FINAL
ACTION MEMORANDAM

for

NON TIME CRITICAL REMOVAL ACTION
OPERABLE UNIT 3

FORMER NEBRASKA ORDNANCE PLANT

MEAD, NEBRASKA

US Army Corps
of Engineers ®

prepared by

US ARMY CORPS OF ENGINEERS - KANSAS CITY DISTRICT
KANSAS CITY, MISSOURI
DECEMBER 2007

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Attachment 1: Responsiveness Summary

LIST OF ABBREVIATIONS AND ACRONYMS

ARDC	Agricultural Research and Development Center
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
HI	Hazard Index
mg/kg	milligram per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOP	Nebraska Ordnance Plant
NPL	National Priorities List
NRD	Lower Platte (North) Natural Resource District
OU3	Operable Unit 3
PRG	Preliminary Remediation Goal
RAO	Removal Action Objective
RCRA	Resources Conservation and Recovery Act
RI	Remedial Investigation
SARA	Superfund Amendments and Reauthorization Act
Site	Former NOP
USC	U.S. Code
UNL	University of Nebraska, Lincoln

SECTION I

PURPOSE

1.0 Purpose and Basis

This Action Memorandum presents the selected Non Time Critical Removal Action for the Former Nebraska Ordnance Plant (NOP or Site) Operable Unit 3 (OU3) Areas: Load Line 2 Paint Operations Area; Load Line 4 Paint Operations Area; and Potential Landfill Area. The selected Removal Action is the excavation and off-site disposal of soils that have elevated concentrations of antimony.

The selected Removal Action will be undertaken pursuant to Defense Environmental Restoration Program (DERP), 10 U.S. Code (USC) 2701 et. seq. and the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 USC. 9601 et. seq., the National Oil and Hazardous Substances Contingency Plan (NCP).

SECTION II

SITE CONDITIONS AND BACKGROUND

2.0 Site Description

The Site was a Department of Defense (DoD)-owned, contractor-operated facility operated intermittently from October 1942 through 1956. The Site is located in east central Saunders County, approximately one (1) mile south of Mead, Nebraska (see Figure 1: General Site Location Map). The principal operation at the Former NOP was loading bombs using four load lines (see Figure 2: Former NOP Site Map). This activity was conducted from October 1942 through August 1945 with the lines undergoing periodic operational changes. Operations were terminated in 1945.

In 1950, the Site was temporarily reactivated and produced an assortment of weapons for the Korean Conflict. In 1956, the Site was placed on standby. In 1959, the Former NOP was determined to be surplus and was transferred to the General Services Administration. During the period of 1959 through 1971, much of the site was sold and resold, except a few areas which were retained for Government use. Currently, the University of Nebraska, Lincoln (UNL), Agricultural Research and Development Center (ARDC), U.S. Army National Guard and Reserves, and various private interests own the land.

2.1 Location

The Site is approximately 17,258 acres and is located approximately one (1) mile south of Mead, Nebraska (see Figure 1). It is six (6) miles east of Wahoo, two (2) miles east of Ithaca, four (4) miles north of Memphis, three (3) miles southwest of Yutan, three (3) miles west of Wann, and nine (9) miles northwest of Ashland. The Site encompasses the western half of the Township 14 North, Range 9 East, and the eastern one-third of Township 14 North, Range 8 East.

2.1.1 Load Line 2 and 4 Paint Operations Areas

There are three former paint operations buildings at Load Lines 2 and at Load Line 4: the Receiving and Painting Building, Paint Storage and Mixing Building, and South Paint Storage Building. The Receiving and Painting Building is located south of the Inert Storage Building. The Paint Storage and Mixing Building is located west of the Receiving and Painting Building. The South Paint Storage Building is located west of the Assembly, Pack, and Shipping Building. See Figure 3, Load Line 2 Location Map and Figure 4, Load Line 4 Location Map.

2.1.1.1 Load Line 2 Paint Operations Area

The elevated concentrations of antimony in the soils at Load Line 2 are located east of the Receiving and Painting Building. The removal area is approximately 41.5 by 200 feet and has a depth of 1 foot. The total anticipated volume of soil is 308 cubic yards. See Figure 5, Load Line 2 Removal Area.

2.1.1.2 Load Line 4 Paint Operations Area

The elevated concentrations of antimony in the soil at Load Line 4 are located east of the Receiving and Painting Building. The removal area is approximately 36 by 75 feet and has a depth of 1 foot. The total anticipated volume of soil is 100 cubic yards. See Figure 6, Load Line 4 Removal Area.

2.1.2 Potential Landfill Area

The Potential Landfill Area an untilled grassy area with no surface evidence of past disposal activities. See Figure 7, Potential Landfill Location Map.

The elevated antimony levels in the soils at the Potential Landfill Area are located in the central portion of the site. The removal area is approximately 62 by 62 feet and has a depth of 4 foot. The total anticipated volume of soil is 563 cubic yards. See Figure 8, Potential Landfill Removal Area.

2.1.3 Environmental Investigation History

OU3 was extensively investigated and reported on in the 1993 and 1997 Remedial Investigations (RI) and the 2000 RI Addendum Report. Based on the findings and conclusions of the RIs, soil samples indicated elevated concentrations of antimony. These elevated concentrations of antimony are limited to Load Line 2 & 4 Paint Operations Areas and the Potential Landfill Area. The elevated concentrations of antimony at the Load Line 2 & 4 Paint Operations Areas appear to be isolated occurrences with limited vertical and horizontal extent. The elevated concentrations of antimony are in the 0 to 6 inch below ground surface (bgs) sampling interval at contiguous sampling locations along the east side of the Receiving and Painting Building at each Load Line. See Figures 5 and 6.

As detailed in the OU3 RI Reports and OU3 RI Addendum, the Potential Landfill Area soil samples indicate elevated concentrations of antimony in soil of limited vertical and horizontal extent. The elevated concentrations of antimony are in the uppermost two feet bgs sampling interval at one sample location in the Potential Landfill Area. See Figure 8.

2.1.4 Baseline Risk Assessment Summary

An OU3 Baseline Risk Assessment was conducted to specifically address potential human health effects and ecological effects associated with the contaminated media. The OU3 Baseline Risk Assessment incorporated data collected as part of the 1993 and 1997 OU3 RIs and the 2000 OU3 RI Addendum sampling activities. The Baseline Risk Assessment determined that antimony was the only potential contaminant of concern that may cause adverse non-cancer health effects. Other potential contaminants of concern are not present in significant concentrations that would pose adverse non-cancer health effects.

In the Human Health Risk Assessment, the scenarios evaluated in the Load Line Areas included residential (adult and child), trespasser/visitor (adult and juvenile), and on-site worker exposure to surface soil. Scenarios evaluated at the Potential Landfill Area included residential (adult and child) and trespasser (adult and juvenile) exposure to surface soil and construction worker exposure to both surface and subsurface soils. Potential health risks were evaluated quantitatively for ingestion and direct dermal contact for all receptors. Potential excess cancer risks and non-carcinogenic hazards were estimated for exposure to site-related contaminants of potential concern using both a Reasonable Maximum Exposure and an Average Exposure approach.

The non-carcinogenic cumulative Hazard Index (HI) exceeded the threshold target of one for the Reasonable Maximum Exposure child resident scenario at the Load Line 2 Paint Operations Area, the Load Line 4 Paint Operations Area, and at the Potential Landfill Area. HI greater than one indicates the potential for adverse health effects. Antimony is the potential contaminant of concern contributing the majority of the potential hazard at each exposure area. Soil ingestion was the exposure pathway contributing the majority of the hazard. See Table 1: Antimony-Specific Child Resident Scenario Hazardous Index Calculation Results.

Potential excess cancer risks are within, or below, EPA risk range of 1×10^{-4} to 1×10^{-6} (i.e., 1 in 10,000 to 1 in 1,000,000) for all scenarios and areas evaluated. An evaluation of the potential health risks to children associated with exposure to lead was conducted for all areas of concern. The results of this evaluation indicate that lead in Site soils is unlikely to pose a health hazard.

