

AD-A248 590



DTIC

ELECTE

APR 13 1992

FINAL

## US Army Corps of Engineers

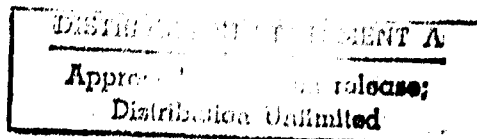
Toxic and Hazardous  
Materials Agency

# Delivery Order 9 Enhanced Preliminary Assessment

FORT BENJAMIN HARRISON, INDIANA

Contract Number DAAA15-90-D-0009

February 1992



92-09161



Prepared for:

U.S. ARMY TOXIC AND  
HAZARDOUS MATERIALS AGENCY  
Aberdeen Proving Ground  
Maryland 21010-5401

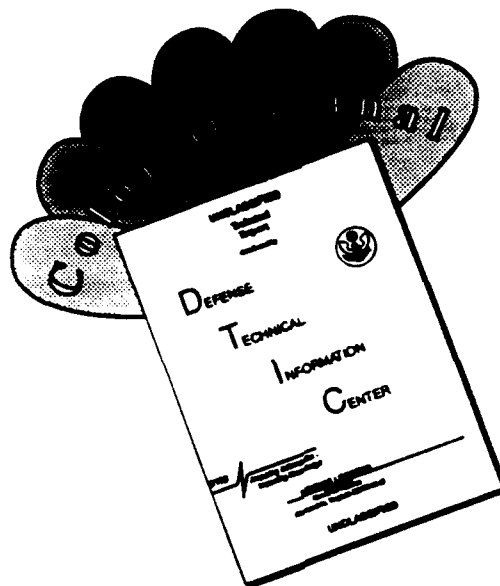
C344

Prepared by:



Roy F. Weston, Inc.  
West Chester,  
Pennsylvania 19380

# DISCLAIMER NOTICE




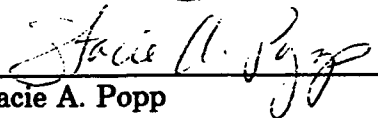
THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF COLOR PAGES WHICH DO NOT REPRODUCE LEGIBLY ON BLACK AND WHITE MICROFICHE.



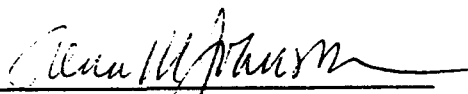
**USATHAMA DELIVERY ORDER 9**  
**ENHANCED PRELIMINARY ASSESSMENT**  
**FORT BENJAMIN HARRISON**  
**INDIANA**

Contract Number DAAA15-90-D-0009

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

  
  
Stacie A. Popp  
Project Engineer

  
David H. Pohl, P.E.  
Project Manager

  
Glenn M. Johnson, P.E.  
Program Manager

February 1992

Prepared By:

Roy F. Weston, Inc.  
Weston Way  
West Chester, Pennsylvania 19380

W.O. No. 2281-11-09-0021

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
<small>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.</small>				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE March 1992	3. REPORT TYPE AND DATES COVERED Final December 1991 - March 1992		
4. TITLE AND SUBTITLE Enhanced Preliminary Assessment Fort Benjamin Harrison, Indiana		5. FUNDING NUMBERS Contract No. DAAA15-90-D-0009 Delivery Order 9		
6. AUTHOR(S) Popp, Stacie A.; Pohl, David H.; Finger, Frank J. II				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Roy F. Weston, Inc. One Weston Way West Chester, PA 19380-1499		8. PERFORMING ORGANIZATION REPORT NUMBER 2281-11-09-0021		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Toxic and Hazard Materials Agency ATTN: CETHA-BC-A Aberdeen Proving Ground, MD 21010-5401		10. SPONSORING/MONITORING AGENCY REPORT NUMBER CETHA-BC-CR-92003		
11. SUPPLEMENTARY NOTES Report is contained in one volume.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Distribution Unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) An Enhanced Preliminary Assessment was conducted at Fort Benjamin Harrison (FBH), Indiana, which is located approximately 12 miles from downtown Indianapolis in Lawrence Township, Marion County. FBH contains 2,501 acres, of which approximately 1,069 acres is covered by woodlands. Activities at FBH include administration, training, housing, and support. Sensitive environments at FBH include wetlands, habitat areas for the endangered Indiana bat, endangered plants, and historically and archeologically significant areas. FBH is a U.S. Army Soldier Support Center under the jurisdiction of the U.S. Army Training and Doctrine Command (TRADOC). Based on information obtained during and subsequent to a site visit (15 through 18 October 1991), 36 types of Areas Requiring Environmental Evaluation (AREEs) were identified and grouped by the following categories: Facility Operations; Maintenance/Fueling Operations; Water Treatment Operations; Training Areas; Hazardous Materials Storage/Waste Handling Areas; Sanitary Wastewater Treatment Plants; Storage Tanks; Landfills/Incinerators; Medical Facilities; Burn Pit Areas; Spill Areas; Ammunition Storage; Coal Storage; and Facility-wide AREEs. This report presents a summary of findings for each AREE and recommendations for further action.				
14. SUBJECT TERMS Fort Benjamin Harrison. Base Closure Program. Areas Requiring Environmental Evaluation (AREEs). Human Receptors. Environmental Receptors. Sampling Assessment.			15. NUMBER OF PAGES 326	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT SAR	



## **DISCLAIMER**

This enhanced preliminary assessment report is based primarily on the environmental conditions observed at Fort Benjamin Harrison in Marion County, Indiana between 15 October and 18 October 1991. Past site conditions and management practices were evaluated based on readily available records and the recollections of people interviewed. Every effort was made, within the scope of the task, to interview all identified site personnel, especially those personnel with a historical perspective of site operations.

No environmental sampling was conducted as part of the assessment. The findings and recommendations for further action are based on Roy F. Weston, Inc.'s, experience and technical judgement, as well as current regulatory agency requirements. Future regulations as well as any modifications to current statutes may affect the compliance status of this site.

Roy F. Weston, Inc. does not warrant or guarantee that the property is suitable for any particular purpose or certify any areas of the property as "clean". A more thorough investigation, including intrusive sampling and analyses for specific hazardous materials, is recommended prior to reporting this property as excess.



## TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
	<b>DISCLAIMER</b>	<b>ii</b>
	<b>LIST OF ACRONYMS AND ABBREVIATIONS</b>	<b>x</b>
	<b>EXECUTIVE SUMMARY</b>	<b>ES-1</b>
<b>1</b>	<b>INTRODUCTION</b>	<b>1-1</b>
1.1	Background	1-1
1.2	Objectives	1-1
1.3	Procedures	1-1
1.4	Report Format	1-2
<b>2</b>	<b>PROPERTY CHARACTERIZATION</b>	<b>2-1</b>
2.1	Property Description and History	2-1
2.2	Description of Facilities	2-5
2.3	General Environmental Information	2-6
2.3.1	Demographics and Adjacent Land Use	2-6
2.3.2	Climate	2-6
2.3.3	Physiography and Surface Water	2-7
2.3.4	Soils	2-11
2.3.5	Regional Geology and Hydrogeology	2-11
2.3.6	Sensitive Environments	2-16
2.4	Environmental Studies at FBH	2-23
2.5	Permitting Status and Regulatory Issues	2-26
2.5.1	RCRA Facilities	2-27
2.5.2	NPDES Permit	2-29
2.5.3	Air Permits	2-29
2.5.4	Solid Waste Permits	2-30
2.5.5	Nuclear Regulatory Commission Licenses	2-30
<b>3</b>	<b>AREAS REQUIRING ENVIRONMENTAL EVALUATION</b>	<b>3-1</b>
3.1	Facility Operations	3-1
3.1.1	DPCA Field Printing Shop (AREE 1)	3-1
3.1.2	TASO Devices Shop - Buildings 479 and 481 (AREE 2)	3-8
3.1.3	Graphics Shop - Building 1 (AREE 3)	3-9
3.1.4	Photographic Processing Areas (AREE 4)	3-9
3.1.5	Weapons Cleaning Area - Building 613 (AREE 5)	3-10
3.1.6	Carpentry Shop - Building 1 (AREE 6)	3-12



**TABLE OF CONTENTS**  
**(continued)**

<b><u>Section</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
3.2	Maintenance and Fueling Operations	3-12
3.2.1	Maintenance Shops (AREE 7)	3-13
3.2.2	Former Maintenance Shops (AREE 8)	3-15
3.2.3	Wash Racks, Grease Racks, and Oil/Water Separators (AREE 9)	3-18
3.2.4	POL Drum Accumulation/Waste Staging Areas (AREE 10)	3-20
3.2.5	Fueling Stations (AREE 11)	3-21
3.2.6	DIS Engineering/Maintenance Building (AREE 12)	3-22
3.3	Water Treatment Operations (AREE 13)	3-23
3.3.1	Description	3-23
3.3.2	Known and Suspected Releases	3-23
3.4	Training Areas/Ranges (AREE 14)	3-24
3.4.1	Description	3-24
3.4.2	Known and Suspected Releases	3-24
3.5	Hazardous Materials Storage and Waste Handling Areas	3-25
3.5.1	Former Drum Storage Area (AREE 15)	3-25
3.5.2	DRMO Hazardous Waste Storage Area (AREE 16)	3-26
3.5.3	PCB-Containing Waste Storage Areas (AREE 17)	3-27
3.5.4	Pesticide Mixing and Storage Areas (AREE 18)	3-28
3.5.5	Buried Lithium Bromide Drums (AREE 19)	3-29
3.6	Sanitary Wastewater Treatment Plants (AREE 20)	3-30
3.6.1	Description	3-30
3.6.2	Known and Suspected Releases	3-32
3.7	Storage Tanks	3-32
3.7.1	Underground Storage Tanks (AREE 21)	3-32
3.7.2	Aboveground Storage Tanks (AREE 22)	3-34
3.8	Sanitary Landfills and Former Incinerators	3-36
3.8.1	Former Sanitary Landfill (East) (AREE 23)	3-36
3.8.2	Former Sanitary Landfill (West) (AREE 24)	3-40
3.8.3	Former Incinerators (AREE 25)	3-41
3.9	Medical Facilities (AREE 26)	3-42
3.9.1	Description	3-42
3.9.2	Known and Suspected Releases	3-43
3.10	Burn Pit Areas (AREE 27)	3-43
3.10.1	Fire Training Pit	3-43
3.10.2	Former Fire Training Areas	3-44
3.11	Spill Areas and Other Releases (AREE 28)	3-44
3.12	Ammunition Storage (AREE 29)	3-48
3.12.1	Description	3-48



**TABLE OF CONTENTS**  
**(continued)**

<b><u>Section</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
	3.12.2 Known and Suspected Releases	3-48
3.13	Former Coal Storage Yard (AREE 30)	3-48
	3.13.1 Description	3-48
	3.13.2 Known and Suspected Releases	3-49
3.14	Facility-Wide AREEs	3-49
	3.14.1 Asbestos (AREE 31)	3-49
	3.14.2 Pesticide Usage (AREE 32)	3-50
	3.14.3 Former Coal Storage Areas (AREE 33)	3-52
	3.14.4 Radon (AREE 34)	3-53
	3.14.5 Boiler Blowdown (AREE 35)	3-53
	3.14.6 Transformers (AREE 36)	3-54
<b>4</b>	<b>HUMAN AND ENVIRONMENTAL RECEPTORS</b>	<b>4-1</b>
	4.1 Releases to Groundwater	4-1
	4.2 Releases to Surface Water and Sediments	4-1
	4.3 Releases to Soils	4-2
	4.4 Releases to Air	4-3
<b>5</b>	<b>CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER ACTION</b>	<b>5-1</b>
5.1	Facility Operations	5-1
	5.1.1 DPCA Field Printing Shop (AREE 1)	5-1
	5.1.2 TASO Devices Shop - Buildings 479 and 481 (AREE 2)	5-17
	5.1.3 Graphics Shop - Building 1 (AREE 3)	5-17
	5.1.4 Photographic Processing Areas (AREE 4)	5-18
	5.1.5 Weapons Cleaning Area - Building 613 (AREE 5)	5-19
	5.1.6 Carpentry Shop - Building 1 (AREE 6)	5-19
5.2	Maintenance Operations	5-20
	5.2.1 Maintenance Shops (AREE 7)	5-20
	5.2.2 Former Maintenance Shops (AREE 8)	5-20
	5.2.3 Wash Racks, Grease Racks, and Oil/Water Separators (AREE 9)	5-21
	5.2.4 POL Drum Accumulation/Waste Staging Areas (AREE 10)	5-22
	5.2.5 Fueling Stations (AREE 11)	5-23
	5.2.6 DIS Engineering/Maintenance Building (AREE 12)	5-23
5.3	Water Treatment Operations (AREE 13)	5-24
	5.3.1 Conclusions	5-24



**TABLE OF CONTENTS**  
(continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
	5.3.2 Recommendations	5-24
5.4	Training Areas/Ranges (AREE 14)	5-24
	5.4.1 Conclusions	5-24
	5.4.2 Recommendations	5-25
5.5	Hazardous Materials Storage and Waste Handling Areas	5-25
	5.5.1 Former Drum Storage Area (AREE 15)	5-25
	5.5.2 DRMO Hazardous Waste Storage Area (AREE 16)	5-26
	5.5.3 PCB-Containing Waste Storage Areas (AREE 17)	5-27
	5.5.4 Pesticide Mixing and Storage Areas (AREE 18)	5-27
	5.5.5 Buried Lithium Bromide Drums (AREE 19)	5-28
5.6	Sanitary Wastewater Treatment Plants (AREE 20)	5-29
	5.6.1 Conclusions	5-29
	5.6.2 Recommendations	5-29
5.7	Storage Tanks	5-30
	5.7.1 Underground Storage Tanks (AREE 21)	5-30
	5.7.2 Aboveground Storage Tanks (AREE 22)	5-31
5.8	Sanitary Landfills and Former Incinerators	5-32
	5.8.1 Former Sanitary Landfill (East) (AREE 23)	5-32
	5.8.2 Former Sanitary Landfill (West) (AREE 24)	5-33
	5.8.3 Former Incinerators (AREE 25)	5-34
5.9	Medical Facilities (AREE 26)	5-34
	5.9.1 Conclusions	5-34
	5.9.2 Recommendations	5-35
5.10	Burn Pit Areas (AREE 27)	5-35
	5.10.1 Fire Training Pit	5-35
	5.10.2 Former Fire Training Areas	5-36
5.11	Spill Areas and Other Releases (AREE 28)	5-36
	5.11.1 Conclusions	5-36
	5.11.2 Recommendations	5-36
5.12	Ammunition Storage (AREE 29)	5-36
	5.12.1 Conclusions	5-36
	5.12.2 Recommendations	5-37
5.13	Former Coal Storage Yard (AREE 30)	5-37
	5.13.1 Conclusions	5-37
	5.13.2 Recommendations	5-37
5.14	Facility-Wide AREEs	5-38
	5.14.1 Asbestos (AREE 31)	5-38
	5.14.2 Pesticide Usage (AREE 32)	5-38



**TABLE OF CONTENTS**  
**(continued)**

<b><u>Section</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
	5.14.3 Former Coal Storage Areas (AREE 33)	5-39
	5.14.4 Radon (AREE 34)	5-39
	5.14.5 Boiler Blowdown (AREE 35)	5-39
	5.14.6 Transformers (AREE 36)	5-40
5.15	Areas with Minimal Potential for Environmental Problems	5-40
<b>6</b>	<b>REFERENCES</b>	<b>6-1</b>
<b>7</b>	<b>PHOTOGRAPHS</b>	<b>7-1</b>
<b>APPENDIX A - PHASE I RADON RESULTS</b>		
<b>APPENDIX B - TYPES OF PESTICIDES STORED AT FBH</b>		
<b>APPENDIX C - SI PHASE II DOCUMENTATION CHECKLISTS</b>		
<b>APPENDIX D - DRMO INVENTORY</b>		
<b>APPENDIX E - HOSPITAL INVENTORY</b>		



## LIST OF TABLES

<b><u>Table No.</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
ES-1	AREEs Identified at FBH and Recommendations for Further Action	ES-5
2-1	Property Information Summary	2-3
2-2	Archeological Sites Identified at FBH	2-21
3-1	List of AREEs	3-2
3-2	Photoprocessing Wastes Exceeding EP Toxicity Criteria	3-11
3-3	Wash Racks, Grease Racks, and Oil/Water Separators at FBH	3-19
3-4	Concentrations of Dissolved Metals in Groundwater Samples from the Buried Lithium Drum/Formal STP (Building 810)/ Fire Training Pit Area	3-31
3-5	Underground Storage Tanks at FBH	3-33
3-6	Aboveground Storage Tanks at FBH	3-35
3-7	Summary of Detectable VOCs in Groundwater Samples from MW-20 at Former Landfill (East)	3-38
3-8	Summary of Detectable Organic Compounds in Groundwater Samples from Monitoring Wells at Former Landfill (East)	3-39
3-9	Pesticide Usage	3-51
3-10	Locations and Analytical Results of Transformers with PCB Concentrations Greater Than 50 ppm	3-55
5-1	AREEs Identified at FBH and Recommendations for Further Action	5-2



## LIST OF FIGURES

<b><u>Figure No.</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
ES-1	Property Information Composite	ES-19
2-1	Site Location Map	2-2
2-2	Wind Rose	2-8
2-3	General Surface Drainage Map of FBH and Vicinity	2-9
2-4	Site Plan Delineating Surface Drainage and Floodplain Boundaries	2-10
2-5	General Soils Map	2-12
2-6	Surface Geology and Production Well Map of FBH and Vicinity	2-13
2-7	Bedrock Geology Map of FBH and Vicinity	2-15
2-8	Sensitive Areas and Environmental Studies	2-18
3-1	Areas Requiring Environmental Evaluation	3-7
5-1	Recommended Sampling Locations	5-16
5-2	Areas with Minimal Potential for Environmental Problems	5-41



## LIST OF ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-containing materials
AAFES	Army and Air Force Exchange Service
ADMINCEN	U.S. Army Administrative Center
AEHA	U.S. Army Environmental Hygiene Agency
AREE	Area requiring environmental evaluation
ARFTA	Atterbury Reserve Force Training Area
AST	Aboveground storage tank
bgs	Below ground surface
BNA	TCL Base-neutral and acid extractable compounds
BOD	Biological oxygen demand
BTXE	Benzene, toluene, xylene, ethylbenzene
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CG	Commander General
DA	Department of the Army
DCE	1,2-dichloroethylene
DIO	Directorate of Industrial Operations
DIS	Directorate of Installation Support
DOD	Department of Defense
DPCA	Directorate of Personnel and Community Activities
DPDO	Defense Property Disposal Office



**LIST OF ACRONYMS AND ABBREVIATIONS**  
**(continued)**

<b>DRMO</b>	<b>Defense Reutilization and Marketing Office</b>
<b>EIS/EIR</b>	<b>Environmental Impact Statement/Environmental Impact Report</b>
<b>EOD</b>	<b>Explosive Ordnance Disposal</b>
<b>EPA</b>	<b>U.S. Environmental Protection Agency</b>
<b>ERNS</b>	<b>Emergency Response Notification System</b>
<b>FBH</b>	<b>Fort Benjamin Harrison</b>
<b>FFCA</b>	<b>Federal Facility Compliance Agreement</b>
<b>FICWD</b>	<b>Federal Interagency Committee for Wetland Delineation</b>
<b>FINDS</b>	<b>Facility Index System</b>
<b>FS</b>	<b>Feasibility Study</b>
<b>FWS</b>	<b>U.S. Fish and Wildlife Service</b>
<b>gpm</b>	<b>Gallons per minute</b>
<b>GPR</b>	<b>Ground-penetrating radar</b>
<b>HAH</b>	<b>Hawley Army Hospital</b>
<b>HC</b>	<b>Hydrocarbons</b>
<b>HRS</b>	<b>Hazard Ranking System</b>
<b>HSWA</b>	<b>Hazardous and Solid Waste Amendments of 1984</b>
<b>IAC</b>	<b>Indiana Administrative Code</b>
<b>IAPCD</b>	<b>Indianapolis Air Pollution Control Division</b>
<b>IDEM</b>	<b>Indiana Department of Environmental Management</b>
<b>IRP</b>	<b>U.S. Army Installation Restoration Program</b>



**LIST OF ACRONYMS AND ABBREVIATIONS**  
**(continued)**

ISPCB	Indiana Stream Pollution Control Board
IWC	Indianapolis Water Co.
mgd	Million gallons per day
MSL	Mean sea level
NA	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
NRMD	Natural Resources Management Division (of DIS)
NWI	National Wetlands Inventory
PA	Preliminary Assessment
PA/SI	Preliminary Assessment/Site Investigation
PCB	Polychlorinated biphenyls
PCE	Perchloroethylene or tetrachloroethylene
POL	Petroleum, oils, and lubricants
POTW	Publicly Owned Treatment Works
ppm	Parts per million
PVNTMED	Preventive Medicine Activity
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
SBHSRC	State Board of Health Spill Response Center



## **LIST OF ACRONYMS AND ABBREVIATIONS** **(continued)**

SCS	U.S. Department of Agriculture Soil Conservation Service
SI	Site Inspection
SPCC	Spill Prevention, Control, and Countermeasure Plan
STP	Sewage treatment plant
SWMU	Solid waste management unit
TAL	Target analyte list
TASC	Training and Audiovisual Services Center
TASO	Training Aids Service Office
TCA	1,1,-trichloroethane
TCE	Trichloroethylene
TCL	Target compound list
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
TRPH	Total recoverable petroleum hydrocarbons
TRADOC	U.S. Army Training and Doctrine Command
TSARCOM	U.S. Army Troop Support and Aviation Materiel Readiness Command
TSS	Total suspended solids
USACE	U.S. Army Corps of Engineers
USAEHA	See AEHA
USAFAC	U.S. Army Finance and Accounting Center



**LIST OF ACRONYMS AND ABBREVIATIONS**  
**(continued)**

USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	Underground storage tank
VOC	TCL volatile organic compounds
WESTON	Roy F. Weston, Inc.
WTP	Water Treatment Plant



## **EXECUTIVE SUMMARY**

### **BACKGROUND AND OBJECTIVES**

This enhanced preliminary assessment (PA) report has been prepared by Roy F. Weston, Inc. (WESTON) at the request of the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) pursuant to Contract DAAA15-90-D-0009, Delivery Order 9. The purpose of this enhanced PA report is to document the existing environmental conditions at Fort Benjamin Harrison (FBH), Indiana, and to provide recommendations for further action.

The objectives of the enhanced PA were to:

- Identify and characterize areas requiring environmental evaluation (AREEs) associated with historical and current uses of the property.
- Complete the Site Inspection (SI) Phase II Documentation Checklist for the AREEs identified.
- Identify and characterize possible impacts of the AREEs on the surrounding environment.
- Identify additional environmental actions, if any, that should be initiated for the AREEs identified.

Information contained in this enhanced PA report was obtained through:

- Visual inspection of the facilities.
- Review of available Army information.
- Review of U.S. Environmental Protection Agency (USEPA) Region V files.
- Review of the Indiana Department of Environmental Management (IDEM) files.
- Interviews with current employees familiar with FBH operations.
- Evaluation of aerial photographs.

FBH is located approximately 12 miles from downtown Indianapolis, Indiana in Lawrence Township, Marion County, Indiana. It is bounded by residential areas and farmland, with the exception of light industrial areas that border FBH to the southeast.

FBH contains 2,501 acres, of which approximately 1,069 acres is covered by woodlands. The landscape at FBH consists of moderately sloping terraces that rise from nearly



level bottomland along Fall Creek and its tributaries to nearly level uplands. Sensitive environments at FBH include various wetlands; habitat areas for the endangered Indiana bat and several species of endangered plants; sites of archaeological investigations; historically significant buildings; and the site of a private cemetery.

Activities at FBH include administration, training, housing, and support. Operations conducted to support FBH's mission include furniture and office equipment repair, printing, photographic processing, vehicle maintenance and repair, building and road maintenance, and grounds maintenance. The Hawley Army Hospital is located at FBH and provides medical care, including surgery, for military personnel.

### **HUMAN AND ENVIRONMENTAL RECEPTORS**

The routes of human and environmental exposure from the types of releases identified at the AREEs are summarized below.

Potential sources of groundwater contamination at FBH include two former landfills, leaking underground storage tanks, oil/water separators, former storage areas (specifically, AREE 15 south of Buildings 45 and 46), and former and current fire training areas.

FBH and nearby communities rely heavily on groundwater as their source of drinking water. However, the production wells used to withdraw water are essentially protected from past base activities because of their locations. The FBH wells lie in the northernmost extent of the installation away from the areas of concern cited above. The City of Lawrence is located south and east of FBH, while the Indianapolis Water Company wells are situated to the north of Fall Creek. Monitoring wells have been installed in several areas of the FBH installation, including the old landfill (excessed to the City of Lawrence), the current landfill, the electrical shop and heating plant, the former wastewater treatment plant, and most recently, the site of the proposed Learning Resource Center. Samples from selected wells (adjacent to the two landfills) have been collected for analysis since the early 1980s. These results indicate that aside from some localized impacts, the landfills have exhibited little to no influence on the groundwater quality at FBH (USAEHA, 1975; 1980; 1981; ERC, 1991; Viani, 1983; NET, 1990; 1991a; 1991b, 1991c; Raney, 1988).

Potential contaminant releases to creeks, stormwater collection systems, lakes, and ponds on FBH could occur primarily in two ways. These include both direct releases to the surface water body and overland flow of liquids or suspended/resuspended sediments. Potential releases on FBH could occur from the following areas: outdoor rifle and pistol ranges (metals), runoff from the former coal storage area, pesticide mixing and application, leachate seepage from the two former landfills, and overflow from oil/water separators.

All surface water drainage from FBH flows generally in a northwesterly direction and eventually drains into Fall Creek. The Fall Creek drainage basin provides downstream



municipal water supplies to the City of Indianapolis as well as habitat for aquatic wildlife and recreational opportunities for nearby residents.

Sediments are a special concern because they provide a habitat to a variety of aquatic organisms that occupy the bottom of the food chain. There is thus potential for bioaccumulation of the more persistent metals and other inorganic contaminants. Runoff from the outdoor pistol and rifle ranges creates a potential for this type of release. Sediments are also a potential source of contamination of off-site surface water via the erosion/deposition mechanism that is common to surface water systems.

Soil contamination is an important concern because it provides a source for releases to both surface water and groundwater. In addition, some materials, depending on their concentrations, can present a greater risk to human receptors as inhalation hazards. This can occur in the form of volatile organic vapors or airborne particulates (contaminants bound to dust particles). Potential sources of soil contamination at FBH include underground storage tanks; the two inactive, unlined landfills and any leachate seeps that may develop; the electrical shop, where PCB transformers were drained and serviced; oil/water separators; outdoor pistol and rifle ranges; former storage areas, specifically south of Buildings 45 and 46; pesticide mixing areas; fire training areas; and the former coal storage area.

There are currently several areas of concern regarding sources of air contamination at FBH. These include radon emissions, asbestos in buildings, boiler plant emissions, volatile organic vapors from weapons cleaning operations, carbon dust from graphics operations, and airborne particulate and/or volatile organic compounds from contaminated soils. The primary receptors of potential radon and asbestos exposure would be any humans occupying buildings containing these materials. This would include office and maintenance personnel, as well as remediation and demolition personnel. Basewide surveys are underway for both radon and asbestos to determine the potential and the extent of these contaminants. In general, the results of these surveys indicate that there are asbestos-containing materials present in buildings at FBH. In addition, the Phase I Radon results (July 1990), provided in Appendix A, indicate that there are several buildings on the post that may contain radon at levels higher than the EPA action level of 4 picocuries per cubic centimeter (pCi/cm<sup>3</sup>). Retesting of areas where concentrations were detected above the action level is currently underway.



## **DESCRIPTION OF AREES AND CONCLUSIONS AND RECOMMENDATIONS**

Table ES-1 presents a summary of the description and findings for each AREE and the recommended activity, if any. Figure ES-1 shows recommended sampling location information for the AREES. No conditions that present an imminent threat to human health were observed on the FBH property.

### **AREAS WITH MINIMAL POTENTIAL FOR ENVIRONMENTAL PROBLEMS**

Through a review of available information, site visits, and interviews with FBH personnel, the following areas have been identified as those that can be excessed with minimal investigation:

- Golf course located in the northern part of the installation.
- Mobile home trailer park complex located in the western part of the installation.
- NCO family housing located in the southwestern part of the installation.
- Officer housing in the central region of the installation.
- Housing/condominium complex located in the southwestern corner of the installation.
- Troop training areas located in the north and northwestern regions of the installation not associated with other identified AREES.

In addition, several recreational areas/buildings and administration buildings could be excessed with minimal investigation, including, but not limited to, asbestos, radon, and lead paint surveys and sampling.

The potential exists, however, for subsurface and/or groundwater contamination from operations adjacent to or upgradient of these areas.

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Facility Operations</b>					
1	DPCA Field Printing Shop (Bldg. 1)	No known or suspected releases have been reported. Minor staining was noted on shop floors. Operations conducted inside building with concrete/tile floors and no floor drains.	Ferric cyanide, petroleum distillates, solvents.	Remove all printing and cleaning chemicals and solvents. Clean all exposed surfaces.	NA
2	TASO Devices Shop (Bldgs. 479, 481)	No known or suspected releases have been reported. Minor staining was noted on shop floors. Operations conducted inside building with concrete/tile floors and no floor drains.	Paints, paint thinner, solvents, cleaning agents.	Remove all printing and cleaning chemicals, solvents, and paints. Clean all exposed surfaces.	NA
3	Graphics Shop (Bldg. 1)	Shop wastes discharged to sanitary sewer, which in past flowed to on-site sewage treatment plant (STP). POTW currently accepts and has knowledge of contents of wastestreams. Potential for carbon dust in air during operations.	Ammonia, xylol, acetone, carbon dust.	Remove all printing and cleaning chemicals and acetone. Clean all exposed surfaces.	NA
4	Photographic Processing (Bldgs. 1, 300, 400, 434, 470, 479)	No known or suspected major releases have been reported. In the past, untreated photographic wastes disposed to sanitary sewer from Bldg. 1, Bldg. 434 which flowed to on-site STP. Untreated wastes currently discharged to sanitary sewer from Bldg. 1 Graphics Shop. Some staining noted on shop floors.	Fixative photographic solution wastes, silver, cadmium, chromium, mercury.	Remove all photographic processing solutions and wastes and silver recovery units. Clean all exposed surfaces. Wipe and chip sample surfaces for metals if buildings are to be accessed (post-remediation activity).	Metals (post-remediation).
5	Weapons Cleaning Area (Bldg. 613)	No known or suspected releases have been reported. Odors from cleaning compound noted during site visit. Operations conducted inside building with concrete/tile floors.	Solvents, alkaline butyl cleaner.	None (potential contaminants in form of air emissions).	NA

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
6	Carpentry Shop (Bldg. 1)	No known or suspected releases have been reported. Operations conducted inside building with concrete floor. One floor drain noted near waste storage area. Some staining noted on shop floor.	Paints, paint thinner, solvents.	Remove all paints, paint thinner, and solvents. Clean all exposed surfaces.	NA
<b>Maintenance and Fueling Operations</b>					
7	Maintenance Shops				
	- Electrical Shop (Bldg. 4)	No known or suspected releases have been reported. Operations are conducted at the job site, with some minor work inside building. Past operations on PCB-containing transformers at the shop.	PCBs.	See AREE 17.	See AREE 17.
	- Four Vehicle Maintenance Shops (Includes Roads and Grounds Shop) (Bldgs. 33, 127, 422, 705)	No known or suspected major releases have been reported. Operations are conducted inside buildings with concrete floors. Some staining noticed on floors and around underground waste oil storage tanks. Floor drains in all shops.	Solvents, waste oil and other petroleum products, battery storage.	Remove all waste oils and other petroleum products. Clean all exposed surfaces, including concrete floors, that show any staining or other signs of spills. Install four to six soil borings (sample 0 to 6 inches and 1 to 2 feet) around fill valve and other areas near waste oil tank at auto craft shop.	TPH, metals.
	- Office Equipment Repair Shop (Bldg. 424)	No known or suspected releases have been reported. Operations are conducted inside building with concrete floors and floor drains. Some staining noticed on floors. Furniture repair formerly conducted.	Solvents, petroleum products, paint.	Remove all solvents and degreasing tanks. Clean all exposed surfaces, including concrete floors.	NA
	- Plumbing Shop (Bldg. 604)	No known or suspected releases have been reported. Operations are conducted at the job site.	Acids, bases, phosphates.	Remove all chemicals and clean all exposed surfaces, including concrete floors if there is staining.	NA

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
8	Former Maintenance Shops (Bldgs. 13, 36, 38, 109, 116, 424, 426, 428, 619)	No documentation of releases exists. Past operations conducted in buildings on concrete floors.	Waste oil and other petroleum products, solvents, battery storage.	Clean all surfaces including concrete floors if there is staining. Install one to two borings (sample 0 to 6 inches and 2 to 3 feet) adjacent to Bldgs. 619, 13, and 38 and former location of Building 109.	TPH, VOCs, metals.
9	Wash Racks, Grease Racks, and Oil/Water Separators (Bldgs. 4, 36, 116, 127, 422-428, 500, 515, 705)	Some oil/water separators formerly discharged to storm sewer. No visible evidence of major spills at wash racks, grease racks, or oil/water separators. Minor staining was noted at some locations.	Oil and other petroleum products, other engine fluids, solvents.	Inspect all oil/water separators to ensure proper operation without any leaks. Conduct tests/inspections to verify/determine outlet locations. Advance soil borings at and/or downslope of all oil/water separators, wash racks, and grease racks (sample 0 to 6 inches and 2 to 3 feet). One to two sediment samples if oil/water separators drain/drain/ditch to storm sewer.	TPH, VOCs, metals.
10	POL Drum Accumulation Areas/POL Waste Staging (Bldgs. 34, 36, 109, 116, 127, 422, 424, 705)	Minor spills of waste solvents and petroleum products.	Waste oil and other petroleum products, solvents, antifreeze, and other engine fluids.	Clean all surfaces including concrete floors. Install one to two soil borings (sample 0 to 6 inches and 2 to 3 feet) at outdoor and former outdoor storage locations (Buildings 127 and 422).	TPH, VOCs, metals.
11	Fueling Stations (Bldgs. 33, 239)	Former spills noted in past reports at Building 33. Minor spills of gasoline, fuel oil, and leaks of minor engine oils.	Petroleum products.	Clean concrete and asphalt cover in the vicinity of all gasoline dispensers if heavily stained. See AREE 21.	See AREE 21.

