 ft.	19.00	ppm
Grid:	398	0-1 ft.	19.00	ppm
Grid:	326	0-1 ft.	18.00	ppm
Grid:	127	0-1 ft.	18.00	ppm
Grid:	133	0-1 ft.	18.00	ppm
Grid:	366	0-1 ft.	18.00	ppm
Grid:	290	0-1 ft.	17.00	ppm

Grid:	381	0-1 ft.	17.00	ppm	
Grid:	146	2-3 ft.	17.00	ppm	
Grid:	140	5-6 ft.	16.00	ppm	
Grid:	S4	0-1 ft.	16.00	ppm	
Grid:	161	2-3 ft.	16.00	ppm	
Grid:	214	0-1 ft.	16.00	ppm	
Grid:	252	0-1 ft.	15.00	ppm	
Grid:	146	5-6 ft.	15.00	ppm	
Grid:	426	0-1 ft.	15.00	ppm	
Grid:	370	0-1 ft.	15.00	ppm	
Grid:	102	0-1 ft.	14.00	ppm	
Grid:	129	0-1 ft.	13.00	ppm	
Grid:	189	0-1 ft.	13.00	ppm	
Grid:	276	0-1 ft.	13.00	ppm	
Grid:	374	0-1 ft.	13.00	ppm	
Grid:	354	0-1 ft.	12.00	ppm	
Grid:	104	0-1 ft.	12.00	ppm	
Grid:	107	0-1 ft.	12.00	ppm	
Grid:	S1	0-1 ft.	12.00	ppm	
Grid:	186	0-1 ft.	11.00	ppm	
Grid:	361	0-1 ft.	11.00	ppm	
Grid:	378	0-1 ft.	11.00	ppm	
Grid:	394	0-1 ft.	11.00	ppm	
Grid:	140	0-1 ft.	10.00	ppm	
Grid:	80	0-1 ft.	10.00	ppm	
Grid:	418	0-1 ft.	10.00	ppm	
Grid:	359	0-1 ft.	9.00	ppm	
Grid:	121	0-1 ft.	9.00	ppm	
Grid:	206	0-1 ft.	9.00	ppm	
Grid:	416	0-1 ft.	8.00	ppm	
Grid:	135	0-1 ft.	8.00	ppm	
Grid:	472	0-1 ft.	8.00	ppm	
Grid:	135	2-3 ft.	7.00	ppm	
Grid:	174	0-1 ft.	7.00	ppm	
Grid:	218	0-1 ft.	6.00	ppm	U
Grid:	308	0-1 ft.	6.00	ppm	U
Grid:	417	0-1 ft.	6.00	ppm	U

RDX

Inside RCRA Furnace Walls

Grid:	14	0-1 ft.	1.00	ppm	U
Grid:	15	0-1 ft.	1.00	ppm	U
Grid:	16	0-1 ft.	1.00	ppm	U
Grid:	17	0-1 ft.	1.00	ppm	U

Inside RCRA Area, But Outside Walls

Grid:	1	0-1 ft.	1.00	ppm	U

Zinc

Inside RCRA Furnace Walls

Grid:	11	0-1 ft.	15600.00	ppm
Grid:	4	1-2 ft.	2340.00	ppm
Grid:	5	0-1 ft.	2315.00	ppm
Grid:	12	0-1 ft.	1730.00	ppm
Grid:	3	1-2 ft.	1621.00	ppm
Grid:	11	1-2 ft.	1350.00	ppm
Grid:	7	0-1 ft.	1277.00	ppm
Grid:	13	0-1 ft.	1261.00	ppm
Grid:	4	0-1 ft.	1222.00	ppm
Grid:	10	0-1 ft.	969.00	ppm
Grid:	6	0-1 ft.	691.00	ppm
Grid:	5	1-2 ft.	687.00	ppm
Grid:	12	1-2 ft.	635.00	ppm
Grid:	3	0-1 ft.	607.00	ppm
Grid:	4	5-6 ft.	503.00	ppm
Grid:	8	5-6 ft.	441.00	ppm

Grid:	11	2-3 ft.	413.00	ppm
Grid:	7	1-2 ft.	304.00	ppm
Grid:	5	5-6 ft.	199.00	ppm
Grid:	10	1-2 ft.	173.00	ppm
Grid:	9	0-1 ft.	151.00	ppm
Grid:	4	2-3 ft.	130.00	ppm
Grid:	6	1-2 ft.	130.00	ppm
Grid:	8	0-1 ft.	127.00	ppm
Grid:	6	2-3 ft.	111.00	ppm
Grid:	14	0-1 ft.	111.00	ppm
Grid:	10	2-3 ft.	97.00	ppm
Grid:	17	2-3 ft.	91.00	ppm
Grid:	13	2-3 ft.	91.00	ppm
Grid:	3	2-3 ft.	91.00	ppm
Grid:	10	5-6 ft.	86.00	ppm
Grid:	15	1-2 ft.	83.00	ppm
Grid:	16	1-2 ft.	82.00	ppm
Grid:	5	2-3 ft.	81.00	ppm
Grid:	17	1-2 ft.	78.00	ppm
Grid:	15	2-3 ft.	78.00	ppm
Grid:	9	1-2 ft.	78.00	ppm
Grid:	14	1-2 ft.	78.00	ppm
Grid:	13	1-2 ft.	77.00	ppm
Grid:	11	5-6 ft.	76.00	ppm
Grid:	7	2-3 ft.	75.00	ppm
Grid:	3	5-6 ft.	72.00	ppm
Grid:	6	5-6 ft.	72.00	ppm
Grid:	8	1-2 ft.	72.00	ppm
Grid:	16	2-3 ft.	69.00	ppm
Grid:	17	5-6 ft.	69.00	ppm
Grid:	12	2-3 ft.	68.00	ppm
Grid:	9	2-3 ft.	66.00	ppm
Grid:	8	2-3 ft.	64.00	ppm
Grid:	14	5-6 ft.	62.00	ppm
Grid:	14	2-3 ft.	62.00	ppm
Grid:	16	0-1 ft.	62.00	ppm
Grid:	13	5-6 ft.	61.00	ppm
Grid:	11	10 ft.	61.00	ppm
Grid:	11	12 ft.	59.00	ppm
Grid:	15	0-1 ft.	40.00	ppm
Grid:	17	0-1 ft.	10.00	ppm

Inside RCRA Area, But Outside Walls

Grid:	31	0-1 ft.	3797.00	ppm
Grid:	41	0-1 ft.	3498.00	ppm
Grid:	22	0-1 ft.	2700.00	ppm
Grid:	67	0-1 ft.	1669.00	ppm
Grid:	49	0-1 ft.	1501.00	ppm
Grid:	68	0-1 ft.	1237.00	ppm
Grid:	32	0-1 ft.	980.00	ppm
Grid:	55	0-1 ft.	946.00	ppm
Grid:	23	0-1 ft.	764.00	ppm
Grid:	21	0-1 ft.	596.00	ppm
Grid:	66	0-1 ft.	588.00	ppm
Grid:	42	0-1 ft.	486.00	ppm
Grid:	19	0-1 ft.	414.00	ppm
Grid:	25	0-1 ft.	413.00	ppm
Grid:	54	0-1 ft.	302.00	ppm
Grid:	40	0-1 ft.	302.00	ppm
Grid:	20	0-1 ft.	268.00	ppm
Grid:	34	0-1 ft.	241.00	ppm
Grid:	46	0-1 ft.	197.00	ppm
Grid:	56	0-1 ft.	187.00	ppm
Grid:	52	0-1 ft.	184.00	ppm
Grid:	1	0-1 ft.	169.00	ppm
Grid:	64	0-1 ft.	153.00	ppm
Grid:	39	0-1 ft.	148.00	ppm
Grid:	53	0-1 ft.	145.00	ppm
Grid:	29	0-1 ft.	136.00	ppm
Grid:	43	0-1 ft.	135.00	ppm

Grid:	63	0-1 ft.	134.00	ppm
Grid:	44	0-1 ft.	132.00	ppm
Grid:	18	0-1 ft.	132.00	ppm
Grid:	35	0-1 ft.	132.00	ppm
Grid:	30	0-1 ft.	127.00	ppm
Grid:	48	0-1 ft.	123.00	ppm
Grid:	2	1-2 ft.	123.00	ppm
Grid:	45	0-1 ft.	117.00	ppm
Grid:	59	0-1 ft.	117.00	ppm
Grid:	26	0-1 ft.	114.00	ppm
Grid:	47	0-1 ft.	108.00	ppm
Grid:	25	2-3 ft.	107.00	ppm
Grid:	50	0-1 ft.	107.00	ppm
Grid:	58	0-1 ft.	107.00	ppm
Grid:	60	0-1 ft.	105.00	ppm
Grid:	65	0-1 ft.	103.00	ppm
Grid:	51	0-1 ft.	103.00	ppm
Grid:	27	0-1 ft.	101.00	ppm
Grid:	2	2-3 ft.	95.00	ppm
Grid:	27	2-3 ft.	88.00	ppm
Grid:	61	0-1 ft.	85.00	ppm
Grid:	54	0-1 ft.	85.00	ppm
Grid:	57	0-1 ft.	83.00	ppm
Grid:	62	0-1 ft.	83.00	ppm
Grid:	69	0-1 ft.	82.00	ppm
Grid:	29	2-3 ft.	82.00	ppm
Grid:	36	0-1 ft.	81.00	ppm
Grid:	70	0-1 ft.	78.00	ppm
Grid:	23	2-3 ft.	78.00	ppm
Grid:	37	0-1 ft.	77.00	ppm
Grid:	28	0-1 ft.	76.00	ppm
Grid:	26	2-3 ft.	74.00	ppm
Grid:	38	0-1 ft.	73.00	ppm
Grid:	22	2-3 ft.	73.00	ppm
Grid:	1	1-2 ft.	73.00	ppm
Grid:	20	2-3 ft.	72.00	ppm
Grid:	19	2-3 ft.	69.00	ppm
Grid:	28	2-3 ft.	68.00	ppm
Grid:	2	5-6 ft.	67.00	ppm
Grid:	21	2-3 ft.	67.00	ppm
Grid:	18	2-3 ft.	62.00	ppm
Grid:	30	2-3 ft.	62.00	ppm
Grid:	1	2-3 ft.	61.00	ppm
Grid:	33	0-1 ft.	57.00	ppm
Grid:	2	0-1 ft.	52.00	ppm

Outside RCRA Area

Grid:	82	0-1 ft.	210000.00	ppm
Grid:	312	0-1 ft.	33400.00	ppm
Grid:	326	0-1 ft.	11000.00	ppm
Grid:	107	0-1 ft.	6400.00	ppm
Grid:	274	0-1 ft.	5400.00	ppm
Grid:	364	0-1 ft.	4800.00	ppm
Grid:	276	0-1 ft.	2700.00	ppm
Grid:	418	0-1 ft.	2600.00	ppm
Grid:	146	2-3 ft.	2400.00	ppm
Grid:	184	0-1 ft.	2300.00	ppm
Grid:	381	0-1 ft.	2100.00	ppm
Grid:	228	0-1 ft.	1750.00	ppm
Grid:	146	5-6 ft.	1560.00	ppm
Grid:	182	0-1 ft.	1500.00	ppm
Grid:	361	0-1 ft.	1500.00	ppm
Grid:	102	0-1 ft.	1400.00	ppm
Grid:	417	0-1 ft.	934.00	ppm
Grid:	104	0-1 ft.	860.00	ppm
Grid:	218	0-1 ft.	844.00	ppm
Grid:	S2	0-1 ft.	677.00	ppm
Grid:	366	0-1 ft.	660.00	ppm
Grid:	146	0-1 ft.	616.00	ppm
Grid:	140	0-1 ft.	460.00	ppm

Grid:	S1	0-1 ft.	425.00	ppm
Grid:	186	0-1 ft.	420.00	ppm
Grid:	161	0-1 ft.	395.00	ppm
Grid:	370	0-1 ft.	370.00	ppm
Grid:	154	0-1 ft.	304.00	ppm
Grid:	439	0-1 ft.	255.00	ppm
Grid:	166	0-1 ft.	249.00	ppm
Grid:	252	0-1 ft.	230.00	ppm
Grid:	378	0-1 ft.	160.00	ppm
Grid:	236	0-1 ft.	154.00	ppm
Grid:	135	0-1 ft.	150.00	ppm
Grid:	308	0-1 ft.	149.00	ppm
Grid:	426	0-1 ft.	138.00	ppm
Grid:	472	0-1 ft.	136.00	ppm
Grid:	247	0-1 ft.	134.00	ppm
Grid:	279	0-1 ft.	130.00	ppm
Grid:	385	0-1 ft.	130.00	ppm
Grid:	449	0-1 ft.	122.00	ppm
Grid:	334	0-1 ft.	118.00	ppm
Grid:	154	5-6 ft.	115.00	ppm
Grid:	416	0-1 ft.	110.00	ppm
Grid:	166	5-6 ft.	107.00	ppm
Grid:	354	0-1 ft.	104.00	ppm
Grid:	80	0-1 ft.	100.00	ppm
Grid:	174	0-1 ft.	100.00	ppm
Grid:	398	0-1 ft.	99.00	ppm
Grid:	172	0-1 ft.	98.00	ppm
Grid:	154	2-3 ft.	96.00	ppm
Grid:	166	2-3 ft.	93.00	ppm
Grid:	464	0-1 ft.	91.00	ppm
Grid:	71	0-1 ft.	91.00	ppm
Grid:	140	5-6 ft.	89.00	ppm
Grid:	198	0-1 ft.	86.00	ppm
Grid:	349	0-1 ft.	86.00	ppm
Grid:	S4	0-1 ft.	85.00	ppm
Grid:	374	0-1 ft.	85.00	ppm
Grid:	359	0-1 ft.	84.00	ppm
Grid:	140	2-3 ft.	80.00	ppm
Grid:	133	0-1 ft.	80.00	ppm
Grid:	189	0-1 ft.	80.00	ppm
Grid:	290	0-1 ft.	80.00	ppm
Grid:	214	0-1 ft.	71.00	ppm
Grid:	161	2-3 ft.	71.00	ppm
Grid:	127	0-1 ft.	70.00	ppm
Grid:	129	0-1 ft.	69.00	ppm
Grid:	121	0-1 ft.	62.00	ppm
Grid:	206	0-1 ft.	59.00	ppm
Grid:	394	0-1 ft.	56.00	ppm
Grid:	135	2-3 ft.	44.00	ppm