The potential for protected species or their habitats to occur at the Site was assessed as part of the OU3 RI. A qualified biologist walked all three exposure areas (Load Line 2, Load Line 4, and the Potential Landfill Area) to assess the suitability of the areas for threatened and endangered species habitat. All areas have had past soil disturbances associated with their previous land-use. Presently, these areas are fairly dry and consist of non-native grasses and forbs, which are periodically mowed. There are also buildings and daily operational activities still associated with Load Line 2 and 4. Due to the historical and present day land-uses and the present species composition of the three exposure areas, no suitable habitat for threatened and endangered species was observed at any of these areas.

2.2 National Priorities List Status

The Site is listed on the National Priorities List (NPL).

SECTION III

3.0 Protection of Public Health and the Environment

The OU3 Baseline Risk Assessment identified three areas where the soil ingestion pathway exceeded the HI of 1 for the resident child exposure scenario. These areas: Load Line 2 Paint Operations Area; Load Line 4 Paint Operations Area; and Potential Landfill Area are addressed in this Removal Action to prevent any potential or actual exposure from soil ingestion. Removal of the elevated concentrations of antimony will reduce the HI values at each area and reduce antimony concentrations to acceptable risk based standards.

SECTION IV

4.0 Endangerment Determination

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the Removal Action selected in the Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

SECTION V

REMOVAL ACTION OBJECTIVES/REMOVAL GOALS

5.0 Removal Action Objective

The Removal Action Objective (RAO) is to minimize the potential for ingestion of contaminated soils that are above risk based standards for antimony.

5.1 Removal Goal

The removal goal for antimony in soil is 31 milligram per kilogram (mg/kg). This value corresponds to the values for the residential Region 9 Preliminary Remediation Goal (PRG), Region 6 Media-Specific Screening Level (MSSL), and Region 3 Risk-Based Concentration (RBC), which are all based on protection of a child resident as the most sensitive receptor.

SECTION VI

PROPOSED ALTERNATIVES

6.1 Discussion of Alternatives:

Four alternatives for OU3 were developed in a 2000 Feasibility Study that were subsequently incorporated in a 2007 Engineering Evaluation/Cost Analysis (EE/CA) Addendum. The alternatives and their basic concepts are summarized below.

Alternative 1 – No Action: The No Action alternative consists only of environmental monitoring of the contaminated soil. This alternative is required by the NCP, in accordance with CERCLA, to provide a baseline for comparison with the other alternatives. Estimated cost of Alternative 1 is $231,000.

Alternative 2 – Capping: This alternative consists of installing a barrier (cap) over the contaminated soils. The cap, which can be constructed of asphalt, concrete, or clay, or an engineered material (geosynthetics) will prevent human contact with the contaminated soils. Institutional controls such as land use restrictions may be appropriate for Alternative 2. Estimated cost of Alternative 2 is $322,000.

Alternative 3 – Excavation and Off-Site Disposal: This alternative consists of excavation of the contaminated soils and transportation of the soils to a permitted landfill. It is assumed that the excavated soil can be characterized as non-hazardous and will be disposed at an appropriate facility. Estimated cost of Alternative 3 is $440,000.

Alternative 4 – Capping at Load Lines 2 and 4 Paint Operations Areas and Excavation and Off-Site Disposal at the Potential Landfill Area: At the Load Line 2 Paint Operations Area the location of the preliminary soil remediation area is between the receiving and painting building and a driveway. At the Load Line 4 Paint Operations Area the location of the preliminary soil remediation area is adjacent to the receiving and painting building and a concrete pad. Capping will consist of installing a low permeability or an impermeable barrier (cap) over the contaminated soils at the Load Lines 2 and 4 removal areas with periodic inspection of the cap. The cap, which can be constructed of asphalt, concrete, clay or similar engineered materials (geosynthestics) will prevent human contact with the contaminated soils. Use restrictions may be appropriate for Alternative 4. At the Potential Landfill Area**,** there are no buildings or roadways near to the preliminary soil removal area. At this location, the remedial alternative consists of excavating the contaminated soils and transporting it to a permitted landfill without treatment. Estimated cost for Alternative 4 is $439,000.

SECTION VII

SELECTED ACTIONS AND ESTIMATED COSTS

7.1 Selected Alternative:

Alternative 3 – Excavation and Off Site Disposal is selected as the Removal Action based upon the evaluation of the screening alternatives as presented in the Feasibility Study and the EE/CA Addendum. Alternative 3 – Excavation and Off Site Disposal addresses the elevated concentrations of antimony in the soils at all three exposure areas (Load Line 2, Load Line 4, and Potential Landfill) by excavating the soils to concentrations which are below the EPA Region IX PRG for antimony. It is anticipated that the volume of the excavated soil will be 308, 100, and 563 cubic yards at Load Line 2, Load Line 4, and the Potential Landfill Areas respectively (see Figures 5, 6, and 8). Confirmatory sampling will be undertaken to verify that the RAOs have been achieved. It is assumed that the soils with elevated concentrations of antimony can be characterized as non-hazardous and will be disposed of at the appropriate facility.

The EE/CA was released as an Addendum to the Former NOP OU3 Feasibility Study. These documents were made available to the public starting on February 22, 2007. A Public Meeting was held on March 5, 2007 that included a presentation of the EE/CA process and the preferred Alternative 3 Removal Action. Public concerns were recorded at the meeting. Attachment 1 (Non-Time Critical Removal Action Responsiveness Summary) is a summary of the public comments and the DoD responses.

The EE/CA was made available to the public at the Mead Public Library and the project web site (http://www.nwk.usace.army.mil/projects/mead/projectindex.html). The initial public comment period lasted from February 23 through March 22, 2007. Due to the non-availability of portions of planning documents for this OU3 Removal Action on the project web site, a 30 day extension to the public comment period was provided. Overall, no formal

written comments were received. Comments were generated at the March 5, 2007 public meeting. These comments are summarized and addressed in Attachment 1. A copy of the transcript of the public meeting may be found at the above mentioned project web site.

Alternative 3 is the selected alternative as it successfully addresses all of the screening criteria:

- Overall protection of human health and the environment
- Compliance with Applicable or Relevant and Appropriate Requirements
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume
- Short-term effectiveness
- Implementability, and
- Cost

7.2 Elements of Selected Alternative:

The selected action for this Removal Action will include the following:

- Excavate soils with antimony greater than 31 mg/kg;
- Sample to verify the Removal Goal has been met;
- Dispose of the excavated soils at a permitted, off-site facility as approved by EPA; and
- Restore the removal areas with backfill, grade, and seed.

7.3 Estimated Costs:

The estimated cost for completion of Alternative 3 is $440,000. Table 2, Cost Estimate for Alternative 3 – Excavation and Off-Site Disposal, provides a detailed description of the estimated costs for the Removal Action.

7.4 Contribution to Remedial Performance

The Removal Action selected will, to the extent practicable, contribute to the efficient performance of any long term remedial action by reducing the overall site risk by eliminating the potential for exposure to soils with elevated concentrations of antimony above the EPA Region IX PRG of 31 mg/kg.

7.5 Applicable or Relevant and Appropriate Requirements and To Be Considered Standards

7.5.1 Applicable or Relevant and Appropriate Requirements

Federal

Resource Conservation and Recovery Act (RCRA) 261, Identification and Listing of Hazardous Waste.

State

Nebraska Solid Waste Rules, Title 132 chapter 13

7.5.2 To Be Considered Standards:

Federal

EPA Region IX PRG for antimony

EPA Region III RBC for antimony

EPA Region VI MSSL for antimony.

7.6 Project Schedule

This Removal Action is planned to be completed in 2008. The schedule presented below is based on the number of days after the Action Memorandum is signed.

Complete Work Plans	+ 90 days
Complete Field Work	+ 180 days
Complete Investigation Report	+ 270 days

SECTION VIII

RECOMMENDATION

This Action Memorandum presents the Removal Action for the Former NOP. The Removal Action is protective of human health and the environment and attains Federal and State requirements that are applicable and relevant and appropriate to this Removal Action.