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
12	DIS Engineering/ Maintenance Building - Bldg. 26 - Bldg. 108 (former location)	Maintenance operations conducted mainly at the job site. Woodworking, painting and other activities conducted inside building. Storage of paints, paint thinner, and other solvents. Former storage of transformers in northwest corner of shop. Possibility exists that activities could have occurred outside building. Activities at Building 108 included salt and ash bag storage and, potentially, activities similar to those at Building 26.	Paints, paint thinner, solvents, PCBs, ash.	Clean all surfaces including concrete floors if there is staining. Collect destructive samples of the concrete floor in the northwest corner of Building 26. Install one to two soil borings outside each building (sample 0 to 6 inches and 2 to 3 feet).	PCBs (concrete in Bldg. 26).  PCBs, metals, TPH, VOCs, BNAs (soil in Bldg. 26 and 108).
<b>Water Treatment Operations</b>					
13	Water Treatment Laboratory/Plant - Laboratory (Bldg. 604) - Heating Plant (Bldg. 2)	Testing reagents are discharged to sanitary sewer via Building 604 sink drains, which formerly discharged to the on-site STP. All drains are currently linked to POTW. Water treatment chemicals are stored and used inside Building 2.	Fluoride reagent, hydrochloric acid, sulfuric acid, phosphates.	Remove all laboratory and water treatment chemicals and reagents. Clean all exposed surfaces. Containerize spent reagents in laboratory-grade waste drums for disposal.	NA

**Table ES.1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
<b>Training Areas</b>					
14	<b>Training Areas/Ranges</b> - Indoor Pistol Range (Bldg. 802) - Foreman Rifle Range (Bldg. 811, 812) - State Police Pistol Range (Bldg. 816) - Shoot/Rifle Range (Bldgs. 819-822) - Troop training areas including north troop training area.	No know or suspected releases have been reported for the indoor pistol range. During firearm discharge, antimony, barium, lead, and other metals are released into the environment at outdoor ranges. No ammunition recovery program is in place. Soils and sediments may be contaminated with heavy metals. No evidence of existence of UXOs at FBH. Areas used for marching training only. POL products including fuel for fuel-operated heaters used in north troop training area.	Metals. Light ammunition if carried and left in range areas. POL products in north troop training area.	None at indoor range. Conduct sediment and surface water sampling in Schoen Creek Tributary to Lawrence Creek and in Lawrence Creek downstream and upstream of Foreman and State Police ranges. Install two to four soil borings at each outdoor firing range area (sample 0 to 6 inches and 2 to 3 feet). Install and sample monitoring wells based on results of soil borings. Survey north troop training area and install two to four soil borings at locations where POL products were used (sample 0 to 6 inches and 2 to 3 feet). Conduct further site reconnaissance for troop training areas to determine if further recommendations for sampling are to be made.	NA Metals. Metals. TPH (north troop training area).

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
<b>Hazardous Materials Storage and Waste Handling Areas</b>					
15	Former Drum Storage Area (So. of Bldgs. 45 and 46)	Site records indicate that drums and other wastes such as PCB transformers were stored and that a paint shop was located in area that is now open/grassed. VOCs were detected in groundwater from monitoring wells installed for pre-construction testing purposes.	VOCs, TPH, PCBs, other unknown constituents.	Sample existing wells. Install and sample three to four additional monitoring wells. Install two to four soil borings to depth of water table.	VOCs, BNAs, TPH, pesticides, PCBs, metals.
16	DRMO Hazardous Waste Storage Area (Bldgs. 124, 125 and outdoor area between buildings)	No known or suspected releases have been reported for RCRA-permitted indoor storage facility. Hazardous wastes such as batteries formerly stored outdoors between buildings.  Waste oil currently stored outdoors on uncurbed asphalt yard. Hazardous wastes also formerly stored in Bldg. 124, which has completed partial closure and has been certified closed.	Waste oils, petroleum products, PCB transformers, battery fluids, pesticides and other wastes.	Install a total of two to four soil borings at and downslope of outdoor storage area (sample from 0 to 6 inches and 2 to 3 feet). Install and sample three to four monitoring wells.  No recommendations for Building 124. Building 125 is under Part B permit; facility Closure Plan should, therefore, be implemented prior to excess.	VOCs, BNAs, metals, TPH, pesticides, PCBs (soil and groundwater at outdoor area).  As per facility Closure Plan (Bldg. 125).
17	PCB-containing Waste Storage Areas (Adjacent to Bldgs. 4, 46 and 110, Bldgs. 124, 125)	PCB-containing transformer : were formerly stored at locations adjacent to Buildings 4, 46, and 110 in uncontained areas.	PCBs.	Two to four surface soil samples (sample from 0 to 6 inches at each area).	PCBs.
18	Pesticide Mixing and Storage Areas  - DIS Former Storage (Bldg. 27)	Periodic former storage of pesticides in basement of Bldg. 27, which has since flooded several times.	Pesticides.	Install two soil borings in downslope direction (sample from 0 to 6 inches and 2 to 3 feet). Wipe and/or chip samples of building surfaces.	Pesticides.

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
18	Pesticide Mixing and Storage Areas (continued)				
	- DRMO (Bldg. 125)	See AREE 16.	Pesticides.	See AREE 16.	See AREE 16.
	- Former Storage (Bldg. 514)	Soil may be contaminated from past mixing operations.	Pesticides.	Two surface soil samples (sample from 0 to 6 inches). Wipe and/or chip samples of building surfaces.	Pesticides.
	- DIS Storage and Mixing (Bldg. 605)	Past sampling indicates releases to Hawthorne Lake.	Pesticides.	Two to four soil borings (sample 0 to 6 inches and 2 to 3 feet). Two to four sediment samples in drainageway and in Hawthorne Lake; include background sample (sample 0 to 6 inches and 1 to 2 ft where possible). Wipe and/or chip samples of building surfaces.	Pesticides.
19	- Golf course (Bldg. 674)	Soil may be contaminated from past storage at shed adjacent to Bldg. 674 and mixing operations on side of building.	Pesticides.	Two surface soil samples (sample 0 to 6 inches). Wipe and/or chip samples of building surfaces.	Pesticides.
	Buried Lithium Bromide Drums (Adj. to Bldg. 810)	Drums containing lithium bromide and potentially pesticides possibly buried in former sewage treatment tank or sludge drying beds.	Pesticides.	First conduct geophysical survey using GPR to locate drums. Based on results of survey, excavate area and remove drums. Following removal of drums, collect one to two composite soil sample(s) at excavated area.	Pesticides (soil).
				See AREE No. 20 for monitoring well recommendations.	See AREE 20 (monitoring wells)



**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Sanitary Wastewater Treatment Plants</b>					
20	<p>Former Sewage Treatment Plants</p> <ul style="list-style-type: none"> <li>Current Fire Training Area (Bldg. 810)</li> <li>Historic maps/south of Shafter Road (west of Bldg. 674)</li> <li>Historic files/east area of installation</li> </ul>	<p>Potential contaminants such as waste oils, pesticides, photographic fixative solution, solvents, and other petroleum products have discharged to STPs in past from various base operations.</p>	<p>Residual wastes (metals, petroleum products) not fully treated by STP; pesticides; petroleum products from fire training.</p>	<p>Four surface soil samples (sample 0 to 6 inches) from former sludge drying beds and one sediment sample (sample 0 to 6 inches) downstream of former outfall. Install two soil borings to water table in former treatment tank areas. Determine integrity of existing wells; sample existing wells and install two to four additional monitoring wells up- and downgradient of STP (based on integrity sampling of existing wells).</p> <p>Use geophysical survey, if necessary, to locate boundaries of former treatment beds off Shafter Road. Install two to four soil borings (sample 0 to 6 inches and 2 to 3 feet).</p> <p>Conduct further site reconnaissance to locate former east sewage plant. If location is found, use geophysical survey (if necessary) to locate boundaries and install two to four soil borings (sample at 0 to 6 inches and 2 to 3 feet).</p>	<p>Metals, VOCs, BNAs, pesticides, PCBs, TPH, nitrates (soil, sediment, and groundwater) at Bldg. 810.</p> <p>Metals, VOCs, BNAs, pesticides, PCBs, nitrates (former treatment bed soil, former Shafter Road location).</p> <p>Metals, VOCs, BNAs, pesticides, PCBs, nitrates (soil, former east plant).</p>

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
<b>Storage Tanks</b>					
21	Underground Storage Tanks - See listing in Subsection 3.7.1	Majority of USTs have been leak-tested. Leaking tanks and most out-of-service tanks have been removed. Groundwater monitoring in place at major leak areas.	Petroleum products, metals (from waste oil).	Continue current installation program, which includes removal of tanks as scheduled, leak-testing of tanks periodically, removal of any leaking tanks or tanks taken out of service, and verification sampling of soil following tank removal.  Continue current follow-up program for leaking tanks (LUST program).	NA (ongoing).
22	Aboveground Storage Tanks - See listing in Subsection 3.7.2	Majority of ASTs have berna. Staining noted on soils surrounding AST at Bldg. 674.  Soil sampling program in place for fuel spill at AST Bldg. 4.	Fuel oil.	Install two or four soil borings (sample from 0 to 6 inches and 2 to 3 feet) near fill valves/points and in additional areas near ASTs without concrete berna/secondary containment. Additional sampling may be required in stained areas.	TPH, BTXE (depending on contents of tank).
<b>Landfills and Incinerators</b>					
23	Former Sanitary Landfill (east) (NW of Bldg. 304)	Complete operating records not available; available records indicate that wastes were identical to those disposed of in west landfill. Results of past sampling of monitoring wells show presence of some VOCs and BNAs in certain groundwater samples.	Potential for petroleum products, metals, solvents, pesticides, and other hazardous wastes.	Sample seepage (leachate) and resample surface water at southern extreme of landfill. Determine integrity of existing wells and then sample all wells where appropriate. Install and sample new wells, if necessary, east and north of landfill. Coordinate sampling program with City of Lawrence due to deed status of land.	VOCs, BNAs, pesticides, PCBs, metals, TPH, typical landfill parameters (BOD, COD, etc).

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
24	Former Sanitary Landfill (west) (West of Bldg. 800-809)	Records state that municipal solid waste from FBH was disposed of in landfill. Results of sampling from existing monitoring wells indicate little to no impact on local groundwater due to presence of chemical constituents (only a few isolated occurrences of VOCs detected).	Potential for petroleum products, metals, solvents, pesticides, and other hazardous wastes.	Determine integrity of existing monitoring wells and then sample. Install and sample new wells if necessary. Sample seepage at the north end of landfills.	VOCs, BNAs, pesticides, PCBs, metals, TPH, typical landfill parameters (BOD, COD, etc.)
25	Former Incinerators - Hospital (Bldg. 300) - Sanitary Waste Incinerator (Bldg. 518)	No known or suspected releases have been reported for former incinerator in hospital. Information indicates that ash was disposed of in on-site landfill(s).  No known or suspected releases have been reported for sanitary waste incinerator. Ash may have been disposed of near the incinerator and/or in on-site landfill(s).	Metals in ash that was potentially disposed of in landfill(s).  Metals in ash. Unknown material(s).	None for former hospital incinerator. See AREEs 23 and 24 for recommendations for landfills.  Conduct geophysical survey using GPR to determine if ash or other wastes have been disposed of adjacent to incinerator building and extent of disposal area. Two to four test pits, depending on results of geophysical survey.	NA for hospital incinerator. See AREEs 23 and 24.  Metals, TPH, VOCs, BNAs, pesticides, PCBs.

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Medical Facilities</b>					
26	<p>Hospital and Clinics</p> <ul style="list-style-type: none"> <li>Occupational Health Clinic (Bldg. 1)</li> <li>Hawley Army Hospital (Bldg. 300)</li> <li>Dental Clinic (Bldg. 300)</li> <li>Veterinary Clinic (Bldg. 805)</li> </ul>	No known or suspected contamination has resulted from handling and disposal of medical waste or handling small amounts of hazardous chemicals. Silver recovery and former incinerator discussed under AREEs 4 and 25, respectively.	Infectious waste, miscellaneous hazardous chemicals.	Remove all hazardous constituents and infectious wastes prior to excessing property. See AREEs 4 and 25 for photographic processing areas and former incinerator.	NA See AREEs 4 and 25.
<b>Burn Pit Areas</b>					
27	<p>Fire Training Area</p> <ul style="list-style-type: none"> <li>Training Pit Area (Adj. to Bldg. 810)</li> <li>Former Training Areas (North of Bldg. 518, east of west landfill)</li> </ul>	<p>Fire training activities conducted using diesel fuel on old automobiles and in metal troughs in gravel-filled former sewage treatment tanks.</p> <p>No substantial evidence found of other training areas based on site visit, interviews, and records. One report indicates fuel oil was ignited in metal troughs in these areas.</p>	<p>Diesel fuel.</p> <p>Fuel oil.</p>	<p>See recommendations for Former Sewage Treatment Plant, AREE 20.</p> <p>Confine all fire training activities to training pit area. No further recommendations for former training areas.</p>	<p>See AREE 20.</p> <p>NA</p>

Table ES-1

AREES Identified at FBH and Recommendations for Further Action  
(continued)

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Spill Areas and Other Releases</b>					
28	<p>Spill Areas</p> <ul style="list-style-type: none"> <li>PCB Spill Areas</li> <li>Other Spills (see Subsection 3.11 for locations)</li> </ul>	<p>Groundwater sampling in vicinity of PCB spill area(s) indicates that PCBs were not released to the environment.</p> <p>Numerous spills of petroleum products have flowed into streams and/or ponds/lakes at the installation.</p>	PCBs, Diesel fuel, gasoline, engine oils, solvents.	Four to six sediment samples in creeks/ponds/lakes (sample 0 to 6 inches) at locations throughout the installation. Collect samples for TPH analysis from the waterline areas. Further investigate supposed off-post asphalt spill. No further recommendations for other spill areas.	TPH, metals, NA for other spill areas.
<b>Ammunition Storage</b>					
29	Ammunition Storage Areas (Bldgs. 519-522)	No evidence of spills or releases on exterior of buildings or noted in site reports. However, buildings were inaccessible and could not be fully inspected.	Ammunition, pentachlorophenols (PCP) in treated ammo boxes.	Obtain access to buildings; remove all ammunition and boxes prior to excess. Consider disposal options for PCP in ammo boxes. Two to four soil samples (sample 0 to 6 inches). Wipe and/or chip samples of building surfaces for building closure.	Metals (soil); PCP (wipe and chip samples).
<b>Coal Storage Yard</b>					
30	Former Coal Storage Yard (NE of Bldg. 2)	Open storage of large amounts of coal; coal sludge associated with rainwater runoff drained to storm sewer. Results of soil sampling indicate presence of some elevated levels of metals, which may be naturally occurring and have not shown to be leachable.	Runoff from coal (similar to acid mine drainage).	Install two to four confirmatory soil borings (sample 0 to 6 inches and 2 to 3 feet) in locations not previously sampled. Two to four sediment samples in drainage pathways.	Metals, pH.

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Facility-wide AREES</b>					
31	Asbestos (Base-wide)	Survey of buildings on installation by FBH personnel is in progress. Results indicate asbestos is of concern in Building 1 and other buildings.	Inhalation of asbestos fibers.	Continue surveying buildings. Generate asbestos management and abatement plan. Remove or encapsulate known exposed friable asbestos.	NA (ongoing).
32	Pesticide Usage (Base-wide)	No known major releases have occurred; however, potential exists for soil, sediment, and groundwater contamination resulting from pesticide, herbicide, and fungicide usage. In the past, USEPA threshold levels for pesticides were exceeded in some areas of the installation.	Pesticides, herbicides, fungicides.	Four to six sediment samples in creeks/ponds/lakes (sample 0 to 6 inches) at locations throughout the installation.	Pesticides.
33	Former Coal Storage Areas (Base-wide)	In the past, numerous small coal piles were located throughout the installation and utilized for heating purposes. Practice was ceased in 1930s (small piles). Larger amounts were stored north of boiler plant and in area where Building 21 is now located. Top 3 feet of soil was removed from these areas in 1984.	Runoff from coal.	No further recommendations.	NA
34	Radon (Base-wide)	A radon screening program is in progress at the installation. Phase I Radon results indicate that radon may be present in numerous buildings at the installation at concentrations above the EPA action level. Retesting is currently in progress.	Radon.	Continue screening program to include all buildings at the installation and implement appropriate remediation measures where necessary, based on results (if above EPA action level).	NA (ongoing).

**Table ES-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

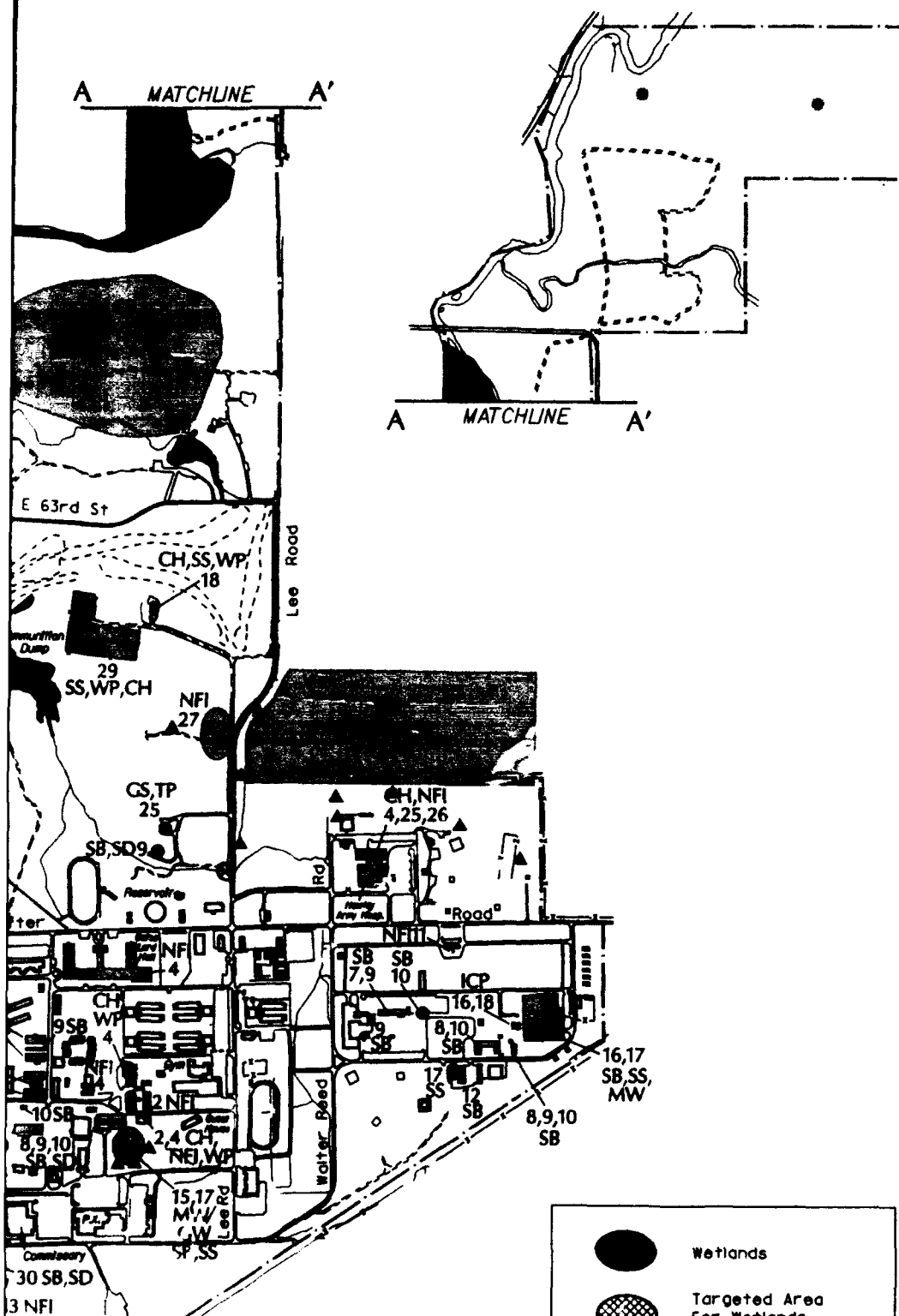
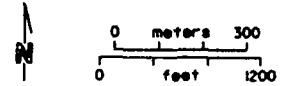
AREES No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
35	Boiler Blowdown (Base-wide)	Chemicals from blowdown from the boilers discharged to soil and storm sewer ditches/drains.	Treatment chemicals such as phosphates, sulfite polymers, sludge conditioners, and/or pH adjusters.	None (small potential for contamination due to concentration and types of chemicals used).	NA
36	Transformers (Base-wide)	All transformers at installation have been sampled and all transformers/transformer oil have been removed that contain PCBs above regulatory level.	PCBs.	No further recommendations.	NA

20. Former Sewage Treatment Plant (not all shown)
21. Underground Storage Tank (not shown)
22. Aboveground Storage Tank (not shown)
23. Former Sanitary Landfill (East)
24. Former Sanitary Landfill (West)
25. Former Incinerator
26. Hospital and/or Clinic
27. Fire Training Area
28. Spill Area (not shown)
29. Ammunition Storage Area
30. Former Coal Storage Yard
31. Asbestos (not shown)
32. Pesticide Usage (not shown)
33. Former Coal Storage Area (not shown)
34. Radon (not shown)
35. Boiler Blowdown (not shown)
36. Transformer (not shown)

**Toxic and Hazardous  
Materials Agency**

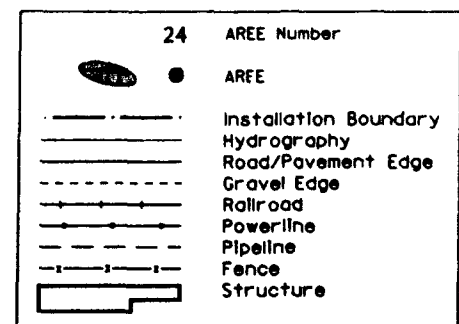
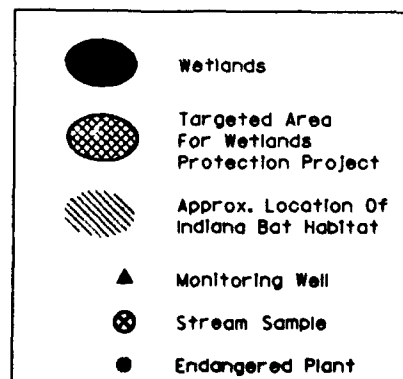
Figure ES-1  
Property Information  
Composite

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



- CH Chip (Destructive) Sample
- FSR Further Site Reconnaissance
- GS Geophysical Survey
- GW Groundwater (existing MW)
- ICP Implement Closure Plan (Part B Permit, Bldg. 125)
- MW Monitoring Well / Sample Groundwater
- NFI No Further Investigation
- SB Soil Boring
- SBS Subsurface Soil
- SD Sediment
- SP Seep
- SS Surface Soil
- SW Surface Water
- TP Test Pit
- WP Wipe

Notes: For Troop Training  
Areas, AREE 14 (not shown),  
the recommendation is FSR





## **SECTION 1**

### **INTRODUCTION**

#### **1.1 BACKGROUND**

Roy F. Weston, Inc. (WESTON) has been retained by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) to prepare Enhanced Preliminary Assessment (PA) Reports under the authority of Contract DAAA15-90-D-0009, Delivery Order 9. This work is being performed within the scope of the U.S. Army Installation Restoration Program (IRP) Base Closure Division.

The purpose of the enhanced PA reports is to document the existing conditions at the properties and to provide recommendations for further action. The recommendations will serve as a guide to the U.S. Army in prioritizing the activities required to report these properties as excess.

This report discusses the enhanced PA of Fort Benjamin Harrison (FBH), which is located in Marion County near Lawrence, Indiana. WESTON conducted a site visit from 15 October through 18 October 1991.

#### **1.2 OBJECTIVES**

This enhanced PA report was prepared using existing information obtained from property records and interviews with current employees familiar with this property. No sampling activities were completed as part of this assessment.

The objectives of the enhanced PA are as follows:

- Identify and characterize areas requiring environmental evaluation (AREEs) associated with historical and current uses of the property.
- Complete the Site Inspection (SI) Phase II Documentation Checklist for the AREEs identified.
- Identify and characterize possible impacts of the AREEs on the surrounding environment.
- Identify additional environmental actions, if any, that should be initiated for the AREEs identified.

#### **1.3 PROCEDURES**

The information contained in this enhanced PA report is based on the following data-gathering activities:

- Visual inspection of the facilities.



- Review of available Army files.
- Review of U.S. Environmental Protection Agency (EPA) Region V files.
- Review of the Indiana Department of Environmental Management (IDEM) files.
- Interviews with current employees familiar with FBH operations.
- Evaluation of aerial photographs.

No survey was conducted of buildings at FBH regarding the presence of lead solder, lead pipes, and/or brass fixtures associated with drinking water systems. Additionally, there was no survey for the presence of lead-based paints on building or equipment surfaces. The time period of construction of portions of the FBH facilities suggests, however, that lead-based paints and lead piping may have been used. A lead survey was conducted by Georgia Technical University; however, a final report was not available at the time this PA was issued.

#### **1.4 REPORT FORMAT**

This enhanced PA report presents an evaluation of the relevant data for FBH.

Section 2 describes the property and provides general environmental information about the site. Section 3 identifies and characterizes all AREEs at FBH related to known and suspected releases to the environment. The potential impacts of these operations on the local environment and human receptors are discussed in Section 4. Section 5 summarizes the findings and conclusions, discusses the quality and reliability of the supporting information, identifies areas requiring further action, and presents recommendations as to how such actions may be accomplished. Section 6 lists the pertinent materials reviewed and the agencies contacted. Photographs taken during the site visit are provided in Section 7. Supporting documentation, including the SI Phase II Documentation Checklists, is provided in Appendices A through E.



## SECTION 2

### PROPERTY CHARACTERIZATION

#### **2.1 PROPERTY DESCRIPTION AND HISTORY**

Fort Benjamin Harrison is a U.S. Army installation named in honor of the twenty-third President of the United States. FBH currently consists of approximately 2,501 acres, located within Lawrence Township in Marion County, Indiana. It is located approximately 12 miles from downtown Indianapolis, as shown in Figure 2-1. A property information summary is provided in Table 2-1.

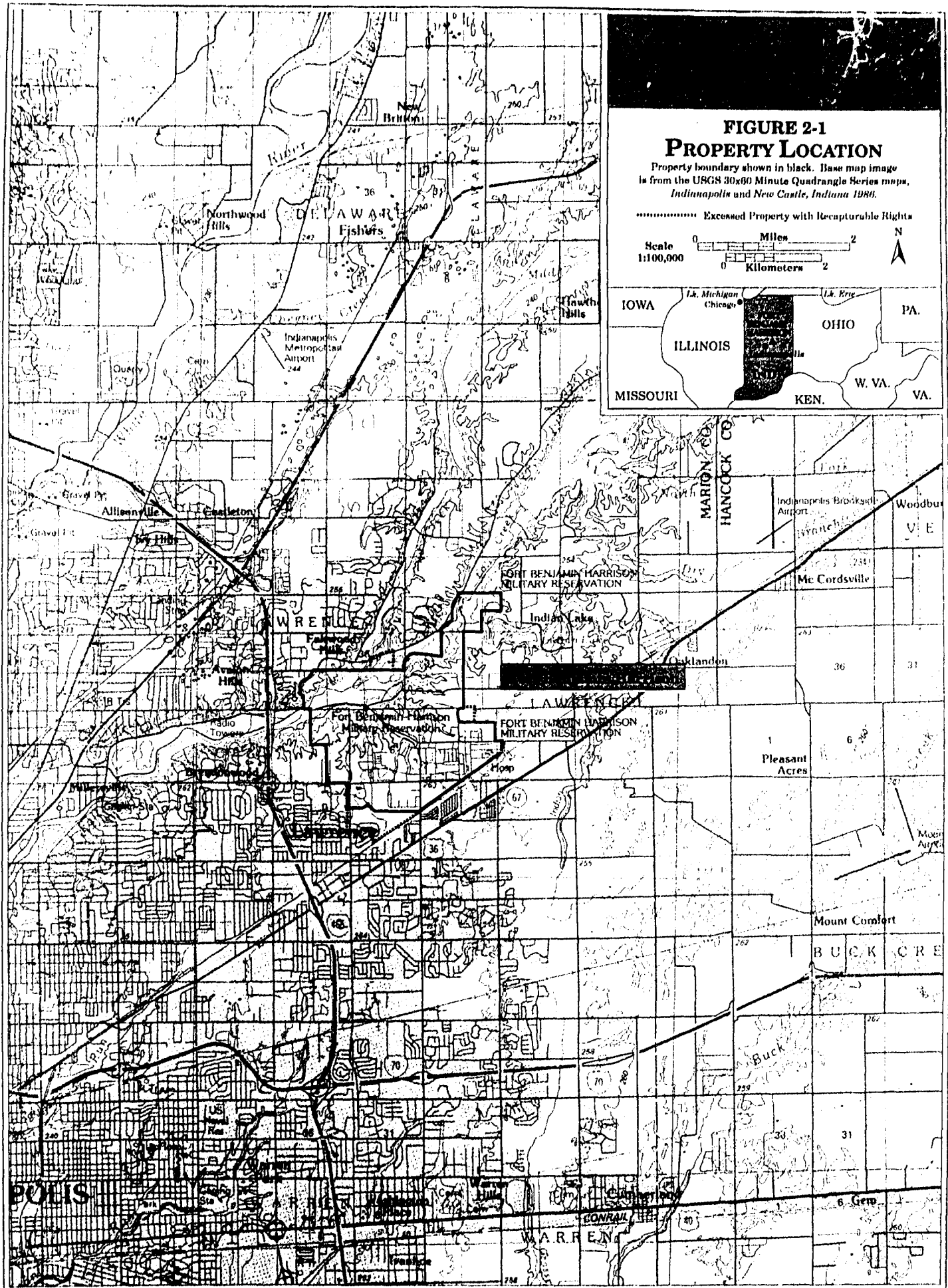
FBH was created by an act of Congress on March 3, 1903. The initial land purchase for the present installation location, however, was not made until June 1904, when the Army purchased 1,994 acres. The Army also purchased an additional 423 acres in 1908 and 1909 south of the installation to allow military access to the "Big Four Railroad." Prior to its purchase for military purposes at FBH, the land was used primarily as farm land. The Minnean Springs Company, however, owned three natural springs in the present location of the Headquarters building, which the company had developed into a resort for the city of Indianapolis.

From 1906 to 1908, FBH was used jointly by the regular Army and the National Guard as training grounds. Infantry regiments were stationed at FBH for garrison duty from the summer of 1908 to the winter of 1913. FBH was abandoned from the winter of 1913 until the spring of 1917, when the U.S. entered World War I.

From 1917 to 1919, an Officer Training Camp, a Medical Officer's Training Camp, and an Engineer Training Camp were held at FBH to support the effort of World War I. In 1917, the Eli Lilly Base Hospital 32, a volunteer hospital, was mobilized at FBH and in 1918 was converted to General Hospital No. 25. General Hospital No. 25 was dismantled following the end of World War I.

During the years between the two World Wars, FBH was generally used by the Army as a training center for military personnel as well as civilians. From 1922 to 1941, the 11th Infantry Regiment was stationed at FBH. A Citizen Military Training Camp was held at FBH from 1925 to 1941. The Civilian Conservation Corps Reforestation Act of 1933 established a Civilian Conservation Corps at FBH from 1933 to 1941.

From 1940 to 1945, during the United States' involvement in World War II, FBH became the site of an induction/reception center for military draftees, the Army Finance School, the Chaplain School, a school for bakers and cooks, the Finance Replacement Training Center, a prisoner of war camp, and an Army disciplinary barracks. An additional 50 acres of land was purchased in 1941 along the eastern side of the reservation, and a 1,000-bed hospital, Billings General Hospital, was built at FBH.





**Table 2-1**

**Property Information Summary  
Fort Benjamin Harrison, Indiana**

---

**Name:** Fort Benjamin Harrison

**FFIS:** IN-213720402

**Property Number:** 18175

**Facility Address:** Fort Benjamin Harrison, Indiana 46216

**Location:** Fort Benjamin Harrison (FBH) is located in Lawrence Township, Marion County, Indiana, approximately 12 miles northeast of downtown Indianapolis. FBH is bordered by residential areas and farmland, with the exception of light industrial areas that border FBH to the southeast.

**Installation Coordinates:** 39° 51' North; 85° 59' North

**Size:** 2,501 acres

**Mission:** To develop and integrate personnel management, administration, financial management, and soldier physical fitness concepts, doctrine, training literature and training into the Army to support increased readiness and modernization now and in the future. To conduct resident and nonresident training in the specialties of personnel management, administration, and financial management. To provide the best possible support to all active, reserve component, and retired personnel, their family members, and units and activities assigned or attached to Fort Benjamin Harrison. To provide the best possible relationship with the local civilian communities.

**Operations:** Activities at FBH include administration, training, housing, and support. Operations conducted to support FBH's mission include furniture and office equipment repair, printing, photography processing, vehicle maintenance and repair, building and road maintenance, and grounds maintenance. The Hawley Army Hospital is located at FBH and provides medical care, including medical surgery, for military personnel.

---



Following the end of hostilities in 1945 and on into early 1947, activities at FBH were slowly phased out. Billings General Hospital was closed in March 1946 and the Finance School was moved to St. Louis in July 1946. On 1 July 1947, FBH was officially declared "United States Army surplus," but in August 1947, it was returned to active status as a permanent military post. In October 1948, command of FBH was relinquished to the 10th Air Force for use as an air force base. It was determined however that the facilities at FBH were inadequate to house an air force base, and in April 1950, command of FBH was returned to the Army.

The 1950s at FBH were marked by reactivation and construction activities. In 1953 and 1954, the Benjamin Harrison Village Corporation built 300 apartment buildings on the southwest side of the post, which FBH purchased in April 1960 for use as military housing. Construction of Building 400, later to be named the Gates-Lord Hall for Major General Horatio Gates and Brigadier General Herbert M. Lord, was conducted from November 1954 to February 1957 to house the new Adjutant General and Finance Schools.

The Army Finance Center was constructed at the site of the former Army airfield from August 1951 to October 1953. The building is 966 ft long and 612 ft wide and cost approximately 19 million dollars to build. In February 1954, it was estimated that 6,000 civilian and military employees worked at the Center. The Army Finance Center is currently in operation at FBH.

The activities that followed the opening of the Army Finance Center at FBH can be characterized as administration and training. In 1966, FBH opened the Defense Information School. In 1971, FBH was designated the United States Army Administrative Schools Center, and in 1973, it was redesignated the United States Army Administrative Center (ADMINCEN) which was one of three mid-management centers for combat developments. In 1973, ADMINCEN was associated with schools such as the Chaplain School, the Woman's Army Corps School, the Defense Information School, the Defense Language Institute, the Judge Advocate General School, the Academy of Health Sciences, the Army Element of the Naval School of Music, and the Institute of Administration.

In 1980, FBH was reorganized and designated the United States Army Soldier Support Center. Currently, the Soldier Support Center at FBH is responsible for personnel service support, including finance, religion, legal aid, music, public affairs, morale, welfare and recreation aspects; soldier support, including the Adjutant General School, the Finance School, the Recruiting and Retention School, the Army Element of the Naval School of Music, the Chaplain Center and School, the Judge Advocate General's School and the Defense Information School; as well as five major tenant commands, including the Defense Finance and Accounting Service - Indianapolis Center, the Enlisted Records and Evaluation Center, Hawley Army Community Hospital, the Readiness Group Harrison, and the 123rd Army Reserve Command (Bower, 1984).

Three separate portions of property that formerly were part of FBH were excessed to the City of Lawrence exclusively for public park or public recreation purposes



(Quitclaim Deed, 1974). These tracts of land are shown in Figure 2-1. These tracts consist of approximately 102, 27, and 33 acres, including a former recreation area at the south end of the installation, a former landfill on the northeast side, and a natural area to the north of the installation, respectively. The deed stipulates that the land rights and title will revert to and become property of the United States of America if needed for national defense or if there is a breach of the conditions and covenants contained within the lease (i.e., if the land is used for something other than park or public recreation purposes).