APPENDIX C

RECENT DEACTIVATION FURNACE AREA AND PAD #45 SOIL SAMPLING DATA

Location: **Deactivation Furnace Area**
Station: **DF1153-SB01**

DFA-SB-001-1153-SO **0.0-2.0 FT** **Field Sample Type: Composite - Surface Soil** **Collected: 11/21/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	14800	MG/KG		
Antimony	0.57	MG/KG	U	UJ
Arsenic	12.7	MG/KG		
Barium	81.0	MG/KG		
Beryllium	0.79	MG/KG		
Cadmium	0.57	MG/KG	U	
Calcium	19000	MG/KG		
Chromium	20.4	MG/KG		
Cobalt	17.1	MG/KG	U	
Copper	33.4	MG/KG		
Iron	23700	MG/KG	MBB	
Lead	16.4	MG/KG		
Magnesium	6450	MG/KG		
Manganese	458	MG/KG		
Mercury	0.11	MG/KG	U	
Nickel	26.0	MG/KG		
Potassium	3230	MG/KG		
Selenium	0.57	MG/KG	U	
Silver	1.1	MG/KG	U	
Sodium	570	MG/KG	U	
Thallium	0.57	MG/KG	U	
Vanadium	25.3	MG/KG		
Zinc	93.0	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1154-SB01

DFA-SB-001-1154-SO 2.0-4.0 FT **Field Sample Type:** Composite - Subsurface Soil **Collected:** 11/21/97

Explosives	Result	Units	Qualifiers Lab	Qualifiers Data
1,3,5-Trinitrobenzene	0.25	MG/KG	U	
1,3-Dinitrobenzene	0.25	MG/KG	U	
2,4,6-Trinitrotoluene	0.25	MG/KG	U	
2,4-Dinitrotoluene	0.25	MG/KG	U	
2,6-Dinitrotoluene	0.25	MG/KG	U	
2-Nitrotoluene	0.25	MG/KG	U	
3-Nitrotoluene	0.25	MG/KG	U	
4-Nitrotoluene	0.25	MG/KG	U	
HMX	0.50	MG/KG	U	
Nitrobenzene	0.25	MG/KG	U	
Nitroglycerin	2.5	MG/KG	U	
RDX	0.50	MG/KG	U	
Tetryl	0.65	MG/KG	U	

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	10800	MG/KG		
Antimony	0.58	MG/KG	U	UJ
Arsenic	13.0	MG/KG		
Barium	56.7	MG/KG		
Beryllium	0.58	MG/KG		
Cadmium	0.58	MG/KG	U	
Calcium	25000	MG/KG		
Chromium	17.5	MG/KG		
Cobalt	17.3	MG/KG	U	
Copper	21.4	MG/KG		
Iron	23100	MG/KG	MBB	
Lead	10.7	MG/KG		
Magnesium	5840	MG/KG		
Manganese	350	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	26.0	MG/KG		
Potassium	2210	MG/KG		
Selenium	0.58	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	576	MG/KG	U	
Thallium	0.58	MG/KG	U	
Vanadium	19.6	MG/KG		
Zinc	65.8	MG/KG	L	J

Location: Deactivation Furnace Area
Station: DF1155-SB01

DFA-SB-001-1155-SO 4.0-6.0 FT **Field Sample Type:** Composite - Subsurface Soil **Collected:** 11/21/97

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	11700	MG/KG		
Antimony	0.58	MG/KG	U	UJ
Arsenic	12.7	MG/KG		
Barium	64.6	MG/KG		
Beryllium	0.58	MG/KG	U	
Cadmium	0.58	MG/KG	U	
Calcium	26500	MG/KG		
Chromium	18.1	MG/KG		
Cobalt	17.5	MG/KG	U	
Copper	20.2	MG/KG		
Iron	24000	MG/KG	MBB	
Lead	11.4	MG/KG		
Magnesium	7150	MG/KG		
Manganese	405	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	28.6	MG/KG		
Potassium	2300	MG/KG		
Selenium	0.58	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	583	MG/KG	U	
Thallium	0.58	MG/KG	U	
Vanadium	21.0	MG/KG		
Zinc	65.8	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1156-SB01

DFA-SB-001-1156-SO 6.0-8.0 FT **Field Sample Type:** Composite - Subsurface Soil **Collected:** 11/21/97

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	7290	MG/KG		
Antimony	0.59	MG/KG	U	UJ
Arsenic	15.3	MG/KG		
Barium	39.6	MG/KG		
Beryllium	0.59	MG/KG	U	
Cadmium	0.59	MG/KG	U	
Calcium	19300	MG/KG		
Chromium	11.8	MG/KG		
Cobalt	17.7	MG/KG	U	
Copper	20.7	MG/KG		
Iron	19500	MG/KG	MBB	
Lead	9.9	MG/KG		
Magnesium	4530	MG/KG		
Manganese	314	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	17.5	MG/KG		
Potassium	1440	MG/KG		
Selenium	0.59	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	590	MG/KG	U	
Thallium	0.59	MG/KG	U	
Vanadium	13.7	MG/KG		
Zinc	56.4	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1157-SB01

DFA-SB-001-1157-SO **8.0-10 FT** **Field Sample Type: Composite - Subsurface Soil** **Collected: 11/21/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	5650	MG/KG		
Antimony	0.56	MG/KG	U	UJ
Arsenic	11.6	MG/KG		
Barium	22.2	MG/KG	U	
Beryllium	0.56	MG/KG	U	
Cadmium	0.56	MG/KG	U	
Calcium	1890	MG/KG		
Chromium	9.6	MG/KG		
Cobalt	16.7	MG/KG	U	
Copper	22.5	MG/KG		
Iron	17100	MG/KG	MBB	
Lead	9.5	MG/KG		
Magnesium	1990	MG/KG		
Manganese	458	MG/KG		
Mercury	0.11	MG/KG	U	
Nickel	17.4	MG/KG		
Potassium	998	MG/KG		
Selenium	0.56	MG/KG	U	
Silver	1.1	MG/KG	U	
Sodium	556	MG/KG	U	
Thallium	0.56	MG/KG	U	
Vanadium	10.8	MG/KG		
Zinc	58.6	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1158-SB02

DFA-SB-002-1158-SO 0.0-2.0 FT **Field Sample Type:** Composite - Surface Soil **Collected:** 11/23/97

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	13900	MG/KG		
Antimony	0.59	MG/KG	U	UJ
Arsenic	20.6	MG/KG		
Barium	65.9	MG/KG		
Beryllium	1.0	MG/KG		
Cadmium	0.59	MG/KG	U	
Calcium	2190	MG/KG		
Chromium	22.2	MG/KG		
Cobalt	17.6	MG/KG	U	
Copper	25.0	MG/KG		
Iron	29000	MG/KG	MBB	
Lead	13.7	MG/KG		
Magnesium	4020	MG/KG		
Manganese	288	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	27.9	MG/KG		
Potassium	2640	MG/KG		
Selenium	0.59	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	588	MG/KG	U	
Thallium	0.59	MG/KG	U	
Vanadium	24.8	MG/KG		
Zinc	96.6	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1159-SB02

DFA-SB-002-1159-SO **2.0-4.0 FT** **Field Sample Type: Composite - Subsurface Soil** **Collected: 11/23/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	14200	MG/KG		
Antimony	0.57	MG/KG	U	UJ
Arsenic	13.1	MG/KG		
Barium	72.4	MG/KG		
Beryllium	0.67	MG/KG		
Cadmium	0.57	MG/KG	U	
Calcium	18800	MG/KG		
Chromium	20.7	MG/KG		
Cobalt	17.1	MG/KG	U	
Copper	21.4	MG/KG		
Iron	25500	MG/KG	MBB	
Lead	11.2	MG/KG		
Magnesium	5900	MG/KG		
Manganese	395	MG/KG		
Mercury	0.11	MG/KG	U	
Nickel	27.7	MG/KG		
Potassium	3120	MG/KG		
Selenium	0.57	MG/KG	U	
Silver	1.1	MG/KG	U	
Sodium	569	MG/KG	U	
Thallium	0.57	MG/KG	U	
Vanadium	26.3	MG/KG		
Zinc	67.9	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1160-SB02

DFA-SB-002-1160-SO 4.0-6.0 FT **Field Sample Type:** Composite - Subsurface Soil **Collected:** 11/23/97

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	16600	MG/KG		
Antimony	0.57	MG/KG	U	UJ
Arsenic	13.4	MG/KG		
Barium	80.9	MG/KG		
Beryllium	0.74	MG/KG		
Cadmium	0.57	MG/KG	U	
Calcium	25400	MG/KG		
Chromium	23.0	MG/KG		
Cobalt	17.1	MG/KG	U	
Copper	21.1	MG/KG		
Iron	25800	MG/KG	MBB	
Lead	12.9	MG/KG		
Magnesium	6240	MG/KG		
Manganese	388	MG/KG		
Mercury	0.11	MG/KG	U	
Nickel	28.5	MG/KG		
Potassium	4190	MG/KG		
Selenium	0.57	MG/KG	U	
Silver	1.1	MG/KG	U	
Sodium	570	MG/KG	U	
Thallium	0.57	MG/KG	U	
Vanadium	30.1	MG/KG		
Zinc	75.1	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1161-SB02

DFA-SB-002-1161-SO **6.0-8.0 FT** **Field Sample Type: Composite - Subsurface Soil** **Collected: 11/23/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	4830	MG/KG		
Antimony	0.56	MG/KG	U	UJ
Arsenic	13.5	MG/KG		
Barium	27.8	MG/KG		
Beryllium	0.56	MG/KG	U	
Cadmium	0.56	MG/KG	U	
Calcium	3420	MG/KG		
Chromium	8.5	MG/KG		
Cobalt	16.9	MG/KG	U	
Copper	18.4	MG/KG		
Iron	16600	MG/KG	MBB	
Lead	10.1	MG/KG		
Magnesium	2220	MG/KG		
Manganese	306	MG/KG		
Mercury	0.11	MG/KG	U	
Nickel	15.1	MG/KG		
Potassium	760	MG/KG		
Selenium	0.56	MG/KG	U	
Silver	1.1	MG/KG	U	
Sodium	563	MG/KG	U	
Thallium	0.56	MG/KG	U	
Vanadium	8.9	MG/KG		
Zinc	57.4	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1162-SB02

DFA-SB-002-1162-SO **8.0-10 FT** **Field Sample Type: Composite - Subsurface Soil** **Collected: 11/23/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	6150	MG/KG		
Antimony	0.55	MG/KG	U	UJ
Arsenic	14.9	MG/KG		
Barium	38.6	MG/KG		
Beryllium	0.55	MG/KG	U	
Cadmium	0.55	MG/KG	U	
Calcium	3580	MG/KG		
Chromium	10.3	MG/KG		
Cobalt	16.5	MG/KG	U	
Copper	22.5	MG/KG		
Iron	18300	MG/KG	MBB	
Lead	12.8	MG/KG		
Magnesium	2230	MG/KG		
Manganese	578	MG/KG		
Mercury	0.11	MG/KG	U	
Nickel	22.7	MG/KG		
Potassium	1250	MG/KG		
Selenium	0.55	MG/KG	U	
Silver	1.1	MG/KG	U	
Sodium	550	MG/KG	U	
Thallium	0.55	MG/KG	U	
Vanadium	11.8	MG/KG		
Zinc	71.4	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1151-SS01

DFA-SS-001-1151-SO 0.0-0.5 FT **Field Sample Type:** Split Sample **Collected:** 11/24/97

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	14500	MG/KG		
Antimony	0.60	MG/KG	U	UJ
Arsenic	12.5	MG/KG		
Barium	108	MG/KG		
Beryllium	1.0	MG/KG		
Cadmium	1.7	MG/KG		J
Calcium	25800	MG/KG		
Chromium	18.4	MG/KG		
Cobalt	18.0	MG/KG	U	
Copper	46.3	MG/KG		
Iron	22800	MG/KG		
Lead	34.4	MG/KG		
Magnesium	7000	MG/KG		
Manganese	678	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	24.4	MG/KG		
Potassium	2800	MG/KG		
Selenium	0.60	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	599	MG/KG	U	
Thallium	0.60	MG/KG	U	
Vanadium	22.5	MG/KG		
Zinc	178	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1225-SS01

DFA-SS-001D-1225-SO 0.0-0.5 FT **Field Sample Type: Field Duplicate** **Collected: 11/24/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	13400	MG/KG		
Antimony	0.96	MG/KG		J
Arsenic	11.0	MG/KG		
Barium	128	MG/KG		
Beryllium	1.2	MG/KG		
Cadmium	2.8	MG/KG		J
Calcium	31700	MG/KG		
Chromium	15.2	MG/KG		
Cobalt	17.4	MG/KG	U	
Copper	83.4	MG/KG		
Iron	19500	MG/KG		
Lead	46.5	MG/KG		
Magnesium	7380	MG/KG		
Manganese	792	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	21.3	MG/KG		
Potassium	2060	MG/KG		
Selenium	0.58	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	580	MG/KG	U	
Thallium	0.58	MG/KG	U	
Vanadium	17.3	MG/KG		
Zinc	219	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1149-SS01

DFA-SS-001S-1149-SO **0.0-0.5 FT** **Field Sample Type: Grab - Slag** **Collected: 11/24/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	25800	MG/KG		
Antimony	0.54	MG/KG	U	UJ
Arsenic	2.4	MG/KG		
Barium	487	MG/KG		
Beryllium	5.3	MG/KG		
Cadmium	0.99	MG/KG		J
Calcium	174000	MG/KG		
Chromium	12.4	MG/KG		
Cobalt	16.1	MG/KG	U	
Copper	14.1	MG/KG		
Iron	23100	MG/KG		
Lead	5.4	MG/KG		
Magnesium	30500	MG/KG		
Manganese	3170	MG/KG		
Mercury	0.11	MG/KG	U	
Nickel	4.3	MG/KG	U	
Potassium	1920	MG/KG		
Selenium	0.54	MG/KG	U	
Silver	1.1	MG/KG	U	
Sodium	1580	MG/KG		
Thallium	0.74	MG/KG		
Vanadium	11.1	MG/KG		
Zinc	28.0	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1152-SS02

DFA-SS-002-1152-SO 0.0-0.5 FT **Field Sample Type:** Composite - Surface Soil **Collected:** 11/24/97