SIGNATURE

Roger A. Wilson, Jr.
Colonel, Corps of Engineers
District Commander

12/18/07
Date

TABLE 1
Antimony-Specific Child Resident Scenario Hazardous Index Calculation Results
Former Nebraska Ordnance Plant, Mead, Nebraska

OU3 Exposure Area	Depth Below Ground Surface (feet)	No. of Samples	Concentration Range for Antimony (mg/kg)	Reasonable Maximum Exposure Point Concentrations for Antimony (mg/kg)	Antimony Hazard Index	Total Hazard Index
Load Line 2 Paint Operations Area	0 – 0.5	22	0.6 – 37.4	37.4	1.5	2.0
Load Line 2 Paint Operations Area	0 – 0.5	18	0.71 – 171	106	4.1	4.2
Potential Landfill Area	0 – 2	16	0.5 – 81.8	46	2.0	2.4

Table 2

Cost Estimate for Alternative 3
Excavation and Off-Site Disposal
Former Nebraska Ordnance Plant, Mead, Nebraska

Cost Item	Quantity	Unit	Unit Cost, $	Total Base Cost, $	Ref.
1. Capital Cost					
1.1 Direct Capital Cost					
Sampling & Analysis to Verify Remediation Area					
(3 samples east of easternmost remediation area boundary at Load Line 2 collected prior to final remedial design)					
Travel From Kansas City Or Equal					
Car Rental	2	Day	$ 48	$ 96	13
Mobilization/Demobilization To Site - Labor, Staff Scientist	12	Hour	$ 50	$ 600	6, 12
Sampling - Hand Auger, Staff Scientist	4	Hour	$ 50	$ 200	6, 12
Per Diem - Full Day	1	Day	$ 85	$ 85	11
Per Diem - Half Day, No Lodging	1	Day	$ 30	$ 30	11
Sample Containers & Shipping, Supplies, Personal Protective Equipment	1	Lump Sum	$ 50	$ 50	12
Sample Analysis For Antimony	3	Sample	$ 50	$ 150	7
Total Remediation Verification Sampling Direct Capital Cost				$ 1,211	
Fencing Around Burning/Proving Grounds					
8 ft. H, 6 ga wire, 2.5 inch line post, galv. steel	4500	Feet	$ 30.50	$ 137,250	5
3 inch diam corner post, galv. steel	20	Each	$ 106.00	$ 2,120	6
Double swing gates, 8 ft. H, 20 ft. opening	2	Each	$ 1,625.00	$ 3,250	6
Total Fencing Direct Capital Cost				$ 142,620	
Excavating And Hauling, Safety Level C					
Ordnance and Explosives Avoidance and Supervision	1	Lump Sum	$ 3,000	$ 3,000	12
Excavating To 4 Ft. Depth 1/2 Cu. Yd. Tractor/Loader Backhoe	971	Cu. Yd.	$ 5.81	$ 5,642	5
($4.65/Cu. Yd. + 25% for Safety Level C = $5.81/Cu. Yd.)					6
Transport To Butler County, NE Landfill - Roll-Off Boxes	1636	Ton	$ 20.00	$ 32,720	1
(971 Cu. Yd. @ 1.685 Ton/Cu. Yd. = 1636 Ton)					2
Disposal At Butler County Landfill, No Treatment	1636	Ton	$ 36.25	$ 59,305	1
Sampling & Analysis For Soil Toxicity Characterization For Landfill Acceptance					
(Sampling conducted Prior to Excavation)					
Travel From Kansas City Or Equal					
Car Rental	3	Day	$ 48	$ 144	13
Mobilization/Demobilization To Site - Labor, Staff Scientist	16	Hour	$ 50	$ 800	6, 12
Sampling - Hand Auger, Staff Scientist	8	Hour	$ 50	$ 400	6, 12

Table 2 (cont.)

Per Diem - Full Day	2	Day	$	85	$	170	11
Per Diem - Half Day, No Lodging	1	Day	$	30	$	30	11
Sample Containers & Shipping, Supplies, Personal Protective Equipment	1	Lump Sum	$	100	$	100	12
Sample Analysis For Soil Toxicity Characterization For Landfill Acceptance	9	Sample	$	959	$	8,631	7
(3 samples per location x 3 locations of Load lines 2 & 4 & Potential Landfill)							12
Replace Excavated Soil With Backfill - Top Soil From Off-Site (Loose Soil AT 1.2 Ton/Cu. Yd. = 1223 Cu. Yd. To Be Compacted Into Excavation) (Includes soil cost, transportation, compaction & labor)	1223	Cu. Yd.	$	28.51	$	34,868	6
Seeding - Vegetative Cover	1644	Sq. Yd.	$	2.93	$	4,817	6
Total Excavation and Off-Site Disposal Direct Capital Cost					$	150,626	
Total Direct Capital Cost					$	294,457	
1.2 Indirect Capital Cost							
Design Plan	1	Lump Sum		10,000	$	10,000	12
Health & Safety - 8% of Direct Capital Cost	1	Lump Sum		23,557	$	23,557	12
Legal & Administration - 5% of Direct Cost	1	Lump Sum		14,723	$	14,723	6
Construction Related Services - 8% of Direct Cost (Administrative, Bonds & Insurance, Fees/Permits, etc.)	1	Lump Sum		23,557	$	23,557	6
Contingency -25% of Direct Cost	1	Lump Sum		73,614	$	73,614	12
Total Indirect Capital Cost					$	145,450	
Total Capital Cost					**$**	**439,907**	
2. Operations and Maintenance Cost						$0	
There is no annual Operations & Maintenance because all contaminated soil is removed from the site.							
Present Worth Of Annual Operations And Maintenance Costs						$0	
Total Capital and Present Worth Costs					**$**	**439,907**	

Table 2 (cont.)

Summary of Estimated Costs

	+50% Range Base Cost, $	Base Cost, $	-30% Range Base Cost, $
1. Total Capital Cost	$ 659,861	$ 439,907	$ 307,935
2. Total Present Worth Annual Operation And Maintenance Cost	$0	$0	$0
3. Total Present Worth Cost - Alternative 3 - Excavation And Off-Site Disposal (Total Capitol And Present Worth Annual Operations And Maintenance Cost)	$ 659,861	$ 439,907	$ 307,935