## **2.2 DESCRIPTION OF FACILITIES**

FBH consists mainly of administrative, training, housing, and support facilities, with over 400 buildings concentrated in the southeastern portion of the post. This subsection provides a brief overview of these facilities. More detailed descriptions of specific operations and facilities are provided in Section 3.

Three main administrative facilities at FBH include the U.S. Army Finance Center (Building 1), the U.S. Army Garrison Headquarters (Building 600), and the U.S. Army Reserve Center (Buildings 126 and 127). Facility operations conducted to support the administrative activities at the post consist of furniture and office equipment repair, printing, and photographic processing.

The Hawley Army Hospital (Building 300) provides medical care, including general surgery, for military personnel at FBH. Infectious wastes were previously autoclaved at the hospital and then disposed of at the landfill, but they are now collected and sent off-site for incineration at the Veteran's (VA) Hospital. Silver recovery operations are presently conducted at the hospital in association with x-ray operations. A veterinary clinic (Building 805) is also operated at FBH. Infectious wastes from the veterinary clinic are currently sent to Hawley Army Hospital and stored for off-site incineration. Building 300 also houses the dental facilities at FBH. The dental clinic has a separate silver recovery unit for processing its own x-ray fixatives. Both the hospital and the dental clinic have laboratory facilities in Building 300.

The housing and community facilities at FBH include troop housing, family housing, a mobile home park, fire and police stations, chapels, a bank and credit union, child support center, library, community center, music center, a gas station, automobile maintenance shops, restaurants, and stores. Recreation facilities at FBH include a bowling center; gymnasium; 18-hole golf course; riding stable; skating rink; indoor and outdoor swimming pools; volleyball, basketball, handball, and tennis courts; baseball, softball, football, and soccer fields; and a running track. These facilities are located throughout the post. The housing facilities are located generally in the southwest portion of the post.

Troop training constitutes a major part of the activities at FBH. Training facilities include a confidence course, fire fighting training area, four firing ranges, as well as academic training facilities such as classrooms.



One inactive wastewater treatment plant exists at FBH. In the past, this facility was equipped to treat wastewater (prior to disposal) from activities on post. FBH is currently tied into the Indianapolis metropolitan area stormwater/sanitary sewer system. All wastewater discharges to the publicly owned treatment works (POTW) in Belmont. Laboratory facilities currently exist at the water treatment plant (plumbing shop).

Additional facility operations are conducted at FBH to support the overall post activities. These operations include vehicle maintenance and repair, grounds maintenance, and building and road maintenance.

Two separate landfills, both permitted for municipal solid waste, have been used in the past for potential or suspected disposal of domestic waste, autoclaved medical waste, ash, and other non-toxic substances. The former landfill located along the eastern side of the post was closed in 1968. A portion of it was excecised and deeded to the City of Lawrence with complete recall rights. The City of Lawrence currently uses the former landfill site as a park. The other former sanitary landfill, located in the southwestern portion of the post, was used from 1969 until 1 October 1991, at which time it stopped accepting waste.

## **2.3 GENERAL ENVIRONMENTAL INFORMATION**

### **2.3.1 DEMOGRAPHICS AND ADJACENT LAND USE**

FBH is located within Lawrence Township in Marion County, Indiana, approximately 12 miles from downtown Indianapolis. Lawrence Township, which has a population of approximately 83,000 (1986), consists of 30,470 acres located in the northeastern area of Marion County (Lawson, 1991). Indianapolis is the 12th largest city in the United States, with a 1990 population of 737,000 in the city, 791,000 in Marion County, and 1,252,400 in the metropolitan area (Indianapolis Chamber of Commerce, 1990).

Lawrence Township's 30,470 acres is divided into approximately 11,500 acres for residential use, 1,100 acres for commercial use, 500 acres for industrial use, 7,000 acres for public and semi-public use, and 10,400 acres of vacant land (Buchart-Horn, 1990). FBH is bordered by residential areas and farmland, with the exception of a light industrial area to the southeast that includes asphalt and paving companies, a steel processing plant, and several construction companies.

### **2.3.2 CLIMATE**

The "continental" climate of FBH is characterized generally by warm and humid summers and moderately cold winters. Temperatures average 28° F in January and 75° F in July (Indianapolis Chamber of Commerce, 1990). The summer climate is influenced by warm, moist air masses from the Gulf of Mexico that move up the Mississippi and Ohio valleys. The winter climate is influenced by cold, dry air masses from Canada that move across the plains (USACE, 1990).



Precipitation in central Indiana is distributed fairly evenly throughout the year. The average annual rainfall is 40 inches, and the average annual snowfall is 23 inches (Indianapolis Chamber of Commerce, 1990). During the summer months, damage may occur to crops due to periods of drought. Central Indiana is occasionally subject to tornadoes and windstorms.

Figure 2-2 shows a wind rose for the period of 1972 through 1984 for Indianapolis, which is approximately 12 miles from FBH. The wind rose should accurately depict the conditions at FBH, since the terrain and weather conditions at the two locations are similar. Winds blow predominately from the southwest in the summer and from the northwest in the winter. The average annual wind velocity at FBH is 9.7 miles per hour (ESE, 1984).

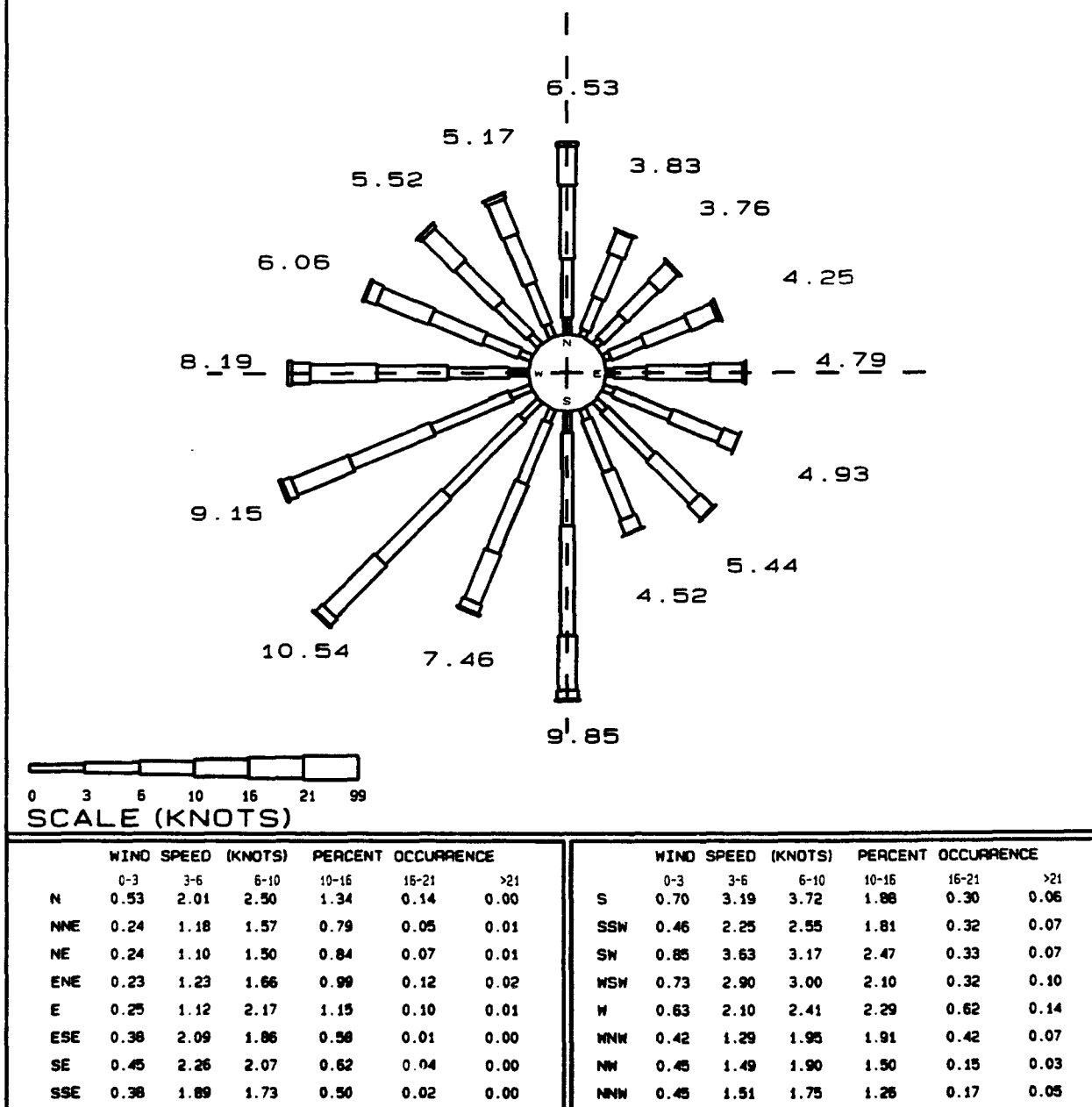
### **2.3.3 PHYSIOGRAPHY AND SURFACE WATER**

FBH is situated on the Tipton Till Plain which lies in the Till Plains Section of the Central Lowland physiographic province (Harrison, 1963). This unit is of glacial origin, dating back to the Wisconsinian age. The topography rises (north to south) from nearly level bottomland along Fall Creek and its tributaries across moderately sloping terraces to nearly level uplands. This relief is in the form of river valleys created by the flow of Fall Creek and its tributaries. Surface elevations across FBH range from 732 feet above mean sea level (MSL) along the northern boundary of the installation to 870 feet MSL at the southern boundary.

Surface drainage from the installation is primarily to the northwest, ultimately entering Fall Creek. Four major streams (Fall Creek, Lawrence Creek, Mud Creek, and Indian Creek) and three intermittent streams (Camp Creek, Fort Branch, and Schoen Creek) constitute the surface drainage system on FBH. Storm sewers in developed areas discharge surface runoff to these streams. In addition, three manmade lakes (Delaware Lake, New Lake, and Duck Pond) have been constructed on the installation. All three ponds are stocked with fish and designated as fishing and recreational areas. Just north of and upstream from FBH is the Geist Reservoir, a manmade reservoir that supplies drinking water to the City of Indianapolis and surrounding communities. Figure 2-3 shows the major surface water bodies described above. Figure 2-4 presents a more detailed drainage pattern (ESE, 1984; USACE, 1990) for FBH and the area covered by the 100-year floodplain.

The Indiana Stream Pollution Control Board (ISPCB) has classified the surface waters at FBH as suitable for recreation and aquatic life; they are therefore subject to the corresponding water quality criteria for this designation. Fall Creek is also subject to limitations on specific maximum concentrations of chemical constituents, since it is a water supply source for the City of Indianapolis. These criteria are more restrictive than those that apply to the aquatic life and recreation classification. Samples of Fall Creek and nearby surface water bodies both on and adjacent to FBH have been collected since the early 1970s (USAEHA, 1975; 1980; NET, 1990; 1991a; 1991b; 1991c). The analytical results indicate that the water quality is good and suitable for the uses for which it has been designated. A review of available sample results

## INDIANAPOLIS, IN 1985 THROUGH 1990 CALMS INCLUDED



**FIGURE 2-2 WIND ROSE**

INTERSTATE  
ROUTE 37



MUD CREEK

FALL CREEK

INDIAN CREEK

INDIAN LAKE

DUCK POND

CAMP CREEK

DELAWARE  
LAKE

NEW  
LAKE

SCHOEN CREEK

FORT  
BENJAMIN  
HARRISON

LAWRENCE CREEK

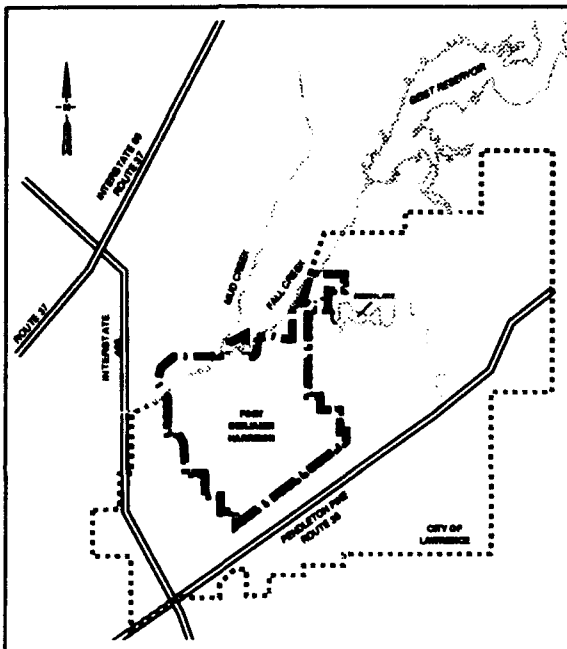
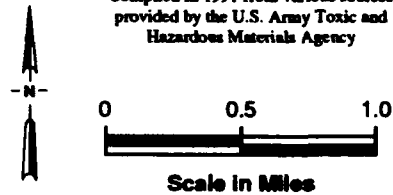
PENDLETON PIKE  
ROUTE 36

730-7216a

U.S. Army  
Base Closure Preliminary Assessment  
**Fort Benjamin Harrison**  
Indianapolis, IN - December 1991





**Figure 2-3**  
**General Surface Drainage Map**  
**of Fort Benjamin Harrison**  
**and Vicinity**

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency

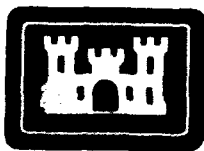


**Location Map**

**LEGEND**

-  Drainage
-  Lakes and Reservoirs
-  Installation Boundary
-  City of Lawrence Boundary

## MATCHLINE



**Toxic and Hazardous  
Materials Agency**

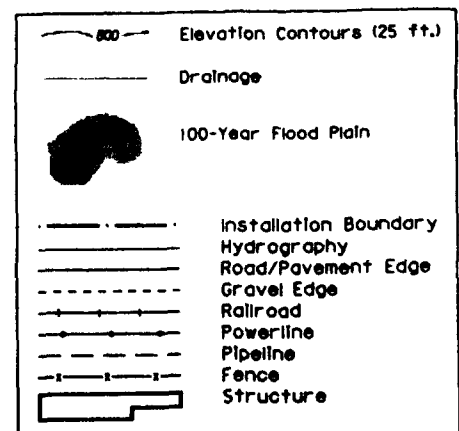
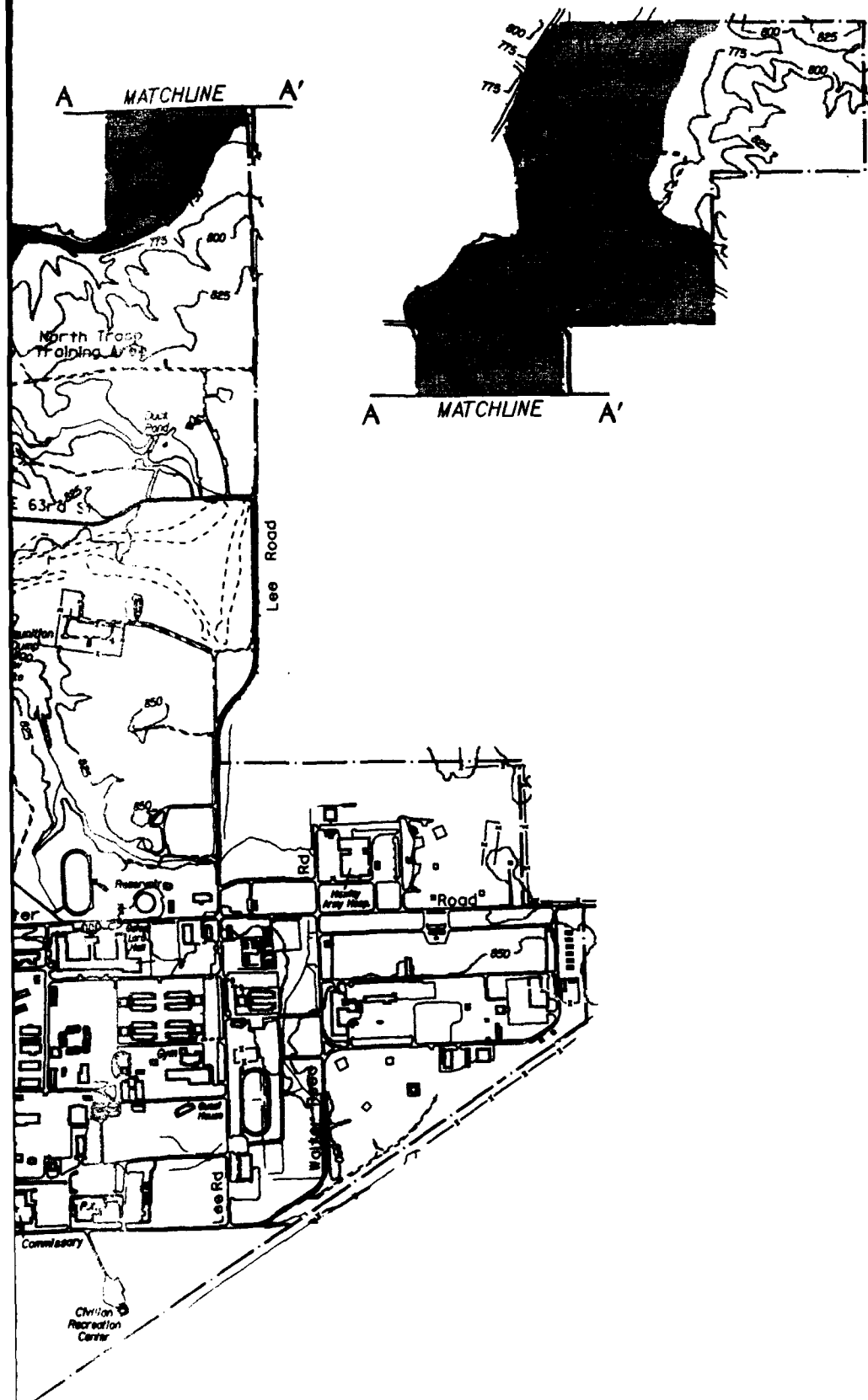
U. S. Army  
Base Closure Preliminary Assessment  
Fort Benjamin Harrison  
Indianapolis, IN - December 1991

**Figure 2-4**  
Site Plan Delineating  
Surface Drainage and  
Flood Plain Boundaries

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



0 meters 300  
0 feet 1200





indicates that the operations at FBH appear to have had a negligible impact on the primary streams in the vicinity of the installation.

#### **2.3.4 SOILS**

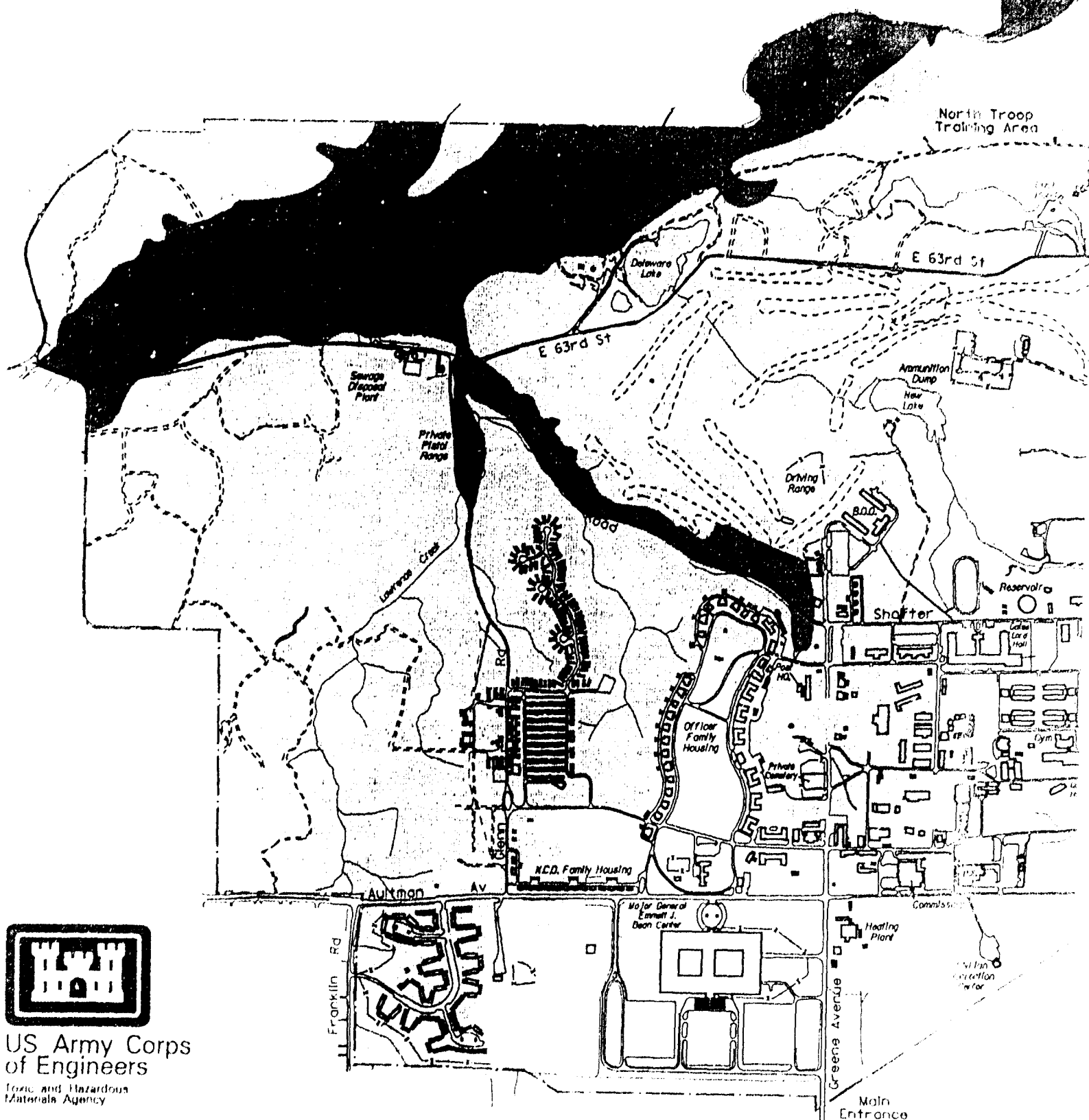
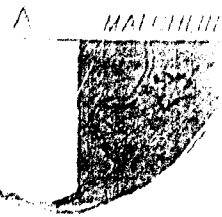
The soil types found on FBH have been evaluated and grouped into three categories according to their locations. These categories include bottomland, terrace, and upland soils. Figure 2-5 displays the distribution of soil categories in the FBH area. Bottomland soils are the recent alluvial materials found along the floodplain of Fall Creek and its tributaries. These belong to the Genesee group, consisting of deep, well-drained soils with a medium to coarse texture. Because they are subject to flooding, these soils are low in organic matter and retain a high moisture capacity. Permeability is moderate and runoff is slow due to the shallow slopes of less than 2%.

Terrace soils are found in areas that lie adjacent to the bottomland soils. They include the Miami, Fox, and Ockley soil series. Miami soils have developed in glacial till and are found on nearly level upland till plains. In contrast, Fox and Ockley soils have developed from glacial and sandy outwash materials, respectively, and are found on outwash plains and terraces. The Fox series is found generally on level to moderately level terrain, while the Ockley series is found on gently sloping terrain. The terrace soil types are deep and well-drained with moderately coarse-textured materials near the surface. The subsoil grades to a moderately fine-textured material that changes abruptly to sand and gravel at depths of 2 to 6 feet below the surface. The susceptibility of these soils to erosion depends upon the degree of slope (2 to 25%) and the amount of disturbance (exposed soil). Medium to low in organic matter, these soils generally retain a low to moderate moisture capacity.

Upland soils, found near the southern and eastern boundaries of FBH, include the Brookston, Crosby, and Hennepin soil series. These are deep, poorly drained (Brookston series) to well drained (Hennepin series) soils, with moderately fine-textured surface and subsurface materials. The Brookston soils are high in organic matter and have a high available moisture capacity. The Crosby and Hennepin soils exhibit less organic matter with a consequently lower moisture content. Slopes in the upland areas are generally in the 0 to 2% range, which limits the potential for erosion. Some slopes within FBH do exceed 25%, and although these have a high potential for erosion, the steep slopes place severe limitations on the use of these areas (ESE, 1984; TRADOC, 1984; SCS, 1978).

#### **2.3.5 REGIONAL GEOLOGY AND HYDROGEOLOGY**

Fort Benjamin Harrison is underlain by both recent and quaternary (Pleistocene) unconsolidated deposits, which unconformably overlie Middle Devonian and Silurian age limestone and dolomite bedrock units (Figure 2-6). These unconsolidated deposits, which range from 5 to over 200 feet thick, are generally made up of two units: the Martinsville Formation (recent alluvium; silts, sands, and gravels) and the Trafalgar Formation (Kansan, Illinoian, and Wisconsinian age glacial till). Only the most recent Wisconsinian age till is exposed at the surface. These unconsolidated deposits reach

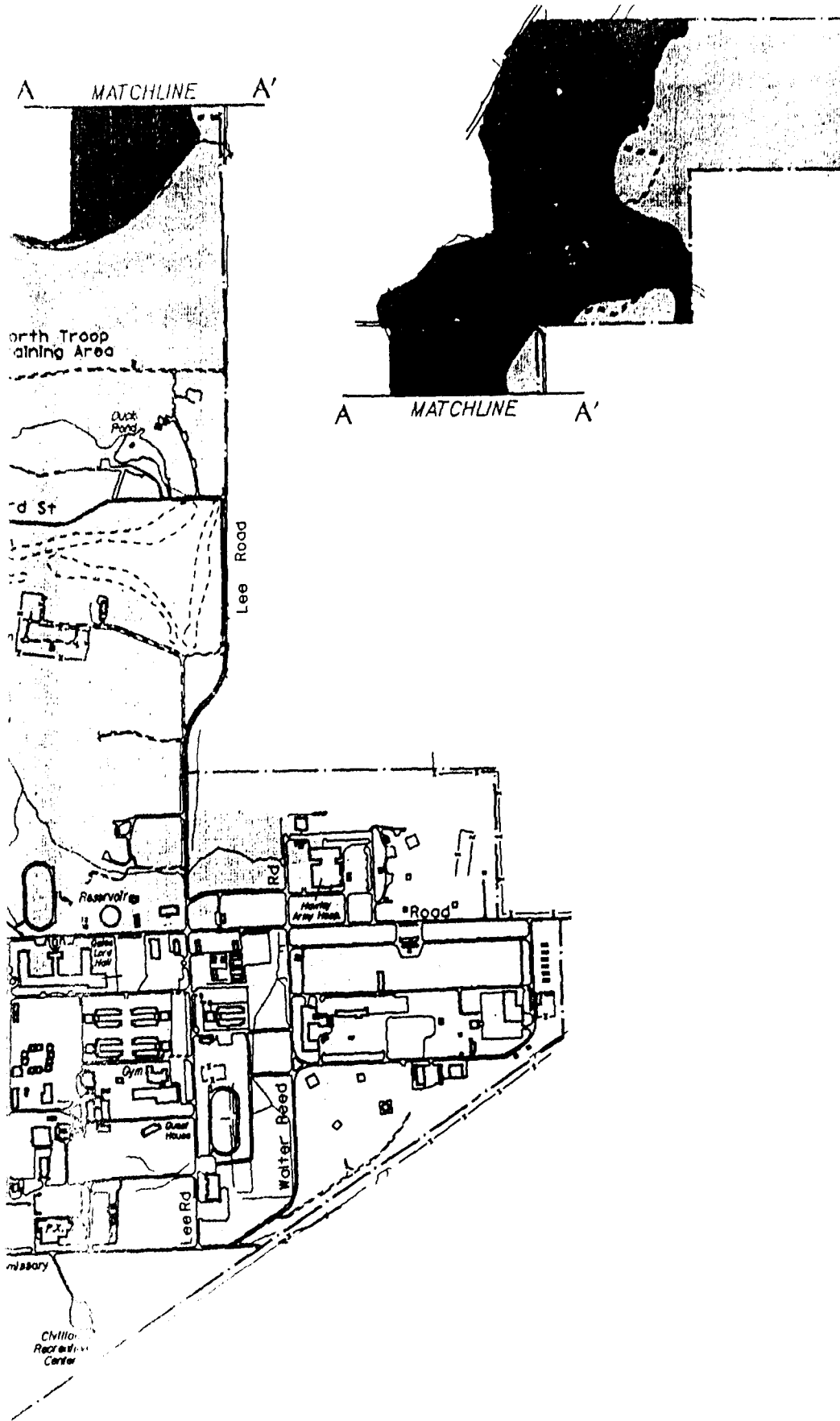
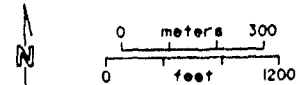


US Army Corps  
of Engineers  
Toxic and Hazardous  
Materials Agency

Best Available Copy

Figure 2-5  
General Soils Map

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency

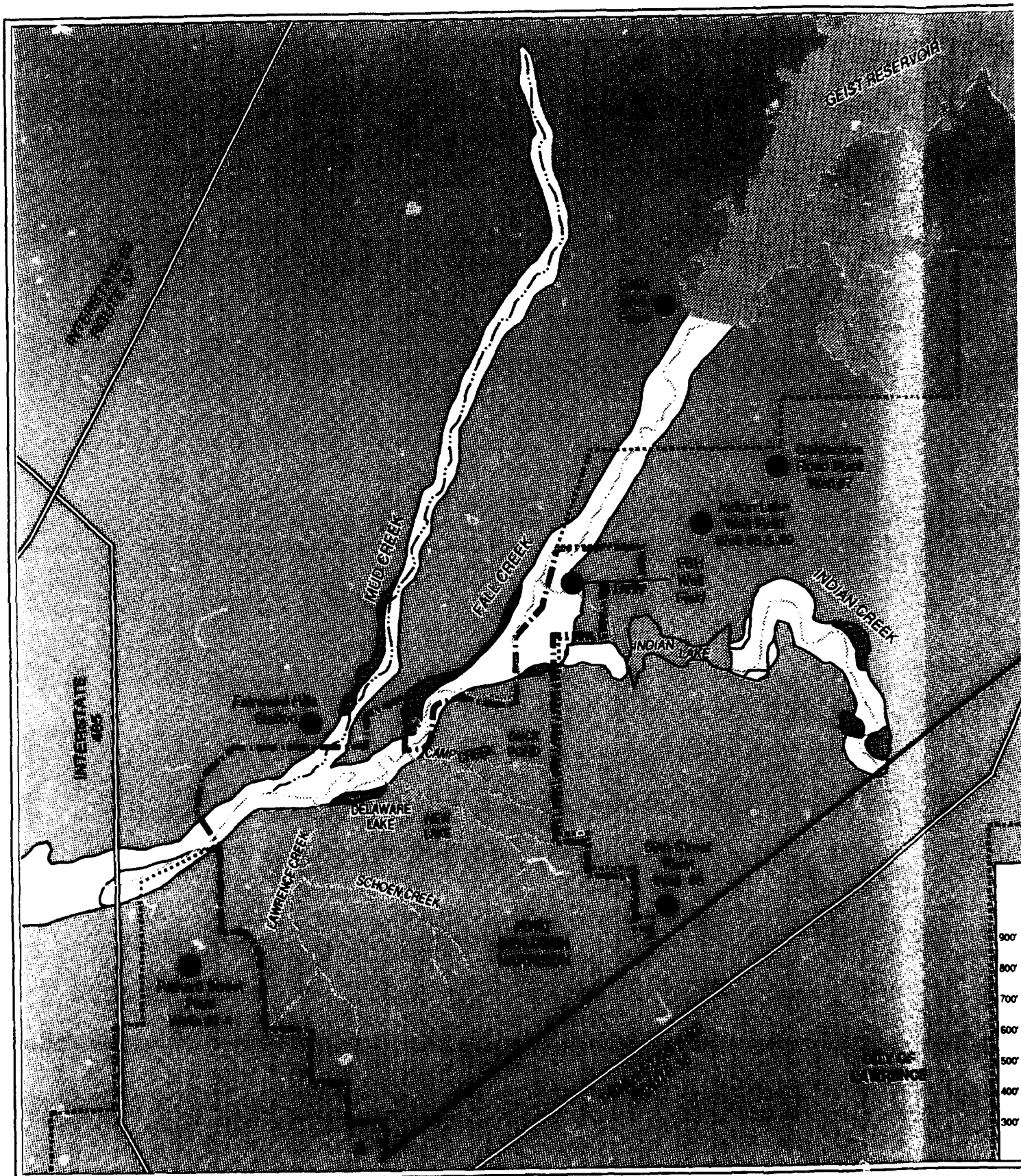


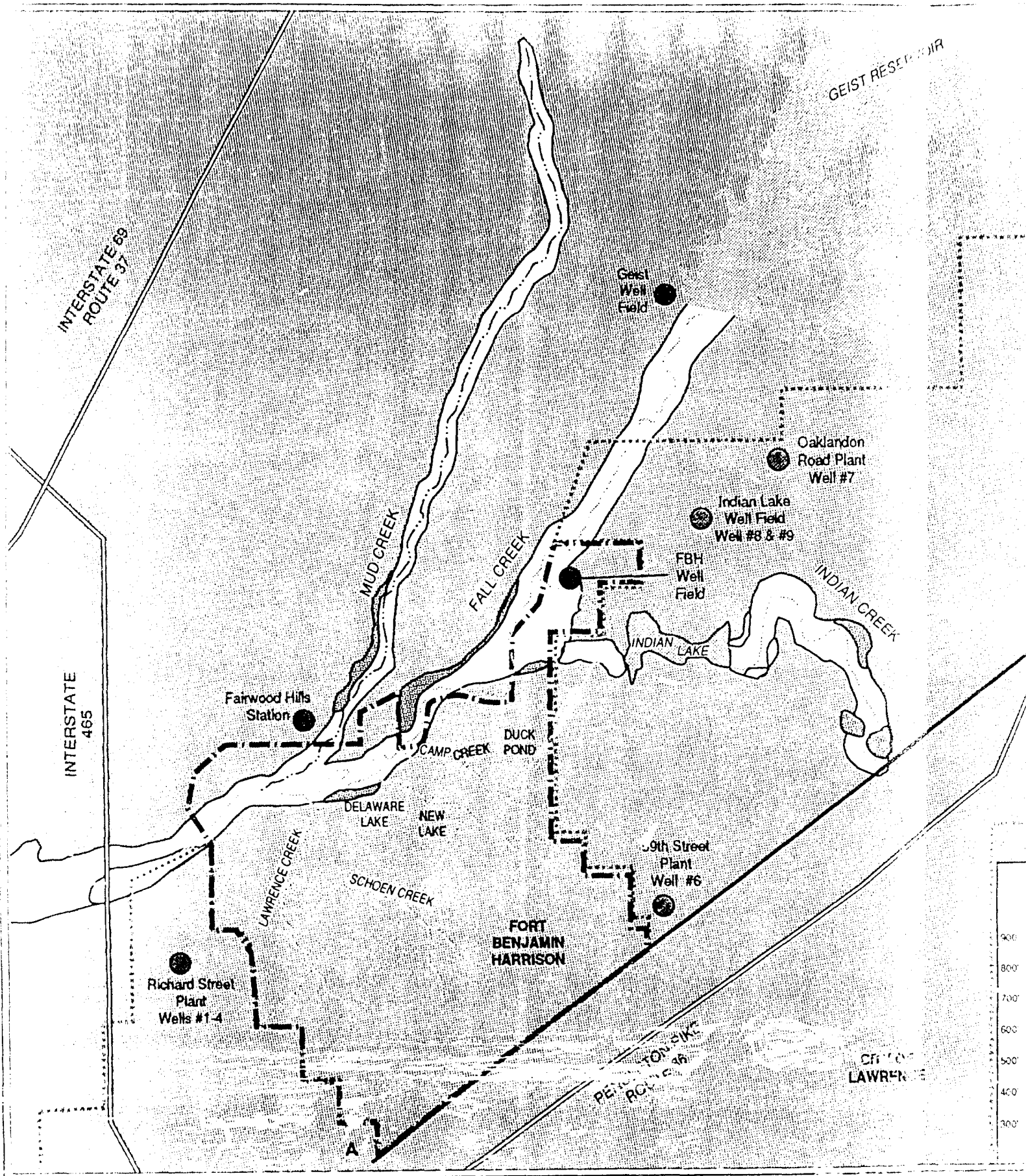
Crosby-Brookston association:  
deep, somewhat poorly  
drained and very poorly  
drained, nearly level and  
gently sloping soils formed  
in a silty layer and the  
underlying glacial till