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	15400	MG/KG		
Antimony	2.3	MG/KG		J
Arsenic	171	MG/KG		
Barium	128	MG/KG		
Beryllium	1.1	MG/KG		
Cadmium	8.9	MG/KG		J
Calcium	33900	MG/KG		
Chromium	18.9	MG/KG		
Cobalt	18.3	MG/KG	U	
Copper	545	MG/KG		
Iron	19200	MG/KG		
Lead	144	MG/KG		
Magnesium	6260	MG/KG		
Manganese	924	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	21.7	MG/KG		
Potassium	2190	MG/KG		
Selenium	0.61	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	609	MG/KG	U	
Thallium	0.61	MG/KG	U	
Vanadium	17.8	MG/KG		
Zinc	667	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1226-SS02

DFA-SS-002D-1226-SO **0.0-0.5 FT** **Field Sample Type: Field Duplicate** **Collected: 11/24/97**

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	10600	MG/KG		
Antimony	0.89	MG/KG		J
Arsenic	69.9	MG/KG		
Barium	77.2	MG/KG		
Beryllium	0.61	MG/KG	U	
Cadmium	2.9	MG/KG		J
Calcium	14500	MG/KG		
Chromium	16.5	MG/KG		
Cobalt	18.2	MG/KG	U	
Copper	158	MG/KG		
Iron	22000	MG/KG		
Lead	57.6	MG/KG		
Magnesium	4070	MG/KG		
Manganese	434	MG/KG		
Mercury	0.12	MG/KG	U	
Nickel	24.1	MG/KG		
Potassium	1850	MG/KG		
Selenium	0.61	MG/KG	U	
Silver	1.2	MG/KG	U	
Sodium	606	MG/KG	U	
Thallium	0.61	MG/KG	U	
Vanadium	18.1	MG/KG		
Zinc	272	MG/KG		J

Location: Deactivation Furnace Area
Station: DF1150-SS02

DFA-SS-002S-1150-SO 0.0-0.5 FT **Field Sample Type:** Grab - Slag **Collected:** 11/24/97

Metals	Result	Units	Qualifiers Lab	Qualifiers Data
Aluminum	31100	MG/KG		
Antimony	1.0	MG/KG	U	UJ
Arsenic	4.2	MG/KG		
Barium	328	MG/KG		
Beryllium	4.4	MG/KG		
Cadmium	6.7	MG/KG		J
Calcium	258000	MG/KG		
Chromium	16.4	MG/KG		
Cobalt	15.1	MG/KG	U	
Copper	7.9	MG/KG		
Iron	701	MG/KG		
Lead	7.3	MG/KG		
Magnesium	30200	MG/KG		
Manganese	3300	MG/KG		
Mercury	0.10	MG/KG	U	
Nickel	9.7	MG/KG		
Potassium	2560	MG/KG		
Selenium	1.0	MG/KG	U	
Silver	1.0	MG/KG	U	
Sodium	2350	MG/KG		
Thallium	1.5	MG/KG		
Vanadium	5.0	MG/KG	U	
Zinc	38.4	MG/KG		J

Northing: 563055.29
Easting: 2359575.83
Elevation:

Location: WINKLEPECK BURNING GROUND
Station : WBGss-142 PAD-68-2 10 ft E of pad

WBGss-142-0731-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/22/98

Sample Type	Explosives	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	HMX	12	MG/KG	U	U	
REG	Nitrobenzene	6.2	MG/KG	U	U	
REG	Nitrocellulose as N	3	MG/KG		J	A01
REG	Nitroglycerin	2.5	MG/KG	U	U	
REG	Nitroguanidine	0.25	MG/KG	U	UJ	A01
REG	RDX	12	MG/KG	U	U	
REG	Tetryl	16	MG/KG	U	U	

WBGss-142-0868-FD 0.0 - 1.0 FT Field Sample Type: Field Duplicate Matrix: Surface Soil Collected: 04/22/98

Sample Type	Explosives	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,3,5-Trinitrobenzene	6.2	MG/KG	U	U	
REG	1,3-Dinitrobenzene	6.2	MG/KG	U	U	
REG	2,4,6-Trinitrotoluene	27	MG/KG		=	
REG	2,4-Dinitrotoluene	0.43	MG/KG		=	
REG	2,6-Dinitrotoluene	0.25	MG/KG	U	U	
REG	2-Nitrotoluene	6.2	MG/KG	U	U	
REG	3-Nitrotoluene	6.2	MG/KG	U	U	
REG	4-Nitrotoluene	6.2	MG/KG	U	U	
REG	HMX	12	MG/KG	U	U	
REG	Nitrobenzene	6.2	MG/KG	U	U	
REG	Nitrocellulose as N	6.3	MG/KG		J	A01
REG	Nitroglycerin	1.5	MG/KG	J	J	
REG	Nitroguanidine	0.25	MG/KG	U	UJ	A01
REG	RDX	12	MG/KG	U	U	
REG	Tetryl	16	MG/KG	U	U	

Northing: 563105.59
Easting: 2359521.84
Elevation:

Location: WINKLEPECK BURNING GROUND
Station : WBGss-143 PAD-68-3 10 ft N of pad

WBGss-143-0732-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/22/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.57	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	11500	MG/KG		=	
REG	Antimony	0.57	MG/KG	U	UJ	I02
REG	Arsenic	10.6	MG/KG		=	
REG	Barium	702	MG/KG		J	I03
REG	Beryllium	0.52	MG/KG	B	U	F06
REG	Cadmium	0.57	MG/KG	U	U	
REG	Calcium	11200	MG/KG		=	
REG	Chromium	15	MG/KG		=	
REG	Cobalt	6.9	MG/KG	B	J	
REG	Copper	22.8	MG/KG		=	
REG	Iron	21100	MG/KG		=	
REG	Lead	18.3	MG/KG		=	
REG	Magnesium	2850	MG/KG		J	I02
REG	Manganese	447	MG/KG		=	
REG	Mercury	0.11	MG/KG	U	U	
REG	Nickel	16.8	MG/KG		=	
REG	Potassium	1300	MG/KG		J	I02
REG	Selenium	1	MG/KG		=	
REG	Silver	1.1	MG/KG	U	U	
REG	Sodium	116	MG/KG	B	J	
REG	Thallium	0.57	MG/KG	U	U	
REG	Vanadium	21.1	MG/KG		=	
REG	Zinc	85.9	MG/KG		J	I01,E07

Location: WINKLEPECK BURNING GROUND
Station : WBGss-144 DEAC.FURN-1 20 ft NE of RCRA boundary

Northing: 562798.20
Easting: 2356261.09
Elevation:

WBGss-144-0733-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.68	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	15400	MG/KG		=	
REG	Antimony	0.68	MG/KG	U	UJ	I02
REG	Arsenic	17.8	MG/KG		=	
REG	Barium	76	MG/KG		=	
REG	Beryllium	0.58	MG/KG	B	U	F06
REG	Cadmium	1.1	MG/KG		=	
REG	Calcium	1080	MG/KG		=	
REG	Chromium	18.9	MG/KG		=	
REG	Cobalt	10	MG/KG	B	J	
REG	Copper	36	MG/KG	L	J	E07
REG	Iron	27600	MG/KG		=	
REG	Lead	27	MG/KG		J	I02
REG	Magnesium	2780	MG/KG		=	
REG	Manganese	722	MG/KG		=	
REG	Mercury	0.041	MG/KG	B	J	
REG	Nickel	22.2	MG/KG		J	D05
REG	Potassium	1470	MG/KG		=	
REG	Selenium	0.68	MG/KG	U	U	
REG	Silver	1.4	MG/KG	U	U	
REG	Sodium	65.3	MG/KG	B	U	F01,F06
REG	Thallium	0.68	MG/KG	U	UJ	D05
REG	Vanadium	27.4	MG/KG		=	
REG	Zinc	149	MG/KG		J	I03

Sample Type	Explosives	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,3,5-Trinitrobenzene	0.25	MG/KG	U	U	
REG	1,3-Dinitrobenzene	0.25	MG/KG	U	U	
REG	2,4,6-Trinitrotoluene	0.03	MG/KG	J	J	
REG	2,4-Dinitrotoluene	0.25	MG/KG	U	U	
REG	2,6-Dinitrotoluene	0.075	MG/KG	J	J	
REG	2-Nitrotoluene	0.25	MG/KG	U	U	
REG	3-Nitrotoluene	0.25	MG/KG	U	U	
REG	4-Nitrotoluene	0.25	MG/KG	U	U	
REG	HMX	0.12	MG/KG	J	J	
REG	Nitrobenzene	0.25	MG/KG	U	U	
REG	Nitrocellulose as N	2	MG/KG	U	UJ	A05
REG	Nitroglycerin	2.5	MG/KG	U	U	
REG	Nitroguanidine	0.25	MG/KG	U	UJ	A01,A05
REG	RDX	0.5	MG/KG	U	U	
REG	Tetryl	0.65	MG/KG	U	U	

Location: WINKLEPECK BURNING GROUND
Station : WBGss-145 DEAC.FORN-2 20 ft SE of RCRA bounbary

Northing: 562807.29
Easting: 2356102.80
Elevation:

WBGss-145-0734-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.66	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	20400	MG/KG		=	
REG	Antimony	24.8	MG/KG		J	I02
REG	Arsenic	15.5	MG/KG		=	
REG	Barium	145	MG/KG		=	
REG	Beryllium	0.59	MG/KG	B	U	F06
REG	Cadmium	5	MG/KG		=	
REG	Calcium	1750	MG/KG		=	
REG	Chromium	23.1	MG/KG		=	
REG	Cobalt	9.7	MG/KG	B	J	
REG	Copper	2230	MG/KG		J	E07

Location: WINKLEPECK BURNING GROUND
Station : WBGss-145 DEAC.FORN-2 20 ft SE of RCRA bounbary

Northing: 562807.29
Easting: 2356102.80
Elevation:

WBGss-145-0734-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Iron	32800	MG/KG		=	
REG	Lead	359	MG/KG		J	I02
REG	Magnesium	2610	MG/KG		=	
REG	Manganese	803	MG/KG		=	
REG	Mercury	0.043	MG/KG	B	J	
REG	Nickel	30.4	MG/KG		J	D05
REG	Potassium	1650	MG/KG		=	
REG	Selenium	1.1	MG/KG		=	
REG	Silver	1.3	MG/KG	U	U	
REG	Sodium	75.8	MG/KG	B	U	F01,F06
REG	Thallium	0.66	MG/KG	U	UJ	D05
REG	Vanadium	24.3	MG/KG		=	
REG	Zinc	2410	MG/KG		J	I03

WBGss-145-0876-FD 0.0 - 1.0 FT Field Sample Type: Field Duplicate Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.66	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	18000	MG/KG		=	
REG	Antimony	4.4	MG/KG		J	I02
REG	Arsenic	20.8	MG/KG		=	
REG	Barium	123	MG/KG		=	
REG	Beryllium	0.66	MG/KG		U	F07
REG	Cadmium	4.3	MG/KG		=	
REG	Calcium	1560	MG/KG		=	
REG	Chromium	19.7	MG/KG		=	
REG	Cobalt	10.2	MG/KG	B	J	
REG	Copper	491	MG/KG		J	E07
REG	Iron	24700	MG/KG		=	
REG	Lead	83.8	MG/KG		J	I02
REG	Magnesium	2990	MG/KG		=	
REG	Manganese	1010	MG/KG		=	
REG	Mercury	0.041	MG/KG	B	J	
REG	Nickel	24.8	MG/KG		J	D05
REG	Potassium	1710	MG/KG		=	
REG	Selenium	0.66	MG/KG	U	U	
REG	Silver	1.3	MG/KG	U	U	
REG	Sodium	65.8	MG/KG	B	U	F01,F06
REG	Thallium	0.66	MG/KG	U	UJ	D05
REG	Vanadium	28.1	MG/KG		=	
REG	Zinc	774	MG/KG		J	I03

Location: WINKLEPECK BURNING GROUND
Station : WBGss-146 DEAC.FURN-3 20 ft NW of RCRA boundary

Northing: 562732.51
Easting: 2356051.59
Elevation:

WBGss-146-0735-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.68	MG/KG		=	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	28500	MG/KG		=	
REG	Antimony	19.4	MG/KG		J	I02
REG	Arsenic	11.8	MG/KG		=	
REG	Barium	290	MG/KG		=	
REG	Beryllium	0.57	MG/KG		U	F06
REG	Cadmium	234	MG/KG		=	
REG	Calcium	24200	MG/KG		=	
REG	Chromium	22.7	MG/KG		=	
REG	Cobalt	5.4	MG/KG	B	J	
REG	Copper	16800	MG/KG		J	E07
REG	Iron	26900	MG/KG		=	

Location: WINKLEPECK BURNING GROUND
Station : WBGss-146 DEAC.FURN-3 20 ft NW of RCRA boundary

Northing: 562732.51
Easting: 2356051.59
Elevation:

WBGss-146-0735-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Lead	2200	MG/KG		J	I02
REG	Magnesium	4150	MG/KG		=	
REG	Manganese	998	MG/KG		=	
REG	Mercury	0.34	MG/KG		=	
REG	Nickel	43.7	MG/KG		J	D05
REG	Potassium	1030	MG/KG		=	
REG	Selenium	1.6	MG/KG		=	
REG	Silver	33.2	MG/KG		=	
REG	Sodium	179	MG/KG	B	J	
REG	Thallium	0.56	MG/KG	U	UJ	D05
REG	Vanadium	11.9	MG/KG		=	
REG	Zinc	24900	MG/KG		J	I03

Location: WINKLEPECK BURNING GROUND
Station : WBGss-147 DEAC.FURN-4 20 ft SW of RCRA boundary

Northing: 562674.64
Easting: 2356009.35
Elevation:

WBGss-147-0736-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.63	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	18700	MG/KG		=	
REG	Antimony	0.63	MG/KG	U	UJ	I02
REG	Arsenic	17.2	MG/KG		=	
REG	Barium	54.8	MG/KG		=	
REG	Beryllium	0.62	MG/KG	B	U	F06
REG	Cadmium	0.63	MG/KG	U	U	
REG	Calcium	1060	MG/KG		=	
REG	Chromium	25	MG/KG		=	
REG	Cobalt	8.6	MG/KG	B	J	
REG	Copper	32.8	MG/KG		J	E07
REG	Iron	34700	MG/KG		=	
REG	Lead	19.6	MG/KG		J	I02
REG	Magnesium	3970	MG/KG		=	
REG	Manganese	209	MG/KG		=	
REG	Mercury	0.13	MG/KG	U	U	
REG	Nickel	24.1	MG/KG		J	D05
REG	Potassium	1860	MG/KG		=	
REG	Selenium	0.63	MG/KG	U	U	
REG	Silver	1.3	MG/KG	U	U	
REG	Sodium	77.8	MG/KG	B	U	F01,F06
REG	Thallium	0.63	MG/KG	U	UJ	D05
REG	Vanadium	31.7	MG/KG		=	
REG	Zinc	81.6	MG/KG		J	I03

Location: WINKLEPECK BURNING GROUND
Station : WBGss-148 DEAC.FURN-5 50 ft E of RCRA boundary

Northing: 562673.14
Easting: 2356225.75
Elevation:

WBGss-148-0737-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.62	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	11800	MG/KG		=	
REG	Antimony	1.5	MG/KG		J	I02
REG	Arsenic	15.7	MG/KG		=	
REG	Barium	74	MG/KG		=	
REG	Beryllium	0.51	MG/KG	B	U	F06
REG	Cadmium	1.8	MG/KG		=	
REG	Calcium	2290	MG/KG		=	
REG	Chromium	15.8	MG/KG		=	

Location: WINKLEPECK BURNING GROUND
Station : WBGss-148 DEAC.FURN-5 50 ft E of RCRA boundary

Northing: 562673.14
Easting: 2356225.75
Elevation:

WBGss-148-0737-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cobalt	9.9	MG/KG	B	J	
REG	Copper	62.5	MG/KG		J	E07
REG	Iron	20400	MG/KG		=	
REG	Lead	55.1	MG/KG		J	I02
REG	Magnesium	2370	MG/KG		=	
REG	Manganese	751	MG/KG		=	
REG	Mercury	0.028	MG/KG	B	J	
REG	Nickel	19.5	MG/KG		J	D05
REG	Potassium	1080	MG/KG		=	
REG	Selenium	0.62	MG/KG	U	U	
REG	Silver	1.2	MG/KG	U	U	
REG	Sodium	72.5	MG/KG	B	U	F01,F06
REG	Thallium	0.62	MG/KG	U	UJ	D05
REG	Vanadium	22	MG/KG		=	
REG	Zinc	256	MG/KG		J	I03

Location: WINKLEPECK BURNING GROUND
Station : WBGss-149 DEAC.FURN-6 50 ft W of RCRA boundary

Northing: 562692.18
Easting: 2356072.15
Elevation:

WBGss-149-0738-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.62	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	12400	MG/KG		=	
REG	Antimony	0.89	MG/KG		J	I02
REG	Arsenic	9.2	MG/KG		=	
REG	Barium	77	MG/KG		=	
REG	Beryllium	1.2	MG/KG		=	
REG	Cadmium	7.6	MG/KG		=	
REG	Calcium	28800	MG/KG		=	
REG	Chromium	11.8	MG/KG		=	
REG	Cobalt	4.6	MG/KG	B	J	
REG	Copper	261	MG/KG		J	E07
REG	Iron	16300	MG/KG		=	
REG	Lead	75.2	MG/KG		J	I02
REG	Magnesium	5320	MG/KG		=	
REG	Manganese	535	MG/KG		=	
REG	Mercury	0.12	MG/KG	U	U	
REG	Nickel	14.7	MG/KG		J	D05
REG	Potassium	1430	MG/KG		=	
REG	Selenium	0.62	MG/KG	U	U	
REG	Silver	1.2	MG/KG	U	U	
REG	Sodium	230	MG/KG	B	J	
REG	Thallium	0.62	MG/KG	U	UJ	D05
REG	Vanadium	14.6	MG/KG		=	
REG	Zinc	659	MG/KG		J	I03

Location: WINKLEPECK BURNING GROUND
Station : WBGss-150 DEAC.FURN-7 50 ft N of RCRA boundary

Northing: 562742.44
Easting: 2356124.35
Elevation:

WBGss-150-0739-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.73	MG/KG		=	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	13300	MG/KG		=	
REG	Antimony	1.1	MG/KG		J	I02
REG	Arsenic	12.6	MG/KG		=	
REG	Barium	87.6	MG/KG		=	
REG	Beryllium	0.98	MG/KG		=	

Northing: 562742.44
Easting: 2356124.35
Elevation:

Location: WINKLEPECK BURNING GROUND
Station : WBGss-150 DEAC.FURN-7 50 ft N of RCRA boundary

WBGss-150-0739-SO 0.0 - 1.0 FT Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 04/23/98

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cadmium	3.3	MG/KG		=	
REG	Calcium	13200	MG/KG		=	
REG	Chromium	17.1	MG/KG		=	
REG	Cobalt	8.8	MG/KG	B	J	
REG	Copper	140	MG/KG		J	E07
REG	Iron	27400	MG/KG		=	
REG	Lead	85.8	MG/KG		J	I02
REG	Magnesium	4100	MG/KG		=	
REG	Manganese	828	MG/KG		=	
REG	Mercury	0.038	MG/KG	B	J	
REG	Nickel	23.3	MG/KG		J	D05
REG	Potassium	1130	MG/KG		=	
REG	Selenium	0.61	MG/KG	U	U	
REG	Silver	1.2	MG/KG	U	U	
REG	Sodium	196	MG/KG	B	J	
REG	Thallium	0.61	MG/KG	U	UJ	D05
REG	Vanadium	19.8	MG/KG		=	
REG	Zinc	391	MG/KG		J	I03

Northing: 562374.27
Easting: 2358752.15
Elevation:

Location: WINKLEPECK BURNING GROUND
Station : WBGss-153 PAD-37 Road E east adjacent to - SLAG-1

WBGss-153-0742-SO Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 05/06/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.5	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	29200	MG/KG		J	F10
REG	Antimony	0.5	MG/KG	U	UJ	I02
REG	Arsenic	0.31	MG/KG	B	J	
REG	Barium	495	MG/KG		=	
REG	Beryllium	7.8	MG/KG		=	
REG	Cadmium	0.5	MG/KG	U	U	
REG	Calcium	228000	MG/KG		=	
REG	Chromium	27.3	MG/KG		=	
REG	Cobalt	15	MG/KG	U	U	
REG	Copper	3.4	MG/KG		U	F07
REG	Iron	1350	MG/KG		=	
REG	Lead	5.6	MG/KG		=	
REG	Magnesium	53700	MG/KG		=	
REG	Manganese	4270	MG/KG		=	
REG	Mercury	0.1	MG/KG	U	U	
REG	Nickel	4	MG/KG	U	UJ	D05
REG	Potassium	3710	MG/KG		=	
REG	Selenium	1.5	MG/KG		=	
REG	Silver	1	MG/KG	U	U	
REG	Sodium	2320	MG/KG		=	
REG	Thallium	1	MG/KG	U	U	
REG	Vanadium	23.2	MG/KG		=	
REG	Zinc	9.3	MG/KG		U	F07

Northing: 562369.27
Easting: 2358682.15
Elevation:

Location: WINKLEPECK BURNING GROUND
Station : WBGss-154 PAD-37 Road E east adjacent to - SLAG-2

WBGss-154-0743-SO Field Sample Type: Grab Composite Matrix: Surface Soil Collected: 05/06/98

Sample Type	Cyanide	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cyanide	0.5	MG/KG	U	U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Aluminum	30700	MG/KG		J	F10
REG	Antimony	0.4	MG/KG	B	J	I02

APPENDIX D

RVAAP FACILITY-WIDE BACKGROUND DATA

Surface Soil (0 to 1 ft) Background Criteria

Analyte	Results > Detection Limit[a]	Minimum Detect	Maximum Detect	Average Result[b]	Std. Dev.	Distr.[c]	Parametric 95% UTL	Nonparametric 95% UTL	Background Criteria[d]
Metals (mg/kg)									
Aluminum	11/ 11	4920.00	17700.00	1070.00	4914.00	N	22100.00	17700.00	17700.00
Antimony	0/ 11			0.32	6.21	O		0.78	0.96[e]
Arsenic	11/ 11	7.00	15.40	10.50	3.72	L	20.20	15.40	15.40
Barium	11/ 11	47.90	88.40	65.20	1202.00	L	112.00	88.40	88.40
Beryllium	0/ 11			0.25	0.54	O		0.82	0.88[e]
Cadmium	0/ 11			0.32	74.8	O		0.78	0.00
Calcium	11/ 11	238.00	15800.00	4300.00	18276.00	L	97300.00	15800.00	15800.00
Chromium	11/ 11	6.30	17.40	12.10	18.1	N	24.20	17.40	17.40
Cobalt	11/ 11	4.10	10.40	7.53	2.07	N	14.20	10.40	10.40
Copper	11/ 11	9.10	17.70	11.50	1980.00	X		17.70	17.70
Cyanide	0/ 11			0.32	0.15	O		0.78	0.00
Iron	11/ 11	10000.00	23100.00	17200.00	5336.00	N	27600.00	23100.00	23100.00
Lead	11/ 11	12.80	26.10	18.40	373.6	L	32.80	26.10	26.10
Magnesium	11/ 11	1140.00	3030.00	1970.00	2287.00	L	4410.00	3030.00	3030.00
Manganese	11/ 11	147.00	1450.00	638.00	499.9	L	3050.00	1450.00	1450.00
Mercury	7/ 11	0.03	0.04	0.04	0.15	X		0.16	0.04
Nickel	10/ 11	9.00	21.10	13.60	14.85	L	29.40	21.10	21.10
Potassium	11/ 11	303.00	927.00	621.00	518.3	N	1120.00	927.00	927.00
Selenium	2/ 11	0.69	1.40	0.45	0.69	D		1.40	1.40
Silver	0/ 11			0.65	2.92	O		1.60	0.00
Sodium	1/ 11	123.00	123.00	42.80	195.7	D		123.00	123.00
Thallium	0/ 11			0.32	0.54	O		0.78	0.00
Vanadium	11/ 11	9.10	31.10	19.00	4.98	N	40.80	31.10	31.10
Zinc	11/ 11	38.40	61.80	51.20	2066.00	N	74.80	61.80	61.80
Organics (mg/kg)									
Total organic carbon	11/ 11	7000.00	24000.00	14400.00		L	41700.00	24000.00	24000.00
SVOCs (µg/kg)									
Benzo(*a*)anthracene	6/ 11	44.00	110.00	142.00	250.00	X		520.00	110.00
Benzo(*a*)pyrene	4/ 11	58.00	100.00	167.00	193.00	D		520.00	100.00
Benzo(*b*)fluoranthene	6/ 11	62.00	140.00	159.00	275.00	N	351.00	520.00	140.00
Benzo(*g,h,i*)perylene	2/ 11	46.00	51.00	185.00	74.9	D		520.00	51.00
Benzo(*k*)fluoranthene	2/ 11	53.00	54.00	186.00	106.00	D		520.00	54.00
Bis(2-ethylhexyl)phthalate	1/ 11	47.00	47.00	198.00	63.0	D		520.00	47.00

(continued)

Analyte	Results > Detection Limit[a]	Minimum Detect	Maximum Detect	Average Result	Std. Dev.[c]	Distr.	Parametric 95% UTL	Nonparametric 95% UTL	Background Criteria[d,e]
Chrysene	6/ 11	57.00	120.00	147.00	248.00	N	369.00	520.00	120.00
Fluoranthene	6/ 11	53.00	290.00	179.00	801.00	N	409.00	520.00	290.00
Indeno(1,2,3-*cd*)pyrene	1/ 11	54.00	54.00	198.00	91.7	D		520.00	54.00
Phenanthrene	2/ 11	110.00	150.00	197.00	661.00	D		520.00	150.00
Pyrene	6/ 11	48.00	230.00	169.00	577.00	L	2390.00	520.00	230.00

[a]Results for 4 samples with outlier results were excluded [(BKGSs-011(b)-0794-SO, BKGss-012(b)-0795-SO, BKGss-015(b)-0798-SO, and BKGss-005(b)-0788-SO)]
[b]Results less than the detection limit were set to one-half the reported detection limit.
[c]Distribution codes: L = Distribution most similar to lognormal.
N = Distribution significantly different from normal.
X = Distribution significantly different from normal and lognormal.
D = Non-parametric distribution – frequency of detection <50%.
0 = Zero detects – background criteria are set to zero.
[d]If 95% UTL > max. detect then background criteria = max. detect.
[e]Subsurface antimony and beryllium background used
If distribution determined not normal or lognormal or fewer than 3 results then background criteria = max. detect.
Background criteria was set to zero if there were no detects.

Subsurface Soil (>1 ft) Background Criteria

Analyte	Results > Detection Limit	Minimum Detect	Maximum Detect	Average Result[a]	Std. Dev.[a]	Distr.[b]	Parametric 95% UTL	Nonparametric 95% UTL	Background Criteria[c]
Metals (mg/kg)									
Aluminum	27/ 27	1380.00	19500.00	11600.00	2862.00	N	22900.00	19500.00	19500.00
Antimony	8/ 27	0.27	0.96	0.34	0.42	D		0.96	0.96
Arsenic	27/ 27	3.50	19.80	12.10	2.86	N	21.40	19.80	19.80
Barium	27/ 27	10.70	134.00	58.60	90.62	N	124.00	134.00	124.00
Beryllium	12/ 27	0.26	0.88	0.37	0.25	D		0.88	0.88
Cadmium	0/ 27			0.29	2.23	O		0.62	0.00
Calcium	22/ 27	416.00	35500.00	4880.00	5325.00	L	44800.00	35500.00	35500.00
Chromium	27/ 27	4.10	27.20	16.90	3.92	N	31.30	27.20	27.20
Cobalt	27/ 27	2.30	23.20	9.94	3.96	L	31.00	23.20	23.20
Copper	27/ 27	2.90	32.30	19.50	8.16	N	34.10	32.30	32.30
Cyanide	0/ 27			0.29	0.01	O		0.62	0.00
Iron	27/ 27	3690.00	35200.00	23200.00	5561.00	N	39900.00	35200.00	35200.00
Lead	27/ 27	2.50	19.10	11.60	17.31	X		19.10	19.10
Magnesium	27/ 27	216.00	8790.00	3350.00	1344.00	X		8790.00	8790.00
Manganese	27/ 27	107.00	3030.00	400.00	584.00	X		3030.00	3030.00
Mercury	4/ 27	0.03	0.04	0.04	0.02	D		0.12	0.04
Nickel	27/ 27	3.80	60.70	23.60	8.30	L	76.10	60.70	60.70
Potassium	27/ 27	333.00	3560.00	1520.00	664.9	N	3350.00	3560.00	3350.00
Selenium	8/ 27	0.61	1.50	0.49	0.15	D		1.50	1.50
Silver	0/ 27			0.58	0.16	O		1.20	0.00
Sodium	7/ 23	29.90	145.00	59.50	55.96	D		524.00	145.00
Thallium	3/ 27	0.77	0.91	0.35	0.18	D		0.91	0.91
Vanadium	27/ 27	5.20	37.60	19.70	5.38	N	37.80	37.60	37.60
Zinc	27/ 27	7.60	93.30	60.50	25.26	N	99.90	93.30	93.30
SVOC's (µg/kg)									
Fluoranthene	1/ 12	76.00	76.00	188.00	339.35	D		410.00	NA
Pyrene	1/ 12	60.00	60.00	186.00	245.49	D		410.00	NA
VOC's (µg/kg)									
Toluene	2/ 2	0.94	3.40	2.17	1.10	N	3.40	3.40	NA

[a]Results less than the detection limit were set to one-half the reported detection limit.