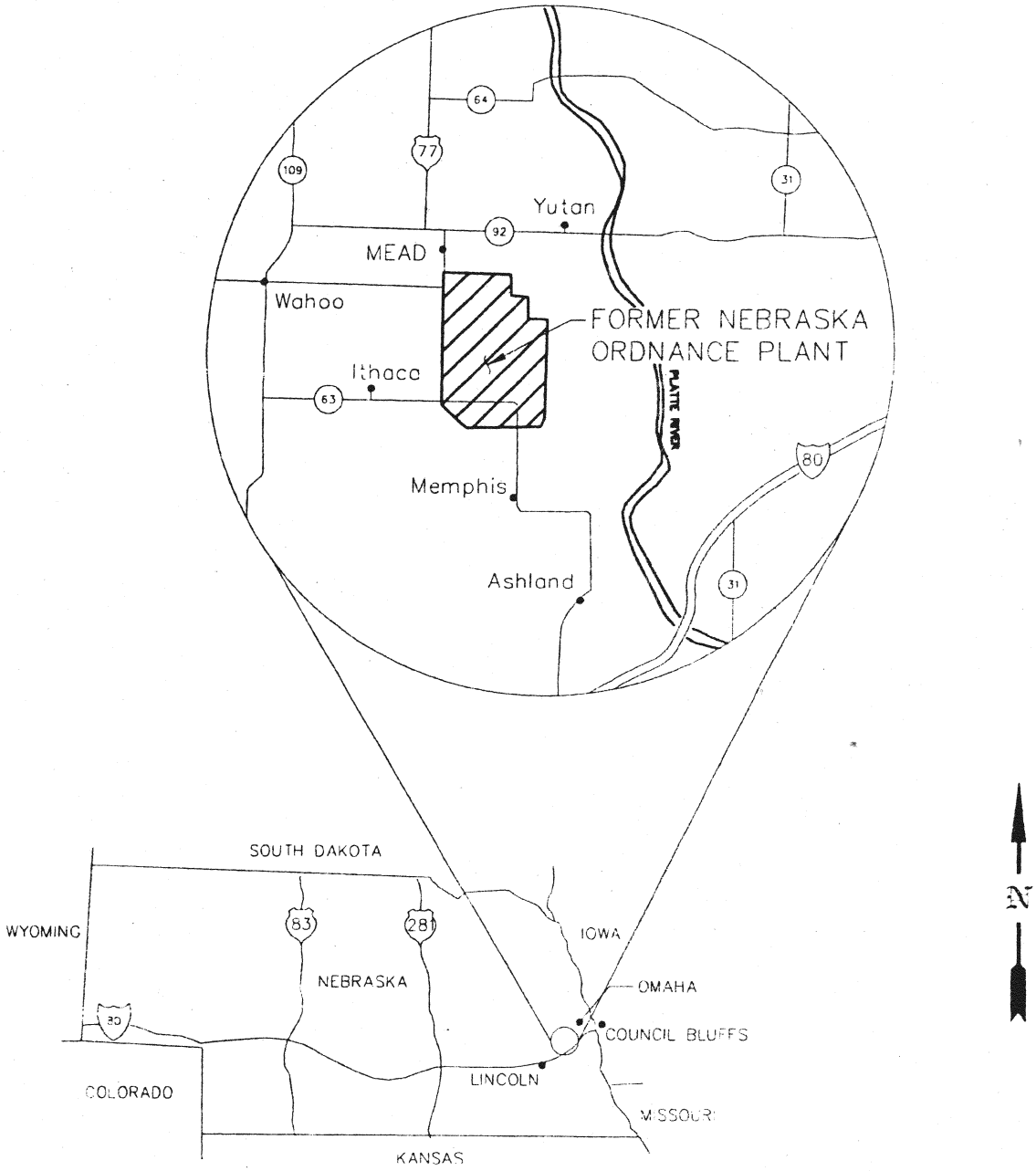

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Figure 1

General Site Location Map

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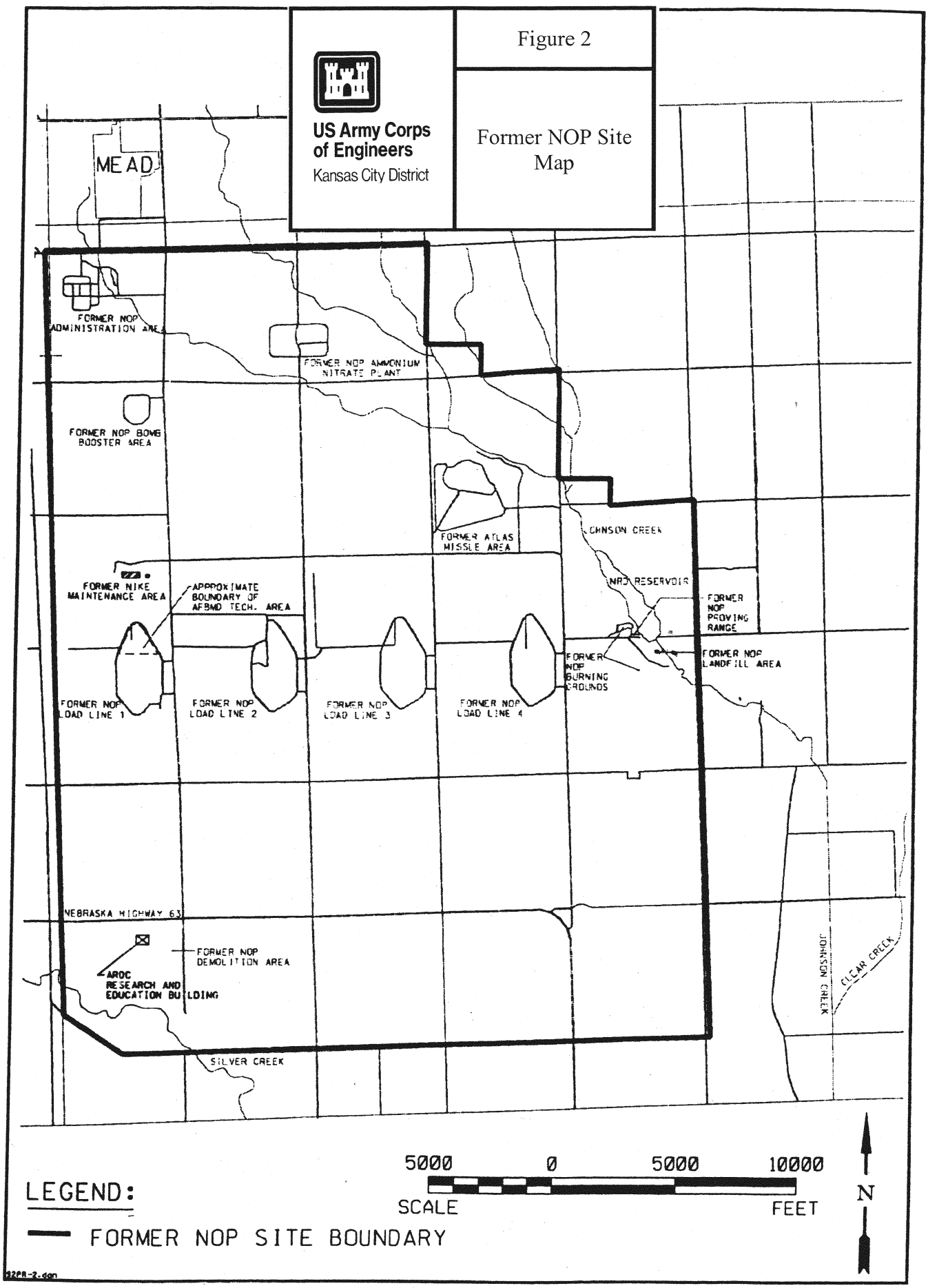
US Army Corps of Engineers
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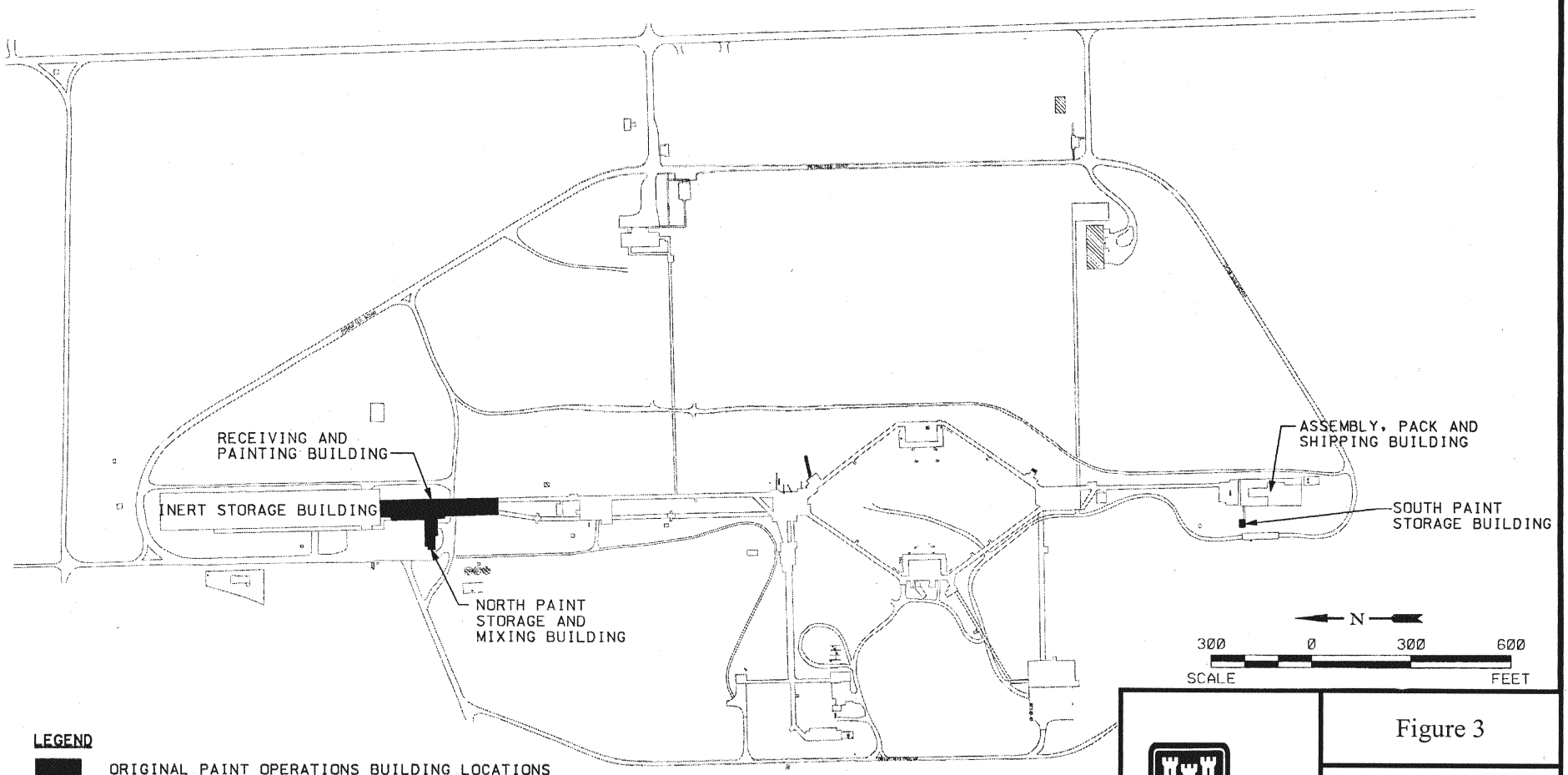
Figure 2
Former NOP Site Map
MEAD
FORMER NOP ADMINISTRATION AREA
FORMER NOP AMMONIUM NITRATE PLANT
FORMER NOP BOMB BOOSTER AREA
FORMER ATLAS MISSLE AREA
JOHNSON CREEK
NRD RESERVOIR
FORMER NIKE MAINTENANCE AREA
APPROXIMATE BOUNDARY OF AFBMD TECH. AREA
FORMER NOP PROVING RANGE
FORMER NOP BURNING GROUNDS
FORMER NOP LANDFILL AREA
FORMER NOP LOAD LINE 1
FORMER NOP LOAD LINE 2
FORMER NOP LOAD LINE 3
FORMER NOP LOAD LINE 4
NEBRASKA HIGHWAY 63
FORMER NOP DEMOLITION AREA
AROC RESEARCH AND EDUCATION BUILDING
SILVER CREEK
JOHNSON CREEK
CLEAR CREEK
5000 0 5000 10000
SCALE FEET
N
LEGEND:
FORMER NOP SITE BOUNDARY