Miami-Crosby association:  
deep, well drained and  
somewhat poorly drained,  
nearly level to moderately  
steep soils formed in a  
thin silty layer and the  
underlying glacial till

Genesee-Sloom association:  
deep, well drained and very  
poorly drained, nearly level  
soils formed in loamy  
alluvium

- Installation Boundary
- ~~~~~ Hydrography
- ===== Road/Pavement Edge
- Gravel Edge
- Railroad
- Powerline
- Pipeline
- Fence
- ===== Structure





739-7216b

Best Available Copy

GEIST RESERVOIR

Indian  
Plant  
197

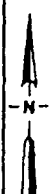
DIAN CREEK

CITY OF  
LAWRENCE

U.S. Army  
Base Closure Preliminary Assessment  
**Fort Benjamin Harrison**  
Indianapolis, IN - December 1991

**Figure 2-6**  
**Surface Geology and**  
**Production Well Map**  
**of Fort Benjamin Harrison**  
**and Vicinity**

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



0 0.5 1.0



Scale in Miles

**LEGEND**

- FBH Well Field
- City of Lawrence Well Fields
- City of Indianapolis Well Fields
- Drainage
- Lakes and Reservoirs
- Installation Boundary
- City of Lawrence Boundary

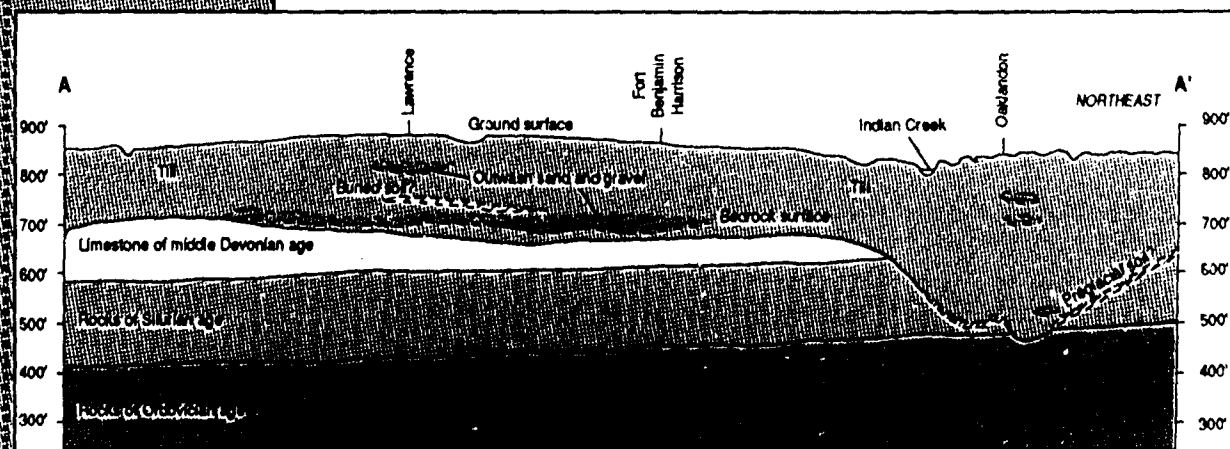
**EXPLANATION**

**Consolidated Units**

- Dolomitic limestone of middle Devonian age
- Limestone, dolomite, and shale of Silurian age
- Shaly limestone of late Ordovician age

**Unconsolidated Quaternary Deposits**

- Alluvial sand, silt, and clay  
*Recent stream deposits. Yellowish gray or gray, black where considerable organic material. Generally underlain by outwash sand and gravel.*
- Outwash sand and gravel  
*Glacial stream deposits. Yellowish gray or light gray. Principally sand and sandy gravel, some silt and clay, and scattered cobbles and boulders.*
- Till  
*Glacial ice deposits. Yellowish gray, bluish gray or gray. Principally sand or silt, some clay and pebbles, and scattered cobbles and boulders.*





their maximum thickness in bedrock valleys, which were scoured during the periods of glaciation and later filled with deposits from glacial meltwater. Bedrock valleys filled with remnant deposits of these glacial meltwater streams have been identified in the vicinity of FBH along Fall Creek (ESE, 1984; USACE, 1990; Harrison, 1963).

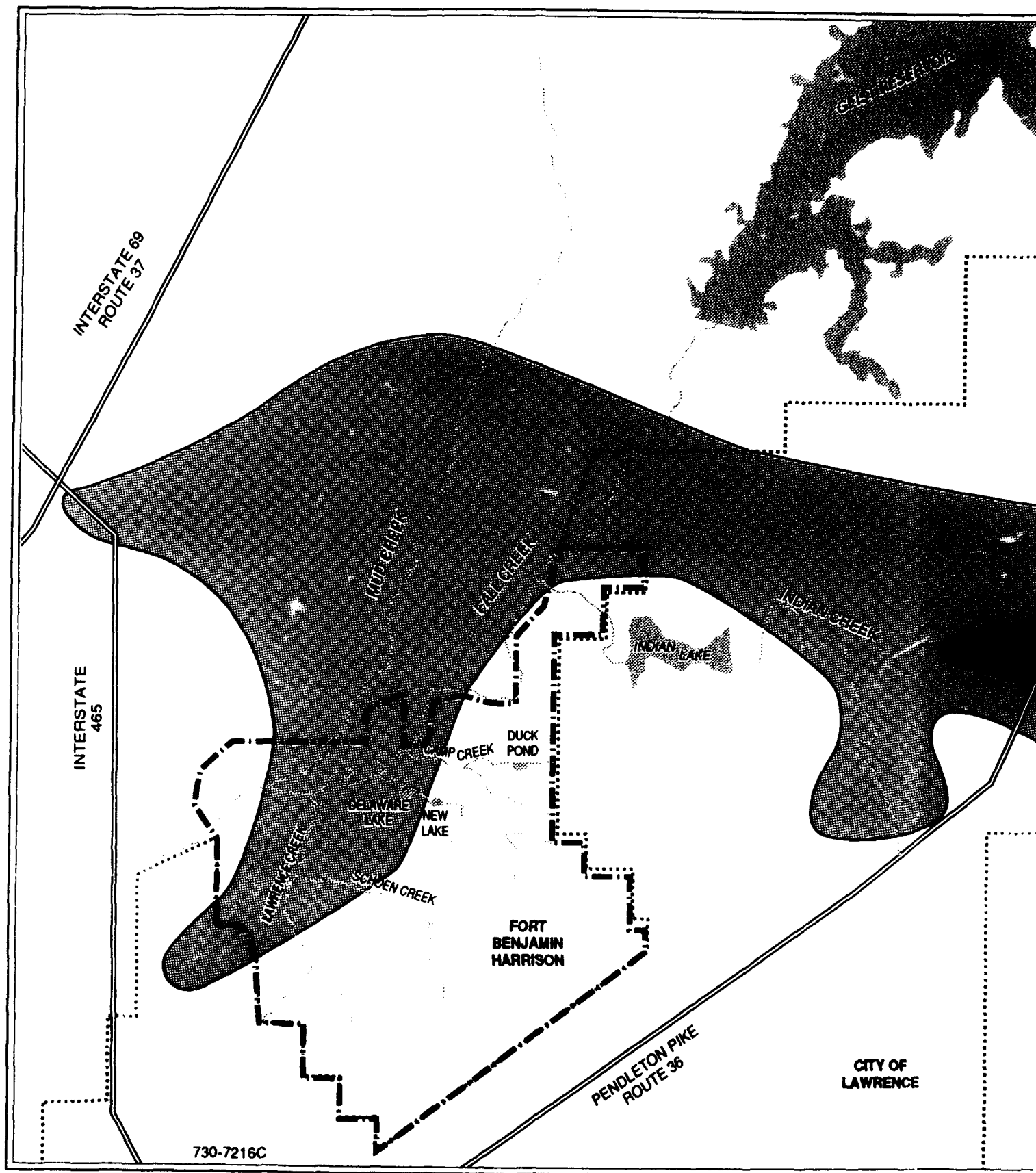
A lithological mapping of the glacial till was conducted during the March 1984 Environmental Assessment of Fort Benjamin Harrison (TRADOC, 1984), in which a major unconfined sand and gravel aquifer was delineated beneath White River and Fall Creek. The location of this aquifer generally follows the glacial meltwater and outwash deposits previously mapped along these streams. This deposit is referred to as the glacial-outwash aquifer and is considered the most important aquifer in the area.

Bedrock at FBH lies 200 to 250 feet below the unconsolidated deposits and consists of two types, Devonian and Silurian limestones and dolomites. Silurian age rocks are found underlying the northwest portion of the installation, as shown in Figure 2-7. These materials exceed 150 feet in thickness. They consist of white/gray limestone, tan dolomite, and blue shales. The Devonian age rocks, which underlie the remainder of the installation, consist of white/blue limestone, tan dolomite, and blue/black shales (Harrison, 1963). The regional dip of these two formations is to the southwest at approximately 25 feet per mile (USAEHA, 1986).

During the site visit, an attempt was made to secure lithologic logs and construction diagrams of wells (water supply wells and monitoring wells) drilled in the FBH area. Seven water supply wells and 29 monitoring wells have been completed on the installation to date. Limited information was available for a small number of the FBH monitoring wells. These well logs indicate that the shallow materials (0 to 60 feet below ground surface (bgs)) found on FBH are consistent with the glacial till described in the regional geology references. Lithologic descriptions from the deeper glacial till wells and bedrock wells located both on and off the installation were not available for review (USAEHA, 1986; 1987; 1981; ERC, 1991).

Groundwater in the FBH vicinity is available for drinking water supply purposes from both the unconsolidated glacial tills and the underlying bedrock. The primary groundwater flow direction within these formations is toward Fall Creek. Geist Reservoir, situated to the northeast of FBH, has caused water levels in the immediate vicinity of the reservoir to be somewhat higher than expected under normal conditions. Groundwater flows from the area of higher level at Geist Reservoir toward Fall Creek (Buchart-Horn, Inc., 1990). Supply wells drilled into the thick alluvial and glacial outwash material along Fall Creek are the best producers, with well yields as high as 500 gallons per minute (gpm). Small shallow wells (70-150 feet deep) located in the sand and gravel aquifers currently produce between 100 and 400 gpm. This is in contrast to yields from the deeper bedrock wells, which range from as little as 30 gpm to as much as 1,200 gpm (ESE, 1984; USACE, 1990).

Three public water supply systems in the vicinity of FBH draw their drinking water from the above-mentioned aquifers. They are (1) the Indianapolis Water Company, (2) the City of Lawrence Water Company, and (3) Fort Benjamin Harrison. The



INTERSTATE 69  
ROUTE 37

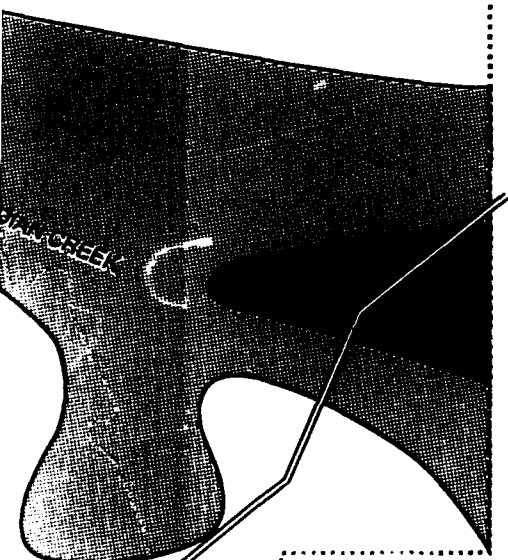
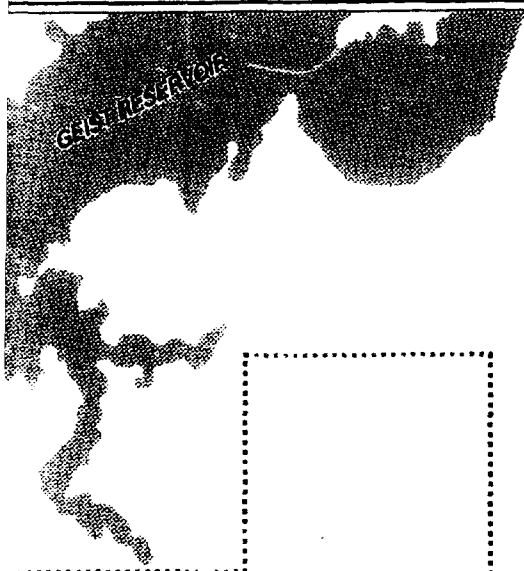
INTERSTATE  
465

FORT  
BENJAMIN  
HARRISON

PENDLETON PIKE  
ROUTE 36

CITY OF  
LAWRENCE

730-7216C

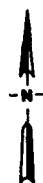


CITY OF  
LAWRENCE

U.S. Army  
Base Closure Preliminary Assessment  
**Fort Benjamin Harrison**  
Indianapolis, IN - December 1991

**Figure 2-7**  
**Bedrock Geology Map**  
**of Fort Benjamin Harrison**  
**and Vicinity**

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



Scale in Miles

**EXPLANATION**



Dolomitic limestone of  
middle Devonian age



Limestone, dolomite, and  
shale of Silurian age



Shaly limestone of late  
Ordovician age

**LEGEND**

..... Drainage

 Lakes and Reservoirs

----- Installation Boundary

..... City of Lawrence Boundary



Indianapolis Water Company withdraws a portion of its total water supply from well fields located along Fall Creek. These include the Fairwood Hills and the Geist Area Well Fields, which in 1989 had an anticipated yield of 20 to 25 million gallons per day (mgd) (McClure, 1991). Similarly, the City of Lawrence withdraws its drinking water from well fields that yield water from both the glacial till aquifer and the bedrock aquifers. These well fields have a combined anticipated yield of 7 mgd and are distributed throughout the municipality (Boese, 1991; CEW, 1991). FBH's drinking water is supplied by the well field located in the northern extremity of the installation. There are seven wells in this area, of which only three are currently operational (wells no. 9, 10, and 11) for daily use, with one backup (well no. 5) when water levels are low. Groundwater use on FBH is estimated at 1 mgd (USACE, 1990; Buchart-Horn, 1990). Figure 2-7 shows the locations of the drinking water supply wells in relation to the primary aquifers described above.

Water levels measured in these supply wells differ greatly between those that draw from the glacial till and those that draw from bedrock aquifers. Water levels in wells completed in the glacial till range from 13 to 21 feet bgs, while water levels from nearby bedrock wells exhibit a range of 103 to 134 feet bgs (Boese, 1991).

Groundwater in the vicinity of FBH contains calcium bicarbonate, iron, chloride, magnesium, and moderate concentrations of total dissolved solids (TDS) (IDNR, 1980). Although the water is of acceptable quality for most uses, it is classified as hard to very hard. Average hardness of the untreated water at FBH is 230 milligrams per liter (mg/L). Specific conductivity and TDS average 740 microohms and 432 mg/L, respectively. The difference in groundwater quality between the glacial-outwash aquifer and the bedrock aquifer is negligible (USACE, 1990; IDNR, 1980).

Monitoring wells have been installed in several areas of the FBH installation, including the old landfill (excessed to the City of Lawrence), the current landfill, the electrical shop and heating plant, the former wastewater treatment plant, and most recently, on the site of the proposed Learning Resource Center. Samples from selected wells (adjacent to the two landfills) have been collected for analysis since the early 1980s. Analytical results indicate that aside from some localized impacts, the landfills have exhibited little to no influence on the groundwater quality at FBH (USAEHA, 1975; 1980; 1981; ERC, 1991; Viani, 1983; NET, 1990; 1991a; 1991b, 1991c; Raney, 1988).

### **2.3.6 SENSITIVE ENVIRONMENTS**

The purpose of this subsection is to identify any environmentally sensitive areas at FBH and provide information on these areas. This information was obtained through a review of existing literature and through conversations with personnel from the appropriate state and federal agencies and the environmental management office at FBH.



### **2.3.6.1 Wetlands**

Wetlands are protected by the federal government primarily through Section 404 of the Clean Water Act. This act empowers the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) to regulate most cases of wetland destruction, with input from the U.S. Fish and Wildlife Service (FWS) and the USDA Soil Conservation Service (SCS). Each of these four agencies has developed its own definition for wetlands, based on its needs in conjunction with different laws, regulations, and programs. The regulatory definition of a wetland, as used by the EPA and USACE for administering the Section 404 Permit Program, is as follows:

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (EPA, 40 CFR 230.3 and USACE, 33 CFR 328.3).

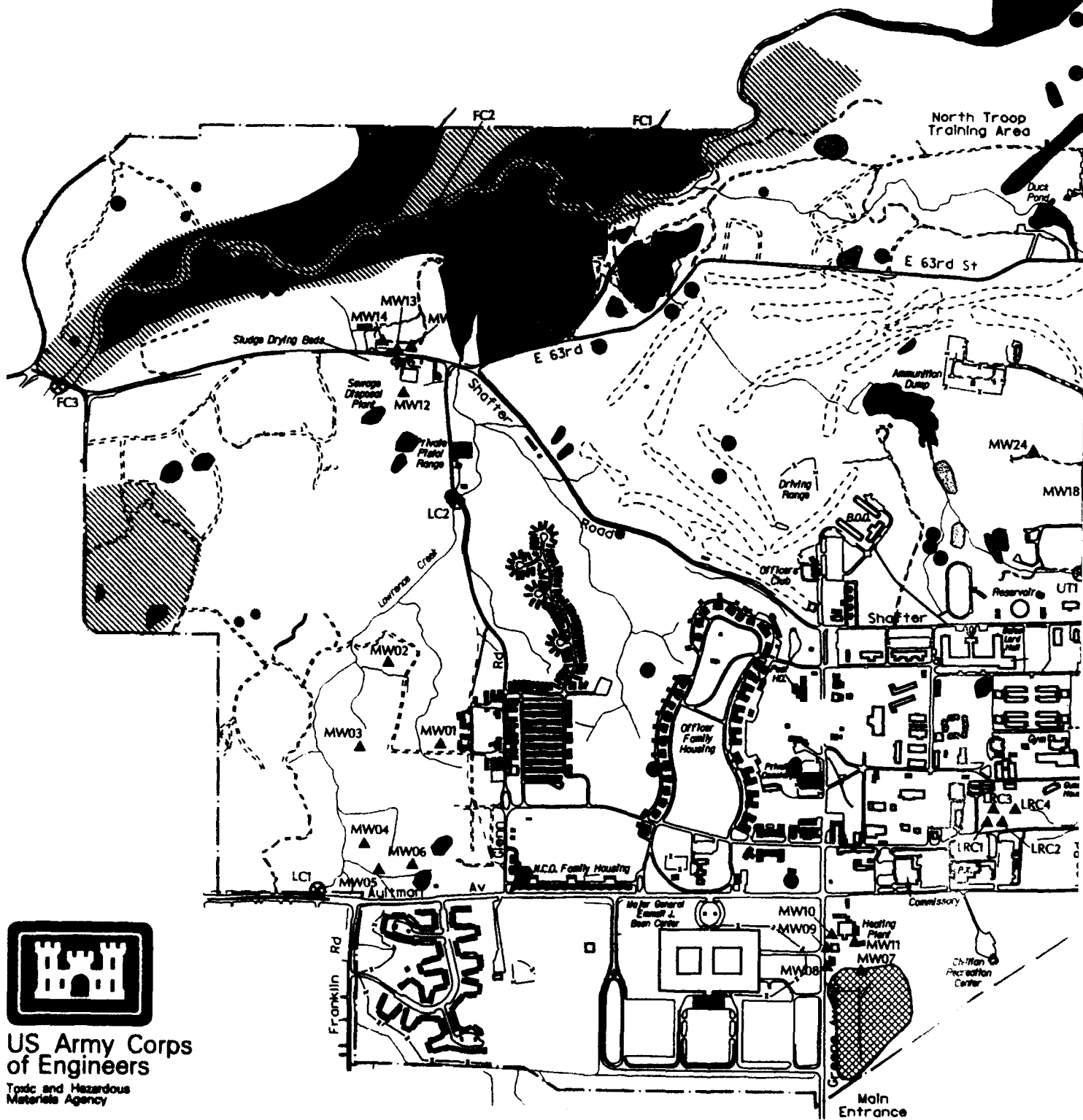
While the FWS and the SCS definitions for wetlands differ slightly from this definition, all definitions for wetlands are conceptually the same, in that they all include three basic elements for identifying wetlands: hydrology, vegetation, and soils. In January 1989, the Federal Interagency Committee for Wetland Delineation (FICWD) published a guidance document for identifying wetlands, the Federal Manual for Identifying and Delineating Jurisdictional Wetlands. This interagency committee consists of representatives from the USACE, the EPA, the FWS, and the SCS (FICWD, 1989).

WESTON initiated telephone conversations with the National Wetlands Inventory (NWI) Group in Bloomington, Minnesota (November 1991). According to the NWI, Indiana has been mapped under the NWI Program on 7.5 minute quadrangle maps. This mapping is intended to establish guidelines for determining the potential for an area to contain wetlands. The method for performing this mapping generally consists of reviewing detailed overflight maps and delineating the extent of possible wetlands, based on soil types and vegetation.

FBH personnel, in conjunction with the Indiana Department of Environmental Resources, have identified the wetlands at FBH shown on Figure 2-8. These wetlands were identified using the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (FICWD, 1989). While these wetlands were identified using the field manual, they have not been completely delineated. The boundaries of the wetlands shown in Figure 2-8 are approximate, and further field investigations can be conducted to completely delineate them.

In addition, according to FBH personnel, two areas at the post are presently being considered for restoration to wetlands by FBH personnel and the State of Indiana. One area, located in the vicinity of the boiler plant (see Figure 2-8), is being considered based on the soil type, the hydrology, and the present-day vegetation. A transient wetlands study was conducted in this area. The survey indicated the presence of

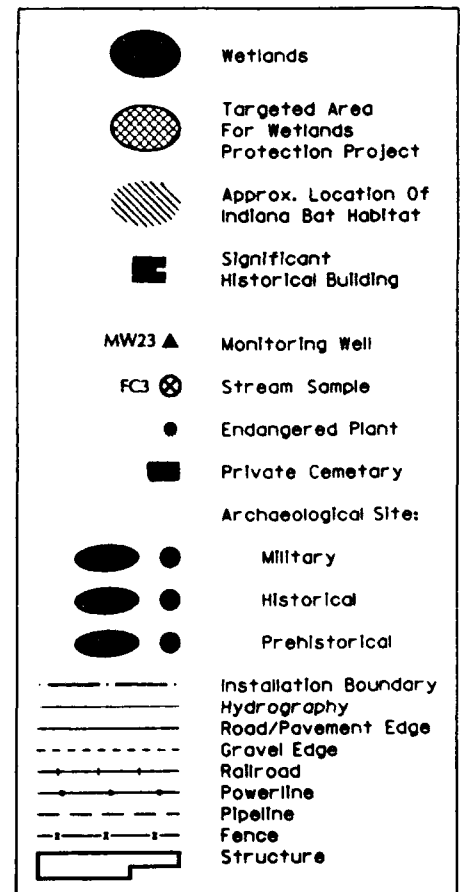
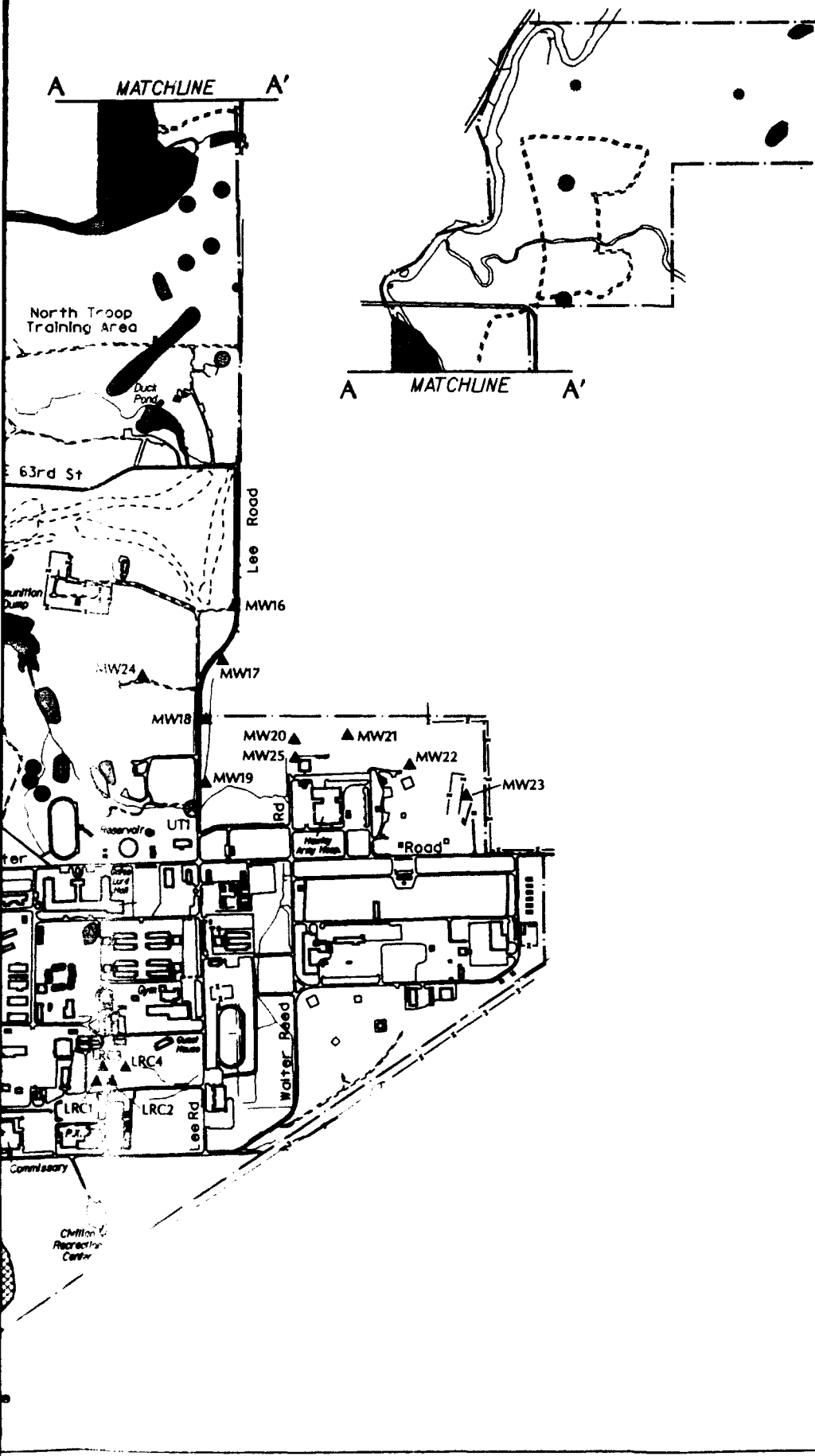
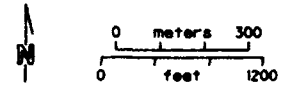
A MATCHLINE



**US Army Corps  
of Engineers**  
Toxic and Hazardous  
Materials Agency

**Figure 2-8**  
**Sensitive Areas and**  
**Environmental Studies**

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency





Brookstone soils near the boiler plant; the exact area has not yet been delineated. Wetlands are expected to be constructed upon delineation of the area(s) and approval of environmental restoration funds. The second area, located in the vicinity of the ammunition storage area, is being considered based on the soil type and evidence of oxidation.

### **2.3.6.2 Flora and Fauna**

FBH consists of 2,501 acres, of which approximately 1,069 acres is covered by woodlands. Several areas of FBH, including disturbed and undisturbed areas, provide excellent habitat for various aquatic, riparian, and terrestrial species. Significant landscape additions to the post include several man-made lakes, an 18-hole golf course, fire trails, landfills, and the 27-acre Black Walnut Plantation. In addition, there are 32 acres of land at FBH available for an agricultural lease program; however, no land is currently leased for agricultural uses. Military personnel (both retired and active), post personnel, and their dependents are allowed to obtain permits for hunting and fishing on the post. Listings of flora and fauna at FBH are provided in the Environmental Assessment of Ongoing Mission at FBH issued by TRADOC (1984). These listings are currently being updated by DIS NRMD personnel.

According to the Forest Cover Types of America Handbook, FBH falls within the Central Forest Region of the United States. The forest types for this region include Type 52 (White Oak, Red Oak, and Hickory trees); Type 60 (Beech and Sugar Maple trees); and Type 62 (Silver Maple and American Elm trees) (ESE, 1984). There have been no major timber fires recorded at FBH.

The woodlands of FBH are maintained through periodic single tree and group harvesting and are replenished through natural regeneration and planting. Thirty-six areas of harvestable timber stands exist at FBH, generally to the west, north, and northeast of developed areas. These areas range in size from 9 to 79 acres each. Timber is not routinely harvested at FBH; however, from 1959 to 1970, approximately 750,000 board feet of timber was harvested. Firewood is sold by permit to FBH personnel and their dependents (NRMP, 1983).

The dominant species of trees in the woodlands include Red Oak, Green Ash, Sugar Maple, American Beech, and Cottonwood. Developed areas are covered with lawn grasses and various ornamental and shade trees, including Tulip, Sweet Gum, Honey Locust, Ohio Buckeye, and several varieties of Hawthorn and Crabapple trees (ESE, 1984). Although prairie grasses flourished in the area of FBH at one time, there are no significant areas of prairie grasses left on the post.

Several species of endangered plants have been found at FBH, including wood's sedge (Carex woodii), pink turtle head (Chelone obliqua var. speciosa), golden seal (Hydrastis canadensis), and ginseng (Panax quinquefolius). All of these plants have previously been candidates for the Federal Endangered Plants List but are currently dropped from consideration. Wood's sedge is currently considered "rare" by the State of Indiana,



which signifies that the species occurs at 11 to 20 sites in the state. Golden seal and ginseng, which are valuable as medicinal herbs, are listed on the state's "watch list." Plants on this list may be found at more than 20 sites in the state but are still being tracked due to various threats, such as collecting for sale as medicinal herbs. Pink turtle head is a very attractive plant that is also currently on the "watch list" (Hedge, 1991). Mead's milkweed (Asclepias meadii), Kankakee globe mallow (Liamna remota), and scurf pea (Psoralea stipulata) are listed on the National Register of Endangered and Threatened Species (50 CFR 17.11 and 17.12, 1 January 1989) and have been identified as potentially occurring in the area of FBH; however, these have not recently been found on the post (USACE, 1990). Locations of endangered plants at FBH are shown in Figure 2-8.

The primary game species at FBH include the cottontail rabbit, gray squirrel, and ring-necked pheasant. Other game species include the fox squirrel, whitetail deer, bobwhite quail, and mourning dove. Game fish found in the three man-made lakes at the post, Delaware Lake, New Lake, and Duck Pond, include the largemouth bass, bluegill, channel catfish, crappie, bullhead, and trout. These lakes are periodically stocked with bluegill, crappie, bass, and catfish.

In 1987, the Indiana Department of Natural Resources indicated that blue heron rookeries existed along Indiana and Fall Creeks, located in the northeast corner of FBH. The Indiana National Heritage Program lists 14 nests in the rookery along Fall Creek and 108 nests in the rookery along Indian Creek (USACE, 1990).

The Indiana bat (Myotis sodalis), listed as endangered by both state and federal agencies, has been found in the north to northwestern portion of FBH along Mud and Fall Creeks. A bat survey will be conducted upon receipt of appropriate funds. The proposed project will include the attachment of tracking devices to captured bats. Other endangered fauna that potentially inhabit FBH include Kirtland's warbler (Dendroica kirtlandii), the American peregrine falcon (Falco peregrinus anatum), the arctic peregrine falcon (Falco peregrinus tundrius), and the brown pelican (Pelecanus occidentalis) (USACE, 1990).

#### **2.3.6.3 Archeological Investigations at FBH**

Several archeological investigations have been performed at FBH as part of a cultural resources program started in 1985. Individual investigations are conducted prior to major land improvements. The latest archeological investigation, conducted in late 1989 and early 1990, identified six new archeological sites at FBH, four prehistoric and two historic. Table 2-2 provides a list of the identified prehistoric and historic sites at FBH, along with site descriptions and period dates. The locations of these sites are shown in Figure 2-8 (D.E. McGillem and Associates, 1990).

Historical investigations at FBH have identified over 100 buildings with historical and military significance, as shown in Figure 2-8. Currently, there is one building at the post (Building 616, the post office) that is registered on the National Register of Historic Places. The post office, located at the corner of Walker Road and Aultman



**Table 2-2**

**Archeological Sites Identified at FBH**

Site No.	Description	Type*	Period Dates
12MA249	World War I Entrenchment	WWI	1917-1918
12MA288	Blunt Homestead	Ag	1889-1904
12MA289	World War I Dump	WWI	1889-1913
12MA290	World War I Dump	WWI	1890-1920
12MA291	John M. Reddick Homestead	Ag	1889-1919
12MA292	Unknown Homestead	Ag	ca. 1900
12MA293	Reddick/Harper Homestead	Ag	1866-1911
12MA294	WWII Military Foundations	WWII	1946
12MA295	Dump World War II Military Dump	Ag WWII	ca. 1900 1946-1947
12MA296	Fountain Kimberlain Homestead	Ag	1833-1941
12MA297	Historic Scatter	Ag	1900-1916
12MA298	F.M. Kimberlain Homestead World War II Dump	Ag WWII	1866-1945
12MA299	Prehistoric Scatter Historic Scatter	Preh Ag	Unknown 1904+
12MA300	Prehistoric Scatter	Preh	Unknown
12MA301	Lord Hall Area (Military Dump)	WWII	1947
12MA302	World War I Entrenchments	WWI	1917-1918
12MA303	Stiers/Louden Homestead	Ag	1866-1889
12MA304	Historic Isolated Find	Ag	ca. 1900
12MA305	Speece Homestead	Ag	1828-1922
12MA306	Prehistoric Campsite Spencer (?) Homestead	Preh Ag	Unknown 1828-1907
12MA307	Prehistoric Campsite Military Dump	Preh WWII	Unknown 1930-1950
12MA308	Bates/Sproule Homestead	Ag	1866-1928
12MA311	William. H. Baker (?) Homestead	Ag	1889-1907
12MA312	Prehistoric Scatter	Preh	Unknown
12MA313	Mrs. J. McHibben (?) Homestead	Ag	1866-1907



**Table 2-2**

**Archeological Sites Identified at FBH  
(continued)**

Site No.	Description	Type*	Period Dates
12MA314	Reddick Homestead	Ag	1889-1907
12MA315	Reddick/Baker Homestead	Ag	1866-1889
12MA316	Johnson/Baker Homestead	Ag	ca. 1907
12MA317	Johnson/Baker Homestead	Ag	1866-1907
12MA318	Military Historic Scatter	WWI	ca. 1908+
12MA319	Military Dump	WWI	ca. 1908+
12MA320	Military Dump	WWII	1933+
12MA321	Prehistoric Scatter	Preh	Unknown
12MA322	Hezekiah Smart Homestead	Ag	1889+
12MA379	Prehistoric Camp	Preh	ca. 3700-2000 B.C.
12MA380	Prehistoric Scatter	Preh	Unknown
12MA381	Prehistoric Scatter	Preh	Unknown
12MA382	Isolated Find	Preh	ca. 3700-3000 B.C.
12MA383	Geo. B. Yandes (?) Farmstead	Ag	1889-1907
12MA384	Wm. Apple/H.D. Wheeler Farmstead	Ag	1889-1907

\*Preh = Prehistoric  
 Ag = Historic Agricultural  
 WWI = World War I  
 WWII = World War II



Avenue, was built in 1908. Personnel at FBH are currently discussing with the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology the possibility of registering several other buildings at the post (Ralston, 1991).

## **2.4 ENVIRONMENTAL STUDIES AT FBH**

Numerous environmental studies have been conducted at the FBH. Some of these studies are area-specific, while others are base-wide investigations. In some instances, evidence of a particular study is present, yet no publication was found during the site visit. Studies are discussed chronologically as follows:

- The Water Quality Monitoring Consultation No. 24-10875/76 for Fort Benjamin Harrison, Indiana was completed by the U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD, in September 1975. This document summarizes the monthly collection of surface water samples from 11 sampling locations from October 1973 through April 1975. Although personnel shortages caused the sampling program to be operated sporadically, the general quality of surface water on or adjacent to the installation is assessed as good to excellent. No recommendations were made for continued sampling of these locations.
- The Water Quality Engineering Consultation (WC) No. 3224-0237-80, Fort Benjamin Harrison, Indiana was completed by the U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD, in July 1980. The objective of this survey was to determine the impact of Fort Benjamin Harrison's activities on the levels of pesticides and PCBs in Fall Creek (as identified in the 1971 Draft EIS). The results of the sampling and analysis indicate no evidence that FBH is contributing significant levels of pesticides or PCBs to Fall Creek and recommended that the final EIS reflect this conclusion.
- The Army Pollution Abatement Program Study, Installation of Monitoring Wells, Fort Benjamin Harrison, Indiana, was completed by the U.S. Army Environmental Hygiene Agency (Control No. 81-26-8255-81) in June 1981. This document summarizes the installation of monitoring wells and soil borings adjacent to the active sanitary landfill (located in the western portion of the base off Glenn Road). No conclusions were rendered.
- The Potable/Recreational Water Quality Survey No. 31-610103-82, Fort Benjamin Harrison, Indiana was completed by the U.S. Army Environmental Hygiene Agency in April 1982. This survey was conducted to evaluate the water supply, water treatment, and water distribution system at FBH. It was determined that the Fall Creek valley well field yields an adequate supply for the installation and that the water treatment plant produces a potable water supply that meets all water quality regulatory requirements. Recommendations included notifying users of the high sodium content, providing low-sodium water to certain



individuals, proper plugging and sealing of abandoned wells, and the development of a standard operating procedure for user notification during an emergency.

- The Installation Assessment of Fort Benjamin Harrison, IN, Report No. 331 was submitted by Environmental Science and Engineering, Inc. to the USAEHA in January 1984. This on-site installation assessment was conducted between 25 and 29 October 1982 to address past and present use of any toxic or hazardous materials and to assess the potential for off-post migration. The study identified two wash racks as potential contaminant sources due to their direct tie into the storm sewer system. In addition, available information on geology, contaminant sources, and limited water quality data did not indicate to the reviewers any off-post migration of contaminants via surface or groundwater. No follow-up survey was recommended.
- The Environmental Assessment of Ongoing Mission, Fort Benjamin Harrison, Indiana was completed by the Department of the Army TRADOC in March 1984. The purpose of this study was to determine if an Environmental Impact Statement was required and to identify measures to mitigate adverse environmental impacts. The conclusion was that no significant environmental impact occurs as a result of the ongoing mission activities and that an Environmental Impact Statement is not required.
- The Groundwater Potential Contamination Survey No. 3826-0910-86, Fort Benjamin Harrison, Indiana was conducted by the USAEHA in April 1986. This document summarizes the findings of an installation-wide investigation with respect to potential sources of groundwater contamination (such as landfills, dumps, impoundments, burial pits, underground tanks, and spill sites). The document identified high risk areas and evaluated the groundwater monitoring program, including the monitoring network, well integrity, and collection and sampling procedures.
- The Geohydrologic Study No. 38-26-0920-87, Fort Benjamin Harrison, Indiana was completed by the USAEHA in May 1987. This report summarizes the installation and sampling of monitoring wells (one well as a background water quality monitoring point for the active landfill and five in the vicinity of the USTs at Building No. 4). As a result of the study, this report recommended the monitoring of the groundwater around the current landfill and at two points along Lawrence Creek on a quarterly basis for one year for hazardous constituents and indicator parameters to determine the impact of the landfill on the groundwater regime.



- In 1987, the USAEHA compiled information on 15 Solid Waste Managements Units (SWMUs) (USAEHA, 1988). USAEHA concluded that eight of the identified SWMU sites showed evidence of release to the environment or had potential for release. The report listed proposed environmental sampling and/or action for these eight SWMUs plus an additional SWMU site.
- The Fort Benjamin Harrison Land Use Plan, Final Submittal, was conducted by Buchart-Horn, Inc. for the Department of the Army, U.S. Army Corps of Engineers, Louisville District in February 1990. The purpose of the plan was to establish a complete definition of FBH land use, past and present, and to investigate how the installation interfaces with the surrounding community. In addition, the plan discusses current and long range projects along with possible constraints to that development.
- The Geohydrologic Study No. 38-26-K847-90, RCRA Facility Assessment - Sampling Visit, U.S. Army Soldier Support Center and Fort Benjamin Harrison, Fort Benjamin Harrison, Indiana, 2-13 April 1990 was published by the USAEHA in July 1990. The purpose of this study was to identify the presence of any release of hazardous constituents from the former coal storage yard adjacent to Building 2, the former landfill east of Lee Road and north of Hawley Army Hospital, and the former sewage treatment plant/fire training area at Building 810. Groundwater monitoring wells were installed in these areas and groundwater samples were analyzed for metals (coal storage yard); VOCs, BNAs, pesticides, herbicides, PCBs, sulfates, nitrates, chlorides, and total dissolved solids (TDS) (former landfill); and metals (including lithium), fuels, BNAs, and VOCs, (former sewage treatment plant). The study concluded that these areas did not appear to have significantly affected the surrounding areas. Well MW-20 near the former landfill had the most significant levels of contamination, including vinyl chloride at a concentration greater than the drinking water standard. However, detection limits for all analyses for VOCs were higher than the maximum contaminant level for some VOCs.
- The Fort Sheridan, Illinois, Final Environmental Impact Statement was prepared by the U.S. Army Corps of Engineers, Louisville District in October 1990. This document evaluates the withdrawal from and closure of the Fort Sheridan, IL installation and the relocation of major units to Fort Benjamin Harrison, Indiana. The EIS was prepared to identify the effects of the planned action on the natural, social, and cultural environment not only at Fort Sheridan, but at the receiving installations as well, i.e., FBH. No significant impact was expected as the result of the realignment action.
- A follow-up memorandum concerning the investigation at the former landfill was issued by USAEHA to FBH on 28 January 1991 (USAEHA,



1991). This memorandum concerned additional sampling of MW-20, installation and sampling of a new monitoring well, and sampling of two surface water points. The presence of vinyl chloride in MW-20 was confirmed.

- The Construction Clearance Study-Phase II, Monitoring Well Installation, Learning Resource Center, Fort Benjamin Harrison, Indiana was prepared by ERC Environmental and Energy Services Company for the U. S. Army Corps of Engineers, Nashville District in June 1991. The purpose of the study (and the Phase I that preceded it) was to determine the effects of past use on site soils and groundwater using soil borings and monitoring wells. The study indicated the presence of contaminant concentrations of several constituents above regulatory action limits and the presence of others (i.e., total petroleum hydrocarbons) for which there are no guidelines. Further investigation and monitoring well installation were recommended.
- Quarterly sampling results for select monitoring wells and surface water sampling locations from October 1990 to August 1991 indicate little influence of the two landfills on groundwater quality on the FBH installation. Localized degradation was noted at certain well locations, as indicated by the periodic sampling events.

## **2.5 PERMITTING STATUS AND REGULATORY ISSUES**

The following agencies were contacted, and information was obtained regarding permits and regulatory issues for FBH:

- EPA Region V
- Indiana State Department of Environmental Management (IDEM)
- Indiana State Department of Health
- City of Indianapolis Air Pollution Control Division (IAPCD)

In addition, a computerized database search was conducted of federal and state environmental data, including the following USEPA and Indiana State records (EAI, 1991):

### **Federal**

- National Priorities List (NPL)
- Facility Index System (FINDS)
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
- Resource Conservation and Recovery Act (RCRA) Notification System



- Solid Waste Facilities in relation to RCRA Subtitle D criteria
- Emergency Response Notification System (ERNS)

#### State

- State Priority List
- Underground Storage Tank Facility Information
- Solid Waste Facility Information
- Consolidated Docket Database Information
- RCRA Major Violators

Regulatory issues and actions pertaining to FBH are summarized below:

- USEPA Region V has requested additional information from FBH necessary for completion of a Hazard Ranking System (HRS) evaluation of FBH, which is listed in the Federal Agency Hazardous Waste Compliance Docket as "U.S. Army Soldier Support Center" (USEPA, 1990; 1991; FBH, 1991a; 1991b; 1991c). This action is in compliance with Section 120(c) of CERCLA, 42 U.S.C. Section 9620(c), as amended by Superfund Amendments and Reauthorization Act (SARA) of 1986 (Pub. Law 99-499) (USEPA, 1990).
- In October 1989, FBH signed a Federal Facility Compliance Agreement (FFCA) with USEPA Region V that set a schedule for correcting administrative violations cited in 1987 and 1988. This FFCA is discussed in more detail with RCRA facilities in Subsection 2.5.1. Other regulatory activities are discussed in the following subsections with associated permitting discussions.

#### **2.5.1 RCRA FACILITIES**

The State of Indiana has had authority since January 1986 to administer a Hazardous Waste Program in lieu of the federal program. FBH is therefore regulated by Indiana provisions found in 329 Indiana Administrative Code (IAC) 3, rather than by the federal regulations under RCRA set forth in 40 CFR 265. However, the State of Indiana does not have complete authority to administer Resource Conservation and Recovery Act (RCRA) programs (i.e., Toxicity Characteristic Leaching Procedures (TCLP), Land Disposal Restrictions Wastes, Corrective Actions, etc.).

FBH is a full generator (40 CFR 260.10) of hazardous waste (EPA ID number IN4210090003). The installation was listed as a transport, storage, and disposal facility on the original EPA notification of Hazardous Waste Activity and on the Part A application. The installation is currently listed as a storage facility, in accordance with the Part B permit. On 30 September 1991 (effective date 15 days from receipt of notice and expiration date 5 years from effective date), the Commissioner of the Indiana Department of Environmental Management (IDEM) issued a Hazardous Waste



Management Permit to the U.S. Army Solider Support Center, FBH (under EPA Identification Number IN4210090003) to operate a container storage facility, i.e., the Defense Reutilization and Marketing Office (DRMO) hazardous waste storage facility, requested under Indiana Code 13-7-85 and Rule 329 IAC 3 (IDEM, 1991). A Part B permit was issued to the same facility by the Regional Administrator of the USEPA regarding requirements of the Hazardous and Solid Waste Amendments of 1984 (HSWA) to RCRA (IDEM, 1991).