[b]Dist. Codes: L = Distribution most similar to lognormal.
N = Distribution most similar to normal.
X = Distribution significantly different from normal and lognormal.
D = Non-parametric distribution – frequency of detection <50%.
0 = Zero detects – background criteria set to 0.00.

[c]If 95% UTL >max. detect then background criteria = max. detect.
If distribution determined not normal or lognormal or fewer than 3 results then background criteria = max. detect.
Background criteria were set to zero if there were not detects.
NA - Not applicable. Background criteria were determined for metals only.

APPENDIX E

AIR PERMIT FOR DEACTIVATION FURNACE

300-4

21

RAVENNA ARSENAL INC.
A Subsidiary of Physics International Company
8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

August 21, 1985

Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

SUBJECT: Application for Air Contaminant Source Permit to Operate Deactivation Furnace.

Dear Sir:

Subject submittal is presented for your review, concurrence, and signature.

This submittal deals with RVAAP/RAI's proposed activity to deactivate the M720 point detonating fuse assembly. Ohio EPA requires that an air permit application be filed due to the activity being a process that generates an air contaminant source.

Sincerely,
Ravenna Arsenal, Inc.

H. R. Cooper

H. R. Cooper
Plant Engineer

HRC:jm
cc:D. E. Lawless
T. M. Chanda
1 Enclosure

Encl 5 RVAAP Application for Air Contaminant Source Permit to Operate Deactivation Furnace

OHIO ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR A PERMIT TO OPERATE
AN AIR CONTAMINANT SOURCE

APS APPL NO _____
DATE RECEIVED _____

Ravenna Army Ammunition Plant Facility Name	H. R. Cooper Person to Contact
8451 State Route # 5 Facility Address	Ravenna Arsenal, Inc. Mailing Address
Ravenna / Portage / 44266 City / County / Zip	Ravenna / Ohio / 44266 City / State / Zip
216-358-7111 Telephone Area Number	216-358-7111 (Ext. 3240) Telephone Area Number
N/A (Application No., if this is a renewal application)	3483 Standard Industrial Classification Coc

1. Complete and attach any of the following appendices most appropriate to the air contaminant source. In addition, a compliance time schedule form is to be attached when applicable. Check as appropriate the following:

- [X] Appendix A, Process
- [ ] Appendix B, Fuel-Burning Equipment
- [ ] Appendix C, Incinerator
- [ ] Appendix D, Surface Coating or Printing Operation
- [ ] Appendix E, Storage Tank
- [ ] Appendix H, Gasoline Dispensing Facility
- [ ] Appendix J, Loading Rack at Bulk Gasoline Plant or Terminal
- [ ] Appendix K, Surface Coating Line or Printing Line
- [ ] Appendix L, Solvent Metal Cleaning
- [ ] Appendix M, Fugitive Dust Emission Source (Specify Appendix No.)
- [ ] Appendix N, Rubber Tire Manufacturing
- [ ] Appendix O, Dry Cleaning Facility
- [ ] Appendix P, Synthesized Pharmaceutical Manufacturing
- [ ] Other Appendix
- [ ] Compliance Time Schedule

2. Description of Source (same as used on appendix): Oil Fired - Deactivation Furnace

3. Your identification for Source (same as used on appendix): Building T-3401, Deactivation Furnace

I, being the individual specified in Rule 3745-35-02(B) of the Ohio Administrative Code, hereby apply for a Permit to Operate the air contaminant source(s) described herein. As required, the following additional documents are submitted as part of this application (describe all attachments):

Roy McCoy
Authorized Signature*R. J. Kasper / Roy McCoy
Commander's Representative
Title

8-23-85
Date

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate). Operation of an air contaminant source without an effective permit to operate is prohibited pursuant to 3704.05 Ohio Revised Code.

For Official Use Only

Premise No. _____
Source No. _____

APPENDIX A, PROCESS

PROCESS DATA

1. Name of process Deactivation Furnace

2. End product of this process Deactivated Projectile Fuse Assemblies

3. Primary process equipment Oil Fired Burner with Horizontal Revolving Retort/Chamber

   Your identification Building T-3401 Deactivation Furnace Year Installed 1965

4. Manufacturer Trumbull Manufacturing Make or Model Built by User Specs.

5. Capacity of equipment (lbs./hr): Rated 252 Max. 340
   (Based upon 2.1 lbs/fuse assembly)

6. Method of exhaust ventilation: [X] Stack [ ] Window fan [ ] Roof vent
   [ ] Other, describe _____
   Are there multiple exhausts? [ ] Yes [X] No

OPERATING DATA

7. Normal operating schedule: 8 hrs./day, 5 days/wk., 7 wks./year.

8. Percent annual production (finished units) by season:
   Winter 0% Spring 0% Summer 34% Fall 66%

9. Hourly production rates (lbs.): Average 252 Maximum 340
   (Based upon 2.1 lbs./fuse assembly)

10. Annual production (indicate units) 20,000 (one-time project) fuses
    Projected percent annual increase in production Unknown-No other activity tentatively planned outside that which is stated within this text.

11. Type of operation: [X] Continuous [ ] Batch

12. If batch, indicate Minutes per cycle N/A Minutes between cycles N/A

13. Materials used in process:

List of Raw Materials	Principal Use	Amount (lbs./hr.)
#2 Fuel Oil	Fuel	32.9
Propane Gas	Continuous Pilot	0.2
M720 Fuse Assembly	Item for Deactivation (Detonation)	252

14. A PROCESS FLOW DIAGRAM MUST BE INCLUDED WITH THIS APPENDIX. Show entry and exit points of all raw materials, intermediate products, by-products and finished products. Label all materials including airborne contaminants and other waste materials. Label the process equipment and control equipment.

Reference: Attachment # 1

(continued on reverse side)

CONTROL EQUIPMENT

Control Equipment Code:

(A) Settling chamber
(B) Cyclone
(C) Multiple cyclone
(D) Electrostatic precipitator
(E) Fabric filter
(F) Spray chamber
(G) Cyclonic scrubber
(H) Impingement scrubber
(I) Orifice scrubber
(J) Venturi scrubber
(K) Plate or tray tower
(L) Packed tower
(M) Adsorber
(N) Condenser
(O) Afterburner - catalytic
(P) Afterburner - thermal
(Q) Other, describe None

15. Control Equipment data: Not existing within process.

Item	Primary Collector	Secondary Collector
(a) Type (See above code)		
(b) Manufacturer		
(c) Model No.		
(d) Year installed		
(e) Your identification		
(f) Pollutant Controlled		
(g) Controlled pollutant emission rate (if known)		
(h) Pressure drop		
(i) Design efficiency		
(j) Operating efficiency		

STACK DATA

16. Your stack identification Building T-3401, Deactivation Furnace

17. Are other sources vented to this stack: [ ] Yes [X] No
If yes, identify sources _____

18. Type: [X] Round, top inside diameter dimension 8 inches
[ ] Rectangular, top inside dimensions (L) _____ x (W) _____

19. Height: Above roof _____ ft., above ground 22 ft.

20. Exit gas: Temp. _____ °F, Volume _____ ACFM, Velocity _____ ft./min.

21. Continuous monitoring equipment: [ ] Yes [X] No
If yes, indicate: Type --, Manufacturer --
Make or Model --, Pollutant(s) monitored --

22. Emission data: Emissions from this source have been determined and such data is included with this appendix: [ ] Yes [X] No

If yes, check method: [ ] Stack Test [ ] Emission factor [ ] Material balance

Completed by T. M. Chanda, Date 8-22-85

EPA 3100

Detonator M24: 2.77 grains of lead azide
0.86 grains of primer mix NOL-130

NOTE: The following is a chemical schematic of Primer Mix NOL-130.

a.) 0.172 grains - Barium nitrate
b.) 0.129 grains - Antimony Sulfide
c.) 0.344 grains - Lead Styphsnate
d.) 0.172 grains - Lead Azide
e.) 0.043 grains - Tetracene
0.860 grains NOL-130 Primer Mix

Detonator M17: 3.54 grains - Lead Azide
1.23 grains - Tetryl (2,4,6-Trinitrophenyl-methyl-nitramine)

Tetryl Lead Charge: 50 grains - Tetryl (2,4,6-Trinitrophenyl-methyl-nitramine)

Tetryl Booster Charge: 347 Grains - Tetryl

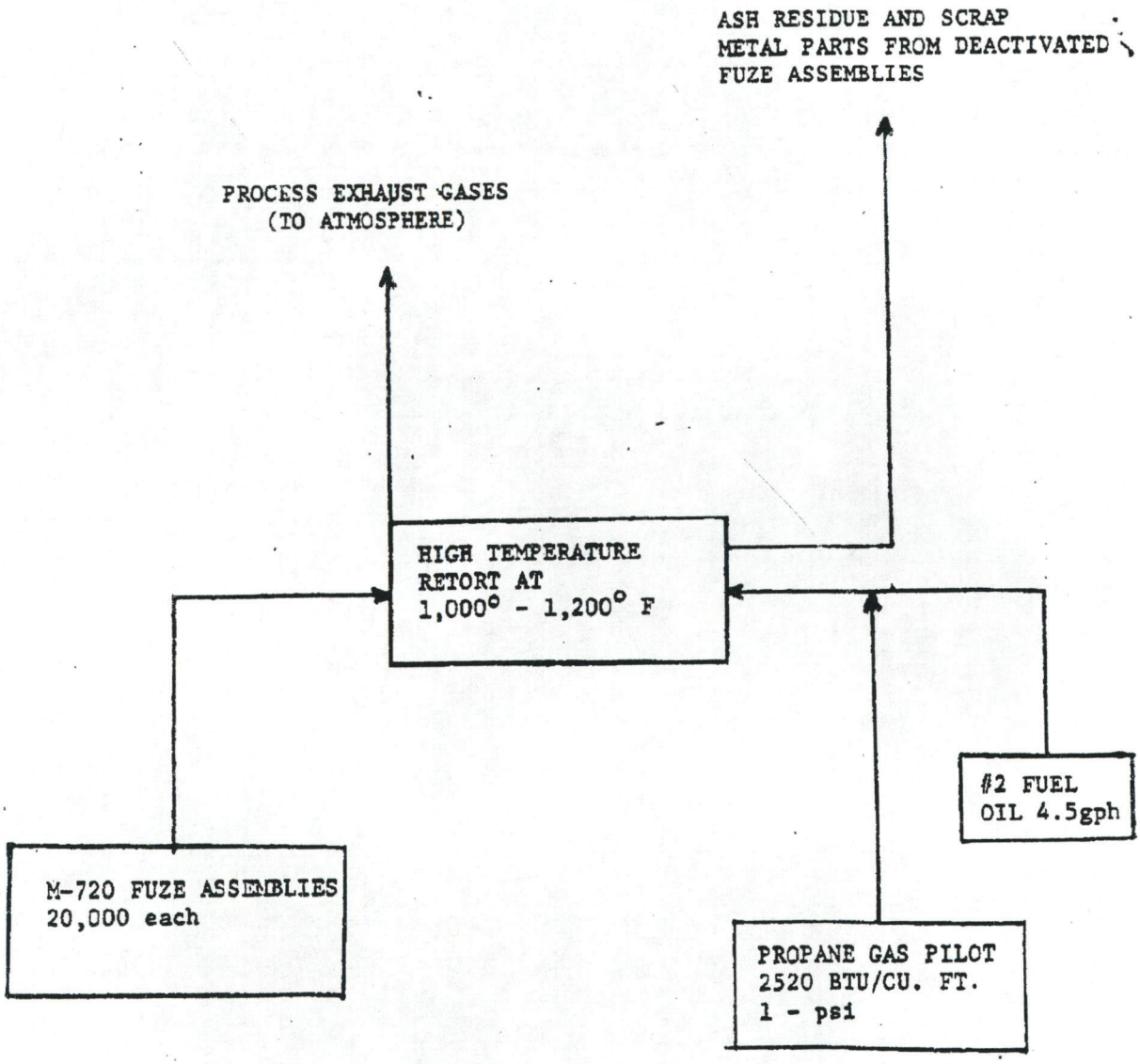
Non - Delay Element M1: 38.1 grains - TNT (Trinitrotoluene)

Under the high temperature condition within the furnace it's reasonable to assert the organic compounds (e.g. tetryl, TNT, and tetracene) will volatilize with the gases of combustion and thus the by-products of combustion are emitted as stack gases. The metal constituency of the explosive component will tail - off in the form of an ash residue along with the remaining metal parts of the fuse assembly.

The process weight that will be exposed to deactivation will be 19,000 Kg (42,000 lbs.). This cumulative fugure includes the weight of the entire lot of fuses as they exist prior to deactivation (each fuse weighing 1.0 Kg (2.1 lbs.) with the assembled metal parts and explosive components).