LEGEND

ORIGINAL PAINT OPERATIONS BUILDING LOCATIONS

NOTE:

THE SOUTH PAINT STORAGE BUILDING AT LOAD LINE 2 HAS BEEN DEMOLISHED.

SOURCE : DONOHUE, 1992B

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Figure 3

Load Line 2:
Location Map

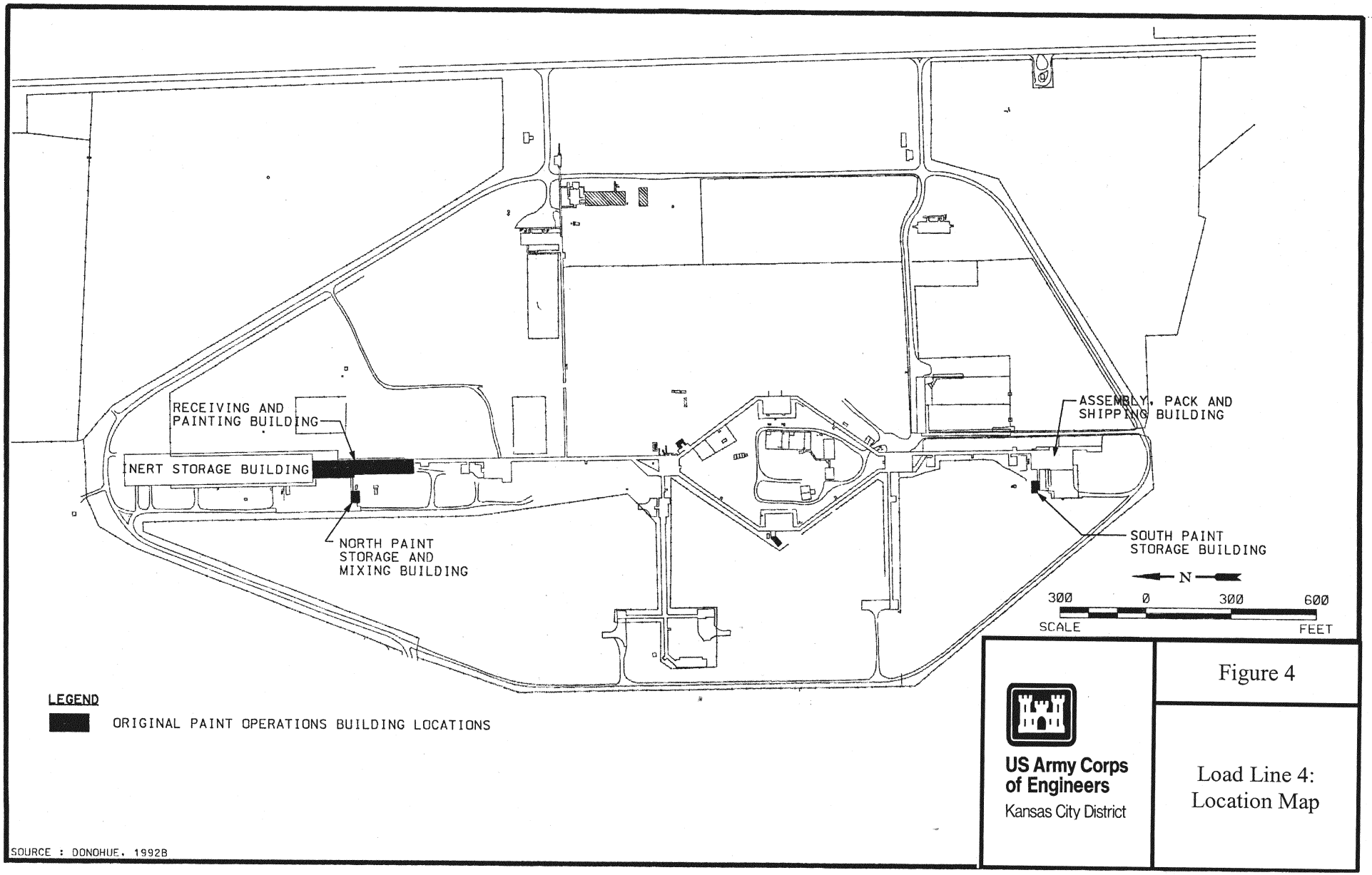

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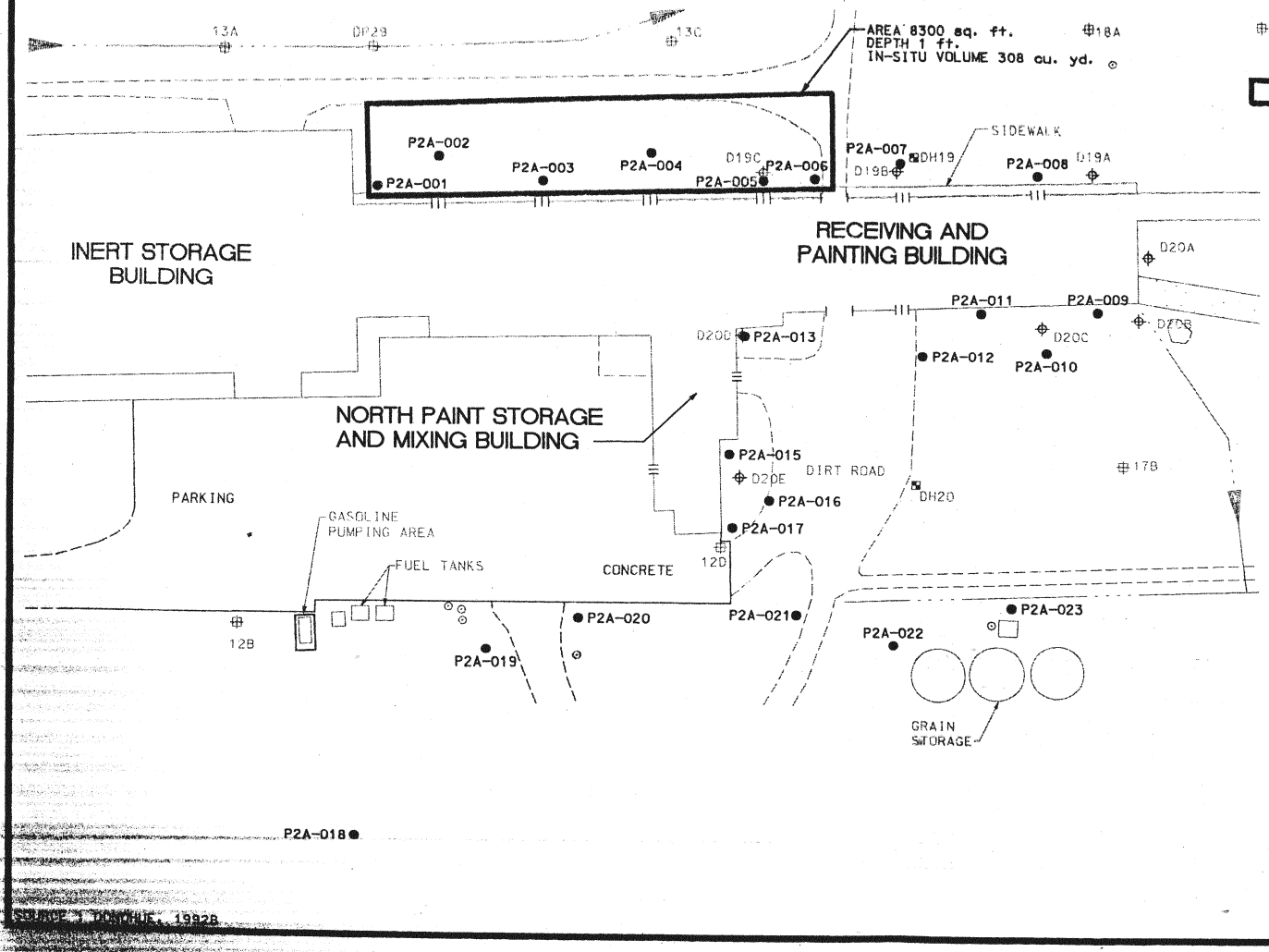
Figure 4

Load Line 4:
Location Map



LEGEND:

● P2A-001	PHASE I RI SAMPLE LOCATION
▣ DH4	PREVIOUS INVESTIGATION SOIL SAMPLE LOCATION (CONFIRMATION STUDY 1989)
⊕ D19C	PREVIOUS INVESTIGATION SOIL SAMPLE LOCATION (OU1 RI 1991)
⊕ CP40	PREVIOUS INVESTIGATION SOIL SAMPLE LOCATION (OU1 SUPPLEMENTAL RI/FS 1992)
▭	PRELIMINARY SOIL REMEDIATION AREA

NOTES:

1. SOIL SAMPLES WERE COLLECTED THE FOLLOWING DISTANCES FROM THE EXTERIOR WALLS OF THE RECEIVING AND PAINTING BUILDING:
   P2A-001 AT 6.5 FT, P2A-002 AT 20.0 FT,
   P2A-003 AT 7.5 FT, P2A-004 AT 20.0 FT,
   P2A-005 AT 7.0 FT, P2A-006 AT 7.0 FT,
   P2A-007 AT 20.0 FT, P2A-008 AT 7.0 FT,
   P2A-009 AT 2.0 FT, P2A-010 AT 20.0 FT,
   P2A-011 AT 1.0 FT, P2A-012 AT 20.0 FT,
   P2A-013 AT 2.0 FT
2. SOIL SAMPLES WERE COLLECTED THE FOLLOWING DISTANCES FROM THE EXTERIOR WALLS OF THE NORTH PAINT STORAGE AND MIXING BUILDING:
   P2A-015 AT 2.0 FT, P2A-016 AT 20.0 FT,
   P2A-017 AT 5.0 FT
3. SOIL SAMPLES WERE COLLECTED THE FOLLOWING DISTANCES FROM THE CONCRETE PAD WEST OF THE NORTH PAINT STORAGE AND MIXING BUILDING:
   P2A-018 AT 100.0 FT, P2A-019 AT 20.0 FT,
   P2A-020 AT 5 FT
4. SHALLOW SOIL SAMPLE P2A-014 NOT COLLECTED DUE TO CONCRETE PAD AT SAMPLING LOCATION.

N

50 0 50 100

SCALE FEET

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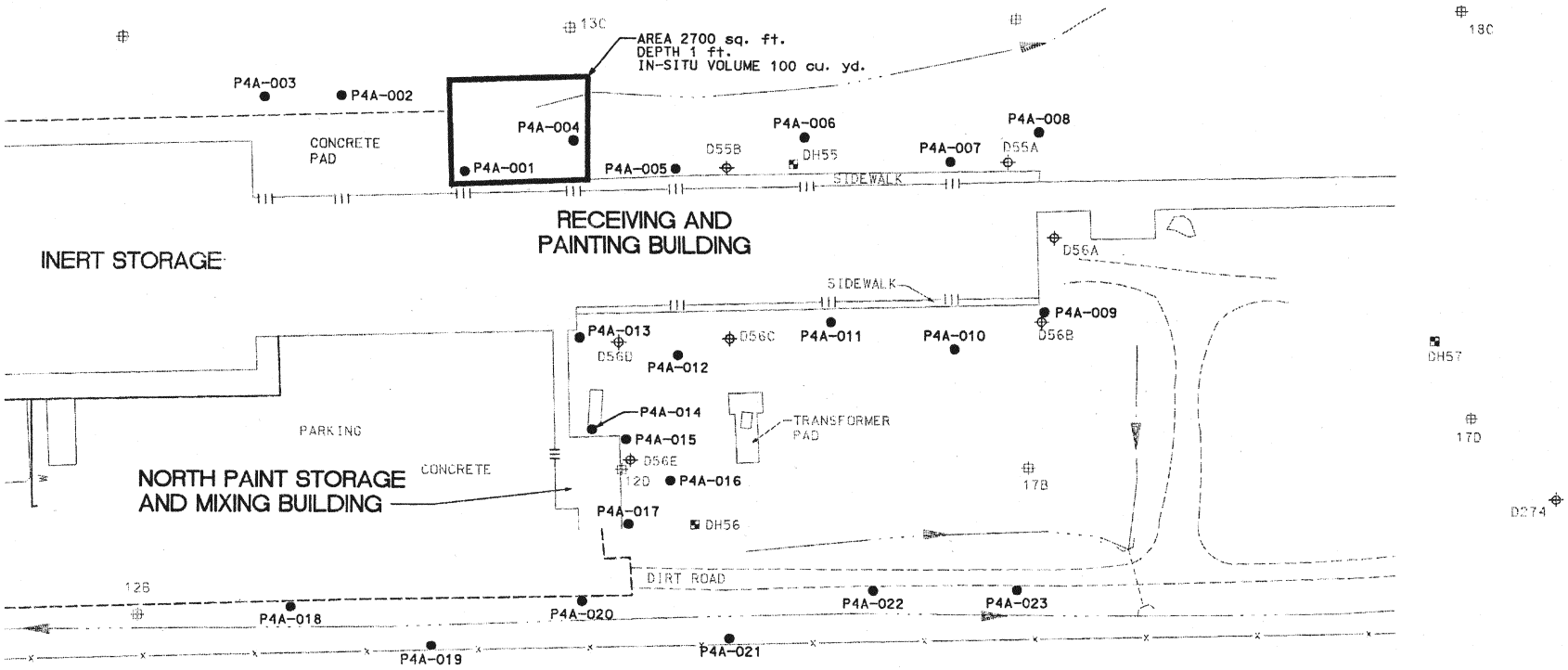
Figure 5