The other main issue related to RCRA and IAC is the Federal Facility Compliance Agreement (FFCA) signed by FBH with USEPA Region V in October 1989 (Docket No. V-W-89-R-4). This agreement stemmed from a November 1985 RCRA inspection conducted by IDEM, in which five violations were cited. The installation did not (or was unable to) act to remediate these violations and had already been cited for noncompliance by EPA in 1987 and 1988 (USAEHA, 1989). Listings of milestones summarizing the RCRA regulatory action at FBH and monthly progress reports concerning the FFCA are available in site reports (USAEHA, 1989) and DIS files at FBH. Issues covered in the October 1989 FFCA include the following action items for FBH (USEPA, 1989):

- Marking of hazardous waste storage containers.
- Development of a waste analysis plan.
- Determination of all waste generation points.
- Maintaining a complete operating record.
- Initiation of weekly inspections.
- Update of Installation Spill Contingency Plan.
- Update of emergency response agreements/Contingency Plan.
- Identification of training needs.
- Development of closure plan for the entire facility.
- Completion of partial closure of Building 124 (former hazardous waste storage area at DRMO).

According to a 4 September 1991 monthly progress report (FBH, 1991a), all submittals for the FFCA have been made. The partial closure of Building 124 was completed, and the building was certified for clean closure on 11 July 1991. The final report for partial closure at Building 124 was initially submitted to the regulatory agency (IDEM) in September 1991 and was subsequently revised and resubmitted in November 1991. Verbal acceptance of this November resubmittal was given to FBH by IDEM. FBH is currently awaiting formal written acceptance from IDEM.



The FFCA concerns administrative issues and does not address corrective action or response measures pursuant to Sections 3004(u), 3004(v), 3008(h), or 9003(h) of RCRA, 42 U.S.C., Sections 6924(u), 6924(v), 6928(h), or 699ab(h), or pursuant to CERCLA and SARA.

### **2.5.2 NPDES PERMIT**

In the past, FBH held a NPDES permit for the outfall of the former sanitary treatment plant (Building 810) to Fall Creek. This NPDES permit was terminated in January 1981 following connection of the FBH sanitary sewer system to the regional system in November 1980. No information was found concerning violations, if any, under the NPDES permit. FBH does not currently hold any NPDES permits for surface water discharges.

FBH is a participant in the Group NPDES permit prepared by USATHAMA. Part 1 of the Group permit was initially submitted to the regulatory agency on 18 March 1991. Based on EPA review and comment, the application was revised and resubmitted on 30 September 1991. Part 2 of the Group application, which is required by 18 May 1992, is currently being prepared (USATHAMA, 1992).

### **2.5.3 AIR PERMITS**

FBH holds four air permits from the City of Indianapolis Air Pollution Control Division (IAPCD) for operations conducted on the installation. Boiler operations and gasoline dispensing are covered under these permits, which are updated annually. These permits are summarized as follows:

- Permit/certification No. 002-01 for Erie City-Keystone boiler, 75.5 MMBtu/hr capacity, gas-fired, model No. 13M (S/N 99026); issued 9 January 1991; expires 31 December 1992.
- Permit/certification No. 0022-02 for Nebraska boiler No. 1 (Building 2), 97.9 MMBtu/hr, natural gas or No. 2 oil-fired, model NS-E/S-55/70; issued 9 January 1991; expires 31 December 1992.
- Permit/certification No. 0022-03 for Nebraska boiler No. 2 (Building 2), 61 MMBtu/hr, natural gas or No. 2 oil-fired, model NS-E/S-55/70; issued 9 January 1991; expires 31 December 1992.
- Permit/certification No. 1241292 for gasoline dispensing at the AAFES service station (Building 33); issued 1 December 1990; expires 31 December 1992.

In the past, the former coal-fired boilers at Building 2 (in operation from 1952 through 1988) had been the object of numerous regulatory actions because of failure to comply with opacity and particulate emission (USAEHA, 1989). Since 1985, FBH has received Notices of Violation from USEPA Region V and the IAPCD; has been served with two



consent orders; signed an Agreed Order (Case No. A-947, signed October 1989) to modify operating practices at the installation; and has received multiple citations for exceeding IAPCD opacity limits (USAEHA, 1989; IDEM, 1989).

#### **2.5.4 SOLID WASTE PERMITS**

FBH currently holds no solid waste permits. The recently closed (September 1991) on-post landfill, located in the western area of the installation at Glenn and Otis Avenues, was issued a "construction plan" permit on 16 May 1980 (USAEHA, 1989) and later operated under Indiana permit No. SW231 (ESE, 1984). The landfill, which is discussed in more detail in Subsection 3.8.2, was permitted while in operation by IDEM, Solid Waste Management Branch, and had a County Registrant No. of 49-0003 (EAI, 1991). Monitoring wells were installed, and groundwater monitoring has been conducted around the landfill. This is discussed in more detail in Subsection 3.8.2.

Underground Storage Tanks (USTs) at FBH are regulated by the Indiana State Board of Health, Land Pollution Control Division, under identification No. 009138 (EAI, 1991). USTs are discussed in more detail in Subsection 3.7.1.

#### **2.5.5 NUCLEAR REGULATORY COMMISSION LICENSES**

FBH currently does not hold any U.S. Nuclear Regulatory Commission (NRC) licenses and does not store any radiological wastes. In the past (from 1976 to 1977), radioisotopes were used at Hawley Army Hospital (ESE, 1984). Storage and use of these materials were covered under NRC license No. 3910, issued to the hospital in April 1976. X-ray units located at FBH are certified by the Joint Commission for Accreditation of Hospitals and NRC (ESE, 1984).



## **SECTION 3**

### **AREAS REQUIRING ENVIRONMENTAL EVALUATION**

In this section, AREEs at FBH are documented. A number of these AREEs were identified in the 1990 USATHAMA Property Report (USATHAMA, 1990) and the 1987 USAEHA report (USAEHA, 1987). Additional AREEs were included based upon evaluation of other existing documentation and on the WESTON site visit. Table 3-1 provides a listing of all AREEs by number, and the locations of these are shown in Figure 3-1. The completed Site Investigation (SI) Phase II Documentation Checklists for Identified AREEs are provided in Appendix C. Facility-wide AREEs, as outlined in Subsection 3.14, are not shown in Figure 3-1 and are not included in Appendix C due to their extensive nature.

Storage of radiological materials or wastes was not considered as an AREE for FBH. This is because radiological isotopes are not currently in use by any medical facilities. The last radioactive materials (radio set) with NRC authorization were returned to Fort Monmouth, New Jersey in March 1982. Defective compasses are turned into Building 425 for subsequent disposal through U.S. Army Troop Support and Aviation Materiel Readiness Command (TSARCOM) (ESE, 1984).

In addition, unexploded ordnance (UXO) is not considered to be of concern at FBH; site reports and personnel indicate that there are and have been no areas of FBH authorized for disposal of explosive ordnance or material and there are no Explosive Ordnance Disposal (EOD) exercises conducted at FBH (USAEHA, 1989; ESE, 1984). EOD activities have been conducted at Atterbury Reserve Force Training Area (ARFTA), which is not located on the FBH property. There are no historical records of EOD activities or demolition sites on FBH (ESE, 1984).

In this section, the phrase "drains to the sanitary sewer" refers to the fact that the sanitary sewer at FBH is currently connected to the off-post Indianapolis regional sanitary sewer system, which discharges to a publicly owned treatment works (POTW).

#### **3.1 FACILITY OPERATIONS**

FBH has a number of operations that provide support for the main operations at the site. More significant facility operations, such as maintenance areas, are discussed in subsequent subsections of Section 3.

##### **3.1.1 DPCA FIELD PRINTING SHOP (AREE 1)**

###### **3.1.1.1 Description**

The Directorate of Personnel and Community Activities (DPCA) Field Printing Shop (AREE 1) is located in the lower level of the U.S. Army Finance and Accounting Center



Table 3-1

**List of Areas Requiring Environmental Evaluation**

AREE Number	Description	Building Number(s)/ Location
<u>Facility Operations</u>		
1	DPCA Field Printing Shop	Bldg. 1
2	TASO Devices Shop	Bldgs. 479 and 481
3	Graphics Shop	Bldg. 1
4	Photographic Processing Areas	Bldgs. 1, 300, 434, 470, 479
5	Weapons Cleaning Area	Bldg. 613
6	Carpentry Shop	Bldg. 1
<u>Maintenance and Fueling Operations</u>		
7	Maintenance Shops	
	- Electrical Shop	Bldg. 4
	- AAFES Gas Station	Bldg. 33
	- U.S. Army Reserve Center	Bldg. 127
	- Roads and Grounds	Bldg. 422
	- Office Equipment Repair	Bldg. 424
	- Plumbing Shop	Bldg. 604
	- Auto Craft Shop	Bldg. 705
8	Former Maintenance Shops	
	- Former Vehicle Maintenance	Bldgs. 13, 36, 109, 116, 424, 425, 426, 619
	- Former Paint Shop	Bldg. 38
9	Wash Racks, Grease Racks, and Oil/Water Separators	
	- Electric Shop	Bldg. 4
	- Former Wash Rack	Bldg. 36
	- Former 36th Engineer	Bldg. 116
	- U.S. Army Reserve Center (4)	Bldg. 127
	- Roads and Grounds	Bldg. 422
	- Car Wash	Bldg. 423



Table 3-1

**List of Areas Requiring Environmental Evaluation  
(continued)**

AREE Number	Description	Building Number(s)/ Location
<u>Maintenance and Fueling Operations (con't)</u>		
	- Indoor Wash Rack	Bldg. 424
	- Former Wash Rack to Storm Sewer	Between Bldgs. 425 and 426
	- Wash Rack (outdoor) Officers Club	Bldg. 500
	- Outdoor Wash Rack	Bldg. 515
	- Auto Craft Shop	Bldg. 705
10	POL Drum Accumulation Areas/POL Waste Staging	
	- Former DIS trans. motor pool	Bldgs. 34, 36
	- Former 36th Engineer	Bldgs. 109, 116
	- U.S. Army Reserve Center	Outside of Bldg. 127
	- Roads and Grounds	Bldg. 422
	- Office Equipment Maintenance	Bldg. 424
	- Auto Craft Shop (former)	Bldg. 705
11	Fueling Stations	
	- AAFES Station	Bldg. 33
	- POL Service Station	Bldg. 239
12	DIS Engineering/Maintenance Building	
	- Current	Bldg. 26
	- Former	Bldg. 108
<u>Water Treatment Operations</u>		
13	Water Treatment Laboratory/Plant	
	- Laboratory	Bldg. 604
	- Heating Plant	Bldg. 2
<u>Training Areas/Ranges</u>		
14	Firing Ranges	
	- Indoor Pistol Range	Bldg. 802
	- Foreman Rifle Range	Bldg. 811, 812



Table 3-1

**List of Areas Requiring Environmental Evaluation  
(continued)**

AREE Number	Description	Building Number(s)/ Location
<u>Training Areas (con't)</u>		
	- State Police Pistol Range	Bldg. 815
	- Skeet/Rifle Range	Bldg. 819, 820, 821, 822
	- Troop Training	Base-wide
<u>Hazardous Materials Storage and Waste Handling Areas</u>		
15	Former Drum/Waste Storage Area	South of Bldgs. 45 and 46
16	DRMO Hazardous Waste Storage Area	Bldg. 124, 125
17	PCB-Containing Waste Storage Areas	
	- Storage/staging of transformers	Adjacent to Bldg. 4
	- Former storage of transformers	Adjacent to Bldg. 46
	- Former staging of transformers	Site of Bldg. 110
	- DRMO storage of transformers and oil	Bldgs. 124 and 125
18	Pesticide Mixing and Storage Areas	
	- DIS Storage (Former)	Bldg. 27
	- DRMO	Bldg. 125
	- Former Storage	Bldg. 514
	- DIS Storage and Mixing	Bldg. 605
	- Golf Course (former storage)	Bldg. 674
19	Buried Lithium Bromide Drums	Adjacent to Bldg. 810
<u>Sanitary Wastewater Treatment Plants</u>		
20	Former Sewage Treatment Plants	
	- Current Fire Training Area	Bldg. 810
	- Historic Maps/South of Shafter Road	West of Bldg. 674
	- Historic Files/East Area of Installation	To Be Located
<u>Storage Tanks</u>		
21	Underground Storage Tanks	See Listing in Subsection 3.7.1
22	Aboveground Storage Tanks	See Listing in Subsection 3.7.2



Table 3-1

**List of Areas Requiring Environmental Evaluation  
(continued)**

AREE Number	Description	Building Number(s)/ Location
<u>Sanitary Landfills and Former Incinerators</u>		
23	Former Sanitary Landfill (East)	NW of Bldg. 304
24	Former Sanitary Landfill (West)	West of Bldgs. 800-809
25	Former Incinerators	
	- Incinerator at Hospital	Bldg. 300
	- Sanitary Waste Incinerator	Bldg. 518
<u>Medical Facilities</u>		
26	Hospital and Clinics	
	- Occupational Health Clinic	Bldg. 1
	- Hawley Army Hospital	Bldg. 300
	- Dental Clinic	Bldg. 300
	- Veterinary Clinic	Bldg. 805
<u>Burn Pit Areas</u>		
27	Fire Training Areas	
	- Fire Training Pit	Adjacent to Bldg. 810
	- Former Fire Training Areas	North of Bldg. 518, East of the West Landfill
<u>Spill Areas and Other Releases</u>		
28	Spill Areas	
	- PCB Spill Areas	See Subsection 3.11
	- Other Spills	See Subsection 3.11
<u>Ammunition Storage</u>		
29	Ammunition Storage Areas	Bldgs. 519, 520, 521, and 522
<u>Coal Storage</u>		
30	Former Coal Storage Yard	NE of Bldg. 2
<u>Facility-wide AREEs</u>		
31	Asbestos	Base-wide
32	Pesticide Usage	Base-wide



**Table 3-1**

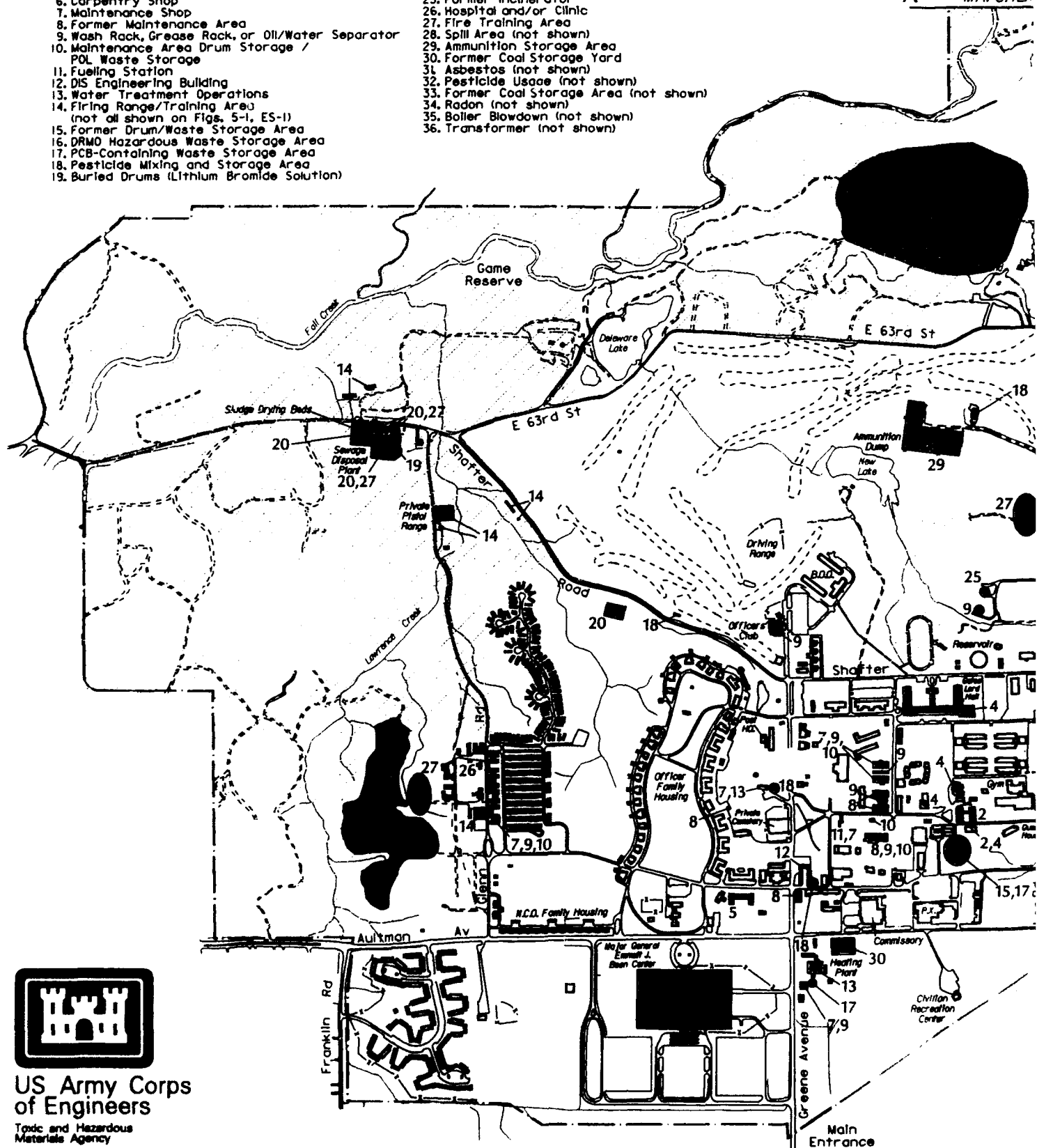
**List of Areas Requiring Environmental Evaluation  
(continued)**

AREE Number	Description	Building Number(s)/ Location
<u>Facility-wide AREEs (con't)</u>		
33	Former Coal Storage Areas	Base-wide
34	Radon	Base-wide
35	Boiler Blowdown	Base-wide
36	Transformers	Base-wide

1. DPCA Field Printing Shop
2. TAO Devices Shop
3. Graphics Shop
4. Photographic Processing Area
5. Weapons Cleaning Area
6. Carpentry Shop
7. Maintenance Shop
8. Former Maintenance Area
9. Wash Rack, Grease Rack, or Oil/Water Separator
10. Maintenance Area Drum Storage / POL Waste Storage
11. Fueling Station
12. DIS Engineering Building
13. Water Treatment Operations
14. Firing Range/Training Area (not all shown on Figs. 5-1, ES-1)
15. Former Drum/Waste Storage Area
16. DRMO Hazardous Waste Storage Area
17. PCB-Containing Waste Storage Area
18. Pesticide Mixing and Storage Area
19. Buried Drums (Lithium Bromide Solution)

20. Former Sewage Treatment Plant (not all shown)
21. Underground Storage Tank (not shown)
22. Aboveground Storage Tank (not shown)
23. Former Sanitary Landfill (East)
24. Former Sanitary Landfill (West)
25. Former Incinerator
26. Hospital and/or Clinic
27. Fire Training Area
28. Spill Area (not shown)
29. Ammunition Storage Area
30. Former Coal Storage Yard
31. Asbestos (not shown)
32. Pesticide Usage (not shown)
33. Former Coal Storage Area (not shown)
34. Radon (not shown)
35. Boiler Blowdown (not shown)
36. Transformer (not shown)

A MATCHLINE



**US Army Corps  
of Engineers**

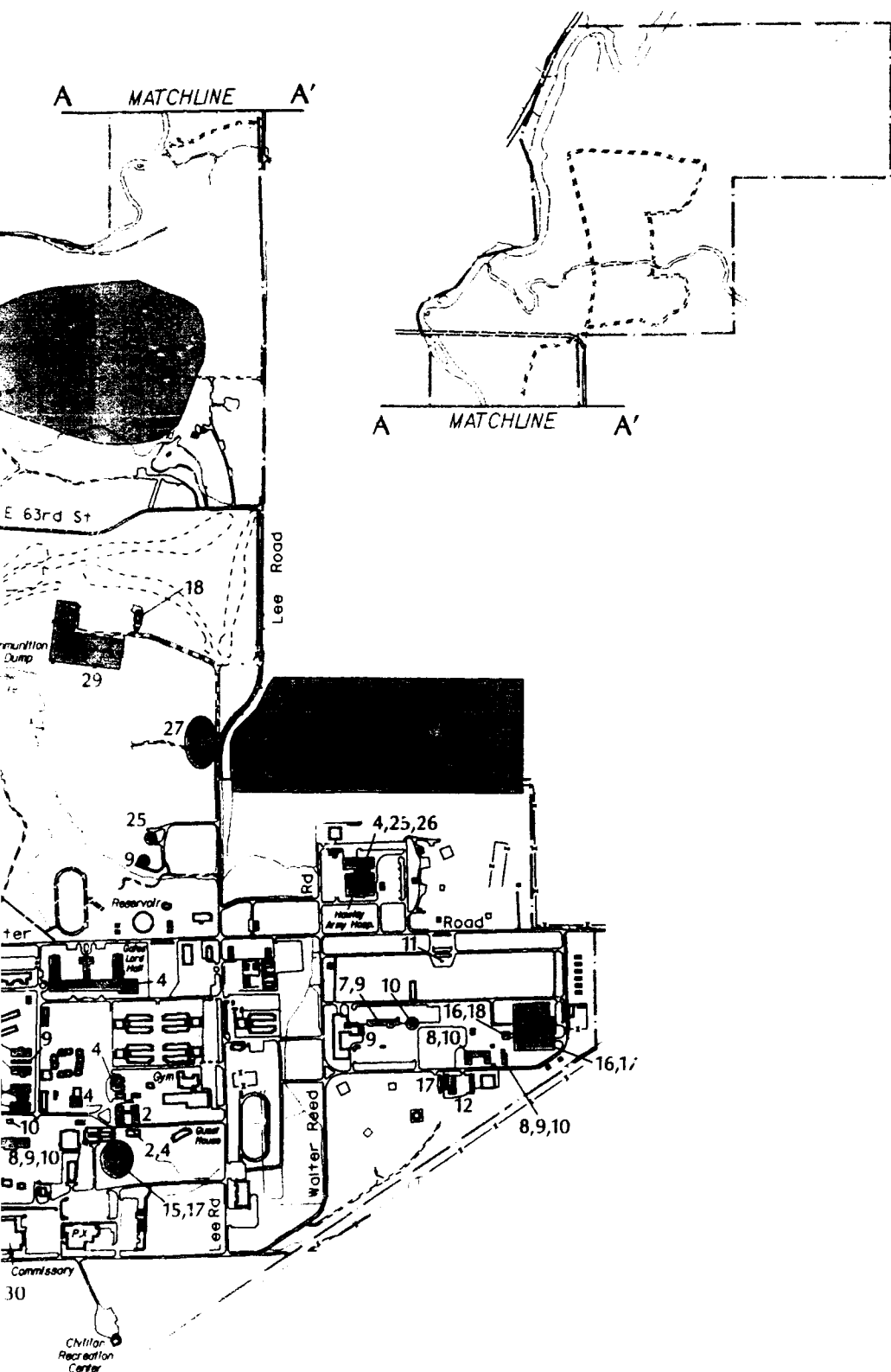
Toxic and Hazardous  
Materials Agency

Figure 3-1  
Areas Requiring  
Environmental Evaluation

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



0 meters 300  
0 feet 1200





(USAFAC), Building 1. This print shop is a large-scale operation that produces prints, photographic copy, and graphics for clients at USAFAC and other areas of FBH. Photographic processes associated with the Field Printing Shop are discussed in Subsection 3.1.4.

Flammable materials used at the shop are stored in labeled metal cabinets, as shown in Photograph 1. Wastes from printing and graphic operations include ferric cyanide, petroleum distillates, and waste solvents (Print Shop Manager, 1991). Wastes are stored in 9- and 15-gallon, plastic-lined containers on wood pallets at a loading dock adjacent to the shop outside of Building 1. The wastes are transported to DRMO when containers are full, or prior to 90 days of storage, for handling and disposal (Print Shop Manager, 1991). All print shop activities are contained inside of the building, and no migration path exists for the printing and graphics wastes. A potential exposure route is wastes or chemicals left exposed on the shop floor (USAEHA, 1987).

#### **3.1.1.2 Known and Suspected Releases**

No evidence was found of known or suspected major releases or spills of hazardous waste associated with the Field Printing Shop (USAEHA, 1987). The possibility exists, however, that small isolated releases of spent or raw materials could have occurred in the past. At the time of the site visit, the storage area at the loading dock was noted to be free of staining or other evidence of spills. Some staining was evident on the flammable material storage cabinet and the floor adjacent to the cabinet.

### **3.1.2 TASC DEVICES SHOP – BUILDINGS 479 AND 481 (AREE 2)**

#### **3.1.2.1 Description**

The Training Aids Service Office (TASO) Devices Shop (AREE 2) is located in Buildings 479 and 481. Activities associated with Building 479 include graphic services, photographic processing and copying, and video services. Building 481 is currently used for materials storage and formerly housed a wood shop. Photographic processing and associated wastestreams are discussed further in Subsection 3.1.4. The graphics process utilizes an ammonia solution; however, the ammonia is consumed in the process, and there is no waste material (TASO Devices Shop Manager, 1991). Wastes generated at the former wood shop, which was discontinued in 1990, consisted of waste mixed paints, thinner, and solvents/cleaning agents that were stored in drums at the shop and transferred to DRMO for handling and disposal (TASO Devices Shop Manager, 1991). Materials stored in Building 481 include paints and thinners that are stored in metal cabinets, as shown in Photograph 2.

All activities associated with the Devices Shop are contained inside the two buildings (which are connected by an enclosed walkway), and no migration path exists for wastes and materials, with the exception of drains to the sanitary sewer associated with the photographic process. A potential exposure pathway is wastes left exposed on the tile and concrete floors.



### **3.1.2.2 Known and Suspected Releases**

There was no evidence found of known or suspected major releases or spills of hazardous waste associated with the TASO Devices Shop. The possibility exists, however, that small isolated releases of spent or raw materials could have occurred in the past. At the time of the site visit, some staining was noted on some floor areas in both buildings.

### **3.1.3 GRAPHICS SHOP - BUILDING 1 (AREE 3)**

#### **3.1.3.1 Description**

The USAFAC Graphics Shop (AREE 3), located on the second floor of Building 1, performs various graphics services including blueprinting, sign printing, silk screening, and a minor amount of photographic processing. Wastes generated at the shop include waste xylol and acetone from screen printing (ESE, 1984) and ammonia-containing blueprint solution, both of which are poured down a sink that drains to the sanitary sewer (Graphics Shop Manager, 1991). Photographic processing and wastes are discussed in Subsection 3.1.4. All operations at the Graphics Shop are housed within known areas inside Building 1, and no migration path exists for wastes. No floor drains were evident. The potential exists for carbon dust from printing operations to be present.

#### **3.1.3.2 Known and Suspected Releases**

No records were found concerning major spills of chemicals or wastes at the USAFAC Graphics Shop. However, past and current operations allow for waste disposal to the sanitary sewer, which in the past discharged to the on-site sewage disposal plant (ESE, 1984). The sanitary sewer currently discharges to a POTW, which accepts and has knowledge of the contents of the wastestreams. At the time of the site visit, operations within the shop area appeared to be otherwise well maintained, with no noted evidence of major spills or staining on shop floors. No evidence of carbon dust was noted; however, the potential exists for its presence on surfaces and in the air during printing operations.

### **3.1.4 PHOTOGRAPHIC PROCESSING AREAS (AREE 4)**

#### **3.1.4.1 Description**

There are currently five facilities at FBH that perform photographic processing services (AREE 4). These facilities are located in the buildings listed below:

- Field Printing Shop, Building 1
- TASO Devices Shop, Building 479
- Graphics Shop, Building 1
- Photojournalism School, Building 470
- Dental X-Ray, Building 300



Black-and-white processing is performed at Buildings 1, 479, and 470; x-ray processing is performed at Building 300; and color processing is performed at Building 470. Wastes from black-and-white and x-ray processing include Dektol paper developer, fixative solution, rinse water, and stop bath. The fixative solution waste from the black-and-white processing work contains silver and is filtered for silver removal and then allowed to drain to the sanitary sewer. This filtering for silver recovery is performed on the wastestreams at the Field Printing Shop (see Photograph 3), the TASO Devices Shop, the Photojournalism School, and the Medical and Dental X-ray areas. Treated wastestreams at these locations are sampled periodically to ensure that the silver recovery unit is operating effectively (Bieber, 1991; Wilson, 1991). Wastes from the process at the Building 1 Graphics Shop are poured down a sink that drains to the sanitary sewer (Graphics Shop Manager, 1991), which formerly flowed to the FBH STP.

Wastes from color processing at the Photojournalism School include developer, bleach, and stabilizer. These wastes are discharged to the sanitary sewer via sink drains (Bieber, 1991), which formerly flowed to the FBH STP. Former photographic processing areas (black-and-white) at FBH include the DPCA Photography/Arts and Crafts Shop (Building 434), USAFAC Data Processing and Public Affairs (Building 1), DIO/TASO Photography Shop (Building 1), and Building 400 (ESE, 1984).

#### **3.1.4.2 Known and Suspected Releases**

No records were found concerning major spills of chemical or wastes at the photographic developing facilities; however, the potential exists that small isolated spills have occurred in the past. According to a site report (ESE, 1984), fixative solution wastes were discharged in the past directly to the sanitary sewer from the USAFAC Graphic Arts, Public Affairs, and Data Processing in Building 1 and the DPCA Photography/Arts and Crafts Shop in Building 434. In the past, the sanitary sewer discharged to the FBH STP. The wastes continue to be discharged to the sanitary sewer via a sink at the USAFAC Graphic Arts Shop in Building 1. In 1981, samples of photographic wastes from FBH operations were analyzed by extraction procedure (EP) toxicity testing by USAEHA, and results showed levels exceeding EP toxicity parameters for cadmium, chromium, and mercury in some samples (ESE, 1984). Results are summarized in Table 3-2. At the time of the site visit, wastes continued to be discharged to the sanitary sewer via a sink at the USAFAC Graphic Arts shop in Building 1. Other photographic operations had silver recovery units on location. The units appeared to be in good operating order at the time of the site visit; however, some units had staining on the adjacent concrete and tile floors, as shown in the photographs.

### **3.1.5 WEAPONS CLEANING AREA — BUILDING 613 (AREE 5)**

#### **3.1.5.1 Description**

A weapons cleaning area (AREE 5) is located in the basement of Building 613. Cleaning of small arms, such as rifles and handguns, is performed in this building. The



**Table 3-2**

**Photoprocessing Wastes Exceeding EP Toxicity Criteria**

Location	EP Toxicity Parameters Exceeded* (mg/L)	Date Reported
DIO/TASO Photography Shop (Bldg. 1)	Cd (64) Cr (7.8), Cd (2.02)	May 1981 Oct. 1981
DINFOS Photojournalism (Bldg. 470)	Hg (8.8) Cr (22.7)	May 1981 Oct. 1981
USAFAC Data Processing (Bldg. 1)	Cr (2,930)	Oct. 1981

\*Cd = cadmium.

Cr = chromium.

Hg = mercury.

Source: (ESE, 1984)



majority of the cleaning involves small amounts of cleaning compound (solvent and detergent) on swabs, which volatilizes, leaving no waste solvents. In addition, solvent baths are used that contain alkaline butyl cleaner. According to area personnel (Newton, 1991), no waste solvents are disposed of; used solvent volatilizes and the cleaner is added to the bath tanks as needed.

### **3.1.5.2 Known and Suspected Releases**

No records were found concerning major spills or releases of chemicals or wastes at the weapons cleaning area. The potential exists, however, that small isolated releases of spent or raw materials have occurred during past operations. Odors noted during the site visit indicated minor releases of solvent to the air.

## **3.1.6 CARPENTRY SHOP -- BUILDING 1 (AREE 6)**

### **3.1.6.1 Description**

The Carpentry Shop (AREE 6) is located in the basement of Building 1. Activities associated with carpentry, such as woodworking, wood/furniture repair, and small amounts of painting and paint stripping, are conducted at the shop (Carpentry Shop Employee, 1991). Wastes such as paints, paint thinners, and paint remover are stored inside the shop in a small drum on a wooden pallet and are sent to DRMO for handling and disposal (see Photograph 4). Sawdust is placed in a dumpster, which was formerly taken to the on-site sanitary landfill for disposal. Carpentry shop activities are contained inside of Building 1, and no migration path is apparent for associated wastes, with the exception of the shop concrete floor.

### **3.1.6.2 Known and Suspected Releases**

There was no evidence found of known or suspected major releases or spills of hazardous waste associated with the carpentry shop in Building 1. The possibility exists, however, that small isolated releases of spent or raw materials could have occurred in the past. At the time of the site visit, some staining was evident on the shop floor in the vicinity of the painting and hazardous waste storage area.

## **3.2 MAINTENANCE AND FUELING OPERATIONS**

There are a number of maintenance and fueling operations conducted at FBH that support the overall activities at the facility. The maintenance operations at FBH include: maintenance shops where vehicles, office equipment, and other equipment are stored and/or serviced; former maintenance shops; wash racks, grease racks, and associated oil/water separators, where vehicles and other equipment are washed; drum storage areas, where hazardous materials and waste oils are temporarily stored prior to off-site disposal; fueling stations for government-owned and privately owned vehicles; and the Department of Installation Services (DIS) building where the DIS operated a carpentry shop, paint shop, electrical shop, preventive maintenance shop, and heating and air conditioning shop.



### **3.2.1 MAINTENANCE SHOPS (AREE 7)**

#### **3.2.1.1 Description**

There are seven maintenance shops (AREE 7) located throughout FBH where maintenance operations such as routine vehicle service, office equipment maintenance, and general road, building, and ground maintenance operations are conducted or centered. The descriptions and discussions of each of these maintenance shops presented below are based on site visits of each facility as well as a review of several site documents (ESE, 1984; USAEHA, 1981b; 1988; USATHAMA, 1990).

- Electrical Shop (Building 4) Maintenance operations associated with the electrical shop are generally conducted at a job site; however, some repair work is performed in the shop. In the past, transformers with lubricants containing polychlorinated biphenyls (PCBs) were repaired at the electrical shop. In addition, there were several diesel generators located outside of the shop along with diesel storage tanks. The concrete foundations for the diesel generators are still intact. There was an oil/water separator that accepted runoff from the diesel generator and diesel storage tank areas at Building 4 and discharged to the storm sewer. The current existence of this oil/water separator was not confirmed.
- Army and Air Force Exchange Gas Station (AAFES) (Building 33) The AAFES gas station sells gasoline to civilians and performs routine maintenance on privately owned vehicles. Vehicle maintenance operations include: oil changing, tire and battery storage/replacement/service, brake repair, electrical systems repair, parts cleaning/degreasing, and engine tuneups. The AAFES gas station has a parts degreasing unit located in the vehicle maintenance area. Safety-Kleen is under contract to periodically remove and replace the mineral spirits from the degreasing unit, which consists of a sink attached to a drum. The concrete floor of the vehicle maintenance area is stained with oil and grease. Gasoline and waste oil are stored in underground storage tanks (see Subsection 3.7.1). Some staining was apparent on the concrete at the opening of the waste oil storage tank (see Photograph 5).
- U.S. Army Reserve Center (Building 127) The U.S. Army Reserve Center conducts routine vehicle maintenance on government-owned vehicles. Vehicle maintenance operations are similar to those conducted at the AAFES gas station. Degreasing operations are also conducted at the U.S. Army Reserve Center, and Safety-Kleen is under contract to periodically remove and replace the mineral spirits in the degreasing unit. The U.S. Army Reserve Center has a waste POL drum storage area outside the building (see Subsection 3.2.4) (USAEHA, 1988; Duch, 1991).
- Roads and Grounds Department (Building 422) The Roads and Grounds Department performs routine maintenance and storage of landscaping and



roadwork equipment. This maintenance includes parts degreasing, for which there are two degreasing tanks; Safety-Kleen is under contract to periodically remove and replace the mineral spirits in them. There is some staining on the concrete floor in the vicinity of one of the degreasing tanks. Maintenance operations in Building 422 also currently include storage of batteries for landscaping and roadwork equipment and fork-lifts (Richardson, 1991). Past operations included servicing of batteries, i.e., changing of electrolyte fluids. Currently there is a drum accumulation area inside the building that is used to accumulate hazardous substances and wastes and POL wastes, which previously were accumulated at an outdoor drum area (see Subsection 3.2.4). Building 422 has concrete floors with two floor drains that discharge to the sanitary sewer (see Photograph 6). The Roads and Grounds Department also has an outdoor vehicle wash rack for equipment washing (see Subsection 3.2.3).

- Office Equipment Maintenance (Building 424) The Office Equipment Maintenance shop, located in Building 424, is equipped to perform office equipment repairs and minor office furniture repairs. Due to a lack of personnel, however, no office furniture is currently repaired. In the past, paint and furniture stripping operations were conducted in the building (Choate, 1991). Maintenance operations consist mainly of typewriter repair. This includes parts degreasing; Safety-Kleen is under contract to periodically remove and replace the mineral spirits in the degreasing unit. There was staining evident on the floor in the vicinity of the degreasing tank. Solvents and waste oil are stored in the drum storage area located in the typewriter repair room and the waste oil drum storage area located in the northwest corner of the building (see Subsection 3.2.4).
- Plumbing Shop (Building 604) Maintenance operations conducted by the plumbing shop are generally conducted at the job site; however, some maintenance operations are conducted at the shop located in Building 604. Small amounts of the chemicals, including acids, bases, phosphates, etc., that are used for water treatment testing are stored at the plumbing shop (USAEHA, 1981b).
- Auto Craft Shop (Building 705) The Directorate of Personnel and Community Activities (DPCA) manages a self-help auto craft shop in Building 705. Army personnel and their dependents can use the shop to work on their personal vehicles. Vehicle maintenance operations conducted at the auto craft shop are similar to the activities conducted at the AAFES gas station and the Army Reserve Center. The building has a concrete floor with floor drains (wash rack) that drain to an oil/water separator (see Subsection 3.2.3). Waste oil is currently stored in an underground storage tank located outside of Building 705 (see Subsection 3.7.1) and was previously stored at an indoor drum accumulation area (see Subsection 3.2.4). The ground surface at the base



of the fill pipe to the underground waste oil tank is stained (see Photograph 7).

### **3.2.1.2 Known and Suspected Releases**

Records found on documented spills at or associated with maintenance operations are presented below:

- On 10 April 1979, a suspected oil spill was investigated at the PX gas station, Building 33 (now the AAFES gas station). An accumulation of oil was noticed on the dumpster at the station and the ground around the dumpster. The investigation revealed that spent oil containers and used oil filters were being thrown into the dumpster, and the accumulation of oil was the result of a buildup over a long period of time. It was determined that no bulk oil was thrown into the dumpster. The primary recommendations were to clean up the existing spillage and institute better housecleaning practices.
- On 13 March 1988, a 20 to 30 gallon diesel fuel spill occurred at the Army Reserve Center (Building 127) in the northeast parking lot. This was the result of faulty valves. The spill was limited to the pavement and was cleaned up with the use of eight bags of oil-dry. The contaminated material was shoveled into plastic-lined trash containers with the intent of transferring it to open-top 55-gallon drums for proper disposal.
- On 7 June 1989, a leak was detected in the supply line to the diesel-fueled electric generators located at the Engineering and Equipment Compound (Building 4). An estimated 178 gallons of diesel fuel was reported to have leaked into the soil adjacent to the break. Approximately 20 cubic yards was excavated and stockpiled for eventual disposal in an approved landfill. No further information was available on this incident.