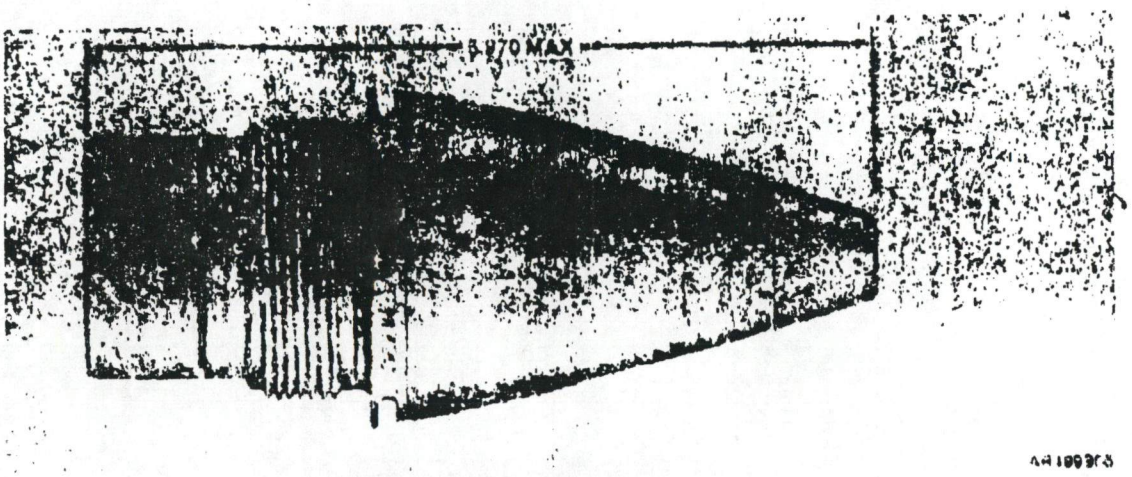
The required amount of time to complete the deactivation process will take approximately twenty-six working days (Monday through Friday; from 8:00 A.M. to 4;30 P.M.). However, anticipating downtime due to machinery and electrical failure, weather conditions, and adequate break - in training period for operating personnel, this submittal to complete said activity will take Thirty (30) days to perform the task of deactivation. RVAAP would like to begin mentioned activity September 3, 1985 with a termination date of October 14, 1985.

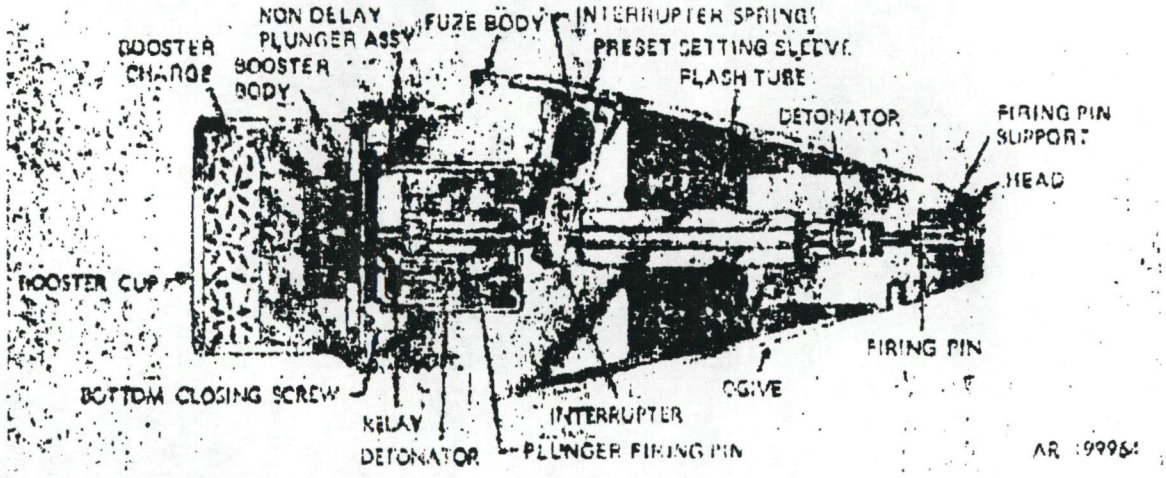
PROCESS FLOW DIAGRAM FOR DEACTIVATION FURNACE AT RVAAP



Reference next page of this attachment for project description and process weights.

FUZE, POINT DETONATING: M720





Type Classification:

C & T AMCTC 9193 dtd 1972

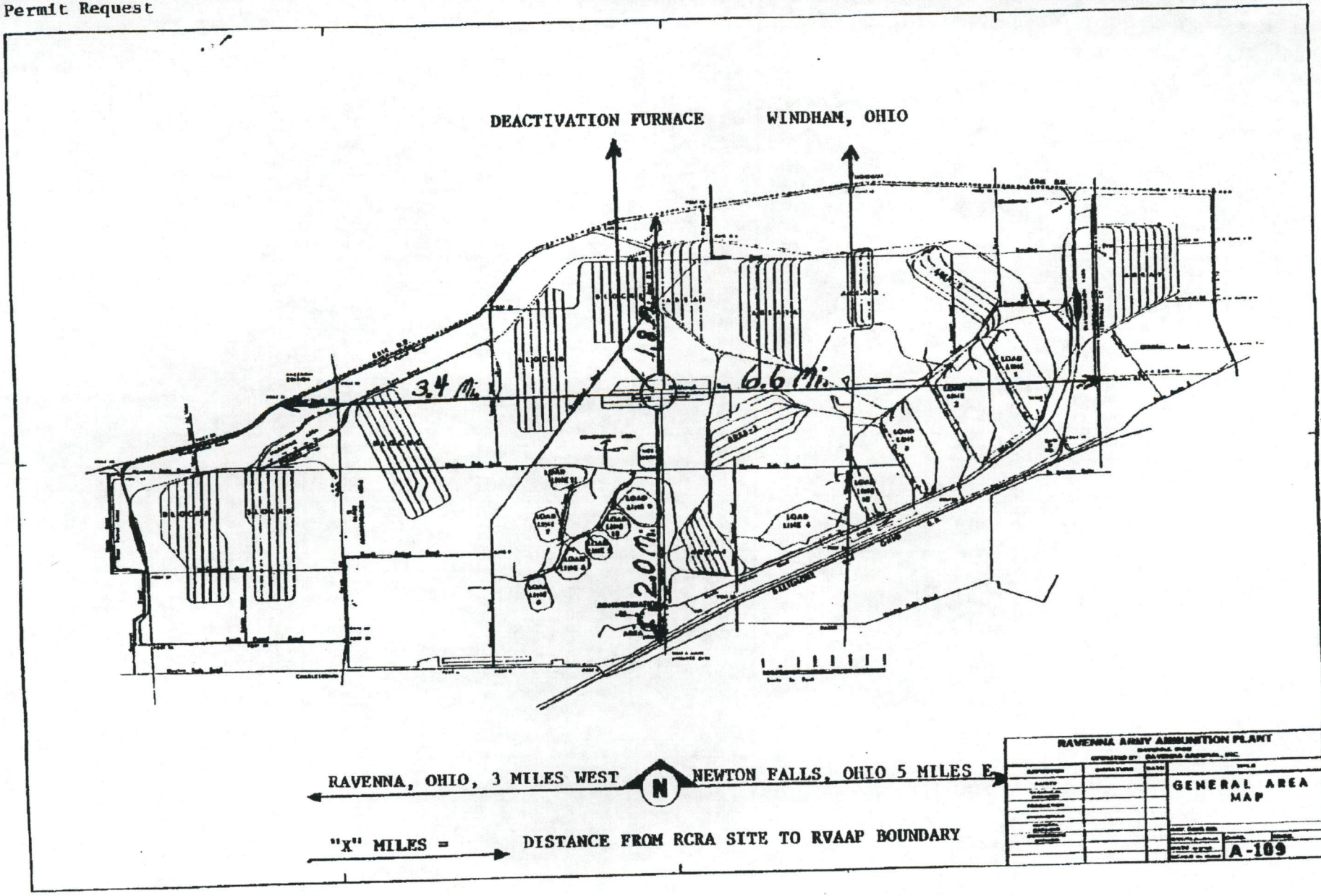
Use:

Point Detonating Fuze M720 is of the superquick type used with 152-mm gun Cartridge M657 and functions on impact or graze.

Description.

The fuze is essentially Fuze M557 modified to provide arming at closer than normal range and to assure superquick or non-delay detonation upon impact or graze. A superquick element in the head consists of a firing pin, firing pin support, and Detonator M28. The body of the fuze is a thin-wall ogive containing non-delay inertial type Plunger Assembly M1. No optional delay setting is provided; the fuze as issued is preset on superquick. Booster M125A1 has been modified for use with Fuze M720 to reduce the normal arming distance to not less than 25 feet. The booster has a brass body internally threaded to accept the fuze body and externally threaded to fit Cartridge M657. A 340-grain tetryl booster charge is contained by an aluminum cup threaded into the base of the booster. The booster body contains Detonator M28 and a spin-activated mechanism to provide the delayed arming safety

Process Air Contaminant Source
Permit Request



APPENDIX F

UXO AND HEALTH AND SAFETY PLAN ADDENDA FOR CLOSURE ACTIVITIES

(attachments to these documents included in Closure Report)

~~Draft~~ FINAL

Site-Wide Safety and Health Plan
Ravenna Army Ammunition Plant
Ravenna, Ohio

Contract Number DACA27-97-D-0005
Delivery Order 0006

Prepared for:

U.S. Army Corps of Engineers
Louisville District

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

~~July~~ AUGUST 1998

This site-wide safety and health plan must be used in conjunction with the facility-wide safety and health plan prepared by Science Applications International Corporation.

SITE-WIDE SAFETY AND HEALTH PLAN
RAVENNA ARMY AMMUNITION PLANT, RAVENNA, OHIO

I have read and approved this site-wide safety and health plan with respect to project hazards, regulatory requirements, and IT procedures.

_____ _____

William C. Shafer, PE
Project Manager

Date

_____ _____

Michael R. Henderson, CIH
Health and Safety Manager

Date

Acknowledgments

The final approved version of this site-wide safety and health plan (SHP) for the closure activities at the Ravenna Army Ammunition Plant, Ravenna, Ohio, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with equipment, and qualified personnel to implement fully all safety requirements in this SSHP.

Project Manager Date

I acknowledge receipt of this site-wide SHP from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and/or the health and safety manager.

Site Coordinator Date

Site-Wide Safety and Health Plan Acknowledgment Form

I have been informed of, and will abide by the procedures set forth, in this site-wide safety and health plan and the facility-wide safety and health plan prepared by Science Applications International Corporation.

Printed Name	*Signature*	*Representing*	*Date*

Table of Contents

List of Acronyms

CFR	Code of Federal Regulations
FSHP	facility-wide safety and health plan
HSM	health and safety manager
IT	IT Corporation
PM	project manager
SHP	safety and health plan
SM	site manager
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers

1.0 IT Safety Policy and Philosophy

It is the policy of IT Corporation (IT) to provide a safe and healthful workplace for all employees, subcontractors, and consultants in compliance with governmental requirements. Additionally, the requirements of our clients shall take precedence provided that their requirements exceed those of IT and governmental regulations.

We believe in two fundamental principles of safety: all accidents, injuries, and occupational illnesses are preventable; and if an operation cannot be done safely, we will not do it. To put these principles into practice, every associate will receive the appropriate training, equipment, and other resources necessary to complete assigned tasks in a safe and efficient manner.

Safety, industrial hygiene, and loss prevention are the direct responsibility of all members of management, who must create an environment in which everyone shares a concern for their own safety and the safety of their associates. Safety shall take precedence over expediency or short cuts. It is a condition of employment that all employees work safely and follow established safety rules and procedures. No individual(s) may pose a direct threat to the health and safety of other individuals in the workplace.

Managers must conduct their businesses in compliance with governmental safety regulations and company procedures. All IT health and safety procedures shall be implemented for all IT employees on all projects where IT is the subcontract, or a joint venture partner. If IT is the prime contractor, IT procedures shall be applied to all IT and subcontractor personnel.

The implementation of effective safety and health practices is a key measure of managerial performance. Management, with the assistance of the internal health and safety professional staff, will conduct audits to assess the effectiveness of the safety program(s) in place, and to identify areas for improvement. All deficiencies shall be corrected promptly.

All injuries, occupational illnesses, vehicle accidents, and incidents with potential for injury or loss will be investigated. Appropriate corrective measures will be taken to prevent recurrence, and to continually improve the safety of our workplace.

2.0 Field Implementation

2.1 All Personnel

All site personnel will be responsible for continuous adherence to health and safety procedures during the performance of assigned work. In no case may work be performed in a manner that conflicts with the intent of this plan or the inherent safety and environmental cautions outlined in this plan. After due warnings, personnel violating safety procedures will be dismissed from the site and possibly terminated from further work.

Any person who observes unsafe acts or conditions or other safety problems should immediately report observations/concerns to supervisory personnel. If there is any dispute with regard to health and safety, the on-site IT staff will attempt to resolve the issue. If the issue cannot be resolved, off-site technical staff and supervisors will be consulted for assistance. The specific task or operation in question shall be discontinued until the issue is resolved. No person may work in a manner that conflicts with the safety and environmental precautions expressed in this site-wide and health plan (SHP). After due warnings, IT will dismiss from the site any person who violates safety procedures. IT's employees are subject to progressive discipline and may be terminated for blatant or continued violations. All on-site personnel will be trained in accordance with 29 Code of Federal Regulations 1910.120, 29 CFR 1926.65 and this site-wide SHP.

2.2 Project Manager

The Project Manager (PM) is responsible for ensuring that the necessary personnel are available for this project and that the reporting, scheduling, and budgetary obligations for this project are met. The PM is ultimately responsible for ensuring that all project activities are completed in accordance with requirements set forth in this plan. The PM is responsible for ensuring all accidents and incidents on the project are reported and thoroughly investigated. The PM must approve in writing any addenda or modifications of the health and safety plan.

2.3 Site Manager

The site manager (SM), as the on-site representative of IT, is responsible for maintaining contact with the U.S. Army Corps of Engineers (USACE) site representative, the health and safety manager (HSM), and the PM. The SM is also responsible for implementation of this SSHP and its addenda. The SM will report to the PM and work directly with the USACE.

2.4 Site Health and Safety Officer

The site health and safety officer (SSHO) will conduct daily inspections to determine if operations are being conducted in accordance with the site-wide SHP, USACE contract requirements, and Occupational Safety and Health Administration regulations. The SSHO will be assigned to the PM on an as-needed basis for the duration of the project, but will report directly to the HSM with operational issues. An open dialogue is kept between the SSHO and project supervisory personnel to ensure that safety issues are quickly addressed and corrective action is taken.