Load Line 2: Removal Area



LEGEND:

● P4A-001	PHASE I RI SOIL SAMPLE LOCATION
▣ DH56	PREVIOUS INVESTIGATION SOIL SAMPLE LOCATION (OU1 RI 1991)
⊕ D56E	PREVIOUS INVESTIGATION SOIL SAMPLE LOCATION (CONFIRMATION STUDY 1989)
⊕ 12B	PREVIOUS INVESTIGATION SOIL SAMPLE LOCATION (OU1 SUPPLEMENTAL RI/FS 1992)
▭	PRELIMINARY SOIL REMEDIATION AREA

NOTES:

1. SOIL SAMPLES WERE COLLECTED THE FOLLOWING DISTANCES FROM THE EXTERIOR WALLS OF THE RECEIVING AND PAINTING BUILDING:
   P4A-001 AT 7.0 FT, P4A-002 AT 42.0 FT,
   P4A-003 AT 42.0 FT, P4A-004 AT 20.0 FT,
   P4A-005 AT 7.0 FT, P4A-006 AT 20.0 FT,
   P4A-007 AT 7.0 FT, P4A-008 AT 20.0 FT,
   P4A-009 AT 3.0 FT, P4A-010 AT 20.0 FT,
   P4A-011 AT 7.0 FT, P4A-012 AT 20.0 FT,
   P4A-013 AT 3.0 FT
2. SOIL SAMPLES WERE COLLECTED THE FOLLOWING DISTANCES FROM THE EXTERIOR WALLS OF THE NORTH PAINT STORAGE/MIXING BUILDING:
   P4A-014 AT 1.0 FT, P4A-015 AT 1.0 FT,
   P4A-016 AT 20.0 FT, P4A-017 AT 1.0 FT
3. SOIL SAMPLES WERE COLLECTED THE FOLLOWING DISTANCES WEST OF THE CONCRETE PAD AND OR DIRT ROAD WEST OF THE NORTH PAINT STORAGE/MIXING BUILDING:
   P4A-018 AT 1.0 FT, P4A-019 AT 20.0 FT,
   P4A-020 AT 1.0 FT, P4A-021 AT 20.0 FT,
   P4A-022 AT 1.0 FT, P4A-023 AT 1.0 FT