Known spills and releases at maintenance shops associated with the wash racks, grease racks, and oil/water separators; drum storage areas; fueling operations; and storage tanks are discussed in following subsections. In addition, the potential exists for other minor spills and releases at these maintenance shops that have not been reported. For example, during the site visit, staining was noticed at the opening of the underground waste oil tanks at the AAFES gas station (Building 33) and the Auto Craft Shop (Building 705).

## **3.2.2 FORMER MAINTENANCE SHOPS (AREE 8)**

### **3.2.2.1 Description**

Based on a review of past reports and discussions with FBH personnel during the site visit, there are several areas and buildings at FBH where maintenance operations were conducted in the past. Former maintenance operations (AREE 8) include vehicle



maintenance shops and a paint shop. Detailed descriptions and discussions of each of these former maintenance shops are presented below.

- Former Vehicle Maintenance Shops

- DIS Transportation Motor Pool (Building 36) The DIS formerly operated a transportation vehicle maintenance shop in Building 36. Maintenance operations conducted at Building 36 are similar to those described above for the AAFES gas station. There was a drum storage area located inside Building 36 that was used for maintenance operations (see Subsection 3.2.4). Currently, the building is used for vehicle storage only. According to DIS personnel, maintenance operations in Building 36 were discontinued approximately three years ago (in 1988). There is currently a wash rack for mops and other cleaning equipment located outside of Building 36 (see Subsection 3.2.3).

- Former 36th Engineers Maintenance Shop (Buildings 109 and 116) The 36th Engineers formerly operated an organizational-level vehicle and equipment maintenance shop in Building 109. Vehicle and equipment maintenance operations performed were similar to those discussed above for the AAFES gas station (ESE, 1984). According to FBH personnel, there was a drum storage area located inside Building 109 (see Subsection 3.2.4). Building 109 has since been demolished; however, the concrete foundation still remains.

Building 116 is currently the post firehouse. Past operations conducted at Building 116 included vehicle maintenance by the 36th Engineers. Maintenance operations conducted at this building are similar to those described above. Presently located northwest of Building 116 there appears to be a former grease rack (see Subsection 3.2.3). Also, there is a storm sewer drain located in front of the middle bay at the firehouse (Building 116) that may at one time have been used as a wash rack (see Subsection 3.2.3).

- Former Vehicle Maintenance Shop (Building 424) Office equipment maintenance operations are currently conducted in Building 424. Past operations in this building included a vehicle maintenance shop operated under the Directorate of Industrial Operations (DIO). Vehicle maintenance operations conducted in this building were similar to those discussed above for the AAFES gas station (ESE, 1984). Hazardous wastes stored at Building 424 as part of the maintenance operations included paint stripper, used oil, used battery electrolyte, used petroleum naphtha, used solvents, and paint sludge (USAEHA, 1981b).



- Former Vehicle Maintenance Shop (Building 425) Army issue materials (clothing, mattresses, bedding supplies, etc.) are sorted and distributed at the Central Issue Facility (CIF), currently located in Building 425. According to CIF personnel, Building 425 was previously used as a vehicle maintenance shop. Operations that were typically performed in vehicle maintenance shops are discussed above for the AAFES gas station. The concrete floor in Building 425 has several floor drains that discharged to the sanitary sewer.
- Former Vehicle Maintenance Shop (Building 426) Building 426 is currently a self-help facility that stores office supplies for FBH employees. According to FBH personnel, there was a vehicle maintenance shop located in Building 426. Maintenance operations are assumed to include those conducted in other vehicle maintenance shops at FBH.
- Former Gas Station/Oil House (Demolished) In 1919, an oil house was located in the vicinity of Building 13. Past operations are assumed to consist mainly of dispensing heating oil. In 1937, the building was converted to a gasoline dispensing station. It is possible that vehicle maintenance similar to that described for the AAFES gas station was performed at this time. This building has since been demolished, and the location where this building stood is currently a parking lot for Building 13.
- Former PX Gas Station (Building 619) According to the post's historical records, Building 619 was at one time the Post Exchange (PX) gas station. Past maintenance operations could have included vehicle maintenance similar to that described for the AAFES gas station. Currently, Building 619 is used for administrative purposes.
- Former Paint Shop (Building 38) A review of historical files indicated that Building 38 was constructed in 1938 for use as a Paint Shop. Currently, this building is used as a community center.

### **3.2.2.2 Known and Suspected Releases**

There are no records of reported major spills or releases associated with these former maintenance shops. The potential exists, however, that solvents, waste oils, and other petroleum products may have been released during these operations. Releases and spills could have contaminated the soil in the vicinity of the maintenance shops, and the runoff from these areas may have affected the ditches, streams, and other surface water bodies at the post. It is unlikely that groundwater has been affected by the maintenance operations at these shops.



### **3.2.3 WASH RACKS, GREASE RACKS, AND OIL/WATER SEPARATORS (AREE 9)**

#### **3.2.3.1 Description**

Wash racks, grease racks, and oil/water separators (AREE 9) are located throughout FBH, as shown in Table 3-3. Discussions and descriptions herein are based on site visits of the wash racks, grease racks, and oil/water separators; on interviews with FBH personnel; and on site documents (USAEHA, 1981b). Wash racks are used to clean vehicles, including the engines, on a regular basis and are mainly associated with the vehicle maintenance areas (see Photographs 8 and 9). Grease racks are used to lubricate mechanical parts and/or change oil in vehicles and are also associated mainly with the vehicle maintenance areas. The potential exists that solvents were used in the past at wash racks and grease racks. In general, the wash racks and grease racks are equipped with oil/water separators that discharge to the sanitary sewer. Exceptions to this are noted in Table 3-3.

Oil/water separators are used to separate any floating product from effluent water from wash racks, grease racks, and other operations prior to being discharged (see Photograph 10). Oil/water separators, if not used properly, can overflow and cause releases of hazardous substances to the sanitary sewer, storm sewer, or the areas adjacent to the oil/water separator. The oil/water separators associated with several former wash racks reportedly discharged directly to the storm sewer.

#### **3.2.3.2 Known and Suspected Releases**

Records found on documented spills at or associated with wash racks, grease racks, and oil/water separators are presented below:

- On 23 February 1978, the oil/water separator located north of and adjacent to Building 4 overflowed to the storm sewers, discharging approximately 150 gallons of diesel fuel to Lawrence Ditch and eventually to Fall Creek. Oil odor and taste were detected in the public water supply effluent from the Fall Creek Plant of the Indianapolis Water Company. A charcoal filtration program was implemented, and stream uptake from Fall Creek was reduced. Booms were used on Fall Creek to remove the visible oil from the stream.

In addition to the above mentioned spill, the potential exists that unreported amounts of oil, grease, other engine fluids, and solvents could have contaminated the soil around or near the wash racks, grease racks, and oil/water separators. Also, the potential exists that runoff from the wash racks, grease racks, and oil/water separators could have contaminated drainage areas, including drainage ditches and streams.

**Table 3-3**  
**Wash Racks, Grease Racks, and Oil/Water Separators at FBH**

Building	Name	Status	Description	Location	Treatment Measures	Discharge
36	Directorate of Industrial Operations	Former (Unofficial)	Wash Rack	Outdoor	None	Storm Sewer
109/117	36th Engineer	Former	Grease Rack	Outdoor	None - Oct 1982 O/W & GC expected '84	
127	US Army Reserve Center	In use	Wash Rack	Indoor	O/W Sep	Sanitary Sewer
127	US Army Reserve Center	In use	Wash Rack	Outdoor	O/W Sep	?
127	US Army Reserve Center	In use	Wash Rack	Outdoor	O/W Sep	?
127	US Army Reserve Center	In use	Wash Rack	Outdoor	O/W Sep	?
422	Roads and Grounds	In use	Wash Rack	Outdoor	O/W Sep	Sanitary Sewer
423	Car Wash	In use	Wash Rack	Indoor	O/W Sep & GC	Sanitary Sewer
424	Typewriter Repair	Former	Wash Rack	Indoor	O/W Sep & GC	Storm Sewer < 1983 San. Sewer > 1983
425/426	Brick lined outdoor wash rack	Former - now blocked	Wash Rack	Outdoor		Storm Sewer
500	Officer's Club	In Use	Wash Rack	Outdoor	No evidence of O/W	?
515		Former ?	Wash Rack	Outdoor	O/W Sep	Storm Sewer or drainage ditch ?
705	Auto Craft Shop	In Use	Wash Rack/ Four Drains	Indoor	O/W Sep	?
128	123rd USAIR Detachment	Former ?	Wash Rack	Indoor	O/W Sep & GC	Sanitary Sewer
536	DEH Waterworks & Refuse	Former ?	Wash Rack	Outdoor	O/W Sep & GC	Sanitary Sewer



### **3.2.4 POL DRUM ACCUMULATION/WASTE STAGING AREAS (AREE 10)**

#### **3.2.4.1 Description**

Several of the maintenance operations discussed above have drum accumulation areas for POL wastes and hazardous materials and wastes. Materials stored in these areas include oil, gasoline, and other petroleum products, hydraulic fluids, transmission fluids, brake fluids, antifreeze, and solvents. Wastes generated during maintenance operations include waste oils and greases, other spent engine fluids, spent solvents, brake shoes and linings (containing asbestos), and lead and acids from batteries. The following descriptions and discussions of each of the drum accumulation areas associated with maintenance operations are based on site visits of each area as well as a review of several site documents (USAEHA, 1981b; 1988).

- Former DIS Transportation Motor Pool (Buildings 34 and 36) Used oil, solvents, and contaminated gasoline were previously stored in 55-gallon drums inside Building 36 as part of the maintenance operations at the former DIS Transportation Motor Pool. Currently these operations have been discontinued. Past reports have noted evidence of spills at the indoor drum accumulation area (USAEHA, 1988).
- Former 36th Engineers Maintenance Shop (Building 109 and 116) According to FBH personnel, waste oil and lubricants were stored in 55-gallon drums in Building 109 as part of the vehicle maintenance operations conducted by the 36th Engineers maintenance shop. Building 109 has since been demolished; however, the concrete foundation still remains. WESTON found no reports of POL or hazardous waste storage in Building 116, although the potential exists.
- U.S. Army Reserve Center (Building 127) Currently, the Army Reserve Center stores accumulated waste oil, waste antifreeze, and some solvents in 55-gallon drums outside of Building 127 on a gravel pad (see Photograph 11). Past reports have noted evidence of spills at the outdoor drum storage area (USAEHA, 1988).
- Roads and Grounds (Building 422) Currently, the Roads and Grounds department has several 55-gallon drums inside Building 422 that are used to store liquids such as antifreeze, waste oil, degreasing agents, etc. There is no secondary containment at the drum accumulation area, and the concrete floor in the vicinity of the drums is stained. Floor drains in Building 422, one of them located in the vicinity of the drum storage area, drain to the sanitary sewer. Previously, waste oil, solvents, antifreeze, and waste gasoline were stored outside Building 422 on a gravel pad. Past reports have noted evidence of minor spills at the outdoor drum accumulation area (USAEHA, 1988).



- Office Equipment Maintenance (Building 424) Solvents and waste oil are stored in a drum accumulation area located in the typewriter repair room of Building 424. The room has a concrete floor with floor drains that drain to the storm sewer. There was staining evident on the floor in the vicinity of the accumulation area (see Photograph 12)). There is also a waste oil drum accumulation area located in the northwest corner of the building. There is some staining on the concrete floor in the vicinity of this waste oil drum storage area.
- Auto Craft Shop (Building 705) Waste oil is currently accumulated in an underground storage tank located outside of Building 705 (see Subsection 3.7). Waste oil was previously stored in 55-gallon drums located in Building 705 (USAEHA, 1981b).

### **3.2.4.2 Known and Suspected Releases**

No records of reported major spills or releases from drum accumulation areas at maintenance operations have been found. During the site visit, it was apparent that the concrete floors at several drum storage areas were stained, indicating minor spills and leaks. Past reports have noted evidence of minor spills at several of the outdoor drum storage areas. Any releases or spills at the drum accumulation areas, especially the outdoor areas, may have contaminated soils, and the runoff from these areas may have affected the ditches, streams, and other surface water bodies at the post. Based on the volume of materials stored in these areas, it is unlikely that the groundwater has been affected by these operations.

### **3.2.5 FUELING STATIONS (AREE 11)**

#### **3.2.5.1 Description**

There are two fueling stations (AREE 11) located at FBH. The AAFES gas station (Building 33) sells gasoline to private vehicle owners. Gasoline is stored at the AAFES gas stations in four underground storage tanks. The POL service station (Building 239) distributes leaded and unleaded gasoline and diesel fuel to government-owned vehicles (see Photograph 13). Gasoline and diesel fuel are stored at the POL service station in three underground storage tanks (see Subsection 3.7.1 for a discussion and description of the underground storage tanks at the AAFES gas station and the POL service station).

#### **3.2.5.2 Known and Suspected Releases**

Records found on documented spills at or associated with the fueling operations are presented below:

- Two gasoline spills, one of 15 gallons on 5 August 1979 and one of 10 gallons on 25 October 1979, occurred at the PX gas station (Building 33) due to a failure of the float vent valve on the vapor recovery system.



Drypac adsorbent booms had normally been used to contain spills in the past, but none were available for use during these incidents. Instead, at the direction of the Post Fire Department, the areas of the spills were flushed. Repairs of the vapor recovery system were authorized, and additional administrative controls were instituted to prevent future spills.

- On 5 November 1988, a gasoline spill was reported at the AAFES gas station (Building 33) at Hawkins and Birtz Roads. The area was secured from pedestrian and vehicular traffic. Foam was applied to the spill, and runoff from the road was diked with sand. Spill Recovery of Indiana conducted the cleanup. Neither the cause nor the volume of the fuel released/recovered is known.
- On 6 December 1988, 30 gallons of unleaded gasoline was spilled at the AAFES gas station (Building 33) during a tank removal. An employee of Valley Oil was cutting cement to expose the piping when he severed an active line. The report indicates that all materials were contained and recovered. No summary of the cleanup was available.

In addition, any spills or releases from the underground storage tanks at the fueling stations are discussed in Subsection 3.7.1. Routine fueling operations have the potential for minor spills of gasoline and diesel fuel; however, the fueling operations are conducted on concrete surfaces, and there is little potential for contamination of soil, surface water, or groundwater from these minor spills.

### **3.2.6 DIS ENGINEERING/MAINTENANCE BUILDING (AREE 12)**

#### **3.2.6.1 Description**

The Directorate of Installation Support (DIS) Engineering/Maintenance Building (AREE 12) is located at the intersection of Greene and Otis Avenues (Building 26). Maintenance facilities include a carpentry shop, an electrical shop, a preventive maintenance shop, and a heating and air conditioning shop. Activities associated with the carpentry shop are conducted mainly at the job site; however, some painting, sawing, sanding, and varnishing are conducted at the shop in Building 26. Used paint thinner and asbestos and asphalt coating have been stored at the carpentry shop in the past (USAEHA, 1981b). Activities associated with the electrical shop are also conducted mainly at the job site. Past activities conducted by the electrical shop included removal of PCB-containing equipment to secure storage (ESE, 1984). According to DIS personnel, electrical transformers were previously stored at the electrical shop in the northwest corner of Building 26. Work performed by the preventive maintenance shop includes painting and minor repairs to plumbing fixtures and is mainly conducted at the job site. Work performed by the heating and air conditioning shop is conducted primarily at the job site (Fitzwater, 1991). Past activities included the removal of asbestos-containing insulation (ESE, 1984). In the past, the heating and air conditioning shop stored acids, bases, used petroleum naphtha, phosphates, biocides in solution, and other chemicals for use in maintenance operations (USAEHA, 1981b). In



addition to the operations mentioned above, DIS also operated a metal and paint shop in Building 26 in the past. Small amounts of hazardous wastes, including acids, bases, paint strippers and thinners, alcohols, etc. were stored in Building 26 as part of the metal and paint shop operations (USAEHA, 1981b).

In the past, Building 108 was used as the DIS Engineering Yard. Activities included storage of salt across from the building (currently in use) and storage of blowdown/ash bag contents. In addition, activities similar to those associated with Building 26 could potentially have occurred at Building 108 when it was used as the Engineering Yard.

### **3.2.6.2 Known and Suspected Releases**

A review of spill reports contained in the FBH and IDEM files did not show any reported major spills or releases associated with the activities at either DIS Engineering/Maintenance building. The potential exists, however, that minor spills and releases typically associated with maintenance operations could occur at Building 26 or could have occurred at Building 108. These spills and releases could include but are not limited to oils, fuels, paints, acids, bases, and/or solvents. In addition, the DIS has outdoor storage for all vehicles associated with their maintenance operations. Releases of oils, fuels, greases, and other engine fluids from these vehicles are possible. The potential exists for releases of metals from ash storage at Building 108.

## **3.3 WATER TREATMENT OPERATIONS (AREE 13)**

### **3.3.1 DESCRIPTION**

A water test laboratory for the water treatment plant (WTP) is located in Building 604. The WTP laboratory performs routine analyses on both potable water and wastewater. Small quantities of fluoride reagent, standards, and hydrochloric acid are used for the analyses. Generated waste is discharged to the sanitary sewer via building drains.

The heating plant at Building 2 performs water treatment activities for which water treatment chemicals are stored inside of the building. In addition, drums of waste petroleum products and oils are stored adjacent to the building in an asphalt covered area.

### **3.3.2 KNOWN AND SUSPECTED RELEASES**

No records were found that indicate that spills or other releases have occurred due to laboratory operations at the WTP or water treatment operations. Currently, all drains discharge to the sanitary sewer, which flows to a POTW. In the past, the drains discharged to the FBH STP.



### **3.4 TRAINING AREAS/RANGES (AREE 14)**

#### **3.4.1 DESCRIPTION**

Four firing ranges (AREE 14) are located on the installation:

- Foreman Range
- State Police Range
- Pistol Target Range
- Skeet/Trap Range

The Foreman Range is an outdoor area located adjacent to Buildings 811 and 812. Approximately 5,000 persons use the range annually for qualification firing of handguns, rifles, and shotguns. Rounds are fired into a hillside adjacent to a tributary of Lawrence Creek.

The State Police Range is an outdoor area located in the vicinity of Building 815. The range is used by the Indiana State Police and a sheriff's department for firing of handguns, rifles, and shotguns. Rounds are fired into a hillside adjacent to Lawrence Creek.

The Pistol Target Range is an indoor facility located in Building 802.

The Skeet/Trap Range is an outdoor area located in the vicinity of Buildings 819 to 822. The range is used by the Rod and Gun Club for firing shotguns. Rifle and pistol ranges have been located in the area in the past.

Firefighting training areas are discussed in Subsection 3.10.

In addition to the firing ranges, troop training activities are conducted in wooded and other areas located on the northern and northwestern part of the installation as shown on Figure 3-1. These activities have included and currently include marching drills, as noted during the site visit, and training in map reading and orienteering (ESE, 1984). The use of smoke or gas agents on the ranges and training areas is not authorized.

The north troop training area is a static location and has been used to practice troop maneuvers for at least 10 years (installing personnel indicate that it may have been in use for 20 years). POL products are used at a designated location in this area for fuel-operated heaters. A gas chamber was previously active on FBH, and a new chamber for protective mask confidence training currently exists at the installation. A confidence course is also utilized for physical conditioning.

#### **3.4.2 KNOWN AND SUSPECTED RELEASES**

No records were found that indicate that releases have occurred due to firing range or troop training activities. Because there is no ammunition recovery program for the outdoor ranges, it is suspected that lead and other heavy metals are present in the soils.



Runoff from the range areas may also have contaminated surface waters, particularly in the Foreman Range and State Police Range (see Photographs 14 and 15). Observations made during the site visit indicated evidence of rounds fired directly into the bank of a tributary of Lawrence Creek at the Foreman Range. The potential exists for releases of POL products to soils in the north troop training area.

### **3.5 HAZARDOUS MATERIALS STORAGE AND WASTE HANDLING AREAS**

This subsection discusses the handling and storage procedures and/or areas for hazardous materials and waste at FBH that are not discussed in other subsections of Section 3.

#### **3.5.1 FORMER DRUM STORAGE AREA (AREE 15)**

##### **3.5.1.1 Description**

The Former Drum Storage Area (AREE 15) is approximately 4 acres of land located in an open grassed area south of Buildings 45 and 46 and north of Otis Avenue, as shown in Figure 3-1. Complete historical records do not exist for this area. However, information from historical site photographs (1972), site personnel, and site reports indicates that this area was used for holding drummed waste materials (Schafer, 1991; ERC, 1991). In addition, a paint shop, which was destroyed by fire, occupied the site (ERC, 1991). Historic site maps of the 1960s show former Buildings T-47 through T-51 (according to the old site building numbering system) at this location. In addition, a site report indicates that the former Defense Property Disposal Office (DPDO) waste storage yard was at this location. This site report states that prior to 1981, PCB transformers were stored outside in the DPDO yard adjacent to Building 46 (ESE, 1984).

Former plans at the installation included building a Learning Resource Center at this location. As part of these plans, and because of former activities in the area, a two-phased investigation was conducted at the area, which included soil sample collection and analysis, soil gas survey, an electromagnetic survey, subsurface soil sampling and analysis, monitoring well installation, and groundwater sampling and analysis.

##### **3.5.1.2 Known and Suspected Releases**

Sufficient information does not exist to determine if spills have occurred at the Former Drum Storage Area; however, the potential exists for spills of the kind related to paint shop operations or the storage of the waste materials, which included PCB transformers.

A site report states that a small spill (1 to 2 quarts) of PCB transformer oil was released from a leaking transformer on 4 August 1980 in the "PCB yard," which indicates that the release occurred in the old DPDO storage yard adjacent to Building 46 (in this area). Forty-four cubic feet of soil was removed from the spill area and disposed of off-site (ESE, 1984).



Results of the two-phase investigation provide limited information concerning releases to soil and groundwater at the area. These results indicate that the area is potentially contaminated with VOCs and TPH. Results of the soil/gas survey revealed that portions of the area are potentially contaminated with VOCs, and soil sampling results showed detectable concentrations of trichloroethylene, 1,1,1-trichloroethane, and TPH at highest detected concentrations of 0.5, 0.014, and 100 ppm, respectively. Sampling procedures for soil boring samples included field compositing of samples, which may have allowed loss of VOCs prior to analysis. Results of groundwater sampling from four monitoring wells (as shown in Figure 2-8) showed detectable concentrations of 1,2-dichloroethylene, trichloroethylene, 1,2-dichloropropane, and TPH (recoverable) at highest detected concentrations of 0.10, 0.16, 0.011, and 0.10 ppm, respectively, at a quantitative limit of 0.010 ppm for VOCs.

### **3.5.2 DRMO HAZARDOUS WASTE STORAGE AREA (AREE 16)**

#### **3.5.2.1 Description**

The Defense Reutilization and Marketing Office (DRMO) hazardous waste storage area (AREE 16) is located in the eastern portion of FBH and consists of Buildings 124 and 125 and the approximately 2-acre fenced area between these buildings. Current operations at the facility include storage of equipment and nonhazardous materials inside of Building 124; storage of equipment, nonhazardous materials, debris, empty drums, and used oil in the asphalt-covered, paint-sealed, 2-acre area between buildings (see Photograph 16); and storage of hazardous wastes and pesticides in Building 125.

The DRMO area provides for storage and disposal of hazardous materials and wastes by either sale or disposal at an approved hazardous waste disposal facility. The storage facility at Building 125 is operating under an approved Part B permit from the State of Indiana (see Photograph 17).

Types of hazardous wastes stored at Building 125 include waste oils, paint, solvents, PCB-containing wastes, batteries, and asbestos. An inventory of wastes at the time of the site visit is included as Appendix D.

Building 125 has a concrete-lined and curbed floor with secondary containment. In the past, hazardous wastes such as PCB liquids and PCB transformers were stored for up to 90 days in a concrete-lined room in Building 124. Plans were initiated for a new facility (Building 125) following air inspection in 1981, which showed Building 124 not in compliance with RCRA regulations (ESE, 1984). Used batteries, small PCB capacitors, and possibly other wastes were stored on an asphalt pad with no cover in the outdoor area between Buildings 124 and 125 (USAEHA, 1988; ESE, 1984). Partial facility closure of Building 124 has been completed, and the building has been certified closed by the U.S. Army Corps of Engineers (see Subsection 2.5.1).



### **3.5.2.2 Known and Suspected Releases**

Available information indicates evidence of potential minor spills on the asphalt in the past caused by mishaps during handling of waste storage drums or by runoff from uncovered wastes stored outdoors (i.e., used nickel-cadmium batteries) (USAEHA, 1988). In addition, there is a potential that releases of petroleum hydrocarbons or metals have occurred due to spills from used oil stored in drums outside of Building 125. At the time of the site visit, Buildings 124 and 125 and the outside storage area appeared to be well managed, and only minor stains were visible on the outside area. Documented spills associated with the DRMO storage area from DIS files and State of Indiana files are as follows:

- On 4 August 1980, a 1 to 2-quart PCB spill occurred at the Property Defense Disposal area from a leaking transformer. The spill did not occur near any storm sewers or catch basins. Approximately 44 cubic feet (six 55-gallon drums) of soil was removed from the spill site and contained in DOT-approved drums.
- On 6 May 1982, a chemical accident/spill was reported at the old DPDO (now DRMO) storage yard. A worker attempted to move a deteriorated container (contents unknown at the time) of industrial strength paint remover (phenol/carbolic acid). Approximately 1 quart of material spilled onto the ground and the arm of the worker. The material caused a severe chemical burn on the worker's arm. The remaining material was transferred to another container and moved to the Materials Lab for storage and disposal.

### **3.5.3 PCB-CONTAINING WASTE STORAGE AREAS (AREE 17)**

#### **3.5.3.1 Description**

PCB-containing waste storage at FBH is located at the DRMO waste storage facility and was formerly located adjacent to Buildings 4, 46, and 110. The DRMO storage facility is discussed in Subsection 3.5.2. According to site personnel and site reports, transformers containing PCB oil were stored and/or staged while being serviced in an area adjacent to Building 4, the electrical shop (Electric Shop Manager, 1991).

In the past, when a transformer was removed from service, the item was transported and staged at the old engineering equipment yard adjacent to Building 110, where it was placed in pans or overpack drums to contain spills.

Past operations also included storage of PCB transformers outdoors in the DPDO yard adjacent to Building 46, which did not meet the federal regulations for a PCB storage area (ESE, 1984). This storage area is further discussed in Subsection 3.5.1.



### **3.5.3.2 Known and Suspected Releases**

Available information indicates that no major spills or releases have occurred associated with the PCB-containing waste storage areas at Buildings 4, 46, and 110. However, the potential exists that small isolated spills of oil could have occurred during transport or management of the wastes. In addition, minor spills have occurred at the DRMO storage facility and the old DPDO storage yard, as discussed previously in Subsections 3.5.2 and 3.5.1, respectively.

### **3.5.4 PESTICIDE MIXING AND STORAGE AREAS (AREE 18)**

#### **3.5.4.1 Description**

Pesticides, herbicides, insecticides, and rodenticides are currently stored and mixed by the DIS Entomology section in Building 605 and stored in Building 125 at DRMO (AREE 18). Former storage and mixing areas include the DIS maintenance storage shed at Building 27, golf course storage at Building 514, and golf course storage and mixing at Building 674 (AREE 18).

According to site personnel, pesticides were stored in the 1970s in Building 27, which is a boiler room/shed with concrete floors. Following the period of pesticide storage, Building 27 was flooded due to broken steam lines (Fitzwater, 1991).

Building 514 was used until the middle to late 1980s for temporary storage of excess pesticides when the stocks exceeded the storage capabilities of Building 605. This normally occurred when large shipments of Balan were received twice a year for use at the golf course (ESE, 1984). Pesticide application equipment was also stored in this building, which was deemed by the USAEHA to be inadequate for storage of pesticides or pesticide equipment (USAEHA, 1990). Pesticides were stored in a small wooden shed adjacent to Building 674 at the golf course. This shed lacked a concrete floor and continuous curbing to contain spills. In addition, mixing was performed outside of Building 674. Empty containers were disposed of in the sanitary landfill without rinsing. These activities occurred from 1970 to 1980 (ESE, 1984).

Current operations at FBH include storage of pesticides at DRMO, which is discussed in more detail in Subsection 3.5.2. In addition, mixing and storage of pesticides is performed by DIS in Building 604. The facility at Building 604 is a masonry block building enclosed by a locked chain-link fence. The floors of storage and mixing rooms inside are concrete but not coated with a sealant and not formed with continuous, nonsealed 4-inch high curbs (USAEHA, 1990). The mixing room is separated from the storage room by a spring-loaded door and a cinder block wall (ESE, 1984). A list of materials stored at the facility was obtained from the Spill Prevention, Control, and Countermeasure (SPCC) Plan and is provided in Appendix D (DIS, 1990). Chlordane was formerly stored in Building 604 (USAEHA, 1981). Mixing of pesticides is also performed in the outside area adjacent to Building 605 and within the fenced area (see Photograph 18). The outside mixing area is covered, has a concrete floor and curbs, and has a catch basin for floor spills. Spills are pumped and/or bailed out of this catch