The SSHO has the ultimate responsibility to stop any operation that threatens the health and safety of the team or surrounding community, or that causes significant adverse impact to the environment.

2.5 Health and Safety Manager

The HSM is responsible for the development, implementation, and oversight of the health and safety program, the site-wide SHP, and its addenda.

The HSM will oversee/review the site operations and review and approve this site-wide SHP and any of its amendments. The HSM will have a formal education and training in occupational health and safety or a related field and certification in IH by the American Board of Industrial Hygiene. The HSM will visit the site at least once to audit the effectiveness of this site-wide SHP, and whenever necessary to investigate major accidents/incidents.

2.6 Subcontractors, Visitors, and Other On-Site Personnel

Subcontractors are responsible for the health and safety of their employees and for complying with the standards established in this site-wide SHP and the guidelines established in IT's Safety Rules for Contractors. Subcontractors will report to the SM. All subcontractors, visitors, and other on-site personnel must check in with the SM prior to gaining access to the site to verify that all appropriate entry requirements are met.

2.7 UNEXPLODED ORDNANCE

UXO SAFETY WILL BE ACHIEVED BY EMPLOYING UXO SPECIALISTS TO ENSURE THAT FIELD PERSONNEL DO NOT COME INTO CONTACT WITH UXO. IN AREAS WHERE UXO IS SUSPECTED TO EXIST, THE UXO SPECIALISTS WILL PERFORM THE

FOLLOWING FIELD UXO AVOIDANCE OPERATIONS. ADDITIONALLY, SAFETY CONCEPTS AND BASIC CONSIDERATIONS FOR UXO OPERATIONS CAN BE FOUND IN SECTION 9.1.5 OF THE FACILITY-WIDE SHP (SAIC, 1996).

- ***AREA UXO SURVEYS USING MAGNETOMETERS.*** DURING THIS OPERATION UXO ON THE SURFACE WILL BE DETECTED AND MARKED FOR AVOIDANCE DURING FIELD OPERATIONS. METAL OBJECTS JUST BELOW THE SURFACE (WITHIN 2 FEET) WILL ALSO BE MARKED TO INDICATE THE POTENTIAL HAZARD.

- ***SAFETY ESCORT.*** UXO SPECIALISTS WILL ESCORT FIELD PERSONNEL IN THE FIELD TO ENSURE THAT NO UXO ARE ACCIDENTALLY DISTURBED DURING FIELD ACTIVITIES SUCH AS SOIL SAMPLING.

- ***DOWNHOLE UXO SURVEYS.*** UXO SPECIALISTS WILL PERFORM DOWNHOLE MAGNETOMETER SURVEYS IF REQUIRED TO DETECT METAL OBJECTS IN THE PATH OF THE BORING APPARATUS UNTIL UNDISTURBED SOILS ARE REACHED. THE BORING LOCATION WILL BE MOVED IF SUBSURFACE METAL OBJECTS ARE DETECTED.

IF UXO IS ENCOUNTERED, CONTACT MARK PATTERSON (RVAAP). MAINTAIN A SAFE DISTANCE OF THE UXO, DO NOT LEAVE THE VICINITY OF THE UXO UNTIL IT IS CERTAIN THE AREA HAS BEEN SECURED.

3.0 IT Checklist and Global Exceptions

This site-wide safety and health plan must be used in conjunction with the facility-wide safety and health plan prepared by Science Applications International Corporation.

Other deviations/variations from the facility-wide SHP (FSHP) (SAIC, 1996) are as follows:

1. Section 1.1 of the FSHP is not applicable to this SHP.

2. Section 1.2 is applicable to this site-wide SHP.

3. Table 1-1 is applicable to this site-wide SHP.

4. Section 2.0 is applicable to this SHP. The tasks expected will be revised to include the following: demolition of buildings and other structures; decontamination of debris; excavation, transportation, and disposal of contaminated soils; collection of confirmatory soil and rinsate samples; and collection and disposal of investigative-derived waste (IDW).

5. Section 2.1 is applicable to this SHP. In addition to this, site-specific safety and health plans (SSHP) will include task-specific hazard analysis.

6. Section 2.2 is applicable to this site-wide SHP. In addition, SSHP will include site-specific contaminants.

7. Table 2-1 is not applicable to this site-wide SHP

8. Table 2-2 is applicable to this site-wide SHP.

9. Sections 3.0, 3.1, 3.2, 3.3, 3.4, and 3.6 are applicable to this site-wide SHP.

10. Section 3.5 is applicable to this SSHP.

11. Section 4.0 is applicable to this SSHP. Amend the first sentence of Section 4.0 to the following: Personnel who participate in field activities at an area of concern are subject to the following training requirements.

12. Section 5.0 and 5.1 are applicable to this site-wide SHP. The first sentence of Section 5.1 is not applicable to this site-wide SHP.

13. Section 5.2 is not applicable to this SHP. The SSHPs list the personal protective equipment required for each task.

14. Section 5.3 is applicable to this SHP.

15. Section 6.0 is applicable to this SHP.

16. Section 7.0 is applicable to this SHP.

17. Sections 8.0, 8.1, and 8.2 are applicable to this SHP. The sixth bullet item of Section 8.1, addressing work rest cycles, is not applicable to this SHP.

18. Section 9.0 is applicable to this SSHP with the following revision:

    - Replace "SAIC" references with "IT."

19. Section 9.1 is applicable to this SHP with the following revision:

    - Replace "EECG" reference with "IT."
    - Replace "SAIC" reference with "IT."

20. Section 9.2 is applicable to this site-wide SHP with the following revision:

    - Replace "SAIC" reference with "IT."

21. Section 9.3 is applicable to this SSHP.

22. Section 9.4 is applicable to this SHP with the following revision:

    - Replace "SAIC EC&HS Manual Procedure 10" with "IT Procedure HS300."

23. Sections 9.5 and 9.6 are applicable to this site-wide SHP with the following revision:

    - Conductive materials (drill rigs) will be kept clear of energized power lines. The following minimum distances will be observed: 0 to 50 kilovolt (kV) (3 meters [m]); 51 to 200 kV (4.5 m); 201 to 300 kV (6 m); 301 to 500 kV (7.5 m); 501 to 750 kV (105 m); 751 to 1000 kV (135 m).

24. Section 9.7 is applicable to the SSHP with the following addition:

    - All excavation activities will be conducted in compliance with IT Procedure HS 307.

25. Section 9.8 is applicable to this site-wide SHP.

26. Section 9.9 is applicable to this SHP with the following addition:

    - All LO/TO activities will be conducted in compliance with IT Procedure HS 315.

27. Section 9.10 is applicable to this SHP. The last sentence of Section 9.10 is not applicable to this site-wide SHP.

28. Section 9.1 is applicable to this SHP with the following revision:

    - Replace "SAIC EC&HS Procedure 8" with "IT Procedure HS 60."

29. Section 9.12 is applicable to this SHP.

30. Section 9.13 is applicable to this SHP with the following revision:

    - ≤ 20 employees = 1 toilet.

31. Section 9.14 is not applicable to this SHP.

32. Section 9.15 is applicable to this SHP.

33. Sections 10.0, 10.1, 10.2, 10.3, 10.4, and 10.5 are applicable to this SHP with the following revisions:

    - Replace all "SAIC" references with "IT."

34. Sections 11.0, 11.1, 11.2, and 11.3 are applicable to this SHP with the following revision:

    - Change 11.2 "Level D Protection Decontamination" to "Level Modified D Protection Decontamination."

35. Section 12.0 is applicable to this SHP.

36. Section 13.0, 13.1, 13.2, 13.3, 13.4, and 13.5 are applicable to this SHP with the following revision:

    - Change "EECG HS Manager.....615-481-4755" in Section 13.2 to "IT H&S Manager.....423-690-3211.

37. Section 14 is applicable to this site-wide SHP.

38. Appendix A is applicable to this site-wide SHP.

39. Appendix B is applicable to this site-wide SHP.

40. Appendix C is applicable to this site-wide SHP.

4.0 References

Science Applications International Corporation (SAIC), 1996, ***Facility-Wide Safety and Health Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio***, prepared for U.S. Army Corps

of Engineers, Nashville District, February.

APPENDIX A

FACILITY-WIDE SAFETY AND HEALTH PLAN

APPENDIX B

SITE SAFETY AND HEALTH PLAN

Appendix A
Final
Unexploded Ordnance (UXO) Construction Support
For
Closure Activities Work Plan
Deactivation Furnace Area
Ravenna Army Ammunition Plan
Ravenna, Ohio
Contract No. DACA27-97-D-0005
Delivery Order No. 0009

Prepared for:
U.S. Army Corps of Engineers
Louisville District
Louisville, Kentucky

Prepared by:
IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

October 1999

Revision 1

Ordnance and Explosives Management Plan
For
Ravenna Army Ammunition Plant

I have read and approve this site-specific unexploded ordnance (UXO) support plan with respect to project hazards, regulatory requirements, and IT procedures.

Prepared/approved by:_____ Date:_____

Ben Redmond
IT UXO Technical Manager

Reviewed/concurred by:_____ Date:_____

Michael Henderson, CIH
Project CIH

Reviewed/concurred by:_____ Date:_____

Karl Van Keuren, RPG
Project Manager

Table of Contents

List of Acronyms

CWM	chemical warfare material
DFA	Deactivation Furnace Area
EMM	earth moving machinery
EOD	Explosive Ordnance Disposal
EZ	exclusion zone
IT	IT Corporation
OE	ordnance and explosives
PM	Project Manager
PPE	personal protective equipment
QC	quality control
SSHP	site-specific safety and health plan
TM	Technical Manager
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Engineering and Support Center, Huntsville
UXO	unexploded ordnance

A1.0 Introduction

This Appendix to the closure activities work plan, Deactivation Furnace Area (DFA), Ravenna Army Ammunition Plant, Ravenna, Ohio (August 1998) will be used to guide unexploded ordnance (UXO) personnel in the performance of ordnance and explosives (OE) clearance activities. These OE activities include the detection, excavation, and identification of UXO at the site.

The DFA was used for disposal of fuzes, boosters, and munitions. A site visit conducted on September 21, 1998 discovered UXO inside the control building and evidence of UXO outside the control building in the DFA. The OE clearance activities to be performed at the site are designed to support the removal, decontamination, and disposal of the remaining deactivation furnace structure; associated structures; previously dismantled equipment; excavation, transportation, and disposal of contaminated soils; site restoration activities, including backfilling and regrading of the site; and collection, characterization, and disposal of investigation-derived waste as listed in the site-specific work plan for the DFA.

This site preparation will consist of performing a UXO inspection of the work site to detect and remove surface UXO, vegetation removal, hand excavation, mechanized excavation, screening, and identification/disposal of OE and OE-related scrap.

This appendix contains a site-specific technical and management plan for the performance of the UXO inspection of closure activities for the DFA.

OE/UXO clearance work at DFA will be divided into the following work tasks:

- Work area inspection/characterization
- Survey to establish site boundaries
- UXO survey grid layout
- Vegetation removal
- Surface inspection/clearance
- UXO excavation to a depth of at least 6 inches or deeper if needed
- Construction support
- Screening of contaminated soil to remove OE and OE-related scrap
- OE/UXO disposal (if required)
- Scrap disposal
- QC.

Disposal of UXO found will be coordinated with representatives from the U.S. Army Corps of Engineers (USACE), Louisville District who will notify U.S. Army Engineering and Support Center, Huntsville (USAEC) (Greg Byuga or Wayne Galloway) who will request military Explosive Ordnance Disposal (EOD) support from 52nd Ordnance Group. If required, IT Corporation (IT) holds the necessary Explosives User License issued by the Bureau of Alcohol, Tobacco, and Firearms and has experience in disposal of UXO by detonation. The following standard operating procedures for performing OE/UXO tasks are included in the following attachments:

- Attachment 1 - General Ordnance Explosives (OE)/Unexploded Ordnance (UXO) Procedures
- Attachment 2 - Unexploded Ordnance (UXO) Avoidance Procedures
- Attachment 3 - Unexploded Ordnance (UXO) Detection Procedures
- Attachment 4 - Unexploded Ordnance (UXO) Excavation Procedures
- Attachment 5 - Unexploded Ordnance (UXO) Handling and Disposal Procedures.

The safety concepts and basic considerations for UXO operations, (USAEC) (February 16, 1996) is also included for general reference at the end of the this appendix.

In providing UXO support for environmental cleanup, IT complies with contract requirements and USACE standards for UXO operations. USACE regulations ER 1110-1-8153 and OE-CX IGD 99-0 define requirements for providing UXO support to construction projects. This support is categorized as follows:

- ***Probability of Encountering UXO is Low.*** When a determination is made that the probability of encountering UXO is low, a two person UXO team stands by in case the construction contractor encounters a suspected UXO.
- ***Probability of Encountering UXO is Moderate to High.*** When a determination is made that the probability of encountering UXO is moderate to high, UXO teams are required to conduct subsurface UXO clearance for the known construction footprint during intrusive activities.

A2.0 Background

The DFA site is in the Winklepeck Burning Ground along Road D West. The DFA area is relatively level.

The site consists of a control room and an earth-filled timber wall measuring 20.5 feet wide by 46 feet long. A discharge point for the ash collection conveyor extends slightly beyond the west side of the timber wall. Also located at this site is a 16-foot by 18-foot in-plan metal sided building and one aboveground storage tank approximately 5 feet in diameter and 13 feet high. The deactivation furnace itself consisted of a No. 2 oil-fired, horizontal, rotary retort furnace used to treat explosive waste. The facility was constructed in the 1960s and was last used in 1983. The furnace drum, feed conveyor belt, collection conveyor, fuel oil pump, and sections of the earth-filled timber wall have previously been removed.

A3.0 UXO Personnel and Responsibilities

A3.1 Personnel Qualifications

The following qualifications requirements are promulgated by the USAEC and will be followed for this project:

- All UXO personnel will be graduates of either the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland; the U.S. Naval EOD School, Indian Head, Maryland; the EOD assistants course, Redstone Arsenal, Alabama; or the EOD assistant course at Eglin Air Force Base, Florida.