N

50 0 50 100

SCALE FEET

SOURCE : DONOHUE, 1992B

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Figure 6

Load Line 4: Removal Area

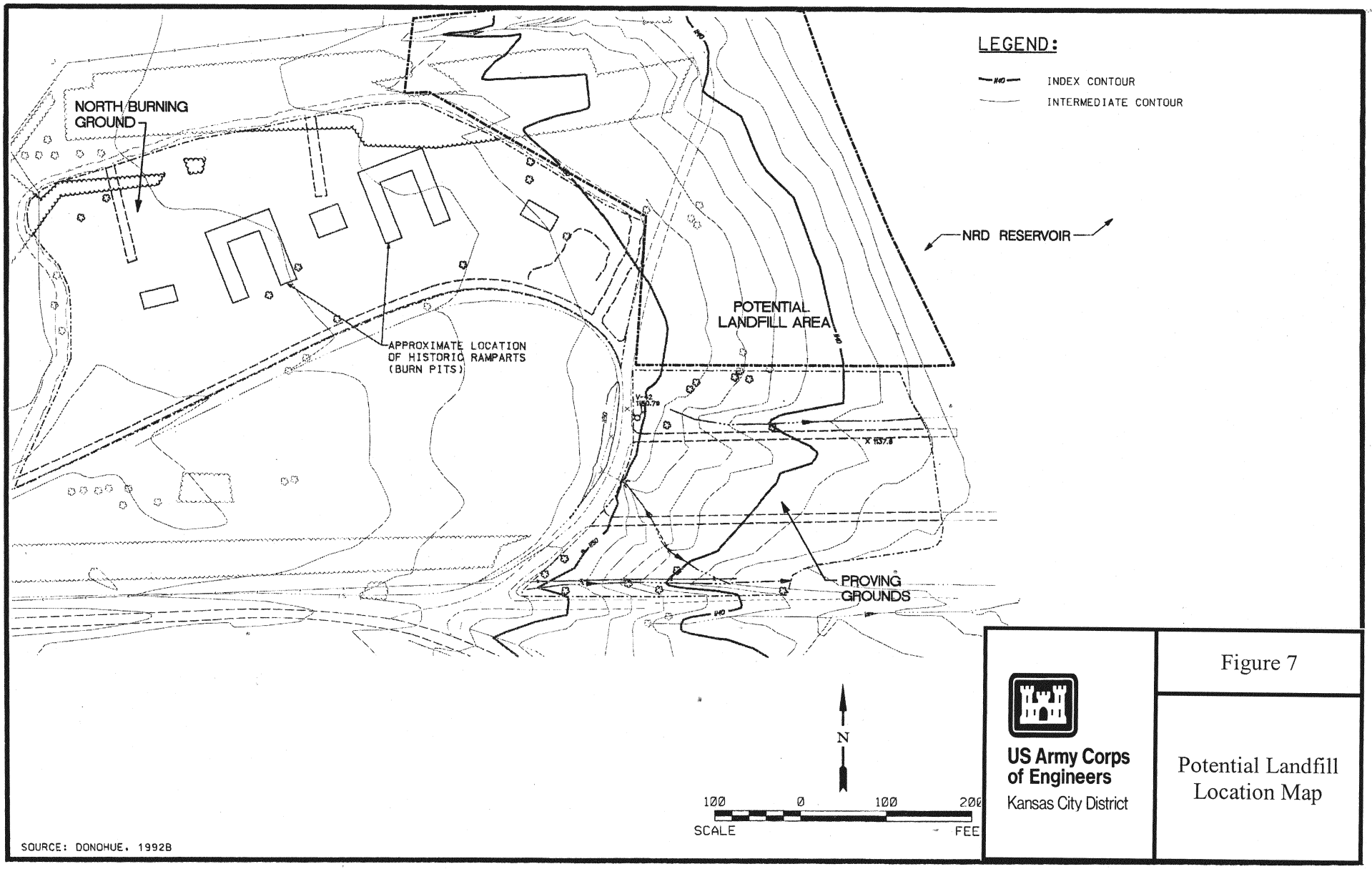

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Figure 7

Potential Landfill Location Map

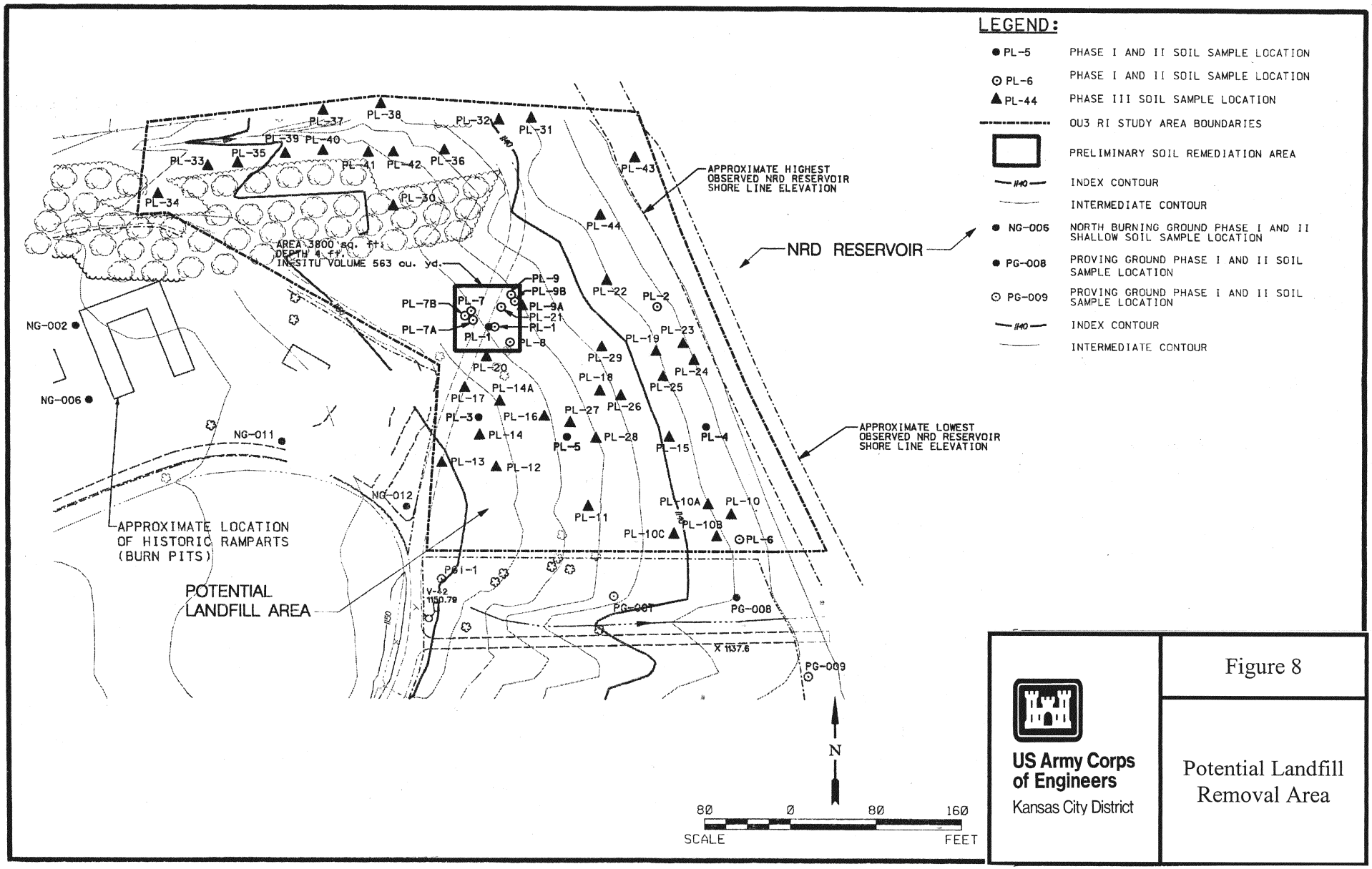

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Figure 8

Potential Landfill Removal Area

ATTACHMENT 1

NON-TIME CRITICAL REMOVAL ACTION RESPONSIVENESS SUMMARY OPERABLE UNIT 3 Former Nebraska Ordnance Plant

The EE/CA was released as an Addendum to the Former NOP OU3 Feasibility Report. A Public Meeting was held on March 5, 2007 that included a presentation of the EE/CA process and the preferred Alternative 3 Removal Action. Public concerns were recorded at the meeting. This Attachment is a summary of the public comments and the DoD responses.

The EE/CA was made available to the public at the Mead Public Library and the project web site (http://www.nwk.usace.army.mil/projects/mead/projectindex.html). The public comment period lasted from February 23 through March 22, 2007. No comments were received.

Public comments and questions from the Public Meeting held on March 5, 2007 were grouped and summarized into ten general questions. The Army received no comments via mail during the public comment period.

1. What was the extent of sampling done around and under the reservoir?

   During the 1999 Field Event for the Remedial Investigation Addendum Report released in February 2000, soil samples were collected along the eastern edge of the Potential Landfill and Proving Grounds (i.e. the western shore of the Lower Platte (North) Natural Resource District [NRD] Reservoir). Sampling was conducted approximately within 50 feet of the shoreline at 50 foot intervals along the shoreline adjacent to the Potential Landfill and Proving Ground.

   Additionally, during a 1999 drawdown of the NRD Reservoir, sediment sampling was completed within the lakebed. Two samples were collected in the sediments of the reservoir directly east of both the Potential Landfill and Proving Ground. An additional 3 sediment samples were collected around the shoreline.

2. Past risk questions that were previously raised during public meetings and associated with the reservoir should be included in this project.

   As the commenter was informed during the public meeting, this comment did not contain a specific issue related to this Removal Action. In February 2000 a Baseline Risk Assessment for Operational Unit 3 was issued to address the current risk status at the Site. This Action Memorandum addresses the antimony in soil removal.

3. Explain discrepancies in the date of the report and included tables that are missing on the internet site. The public requested additional time to review the corrected document.

The comment period was extended 30 days to accommodate the public's request. The materials were updated on the internet site. The Final Baseline Risk Assessment for Operational Unit 3 is dated February 2000. There appears to be some discrepancies in the date found at the bottom of some tables. Tables are generated for various drafts of the report. The date on the table reflects the last date it was updated. Updates are typically generated based on comments from the public and environmental regulators.

4. How was the final extent of contamination for antimony determined in all areas? How were sampling intervals and depths determined? How did the Army decide on the antimony cleanup level of 31 parts per million?

The removal goal of 31 parts per million is based upon the U. S. Environmental Protection Agency's Region III, VI, and IX screening levels for antimony which are protective of the residential child as the most sensitive receptor. The estimated extent of the excavation (width and depth) is based on soil data where the antimony risk is reduced to acceptable levels. The estimated extent of the excavation is also based on physical features such as buildings and roads. Confirmation sampling is part of the field work that will be done as part of the removal action.

5. Clarify the Risk Assessment timeline and guidance used. Explain the derivation and use of the Hazard Index risk number.

The method for calculating a Hazard Index for antimony has changed since the BLRA was finalized. Under RAGS Part E (2004) which addresses dermal risk assessment, skin absorption of metals is no longer assumed without metal-specific data and the soil adherence to skin for the child resident is reduced to 1/5th of the level used in the BLRA. The 31 mg/kg antimony cleanup level conforms with the exposure and toxicity factors that would be used in a risk assessment if the BLRA were being done today. This value is not only presented in the 2004 Region 9 PRGs, but is also the number currently presented in the Region III Risk-Based Concentration Table (October, 2007) and the Region 6 Media-Specific Screening Levels (December, 2007).

6. How is contaminated soil treated before disposal? What are the approximate costs and how will they compare to the cost estimates in the Feasibility Study?

There is no requirement to treat this soil before disposal. The costs as stated in Feasibility Study represent the approximate costs for this Removal Action.

7. How will the Army make a hazardous waste determination of the contaminated soil prior to disposal?

This soil is not considered hazardous waste, however; the Army will follow all applicable Resource Conservation and Recovery Act criteria to determine classification of waste prior to disposal.

8. Explain why land use controls and deed restrictions have not been implemented. How will land use controls be put in place for this operable unit?

> *Land use controls or deed restrictions are not appropriate for this Removal Action at the Load Line 2 Paint Operations Area, the Load Line 4 Paint Operations Area, and the Potential Landfill Area. The selected Removal Action will results in no hazardous substance above the removal goals following soil excavation and disposal.*

9. Why does the current description of OU3 as the "catch-all" unit differ from the description in the Federal Facilities Agreement (FFA)? Has the FFA ever been updated?

> *The FFA has not been updated. The FFA parties have agreed that the most efficient manner to address the remaining issues at the Site is to include them in the final Operable Unit 3.*

10. Why do the Hazard Index risk numbers change between the Draft and Draft Final Feasibility Study Reports?

> *In the period between the issuance of the Draft and Draft Final Feasibility Study Reports, the analytical results used to calculate the Hazard Index were deemed to be of questionable data quality based on one estimated value for antimony. Therefore, that result was removed from the calculations and the Hazard Index was revised. The Hazard Index in the Draft and Draft Final Feasibility Study Report both exceeded the standard of 1.0 which indicates the potential for adverse health effects. Despite the change in the Hazard Index values the overall extent (length, width, and depth) and removal goal of the removal action were not changed as a result of the change in the risk estimate.*