basin to storage drums, which are sent to DRMO for storage and disposal (ESE, 1984). Empty pesticide containers are triple-rinsed and disposed of as sanitary waste. Rinse water is used as a dilutant or disposed of through DRMO.

Building 604 is located on top of a steep drainage gradient above Hawthorne Lake, and any runoff from the area flows into the drainage path to the lake.

#### **3.5.4.2 Known and Suspected Releases**

A review of site reports indicates that pesticide mixing operations at FBH have been relatively well maintained, with no major spills or releases. The potential exists for isolated spills to have occurred at any of the storage or mixing facilities. Potential pathways include releases to soils at the former storage area at Building 514, the former storage/mixing area outside of Building 674, and the shed next to Building 674. In addition, runoff from Building 605 and associated equipment as well as potential leaching of pesticide residues through seams, cracks, and porous materials could cause releases to Hawthorne Lake. Water samples from Hawthorne Lake collected on 9 September 1987 contained a concentration of 4.37 parts per billion malathion, while water sampled upstream of the pesticide storage/mixing facility showed no detectable concentrations of malathion (USAEHA, 1988). In addition, triple-rinsed drained containers and unrinsed containers were disposed of in the past in the on-site landfills.

### **3.5.5 BURIED LITHIUM BROMIDE DRUMS (AREE 19)**

#### **3.5.5.1 Description**

According to site reports and site personnel, drums containing used lithium bromide solution with a noncorrosive additive and potentially containing pesticides (AREE 19) were possibly buried adjacent to Building 810 (see Photograph 19), the former sewage treatment plant and current fire training area (USATHAMA, 1990; USAEHA, 1986; 1988; 1990; Forrester, 1991). Reports indicate that the drums were buried at an unknown depth under the backfill (crushed stone) in the trickling filter beds, the settling basins, or in the clarifying tanks (USAEHA, 1986; 1988; Forrester, 1991). Four monitoring wells were installed in this area in 1990, as shown on Figure 2-8, and the results were reported in a USAEHA report (USAEHA, 1990). The groundwater samples collected from these monitoring wells were analyzed for dissolved metals, fuels, semivolatile organics (BNAs), and volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and xylene.

#### **3.5.5.2 Known and Suspected Releases**

There is potential for the contents of the buried drums to leach to shallow groundwater in the area of the former STP. Although lithium bromide, a waste from air conditioning systems, is not listed as a hazardous waste by the U.S. Environmental Protection Agency, potential release of other constituents in the drums could be a threat to groundwater.



Results of analyses of groundwater samples collected from the four monitoring wells installed in this area are discussed in the USAEHA 1990 report. Complete analytical data were not included in the report. However, the discussion indicated that fuels, VOCs, and BNAs were not detected in any of the monitoring wells around the area. Detection limits for VOCs were 3.0  $\mu\text{g/L}$ , higher than the maximum contaminant level for drinking water standards for some VOCs. The detection limit for fuels was listed as 100 g/L but probably was intended to say 100  $\mu\text{g/L}$  (USAEHA, 1991). Metals detected in samples from the wells are shown in Table 3-4. Only manganese and iron were present in concentrations above drinking water standards. Manganese, however, was detected above these standards in the background well (MW-12). Lithium was detected in MW-13, which supports the hypothesis that drums containing lithium bromide are in fact buried with the beds, tanks, treatment beds, and/or basins and that the lithium bromide or other suspected contents of the drums have had sufficient time to migrate to the groundwater in the vicinity of the well.

### **3.6 SANITARY WASTEWATER TREATMENT PLANTS (AREE 20)**

#### **3.6.1 DESCRIPTION**

Sanitary wastewater was treated on-post in a sewage treatment plant (STP) (AREE 20) until November 1980. This former STP is located near Building 810 in the northwestern portion of FBH on Shafter Road, due south of a skeet range (see Photograph 19). During its operation, effluent from the STP was discharged to Fall Creek under an NPDES permit.

In 1980, the sanitary sewer system was connected to the off-post Indianapolis regional sanitary sewer system, which discharges to a POTW, and the on-post STP was closed. At that time, the sludges in the drying beds were tested for EP toxicity and found to be nonhazardous. The sludge was then excavated and disposed of at a sanitary landfill (ESE, 1984).

According to a USATHAMA property report (USATHAMA, 1990), the vehicle maintenance shops and vehicle wash rack areas are equipped with oil/water separators that drain to the current sanitary sewer system, which discharges to the regional POTW and to the stormwater sewer. Prior to 1980, these oil/water separators may have drained to the former STP.

In a USATHAMA site report (ESE, 1984), it was noted that in the past (prior to 1980), fixative photographic solution wastes were discharged directly to the on-post STP from the USAFAC Graphic Arts, Public Affairs, and Data Processing Offices in Building 1 and the DPCA Photography/Arts and Crafts Shop in Building 434. In 1981, samples of the photographic wastes were analyzed for EP toxicity, and results showed levels exceeding the EP toxicity parameters for cadmium, chromium, and mercury (ESE, 1984).

It was also noted in the USATHAMA site report (ESE, 1984) that the USAFAC Graphic Arts office disposes of waste xylol and acetone from screen printing operations and ammonia-containing blueprint solution by pouring the solutions down a sink that



**Table 3-4**

**Concentrations of Dissolved Metals in Groundwater Samples  
From the Buried Lithium Drum/Formers STP (Building 810)/  
Fire Training Pit Area**

Constituent	Concentration in $\mu\text{g/L}^a$				
	Monitoring Well <sup>b</sup>				Drinking Water Standard <sup>c</sup> MCL/MCLG
	MW-12	MW-13	MW-14	MW-15	
Barium	448	200U <sup>d</sup>	200U <sup>d</sup>	200U <sup>d</sup>	2,000/2,000
Iron	100U <sup>d</sup>	479	100U <sup>d</sup>	100U <sup>d</sup>	300 (SMCL) <sup>e</sup>
Lead	4.6	3U <sup>d</sup>	3U <sup>d</sup>	3U <sup>d</sup>	5/0 <sup>f</sup>
Lithium	100U <sup>d</sup>	0.183	100U <sup>d</sup>	100U <sup>d</sup>	---
Manganese	131	15U <sup>d</sup>	15.7	17.4	50 (SMCL) <sup>e</sup>
Sodium	1,500	30,200	8,010	5,000U <sup>d</sup>	---
Zinc	27.0	35.0	34.0	34.0	5,000 (SMCL) <sup>e</sup>

<sup>a</sup>Micrograms per liter.

<sup>b</sup>USAEHA, 1990.

<sup>c</sup>Maximum contaminant level/maximum contaminant level goal from drinking water standards (USEPA, 1991).

<sup>d</sup>Undetected at the listed detection limit. (Note: Detection limits were listed in the 1990 USAEHA report as grams per liter; however, this was most probably a typographical error and the limits are likely in  $\mu\text{g/L}$ .)

<sup>e</sup>Secondary maximum contaminant level (USEPA, 1991).

<sup>f</sup>Proposed and under review.



drains to the sanitary sewer. It is likely that, prior to 1980, these solutions were drained to the former on-post STP.

Currently, there are concrete walls surrounding the former sludge drying bed area, which is covered with gravel. It is unknown whether there is a concrete bottom/floor below the gravel. Information from the installation indicates that the clarifying tank has a concrete bottom. Four monitoring wells were installed in the area of the former STP at Building 810, as discussed in Subsection 3.5.5.1.

Another sanitary wastewater treatment plant appears on installation maps south of Shafter Road, west of Building 674, due east of the mobile home park, and northeast of the officer family housing area. However, no records concerning operations were found for this wastewater treatment area. In addition, FBH historic files indicate the presence of another former STP in the east area of the installation; however, no operating records were found, and a potential location could not be found on historic maps.

### **3.6.2 KNOWN AND SUSPECTED RELEASES**

There was no evidence found of known or suspected major releases associated with the on-post former STP at Building 810. However, if the sludge drying beds or treatment tanks/beds/basins were not lined, the possibility exists that releases of spent materials from the maintenance shops, Building 1, and Building 434 could have occurred. Results of groundwater samples from monitoring wells installed in the area around the Building 810 former STP are discussed in Subsection 3.5.5.2.

Information is not available concerning the former STP south of Shafter Road and the east area former STP. The potential exists, however, that releases similar to those for the former STP at Building 810 could have occurred in the past.

## **3.7 STORAGE TANKS**

### **3.7.1 UNDERGROUND STORAGE TANKS (AREE 21)**

#### **3.7.1.1 Description**

There are several areas throughout FBH where underground storage tanks (USTs) (AREE 21) are known, or have been reported to be located. The most current listing of USTs at FBH is contained in the federal submittal for Notification for Underground Storage Tanks, submitted in January 1991 and updated periodically by the DIS NRMD. Other listings of USTs are contained in the SPCC Plan (DIS, 1990) and a list created by a search of the Indiana Underground Storage Tank Database (EAI, 1991). Table 3-5 gives a listing of USTs at FBH based upon the three sources mentioned above. In general, USTs which did not appear on the federal submittal for Notification for Underground Storage Tanks were either already removed or were to be removed in the following summer. Other listings are available for FBH that show additional USTs, but the sources are outdated and the USTs are assumed to have been removed.

**Table 3-5**  
**Underground Storage Tanks at FBH**

Building Number	Tank Number	Estimated Installation Date	Materials of Construction	Total Capacity (gallons)	Contents	Status	Date Leak Tested	Results
1	1-23	1978	Steel	8,000	Diesel Fuel	In Use	None	
4	4-1	1972	Steel	10,000	Fuel Oil	Removed as of Feb. 1992	Sep-84	Leaked-LUST
4	4-2	1972	Steel	10,000	Fuel Oil	Removed as of Feb. 1992	Sep-84	No Leaks
4	4-3	1972	Steel	10,000	Fuel Oil	Removed as of Feb. 1992	Sep-84	No Leaks
6	6-4	1937	?	10,000	Gasoline	Removed Summer 1991	Aug-85	Leaked-LUST
6	6-5	1937	?	10,000	Gasoline	Removed Summer 1991	Aug-85	Leaked-LUST
6	6-6	1937	?	10,000	Gasoline	Removed Summer 1991	Aug-85	Leaked-LUST
6	6-7	1937	?	10,000	Gasoline	Removed Summer 1991	Aug-85	Leaked-LUST
33	33-32	1987	FRP	10,000	Gasoline	In Use		
33	33-33	1987	FRP	10,000	Gasoline	In Use		
33	33-34	1987	FRP	10,000	Gasoline	In Use		
33	33-35	1987	FRP	10,000	Gasoline	In Use		
33	33-36	1987	FRP	550	Waste Oil	In Use		
39	39-28	1976	?	1,500	Fuel Oil	Removed Summer 1991	None	
40	40-29	1977	?	1,500	Fuel Oil	Removed Summer 1991	None	
43	43-14	1967	?	550	Fuel Oil	Out of Serv. To be removed Sum. 92	Aug-85	No Leaks
54	54-15	1969	?	1,500	Fuel Oil	Removed Summer 1991	Aug-85	Leaked-LUST
203	203-30	1960	?	2,000	Fuel Oil	Removed Summer 1991	None	
239	239-37	1987	FRP	10,000	Unleaded Gas	In Use	None	
239	239-38	1987	FRP	10,000	Regular Gas	In Use	None	
239	239-39	1987	FRP	10,000	Diesel Fuel	In Use	None	
300	300-16	1973	Steel	6,000	Fuel Oil	In Use	Aug-85	Leaked-LUST
433	433-17	1967	?	1,000	Fuel Oil	Removed Summer 1991	Aug-85	No Leaks
500	500-24	1945	?	2,000	Fuel Oil	Removed Summer 1991	None	
501	501-18	1960	?	550	Fuel Oil	Removed Summer 1991	Aug-85	Leaked-LUST
502	502-31	?	?	?	Fuel Oil	Removed Summer 1991	None	
529	529-25	?	?	2,000	Fuel Oil	Removed Summer 1991	None	
604	604-25	1985	FRP	1,000	Diesel Fuel	In Use	None	
619	619-40	1937	Steel	10,000		Removed as of Feb. 1992		
619	619-41	1937	Steel	10,000		Removed as of Feb. 1992		
619	619-42	1937	Steel	2,000		Removed as of Feb. 1992		
619	619-43	1937	Steel	1,000		Removed as of Feb. 1992		
619	619-44	1937	Steel	550		Removed as of Feb. 1992		
701	701-19	1963	?	550	Fuel Oil	Removed Summer 1991	Aug-85	No Leaks
705	705-20	1982	Steel	550	Fuel Oil	In Use	None	
705	705-21	1982	Steel	550	Fuel Oil	Perm Out of Serv.		
900	900-22	1965	?	2,000	Fuel Oil	Removed Summer 1991	Aug-85	Leaked-LUST



There are 12 USTs at FBH that are currently in use. These include five USTs at the AAFES gas station (see Photograph 20) and three at the POL gas station for gasoline storage. These USTs are less than 5 years old. The remaining USTs in use at FBH are located at Buildings 1, 300, 604, and 705. The UST located at Building 300 stores fuel oil and leaked during a leak test in August 1985. The other three USTs in use have not been leak tested. USTs at FBH, which have been leak tested in the past and have shown to be leaking, have been taken out of service and have either been removed or are to be removed. Five USTs at Building 619 (the former PX gas station) and three USTs at Building 4 have recently been removed.

### **3.7.1.2 Known and Suspected Releases**

There is only one documented record of any spills or releases at USTs in the State of Indiana and FBH spill files. The release occurred at the USTs at the AAFES gas station located at the intersection of Butz and Otis Roads on 6 September 1988. An estimated 1,613 gallons of unleaded gasoline leaked from one of the USTs and migrated 400 feet to a drainage ditch. Sand, straw, and absorbent booms were used to absorb the fuel. The suspected tanks were emptied and tested. The case was referred to the LUST section of the IDEM for remediation. According to past reports, soil borings were advanced in the vicinity of the USTs by Engineering & Testing Services, Inc. to determine the extent of contamination prior to removing the USTs. Sample results indicated no levels of total petroleum hydrocarbons (TPH) above the detection limit. Valley Oil Company was retained to remove the four USTs and the soil beneath the tanks to approximately 16 feet below the tank bottoms. There was no suspected threat to the groundwater from this release (USAEHA, 1989).

Past reports also indicate a release from one of the USTs located at Building 4 during 1985. Leak tests performed on these tanks indicated that one of the tanks was leaking fuel oil at the rate of approximately 7 gallons per day (gpd). In 1986, five groundwater monitoring wells were installed in the vicinity of the UST. Groundwater sampling, however, indicated there was no impact on the groundwater. (USAEHA, 1986; 1989). These three USTs are scheduled to be removed in October 1991.

## **3.7.2 ABOVEGROUND STORAGE TANKS (AREE 22)**

### **3.7.2.1 Description**

There are several areas throughout FBH where aboveground storage tanks (ASTs) (AREE 22) are known or have been reported to be located. Examples of ASTs are shown in Photographs 21 and 22. A complete list of ASTs was provided by DIS personnel at the time of the site visit. This list showed that 10 ASTs are currently located throughout FBH, as shown in Table 3-6. Three 29,990-gallon ASTs, located outside the boiler plant, are used to store Fuel Oil No. 2 for the boiler and backup generators. These are the major ASTs at FBH, and they are the only ones covered in the SPCC Plan (DIS, 1990). At the time of the site visit, the secondary containment for these ASTs was removed for soil sampling. The results of these samples were not



**Table 3-6**

**Aboveground Storage Tanks at Fort Benjamin Harrison<sup>a</sup>**

Building Location	Quantity of ASTs	Capacity (gallons)
4	1	1,000
68	3	29,900
239	1	1,000
332	1	550
609	1	2,000
624	1	1,000
674 <sup>b</sup>	1	275
Former Landfill <sup>c</sup> (west)	1	1,000

<sup>a</sup>Current to date of site visit, 15 to 18 October 1990.

<sup>b</sup>The additional ASTs were observed behind Building 674 during the site visit; they appeared to store No. 2 diesel fuel and gasoline.

<sup>c</sup>The AST at the landfill (west) was empty and being taken out of service at the time of the site visit.



available. Secondary containment for the ASTs consists of a berm constructed from concrete block and a base of gravel. The gravel base was removed for the sampling and is to be replaced with a concrete slab. Other ASTs at FBH may or may not have secondary containment.

### **3.7.2.2 Known and Suspected Releases**

Records found on documented spills at ASTs are presented below:

- On 31 March 1978, a 4-gallon oil spill occurred at the east end of Building 48 due to heat expansion of a full oil tank. The incident was reported by the Smith Oil Co. No further details were available.
- On 5 January 1979, an oil spill of unknown volume occurred at Building 657. The spill occurred both outside and inside the building, resulting in a ruptured oil tank and a spill inside the building. Smith Oil Co. was asked to submit an investigative report of the spill. No further details were available.

The potential exists for isolated spills of minimal amounts of fuel at ASTs that were not reported. These spills could have occurred during filling and draining of these ASTs.

## **3.8 SANITARY LANDFILLS AND FORMER INCINERATORS**

### **3.8.1 FORMER SANITARY LANDFILL (EAST) (AREE 23)**

#### **3.8.1.1 Description**

The older of the two former landfills at FBH is located in the northeastern part of the installation, north of the base hospital. This former landfill (AREE 23) was in use from the early 1940s until 1968 (see Photograph 23). The landfill was operated as a trench-type fill where refuse is placed on the working face of a trench directly from the transport vehicles and then compacted with a bulldozer. Complete operating records are not available for this landfill; however, the types of wastes disposed of at the landfill were identical to those disposed of at the west landfill (ESE, 1984). These wastes include office and household wastes, demolition and construction debris, tree trimmings, and ash from incinerator operations.

The potential exists that hazardous wastes such as used oils, solvents, pesticides, and paints could have been incorporated with office/household wastes and disposed of in the landfill. The trenches in the landfill were not adequately compacted during waste placement nor were they covered with an adequate layer of compacted, impermeable clay following filling with wastes or after the landfill was closed.

The closed landfill currently consists of approximately 80 acres of flat vegetation covered terrain. In addition, a portion of the closed landfill is currently a city park and radio control model airplane park. Over half of the closed landfill was deeded to the



City of Lawrence in 1974 with recapturable rights (in time of war). There is widespread differential settling apparent at the site due to the inadequate compacting operations.

### **3.8.1.2 Known and Suspected Releases**

Surface water from precipitation can readily percolate through the buried waste in the closed landfill because the landfill was not properly covered and closed. As a result, contaminants can be carried into the shallow groundwater table, which is only 10 to 15 feet below the surface (USAEHA, 1988). There has been evidence of leachate seepage from the southern and western ends of the landfill and an intermittent stream flow in a westerly direction along the southern portion of the landfill (USAEHA, 1989). This indicates the potential for releases into the environment and for exposure. In 1990, monitoring wells were installed in the vicinity of the closed landfill to assess the potential for groundwater contamination and to comply with the Resource Conservation and Recovery Act (RCRA) requirements for corrective action, as defined in 40 CFR 264.10 and 270.14 (USAEHA, 1989). Available results of groundwater sampling of 10 monitoring wells (shown in Figure 2-8) and the surface water samples collected downslope from MW-20 indicate the following:

- April 1990 analyses performed by USAEHA showed that BNAs were not detected above detection limits in all wells. VOCs were detected only in MW-20, as shown in Table 3-7. However, detection limits were relatively high (3.0  $\mu\text{g/L}$ ). Vinyl chloride exceeded the drinking water standard. Results of dissolved metals analyses showed high concentrations of manganese and iron; arsenic, barium, chromium, lead, and zinc did not exceed applicable drinking water criteria (USAEHA, 1990).
- Quarterly analyses of monitoring wells conducted by National Environmental Testing, Inc. (NET) for the DIS NRMD at FBH showed that the only constituents of concern for the October 1990 sampling were the VOCs and BNAs shown in Table 3-8. However, not all monitoring wells were sampled at every quarter (NET, 1990; 1991a; 1991b; 1991c). Of the BNA compounds detected in MW-17 from the October 1990 sampling event, one compound, phenol, was used as one of the surrogate compounds in the analytical procedure. The possibility exists that the phenol detected in the October 1990 groundwater sample from MW-17 is due to contamination from the laboratory surrogate compound.
- September and November 1990 sampling events performed by USAEHA were for VOC analyses of samples from monitoring wells MW-20 and MW-25 and two surface water points on a nearby intermittent stream. The September event holding times were exceeded, so no data were reported. No VOCs were detected in MW-25 or the surface water sampling from the November 1990 event. VOCs detected in MW-20 are shown in Table 3-7.



**Table 3-7**

**Summary of Detectable VOCs in Groundwater Samples from  
MW-20 at Former Landfill (East)<sup>a</sup>**

Constituent	Concentration ( $\mu\text{g/L}$ ) <sup>b</sup>		Drinking Water Standards <sup>c</sup>
	11 Apr 90	29 Nov 90	
Vinyl Chloride	4.3	7.5	2/0
N-Propylbenzene	3.1	4.4	--- <sup>d</sup>
1,2,4-Trimethylbenzene	14.0	22.0	--- <sup>d</sup>
1,3,5-Trimethylbenzene	7.5	13.0	--- <sup>d</sup>
O-Xylene	4.0	4.7	10,000 <sup>e</sup>
M&P-Xylene	3.4	4.4	10,000 <sup>e</sup>
Ethylbenzene	<3.0	3.0	700/700 <sup>f</sup>
p-Isopropyltoluene	<3.0	3.0	--- <sup>d</sup>

<sup>a</sup>Results of USAEHA sampling events (USAEHA, 1990; 1991).

<sup>b</sup>Micrograms per liter.

<sup>c</sup>Maximum contaminant level (MCL)/maximum contaminant level goal (MCLG) from drinking water regulations (USEPA, 1991).

<sup>d</sup>No MCL, MCLG, or SMCL listed (USEPA, 1991).

<sup>e</sup>MCL and MCLG for total xylenes.

<sup>f</sup>Secondary maximum contaminant level (SMCL) of 30  $\mu\text{g/L}$  is proposed for ethylbenzene (USEPA, 1991).



Table 3-8

**Summary of Detectable Organic Compounds in Groundwater Samples  
from Monitoring Wells at Former Landfill (East)<sup>a</sup>**

Constituent	Concentration in $\mu\text{g/L}^b$			Drinking Water Standard <sup>c</sup>
	MW-17	MW-18	MW-21	
<b><u>VOCs</u></b>				
Methylene chloride	9	13	--	-- <sup>d</sup>
Xylenes, total	--	--	2	10,000/10,000 <sup>e</sup>
<b><u>BNAs</u></b>				
1,4-Dichlorobenzene	22	--	--	75/75 <sup>e</sup>
2,4-Dinitrotoluene	19	--	--	-- <sup>f</sup>
Pyrene	40	--	--	0.03 <sup>g</sup>
1,2,4-Trichlorobenzene	16	--	--	9/9 <sup>h</sup>
Phenol	21	--	--	-- <sup>i</sup>

<sup>a</sup>Results of October 1990 sampling event.

<sup>b</sup>Micrograms per liter, except where noted otherwise.

<sup>c</sup>Maximum contaminant level (MCL)/maximum contaminated level goal (MCLG) from drinking water regulations (USEPA, 1991).

<sup>d</sup>No MCL, MCLG, secondary MCL (SMCL), or health advisories listed (USEPA, 1991).

<sup>e</sup>SMCL of 2  $\mu\text{g/L}$  and 5  $\mu\text{g/L}$  proposed for xylenes and 1,4-dichlorobenzene, respectively (USEPA, 1991).

<sup>f</sup>Listed for regulation but no standard specified (USEPA, 1991).

<sup>g</sup>This number is a health advisory in units of milligrams per kilogram per day (mg/kg/day), the reference dose for a 70-kg adult (USEPA, 1991).

<sup>h</sup>Proposed MCL/MCLG under Phase V (USEPA, 1991).

<sup>i</sup>No MCL, MCLG, or SMCL listed. Draft health advisories are available including 6,000 and 20,000  $\mu\text{g/L}$  for longer term for 10-kg child and 70-kg adult, respectively (USEPA, 1991).



### **3.8.2 FORMER SANITARY LANDFILL (WEST) (AREE 24)**

#### **3.8.2.1 Description**

The other former sanitary landfill at FBH is located in the western part of the installation (AREE 24). The landfill was in operation from 1969 (USAEHA, 1989) until 1 October 1991. The landfill site is approximately 30 acres in size, and waste was landfilled using the trench and fill method. Refuse was compacted with a bulldozer and covered with a minimum of 6 inches of soil each day and a final cover of 12 inches of soil (Wiles, 1991). Some reports indicate that 2 feet of soil was used as final cover (USAEHA, 1988; 1989). Leachate was collected using rip-rap drainage ditches and a sedimentation pond (Miles, 1991).

The landfill, which was permitted by the State of Indiana and Marion County, included installation of monitoring wells and quarterly groundwater sampling. Types of wastes placed in the former landfill included office and household wastes, tires, ash from the boiler plant, autoclaved waste from the hospital, demolition and construction debris, and tree trimmings (USAEHA, 1988; 1989). The potential exists that hazardous wastes such as used oils, solvents, pesticides, and paints could have been incorporated with office/household wastes and disposed of in the landfill.

Currently, the landfill no longer accepts wastes, and a final cover and seed have been placed on the landfill.

#### **3.8.2.2 Known and Suspected Releases**

Surface water from precipitation can percolate through the landfill cover and potentially contaminate the shallow groundwater because the clay cover over most of the landfill was inadequate in the past and may still be inadequate in some areas (USAEHA, 1988). There also has been evidence of leachate seepage due to poorly compacted cover (USAEHA, 1988). Since the terrain around the landfill site has ravines that feed Lawrence and Fall Creek, there is potential for releases into the environment and exposure from these leachate seeps.

Six groundwater monitoring wells (shown in Figure 2-8) were installed in the vicinity of the landfill to comply with permit requirements. Results of quarterly groundwater sampling indicate that the landfill is impacting the shallow groundwater table (USAEHA, 1986; 1988). This is indicated by the apparent degradation of the groundwater quality and is based on elevated levels of specific conductivity, total dissolved solids (TDS), and iron in downgradient wells. In addition, there is a distinct increase in total hardness of the groundwater in downgradient wells, even though the groundwater in the area is naturally very hard (USAEHA, 1987). Data from the 1986 USAEHA report indicated high barium and lead levels; however, the laboratory data was suspect. Other site reports and data indicate, however, that the former landfill is not having an adverse impact on the local groundwater (USAEHA, 1989; NET, 1990; 1991a; b; c).



A review of available analytical data indicates that organic compounds have not been detected in groundwater samples from monitoring wells surrounding the west landfill, with the exception of methylene chloride, a common lab contaminant, which was found in two samples at a maximum concentration of 20 micrograms per liter ( $\mu\text{g/L}$ ). In addition, in the October 1990 quarterly sampling, chloroethane was found in the duplicate sample from MW-3 at a concentration of 16  $\mu\text{g/L}$ . Chloroethane is listed for drinking water regulation, but no standard is specified (USEPA, 1991). High levels of iron were noted in two samples from MW-3 and in one from MW-4, which showed concentrations of 5.3, 4.9, and 46 milligrams per liter ( $\text{mg/L}$ ), respectively. Other data indicate that most samples show iron concentrations of less than 1  $\text{mg/L}$ , with some levels at 2  $\text{mg/L}$ .

### **3.8.3 FORMER INCINERATORS (AREE 25)**

#### **3.8.3.1 Description**

There are two former incinerators at FBH (AREE 25) and no operational incinerators. The two former incinerators are the medical/infectious waste incinerator located on the first floor of the Hawley Army Community Hospital (Building 300) and the refuse incinerator located at Building 518 (see Photographs 24 and 25). The medical/infectious waste incinerator (a Pilbrico incinerator) was installed in 1972, was operated at a capacity of 50 lbs per hour, and has been out of operation since the early 1980s (USAEHA, 1989). The ash was disposed of in the on-site landfill (Wilson, 1991). Infectious wastes are now shipped off-site to the Indianapolis Veteran's Administration Medical Center for disposal. The former medical waste incinerator is in a room on the first floor of Building 300, which has concrete sealed floors and no noted floor drains.

The former refuse incinerator at Building 518 was constructed in 1942 and operated until 1951. All combustible sanitary wastes or hazardous materials were incinerated, and the ash was disposed of as landfill (ESE, 1984). The building is masonry brick and cement construction; the wastes were fed into the incinerator through holes in the steel floor above. Complete records are not available on this incinerator; therefore, types of wastes are not known. The building was used to store deicing salt in the past and is currently used to store straw.

Conditions of the area surrounding the site and a review of historical aerial photographs indicate that ash and/or waste could have been disposed of in areas adjacent to the building.

#### **3.8.3.2 Known and Suspected Releases**

There are no documented releases of contaminants to soil or groundwater at the former medical waste incinerator or refuse incinerator. However, there is a potential that ash and/or hazardous waste materials could have been buried adjacent to Building 518 from the refuse incinerator. This could contaminate the local soil and groundwater.



### **3.9 MEDICAL FACILITIES (AREE 26)**

#### **3.9.1 DESCRIPTION**

The medical facilities (AREE 26) at FBH include Hawley Army Hospital (Building 300), the dental clinics (Buildings 300, 602, and 237), and the Veterinary Clinic (Building 805). The following paragraphs briefly describe the development of the medical facilities at FBH and the waste disposal methods that have been employed.

The first hospital at FBH, FBH Post Hospital, was opened in 1908. In 1941, Billings General Hospital was constructed to serve the expanding military staff generated by World War II. Billings served the base from July 1941 until March 1946, when the base's medical needs were again met by the Post Hospital. Hawley Army Hospital was completed in 1973 and currently serves the personnel at FBH.

The Hawley Army Hospital (Building 300) is located at the corner of Shafter and Walter Reed Roads. The hospital is a general medical and surgical facility providing comprehensive health care to all active duty personnel and their dependents. In addition to the hospital, there are several outpatient medical clinics. Medical facilities typically store and handle small quantities of hazardous materials (see Photograph 26). These materials are listed in Appendix E. These materials include, but are not limited to, the following:

- Medicines
- Alcohols
- Methyl methacrylate
- Ammonium nitrate
- Acetic acid
- Aluminum sulfate
- Acetone
- Amalgam silver powder

Hazardous materials are stored in a warehouse that has concrete floors; flammable materials are stored separately. The fire company is provided with a copy of the inventory.

Medical wastes generated by the hospital and clinics are stored in the incinerator room. Infectious waste is currently transferred off-site to the incinerator at the VA hospital. Former practices for the disposal of infectious waste (i.e., needles, lab waste) included separate collection, incineration, and disposal with the regular trash in the sanitary landfill. Wastes such as off-specification chemicals and expired shelf-life materials are sent to DRMO for storage and off-site disposal.

Silver is recovered from x-ray and photographic solutions generated by HAH. The recovery is tested with strips two times a day. Fixative solution from which silver has been recovered is then discharged to the sanitary sewer.



The dental clinics also generate x-ray fixative solutions from which silver is recovered in Building 300. Scrap film, gold, and amalgam are also recovered.

The veterinary clinic does not generate chemical wastes. Infectious wastes were formerly incinerated and disposed of with the trash. Current practices for the disposal of infectious wastes include storage in small containers and then staging in exam rooms in the hospital for off-site disposal. Pathological wastes are generated at the veterinary clinic. Animal carcasses are disposed of in dumpsters and were buried in the sanitary landfill in the past.

### **3.9.2 KNOWN AND SUSPECTED RELEASES**

No known or suspected releases or contamination have resulted from handling and disposal of medical waste or handling of small amounts of hazardous chemicals. Silver recovery operations and the former incinerator are discussed in Subsections 3.1.4 and 3.8.3. The potential exists, however, that minor spills and releases of wastes or raw materials could have occurred in the past. At the time of the site visit, the medical facilities operations appeared to be well managed, and working/storage areas were clean and free of spills.