In addition to the above general training requirements, the following experience requirements apply to specific positions of responsibility on OE/UXO projects:

- ***Senior UXO Supervisor.*** The Senior UXO Supervisor will supervise all on-site UXO activities. The Senior UXO Supervisor must be a graduate of either the U.S. Naval School of EOD or the U.S. Army Bomb Disposal School and have at least 15 years of combined active duty military EOD and contractor UXO experience including at least 10 years in supervisory positions. A minimum of 6 years of the required 15 years of experience must be on active duty in military EOD units. The Senior UXO Supervisor must also have documented experience with, or specialized training in, the type of OE expected to be encountered.

- ***UXO Technician III.*** The UXO Supervisor must be a graduate of either the U.S. Naval School of EOD or the U.S. Army Bomb Disposal School and have

experience in OE clearance operations and supervising personnel. The UXO Technician III must have at least 10 years combined active duty military EOD and contractor UXO experience.

- ***UXO Technician II.*** Graduates of the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland or the U.S. Naval School of EOD, Indian Head, Maryland are qualified to be UXO Technician II with no minimum experience requirement. A UXO Technician I (graduate of either of the two previously noted EOD assistant courses) with at least 5 years of combined EOD and contractor UXO experience also qualifies to work as a UXO Technician II.

- ***UXO Technician I.*** The EOD assistants course, Redstone Arsenal, Alabama; or the EOD assistant course at Eglin Air Force Base, Florida. Graduates of the EOD assistants course, Redstone Arsenal, Alabama, or the EOD assistant course at Eglin Air Force Base, Florida are qualified to be UXO Technician I with no minimum experience requirement.

A3.2 Personnel Responsibilities

The following is an explanation of the duties of the personnel within the project OE/UXO organization.

UXO Technical Manager. The UXO Technical Manager (TM), is responsible for general oversight of the UXO clearance program. He oversees the UXO operational, safety, and QC organizations and monitors and reports project performance and financial status to Project Manager (PM). He is also responsible for scheduling work, developing plans, and hiring UXO qualified personnel to perform the work. He monitors the performance of the field UXO work to offer suggestions to the Senior UXO Supervisor for safety and efficiency improvements and assists in the resolution technical conflicts.

Senior UXO Supervisor. The Senior UXO Supervisor is the most senior UXO Technician on-site. He directly controls the operations of the various field teams and will spend most of the day in the field monitoring their performance and assisting them in achieving maximum operational safety and efficiency. He reports directly to the PM and receives guidance from the UXO TM concerning technical UXO and operational issues. He will implement the approved plans in the field and must review and approve any changes to the approved UXO plans.

UXO Technician III. The UXO Technician III is responsible for the safety and efficiency of the performance of his assigned field team and reports directly to the Senior UXO Supervisor.

UXO Technician III can temporarily stop work in order to bring an unsafe condition or procedure to the attention of the Senior UXO Supervisor.

UXO Technician II. UXO Technician II reports directly to their assigned UXO Technician III and is responsible for the safe and efficient performance of specific field tasks as assigned by the UXO Technician III. They are also responsible for complete familiarity with the approved plans and for adherence to the procedures described in the plans. UXO Technician II have the authority to temporarily stop work in order to bring an unsafe condition or procedure to the attention of their assigned UXO Technician III.

UXO Technician I. UXO Technician I reports directly to their assigned UXO Technician II or III and is responsible for the safe and efficient performance of specific field tasks as assigned. They are also responsible for complete familiarity with the approved plans and for adherence to the procedures described in the plans. UXO Technician I have the authority to temporarily stop work in order to bring an unsafe condition or procedure to the attention of their assigned UXO Technician II or III.

A4.0 Operations Plan

The following is a description of the UXO operations that will be performed at DFA. The purpose of the UXO operations is to identify and remove OE and OE-related scrap from within the DFA footprint. This may require use of OE detection techniques; excavation of single or multiple anomalies; excavation of soil in layers and screening of soils to remove small items of OE and OE-related scrap; OE avoidance and construction support for the demolition of the Deactivation Furnace Facility; and possible disposal of recovered OE. The procedures to be followed and equipment to be used by the UXO team in the performance of their duties are provided in the following subsections.

A4.1 UXO Survey, Procedures, and Equipment

For areas that do not have gross metal contamination, the UXO Team will use Schonstedt GA-52CX or GA-72CD magnetometers to detect surface and subsurface UXO and scrap metal. They will use the survey lane method of survey control and the mag and flag method of UXO marking for excavation.

The survey lane method of survey control is efficient to use in open areas with few obstructions. In this method, the Senior UXO Supervisor will direct the team members in dividing the site into 100-foot by 100-foot grids and then hammering in wooden stakes at 10-foot intervals along opposite boundaries of the survey grid. Locations of the wooden stakes will be checked with a magnetometer to ensure that no subsurface anomalies are present prior to hammering the stake.

Highly visible rope, such as 1/4 inch nylon, will be run between the opposing stakes to create clearly marked 5-foot wide survey lanes. Each survey lane will be surveyed by a member of the UXO Team who will walk down the length of the survey lane swinging the hand-held magnetometer back and forth across the lane making sure that the instrument passes over all portions of the survey lane. The UXO Team Supervisor will ensure that the members of the sweep line maintain a 5-foot spacing between themselves and that they completely cover the entire surface of the area with magnetometers.

Detected metal objects will be investigated immediately to determine if the object is on the surface. If the object is on the surface, the UXO Technician investigating the object will determine if the object is UXO. If the object is UXO it will be marked for handling and disposal by the military EOD team by placing a wooden stake marked with red flagging tape next to the UXO.

If the detected object is determined to be located below the surface, it will be marked with a pin flag for subsequent excavation and identification. The UXO Team Supervisor will record the number and location of the pin flags on a grid sheet. After completion of the subsurface geophysical survey the UXO Team will return to the grid, equipped with the grid sheet, and will excavate and investigate the anomalies to determine their identification.

A4.2 Vegetation Removal

DFA is covered with grass and contains a few clusters of small trees. No vegetation removal is required. However if required, the UXO Team will use hand-held weed whackers or a brush hog mower to remove the tall grass that may interfere with the magnetometer survey and hand saws or chain saws to remove interfering trees or low-lying tree limbs.

The Senior UXO Supervisor will direct the UXO Team to inspect the area to be cleared of vegetation to ensure that no surface hazards are present. They will then use the previously

described tools to cut the grasses or tree limbs. Cut tree limbs will be stockpiled for disposal in accordance with the work plan.

A4.3 UXO Excavation And Disposal

In areas that do not have gross metal contamination the UXO Team will use hand tools to excavate subsurface UXO anomalies identified as shallow (less than 1 foot). Deeper buried UXO (deeper than 1 foot) may be hand excavated or, at the option of the Senior UXO Supervisor, an excavator may be used to excavate the overburden. They will use the Schonstedt magnetometers to assist them, while excavating, to pinpoint the exact location of the anomaly.

The Senior UXO Supervisor will direct the UXO Team in the implementation of the excavation procedures outlined in ITUXO-0004 (Attachment 4). All excavation will be performed by at least two UXO qualified personnel and the number of personnel allowed within the established EZ will be kept to the minimum required to perform the excavation.

All UXO will be uncovered by hand excavation. Heavy equipment may be used to remove overburden from UXO suspected to be deeply buried. However, the final 1 foot of soil will always be removed by hand.

During hand excavation, the two UXO qualified personnel will proceed to the anomaly's location within the grid by determining the anomaly's location on the grid map. Once the location has been reached, the UXO Specialists will relocate the anomaly with a Schonstedt magnetometer. They will then carefully hand excavate, using standard EOD hand excavation techniques, until the anomaly is located or the 2 foot maximum depth of excavation required is reached. If the anomaly is located within the maximum required excavation depth, the excavation team will uncover the anomaly sufficiently to allow identification of the anomaly without shocking, jarring or disturbing it.

Anomaly excavation with earth moving machinery (EMM) will also be performed by a team consisting of at least a UXO Technician and an equipment operator operating an excavator. Additional workers may be assigned to assist with the excavation by the UXO Team Supervisor if required to safely perform the excavation. Examples of situations requiring additional workers are if shoring is needed to comply with OSHA requirements for excavation safety. In this case, additional workers will be needed to handle the shoring timbers and safely perform the

excavation. Excavations of significant depth (greater than 2 feet), however, are not anticipated on this project.

EMM excavation, if required, will be conducted similarly to hand excavation. Upon arrival at the anomaly site, the UXO Team will relocate the anomaly using the Schonstedt magnetometer and the equipment operator will begin the excavation under the direction of the UXO Technician. The equipment operator will excavate near the location, but not directly on top of the anomaly. The UXO Technician will frequently monitor the excavation to ensure that the equipment operator does not dig directly over the anomaly to prevent contacting the anomaly with the excavator. The objective of the direction by the UXO Technician is to remove the overburden from a selected area adjacent to the anomaly while ensuring that the anomaly will not be disturbed by the excavator bucket.

The UXO Technician will direct the equipment operator to stop excavation when the overburden has been removed to within 1 foot of the anomaly as estimated by the feedback from the Schonstedt magnetometer. The EMM will than be shut down and the excavation will be completed using hand tools as previously described for hand excavation. Upon discovery, if the object is UXO it will be marked for handling and disposal by placing a wooden stake marked with red flagging tape next to the UXO. The UXO Team Supervisor will record the identification of the UXO on his grid anomaly map.

UXO that is detected and identified by the UXO Team will be handled and disposed of by military EOD. The Senior UXO Supervisor will leave all UXO in place and undisturbed and will report all UXO detected and identified to the project Site Superintendent immediately upon discovery. The UXO report will take the form of a completed UXO grid sheet and will contain the following information:

- UXO number
- Description
- Condition
- Location within the grid
- Disposition (added after removal or disposal by the military EOD team).

The Site Superintendent will in turn inform the USACE, Louisville District who will coordinate the EOD response to the site for handling and disposal of the UXO.

Upon arrival of the EOD team the Senior UXO Supervisor will escort the EOD responders to the UXO and offer to assist them in the disposal operation. The handling and disposal of the UXO will be the responsibility of the military EOD team.

A4.4 UXO Screening

In areas within the DFA footprint that have gross metal contamination, the soil must be removed in layers and then passed through a screen to remove potential OE and OE-related scrap. Use of EMM is authorized for soil removal as long as no hazardous OE items are being recovered. In the event that hazardous OE items are recovered that might detonate from the use of EMM, operations will be suspended and the excavation will be conducted by hand. Only UXO Technicians are authorized to perform hand excavation of potential OE/UXO. The Senior UXO Supervisor must use his/her professional judgement based on site conditions and the type and quantity of OE material identified to determine if additional safety requirements are needed.

The UXO Team will use screens with a mesh of ½ inch to 1 inch to separate OE-related scrap and potential UXO from the excavated soil. Screened soil will be segregated for further testing to determine levels of hazardous toxic and radiologic waste contamination. Recovered OE-related scrap metal will be segregated for inspection, certification, and recycling if approved. Recovered UXO or OE-related scrap that can not be determined as free of hazards will be segregated and stored at Igloo 1501 in Demolition Area No. 2.

A4.5 Removal of Scrap

The UXO Team will collect the scrap piles deposited at the gird corner markers during the magnetometer survey and excavation operations. The Senior UXO Supervisor will inspect and certify each piece of scrap as inert and the scrap will be disposed of in accordance with the requirements of the work plan and U.S. Department of Defense regulations.

A4.6 Quality Control

The on-site UXO QC Specialist will implement the approved site QC plan for the UXO operations. He will be allowed on-site during UXO operations for the purpose of performing site QC inspections. He will also inspect UXO documentation for compliance with QC documentation standards.

A4.7 Site Setup, Control, and Exclusion Zones

Site setup, control, and the establishment of EZs will be accomplished in accordance with the work plan. There are no inhabited structures or roads that interfere with the following planned operations at DFA:

- Work area inspection/characterization
- Survey to establish site boundaries
- UXO survey grid layout
- Vegetation removal
- Surface inspection/clearance
- Subsurface geophysical survey
- UXO excavation and screening
- Construction support
- UXO and scrap disposal
- QC.

A5.0 Site Safety and Personal Protective Equipment

The approved health and safety document will be followed by UXO personnel performing work at DFA with the following exceptions:

- Steel-toed safety shoes will not be worn during UXO operations. Steel-toed shoes may interfere with the operation of Schonstedt magnetometers and create an unsafe condition. Non-metallic safety shoes may be worn by the UXO team.

- Hard hats will not be worn unless an overhead hazard exists (such as when using an EMM for UXO excavation). Hard hats may create an unsafe condition by falling off of the head of a UXO Specialist at a critical moment. In the event of the accidental detonation of a UXO (the worst case accident scenario) the hard hat will not protect the UXO Specialist from fragments and may worsen the injury by reflecting fragments into the head of the Technician.

Otherwise, PPE worn by IT UXO personnel will be in accordance with the guidance in the referenced documents. This is anticipated to be Level "D" PPE modified to include non-steel toed protective boots and to eliminate the requirement for wearing a hard hat if no overhead hazard is present. Both of these modifications comply with the requirements of the USAEC safety concepts and basic considerations for UXO operations.

PPE worn to protect the UXO team from hazardous materials in addition to UXO, such as the expected lead and propellant contamination, will be in accordance with the referenced

documents. A Site Safety Supervisor from IT will work with the UXO team to ensure that the requirements of the site-specific safety and health plan (SSHP) are followed.

A6.0 Chemical Warfare Material

CWM was not used at DFA. The following information is included as a standard precautionary measure to ensure the proper response from UXO personnel in the event that suspected CWM is unexpectedly discovered.

The discovery of CWM, or suspected CWM, on the project site will require that normal site activities immediately stop until the CWM has been recovered and disposed of. Field teams will take the following actions upon discovering possibly chemical filled UXO or other CWM:

- The discoverer will immediately notify the Senior UXO Supervisor.
- The Senior UXO Supervisor will immediately direct the work team to stop work and exit the site in an upwind direction.
- The Senior UXO Supervisor should note the location of the suspected CWM to help with its identification and relocation.
- When the work team has been evacuated to at least 2,000-feet from the suspected CWM the Senior UXO Supervisor will immediately notify the Site Superintendent who will initiate the emergency notification procedure as outlined in the work plan and the SSHP.
- The Senior UXO Supervisor will ensure that all field personnel are accounted for and establish a perimeter security area around the suspected CWM no closer that 2,000-feet.
- The Senior UXO Supervisor will direct his personnel in support of responding personnel.

ATTACHMENT 1

ATTACHMENT 2

ATTACHMENT 3

ATTACHMENT 4

ATTACHMENT 5

ATTACHMENT 6