### **3.10 BURN PIT AREAS (AREE 27)**

Burn pit areas at FBH are/were used as fire training areas and include the fire training pit at Building 810 and other reported areas (AREE 27) as discussed below.

#### **3.10.1 FIRE TRAINING PIT**

##### **3.10.1.1 Description**

The fire training pit is located at the former FBH STP and lithium bromide drum burial site behind and adjacent to Building 810 (see Photograph 27). The treatment tanks were lined with clay and filled with 2-inch-diameter crushed limestone prior to use as a fire training area (USAEHA, 1989). Fire training exercises are conducted by placing fuel on old car bodies or in 55-gallon drum halves partially filled with water, which are placed on top of the old treatment tanks, and igniting the fuel (USAEHA, 1989). According to site personnel, the fuel is consumed during the burning and there is little or no drainage of fuel from the area (Forrester, 1991). Four monitoring wells were installed in this area, as discussed in Subsection 3.5.5.1.

##### **3.10.1.2 Known and Suspected Releases**

There may be a small potential for groundwater contamination associated with current firefighting activities in the area and past operations of the STP and burial of the lithium bromide/pesticide drums. Monitoring wells were installed in 1990 in the vicinity of the fire training pit/former STP; however, results of groundwater sampling are discussed in Subsection 3.5.5.1.



### **3.10.2 FORMER FIRE TRAINING AREAS**

#### **3.10.2.1 Description**

According to site reports, two areas were reportedly used for periodic firefighting training at FBH (ESE, 1984; USATHAMA, 1990). One report (ESE, 1984) noted that training was conducted at a site adjacent to the closed landfill (west). These supposed activities included burning of 10 to 20 gallons of fuel oil ignited in a large metal trough two or three times per training period, with usually three training periods annually. All remaining fuel was reported to have been allowed to burn off.

Another report (USATHAMA, 1990) noted that training was conducted to the west of the older closed landfill (east). The supposed activities consisted of three training periods annually, with three fires per training period, each consisting of 20 gallons of fuel oil ignited in large metal troughs to train firefighting personnel. All remaining fuel was allowed to burn off. This description of firefighting is very similar to that provided by ESE (1984). However, the location is shown adjacent to the eastern former landfill instead of the western former landfill. It is possible that the 1990 USATHAMA report is discussing the same events that are discussed in the 1984 ESE report but that the supposed location is shown incorrectly.

#### **3.10.2.2 Known and Suspected Releases**

The potential exists that small amounts of fuel oil could have been released to the soil in the areas of the fire training activities. It is unlikely that local groundwater would be impacted by these training activities because the amounts of fuel oil were so small. Evidence of these firefighting training areas could not be found during the site visit and the reports could not be substantiated by site personnel (Forrester, 1991).

### **3.11 SPILL AREAS AND OTHER RELEASES (AREE 28)**

This subsection contains information available from the FBH Natural Resources Division spill files and the IDEM emergency response incident files concerning spills and other releases not covered in other sections of this report. These known spill areas are discussed below:

- On 23 March 1978, an accident with a coal truck resulted in a spill of 30 gallons of hydraulic oil into a storm sewer. The oil made its way to Fall Creek but was not recoverable due the high flow of the stream. The Indianapolis Water Company (IWC) and the National Response Center were notified of the spill. IWC indicated that no problems were expected due to the high flow in Fall Creek.
- On 14 July 1980, a spill of 6 to 8 gallons of hydraulic fluid occurred at the corner of Wheeler and Hawkins Road. The spill, caused by the failure of a hose attachment on the hydraulic lift on a tractor, was quickly cleaned up with the use of a commercial sorbent. The sorbent material was



picked up and disposed of in the landfill. The hydraulic fluid did not enter the storm sewers.

- On 13 April 1981, a 15-gallon diesel fuel spill occurred at the north end of Duck Pond when the berm collapsed under the weight of a 5-ton military dump truck, causing the truck to slide partially into the pond. The spill was adjacent to the discharge from Duck Pond and affected a 150-square foot area. Straw and sorbent material were placed along the affected area and at the point of discharge as a means of containment and cleanup. A follow-up report indicated that only 5 to 6 gallons was spilled from the truck, and all of the fuel was contained and recovered from Duck Pond.
- On 22 April 1981, a breakdown of the pumps at the Harrison Village Lift Station (Building 1050) caused a sewage spill into a drainage ditch leading to Lawrence Creek. An investigation revealed that the breakdown first occurred on 20 April 1981 and recurred three times daily for a duration of 1 hour for each event. The flow rate was approximately 100 gallons per hour. The pumps were repaired and subsequent spills were prevented.
- On 21 April 1982, the Indianapolis Department of Public Works Regional Sewage Interceptor broke down, spilling approximately 1.0 million gallons per day into Lawrence Creek at FBH. The problem was corrected within 1 day.
- On 30 April 1982, a malfunction of a paint stripper (owned and operated by the Airmarking Company) caused a 5-gallon spill of SAE 90W oil onto the pavement in front of Building 600. A bag of Oil-Dri was used to clean up the spill. Both the oil and the Oil-Dri were containerized and disposed of off-post. No runoff onto exposed soil or into surface waters was documented.
- In June 1982, two submerged, half-buried, 55-gallon drums were located in Delaware Lake in approximately 10 feet of water. The drums appeared to be sealed, but the contents were unknown. A request for removal was made. Installation records do not document the result of this incident, so it is not known whether the drums were removed or whether there was no action.
- On 16 November 1982, No. 2 fuel oil was observed dripping from a tanker truck (owned and operated by Smith Oil) adjacent to Building T-18. Approximately 1 gallon had accumulated. The driver (who was aware that his truck leaked) was notified of the problem and placed an absorbent material on the spill. The State Board of Health Spill Response Center (SBHSRC) was notified that Smith Oil was using faulty/leaking



equipment. The SBHSRC indicated that Smith Oil would be contacted and remedial action would be recommended.

- On 10 December 1982, a 6- to 10-gallon fuel oil spill occurred on the roadway adjacent to Building 332 when a tanker truck broke a hose. The driver was notified to secure the hose and proceed off-post. No waterways were affected by the incident, and FBH personnel cleaned up the spill. The SBHSRC was notified that Smith Oil was using faulty/leaking equipment. The SBHSRC indicated that Smith Oil would be contacted and remedial action would be recommended.
- On 26 April 1983, a 20-gallon spill of No. 2 fuel oil occurred behind apartment 650A on Lawton Loop as the result of a ruptured hose on a delivery truck. The spill flowed to the pavement, into the gutter, and onto approximately 20 square feet of sod. Smith Oil did not respond. FBH personnel contained the spill and Spill Recovery of Indiana was contracted to clean up the spill.
- On 24 April 1984, a 10-gallon No. 2 fuel oil spill occurred at the FBH power plant during a delivery by Smith Oil. While transferring the fuel, a hose ruptured, releasing the fuel to the ground. The driver stopped the flow, minimizing the size of the spill. No waterway was affected by the spill. Workers at the site covered the affected area with sand to contain and absorb the spill. Smith Oil removed the contaminated soil.
- On 5 November 1984, one-half gallon of a solvent, tetrachloroethylene naphtha, leaked from a containment drum onto a concrete floor (location unknown). Floor absorbent was spread on the product and swept up. The leaking drum was placed inside a larger salvage drum along with the contaminated absorbent material. No threat to waterways was documented.
- On 20 September 1985 a small quantity of oil was observed at Hawthorne Pond. No oil was visible in the ditch leading to the pond. The conclusion was that this oil was coming from an underground leak near Building 4 and was flushed from the ground during a heavy rain event. No further action was documented.
- On 30 September 1986, approximately 100 gallons of asphalt primer was released to a drainage ditch that runs through an underground storm sewer and eventually surfaced in New Lake located on FBH. A heavy rain washed the primer off of a parking lot that had been primed just a few hours earlier. Since the release was on private property, a cleanup was suggested but not required.
- On 21 October 1986, an oil spill was reported on Lee Road near the new barracks (Building 232). A contractor had sprayed a new parking lot with



an organic composition (or tack coat) in preparation for blacktopping the following day. The spill on the pavement was cleaned up with hay and shovels. That evening, heavy rain washed the tack coat from the parking lot and into a storm drain and drainage channels along Walter Reed Road. Upon inspection, the vegetation on each side of the channel was found to be coated with the tack coat material. Downstream, New Lake was inspected for damage, but no evidence of the tack coat material was visible. Due to the gelatinous nature of the material, hay was spread over the affected area (more for aesthetic than for absorption purposes) and the material was left to decompose naturally. No removal action was documented.

- On 23 January 1987, a 1-gallon bottle of Baracide, a pesticide, was found leaking in the retail store on base (Building 28). An employee placed the bottle in a styrofoam box, which was then placed in a janitor's sink. The Baracide, thought to be contained, ate through the styrofoam box and drained into the sanitary sewer. The base fire department was called and, after discussions with the manufacturer of the product, flushed the sink with water for approximately 15 minutes.
- On 13 May 1987, between 1 and 20 gallons of transmission fluid was spilled adjacent to Building 106 and the credit union, which made its way to a nearby storm sewer. The base fire department flushed the area with water. A boom was placed in the storm ditch to facilitate cleanup.
- On 20 August 1987, a citizen observed an individual in a white Ford pickup truck discharging an unknown liquid to a sewer manhole from a 55-gallon drum. This practice had been observed by the same citizen once before. The license of the truck was copied and the case was forwarded to the Office of Investigations. Indications are that this occurred just outside the installation; however, an exact location is unknown.
- On 21 September 1989, an air release of anhydrous ammonia (quantity unknown) was reported in the northeast wing of the Finance Center (Building 1). It was suspected that the release occurred when bottles were being switched. The immediate area was evacuated. No further details on this incident were available.
- On 10 April 1990, a fuel spill behind Building 232S (barracks) was reported. The type and quantity of the spill were not reported. Booms were placed across waterways to absorb the fuel. Samples were collected from four points along this drainage path, including: (1) the inlet to Delaware Lake; (2) the outlet of New Lake; (3) at Building 232S; and (4) at the point of entry of this drainage ditch onto FBH (at the railroad track culvert). The product was visible around the banks of New Lake, although the sorbent booms and straw still surrounded the lake inlet. The booms and straw were cleaned up; the wildlife showed no signs of



deterioration, and no product was visible on the lake itself. Interviews with base personnel suggest that this spill may have occurred outside the base boundaries and flowed onto the installation via the drainage ditch.

- On 30 April 1990, a 3-gallon spill of crankcase oil (adjacent to a barrel) was reported in the Contractors Area, east of Harrison Village. The spill appeared to be the result of rainwater entering the barrel and causing it to overflow, affecting 25 square feet. The impact was defined as superficial staining. The U.S. Army Corps of Engineers was charged with oversight of cleanup and disposal.
- On 11 January 1991, a 30-gallon fuel oil spill was reported in a drainage ditch on the installation. Absorbent booms were set up in the ditch to intercept the product. The report states that very little fuel oil was permitted to advance downstream. The exact location of the incident was not provided. No further action was taken.
- In addition, information from installation personnel indicates that an asphalt spill occurred at the site of an asphalt company located south of the installation, a portion of which reportedly flowed onto installation property.

### **3.12 AMMUNITION STORAGE (AREE 29)**

#### **3.12.1 DESCRIPTION**

Ammunition is stored in Buildings 519 through 522. These buildings are within a fenced secure area, and access could not be gained during the site visit (see Photograph 28). Therefore, the conditions of the building and the amounts of ammunition in each bunker could not be assessed. The potential exists that boxes used to store ammunition are made of lumber treated with pentachlorophenols.

#### **3.12.2 KNOWN AND SUSPECTED RELEASES**

No records were found that indicate that releases have occurred due to ammunition storage at the installation. During the site visit, no evidence of any past or present releases was observed from outside the fenced area. A slight possibility exists for a release of pentachlorophenols, if utilized for storage boxes.

### **3.13 FORMER COAL STORAGE YARD (AREE 30)**

#### **3.13.1 DESCRIPTION**

The Former Coal Storage Yard (AREE 30) is located behind Building 2, the heating plant (see Photograph 29). Several hundred tons of coal for use in the heating plant were stored in a pile outdoors on an approximately 1-acre uncovered concrete pad over a period of years.



The use of the coal pile was discontinued in 1989 when the heating plant was converted to gas (USAEHA, 1989). During wet weather, the coal stored at the yard reportedly produced a sludge that flowed onto the pad and into the storm drains and a nearby settling/evaporation basin (USAEHA, 1988; 1989).

### **3.13.2 KNOWN AND SUSPECTED RELEASES**

Some of the coal stored in the yard had spilled off the edges of the storage pad (USAEHA, 1989). There is potential for soil, sediment, and/or groundwater contamination associated with precipitation runoff from the coal storage area. Shallow groundwater is approximately 5 to 9 feet below ground surface in this area (USAEHA, 1988). The runoff from coal is of concern because it can create an acid-mine drainage situation that can produce metals contamination and abnormal soil pH. The USAEHA conducted soil sampling in 1990 in the vicinity of the Coal Storage Yard (USAEHA, 1990). Four shallow soil borings were installed, one background boring to the northwest of the yard and one each to the west, north, and southwest. Analysis for total metals showed chromium and arsenic at concentrations somewhat higher than in the background sample. However, no metals demonstrated leachability using the toxic extraction procedure. In addition, background concentrations of chromium, iron, lead, and zinc tend to be higher in glacial tills than in other lithologic formations.

### **3.14 FACILITY-WIDE AREEs**

#### **3.14.1 ASBESTOS (AREE 31)**

##### **3.14.1.1 Description**

Several asbestos surveys have been conducted in various areas at FBH. The first survey was conducted by the Everett I. Brown Company at 36 buildings located throughout FBH. This survey primarily included buildings located in the 400 and 600 building areas. Asbestos-containing materials (ACM) were found mainly in the boiler and mechanical rooms of these buildings; however, ACM were found on domestic water piping, shingles, and duct wall sleeve linings. The survey recommended removal of all ACM, and immediate action was recommended at Buildings 28, S26, 500, and 914 (EIB, 1986).

PEI Associates, Inc. have conducted five asbestos surveys at FBH throughout the last few years. These surveys were focused on selected temporary buildings, family housing, selected buildings in the 600 block, and large buildings at FBH. In general, the results of these surveys indicate that there are ACM in several buildings at FBH. The ceiling in Building 1, for example, contains asbestos (see Photograph 30). Asbestos hazard indices were calculated by PEI for all buildings surveyed that contained asbestos. In general, the hazard index values were low for all buildings. Immediate removal, encapsulation, or enclosure was recommended for all buildings with a hazard index of greater than 1,000. Recommendations for buildings with hazard indices of less than 1,000 included removal of badly damaged ACM but not removal of all ACM at that time



unless warranted by construction, renovation, or maintenance activities (PEI, 1987a; 1987b; 1987c; 1988a; 1988b).

### **3.14.1.2 Known and Suspected Releases**

No known release of asbestos has been reported. The primary concern in these buildings is friable ACM. There are no reports of removal of any ACM at the post. The non-friable type of ACM should not pose a risk of contamination unless it becomes damaged in any way.

## **3.14.2 PESTICIDE USAGE (AREE 32)**

### **3.14.2.1 Description**

Pesticides, including insecticides, rodenticides, herbicides, and fungicides, are currently stored and mixed by DIS and golf course personnel in Building 605 for use at all facilities at FBH (AREE 32). All DIS and golf course pest control technicians are certified by the Department of Defense (DOD) to perform pest control work. The pest control facility actually consists of two separate buildings (Buildings 604 and 605); however, Building 604 consists of offices, shower/toilets, and a changing room. Building 605 is divided into two separate rooms, a mixing room and a storage room. All floors in Building 605 are concrete with continuous curbing for secondary containment and have no flood drains. According to a USAEHA survey of the pesticide facility, the storage and mixing rooms do not have adequate ventilation (USAEHA, 1989; ESE, 1984).

There is an outdoor pesticide mixing facility located next to Building 605, which is used for mixing and transfer to large power-application equipment. The area is curbed for secondary containment of any spilled or released pesticides, and is covered to prevent precipitation infiltration. There is a catch basin where any spilled material will collect. Any spilled material is pumped or bailed from this catch basin and stored in 55-gallon drums for pickup by DRMO (ESE, 1984).

FBH reports indicate that twice a year the storage capacity of Building 605 is exceeded, and the excess pesticides are stored in Building 514. This occurs when large shipments of Balan are received for use at the golf course. The entire shipment of Balan is applied to the golf course at one time, and the temporary storage in Building 514 is discontinued (ESE, 1984).

Table 3-9 lists the pesticides used at FBH in 1983. A current listing of pesticide usage was not available at the time of the site visit. DDT has not been used at FBH since 1972 (ESE, 1984).

In the 1970s, pesticides were stored and mixed at the golf course. During this time, the pesticides were stored in a small wooden shed located adjacent to Building 674. The shed did not have the federally required concrete floor with continuous curbing for spill



**Table 3-9**

**Pesticide Usage**

Pesticide	Use	Concentration (%) Used
Dursban	Roaches, ants	0.5, 2.0
Baygon	Roaches	1.1
Pyrethum	Roaches	3
Dacomile	Turf	25
Diazinon	Root pests	2, 11, 43
Anticoag	Rats	0.005, 0.045, 0.025
Chlordane	Termites	---
Spike	Vegetation	80
Maneb	Turf	11
Chipco 26019	Turf	5.5
Balan	Turf	100
Bensulide	Weeds	26
MCPPP	Weeds	4
2,4-D	Weeds	2.3
Malathion	Mosquitos, flies, gnats	91, 2
Cutrine	Algae	---
Roundup	Vegetation	---
Copper Sulfate	Algae	---
Tossits	Mosquitos/roaches	90
Glyphosphate	Vegetation	8
Emburic	Weeds	1.5
Proxol	Cut Worms	4, 80
Ficam W.	Ants	5
Benomyl	Turf	5
Chloroneb	Turf	11

containment. Mixing of pesticides was performed outside Building 674, and empty pesticide containers were disposed of directly into the dumpster without any rinsing (ESE, 1984).

#### **3.14.2.2 Known and Suspected Releases**

Pesticides have been used throughout FBH, which in essence constitutes a release. The concern is for the accumulation of pesticides in soils, sediments, and wildlife. In 1975, USAEHA conducted a limited study of pesticide usage at FBH as part of the Department of the Army Pesticide Monitoring Program. At this time, 22 soil samples, six sediment samples, four fish samples, and one bird sample were collected.

Analytical results of these samples showed elevated levels (greater than 5 ppm total pesticides in soils, greater than 0.1 ppm total pesticides in sediments, and greater than 1.0 ppm total pesticides in fish and birds) in two soil samples, one sediment sample, and three fish samples. Soil samples collected at the sewage treatment plant and the pesticide storage/mixing facility showed total concentrations of 45.68 ppm and 26.77 ppm, respectively. Concentrations of total pesticides in sediments ranged from ND (not detected above the analytical detection limit) to 0.28 ppm. Concentrations of total pesticides in fish samples ranged from 0.519 ppm to 2.68 ppm (ESE, 1984).

As part of the FBH integrated pest management plan, pesticide usage at the sewage treatment plant has been discontinued, and the migration of pesticides from the pesticide mixing/storage building is being minimized (ESE, 1984).

On 15 May 1980, USAEHA conducted a survey of pesticide contamination of the streams located at FBH. Nine sediment samples were collected at this time from various streams throughout FBH. The results of these samples showed no significant amounts of pesticides in the stream sediments at FBH. It was concluded by USAEHA that pesticide operations at FBH do not contribute to contamination of the streams or waterways passing through FBH (ESE, 1984).

#### **3.14.3 FORMER COAL STORAGE AREAS (AREE 33)**

##### **3.14.3.1 Description**

According to FBH personnel, coal was used in the 1930s to heat barracks and other buildings at FBH. At that time, coal was stored in piles on the ground surface outside of each building that had a coal burning unit (AREE 33). Generally, these coal piles were not covered and did not have any type of containment for runoff (see Photograph 29) (Zimmer, 1991). According to installation personnel, large amounts of coal were formerly stored over a long period of time in the field north of the boiler plant, in an area north of 56th Street, and in the field where the Burger King restaurant is now located (Building 21). In 1984, the top 3 feet of soil was stripped from these areas and replaced with soil excavated from the area that is now Hawthorne Pond.



### **3.14.3.2 Known and Suspected Releases**

The environmental concern associated with the former coal storage areas is that the runoff could affect the pH of nearby surface water bodies and groundwater. While it is suspected that these releases did occur, the amount of coal stored in each area and the amount of associated runoff is not expected to have had any impact on the groundwater or surface water at the post. In the areas where larger amounts of coal were stored, the top 3 feet of soil was removed.

### **3.14.4 RADON (AREE 34)**

#### **3.14.4.1 Description**

Radon is a naturally occurring, gaseous, radioactive isotope (AREE 34). It is emitted from subsurface soils and tends to collect in areas with minimal ventilation and circulation, like basements of buildings.

#### **3.14.4.2 Known and Suspected Releases**

Currently, FBH personnel are in the process of testing the buildings at the post for radon. Phase I Radon results indicate that there may be several buildings on post in which radon levels exceed the EPA action level of 4 pCi/cm<sup>3</sup>. Retesting of these buildings is currently underway. Phase I results are shown in Appendix A.

### **3.14.5 BOILER BLOWDOWN (AREE 35)**

#### **3.14.5.1 Description**

FBH uses steam created at the Central Energy Plant (Building 2) as the primary heating source for many of the buildings on post. Previously, steam was produced using four coal-fired water tube boilers; however, steam is currently produced by boilers fueled by natural gas or No. 2 fuel oil. In addition, there are several facilities throughout FBH (less than 25% of total square footage heated) that are heated by separate natural gas or fuel oil-fired combustion units.

Treatment chemicals such as phosphates, sulfite, polymers, sludge conditioners, and/or pH adjusters are added to boiler feed waters at FBH. Blowdown from steam-generating boilers generally can occur continuously or manually. Blowdown may be discharged to either the storm sewer or the sanitary sewer.

#### **3.14.5.2 Known and Suspected Releases**

Boiler blowdown is considered a process wastewater because of the presence of water treatment chemicals. There are no recorded discharges of this process wastewater; however, the potential exists that process wastewater from the boiler plant could contaminate soils and groundwater.



### **3.14.6 TRANSFORMERS (AREE 36)**

#### **3.14.6.1 Description**

Polychlorinated biphenyl (PCB)-containing transformers have been used at FBH. In 1989, FBH conducted a survey of all transformers on-post that were in service. At that time, there were 278 transformers in use at FBH. Analytical results for samples of oil taken from these transformers indicated that 20 transformers were dry (no oil), 229 transformers had less than 50 ppm PCBs, 17 transformers had PCB concentrations between 50 ppm and 500 ppm, and 11 transformers had PCB concentrations greater than 500 ppm. The locations and analytical results for the transformers with PCB concentrations greater than 50 ppm is given in Table 3-10 (ESE, 1984).

Removal of PCB-contaminated (750 ppm PCBs) transformers has been an ongoing process at FBH. Once transformers are removed from service, they are packed in pans or overpack drums for spill containment and shipped to Building 124 for storage, prior to disposal in an approved facility. Non-PCB-containing transformers that are removed from service are salvaged at Building 124. Prior to 1981, PCB-containing transformers were stored outside Building 46 (ESE, 1984). According to FBH personnel, PCB-containing transformers were also once stored outside of Building 4.

#### **3.14.6.2 Known and Suspected Releases**

Records of documented spills and releases of PCBs and PCB-containing fluids are presented below:

- On 4 August 1980, a 1- to 2-quart PCB spill from a leaking transformer occurred at the Property Defense Disposal area. The spill was not located near any storm sewers or catch basins. Approximately 44 cubic feet (six 55-gallon drums) of soil was removed from the spill site and contained in DOT-approved drums.
- On 4 November 1981, two leaking PCB transformers (>500 ppm) were noticed during a quarterly inspection. The source of the leaks was loose valves, which were subsequently tightened. Approximately 3 ounces of material spilled. Cleanup occurred the next day, although no details were provided.
- On 1 September 1982, a 10- to 15-gallon spill of PCB-contaminated (188 ppm) dielectric fluid occurred in Harrison Village (Building 1031B), when a transformer was struck by lightning. The fluid, which contaminated a 50-square-foot area, was discovered on 7 September 1982. Approximately 20 cubic feet of soil was removed and containerized for later disposal. Samples were collected from the waste soil and the excavation. The transformer was taken out of service and transported to a secure storage area. The incident was considered minor.



**Table 3-10**

**Locations and Analytical Results of Transformers with  
PCB Concentrations Greater than 50 ppm**

Transformer ID No.	Building	Location	Concentration of PCBs (ppm)
30-1	Building 6	Well Field	87
30-2	Building 6	Well Field	104
30-3	Building 6	Well Field	78
30-20	Building 812	---	58
5-4	Building 1043	Behind Building	171
5-5	Building 1040	Adjacent to Building	141
5-6	Building 1036	Adjacent to Building	124
7-2	Building 35	North of Building	158
10-10	Building 1028	---	231
10-11	Building 1013	---	198
11-13	Building 40	---	122
11-14	Building 20	---	134
12-21	Building 1	East of Building	76
14-46	Building 3	Substation	233
14-47	Building 3	Substation	384
5-8	Building 1031	Adjacent to Building	>50, <500
10-14	Building 1006	---	542
12-3	Building 613	Basement	918,000
13-12	Building 300	---	>500
14-3	Building 400	In East Wing	>500
14-4	Building 400	In East Wing	>500
14-7	Building 400	In Center Wing	>500



**Table 3-10**

**Locations and Analytical Results of Transformers with  
PCB Concentrations Greater than 50 ppm  
(continued)**

Transformer ID No.	Building	Location	Concentration of PCBs (ppm)
14-9	Building 400	In West Wing	>500
14-20	Building 1	Roof	>500
14-22	Building 1	Roof	>500
14-41	Building 2	Inside	>500
14-42	Building 2	Inside	>500



## SECTION 4

### HUMAN AND ENVIRONMENTAL RECEPTORS

Human and environmental receptors become at risk when materials that are not indigenous to an area are released to the environmental media (air, water, and soil). The medium—soil, for example—then becomes the point source for contaminant migration. The pathways for contaminant migration from FBH to potential receptors include soil, groundwater, surface water, air, and direct contact. These pathways are discussed in this section.

#### **4.1 RELEASES TO GROUNDWATER**

Potential sources of groundwater contamination at FBH include:

- Inadequate leachate collection from the two former landfills.
- Leaking underground storage tanks containing fuel oil and other petroleum products.
- Migration of petroleum products from oil/water separators.
- Migration of contaminants from former storage areas (specifically, AREE 15 south of Buildings 45 and 46.
- Inadequate collection of petroleum products from the former and current fire training areas.

Groundwater flow at FBH generally follows topography, flowing across the installation in a northwesterly direction towards Fall Creek. FBH and nearby communities rely heavily on groundwater as their source of drinking water. Predicated on their locations, the production wells used to withdraw water are somewhat protected from past base activities. The FBH wells lie in the northernmost extent of the installation, away from the areas of concern cited above. The City of Lawrence wells are located south and east of FBH, while the Indianapolis Water Company wells are situated to the north of Fall Creek. Residential wells are common in this mixed rural/suburban area; most of these wells are found to the east and south of the installation. Based on available sample results, releases to groundwater at FBH appear to occur locally, i.e., evidence is detected in specific monitoring wells located across the installation.

#### **4.2 RELEASES TO SURFACE WATER AND SEDIMENTS**

Potential contaminant releases to creeks, stormwater collection systems, lakes and ponds on FBH could occur primarily in two ways, either through direct releases to the



surface water body or through overland flow of liquids or suspended/resuspended sediments. Potential releases on FBH could occur from the following areas:

- Outdoor rifle and pistol ranges (metals).
- Runoff from the former coal storage area.
- Pesticide mixing and application.
- Leachate seeps from the two former landfills.
- Overflow from oil/water separators.

Releases to surface water systems at FBH have been documented from such activities as tank refilling and paving projects that resulted in accidental spills. Lubricating oils, fuel oils and gasoline, and paving primers have accounted for the majority of these spills.

All surface water drainage from FBH flows in a generally northwesterly direction and eventually drains into Fall Creek. The Fall Creek drainage basin provides downstream municipal water supplies to the City of Indianapolis as well as habitat for aquatic wildlife and recreational opportunities for nearby residents.

Contamination of sediments is of special concern because sediments provide a habitat for a variety of aquatic organisms, many of which exist at the bottom of the food chain. Consumption of such organisms by more complex species creates a potential for bioaccumulation of the more persistent metals and other inorganic contaminants. Runoff from the outdoor pistol and rifle ranges is a potential source of contamination of surface water and thus of sediments. Contaminated sediments are also a potential source of contamination to off-site surface water via erosion and deposition.

#### **4.3 RELEASES TO SOILS**

Soil contamination is an important concern because it provides a source for releases to both surface water and groundwater. In addition, some materials, depending on their concentrations, can present a greater risk to human receptors as an inhalation hazard. This can occur in the form of volatile organic vapors or as airborne particulates (contaminants bound to dust particles). Potential sources of soil contamination at FBH include:

- Underground storage tanks (fuel oil and gasoline).
- The two former, unlined landfills and any leachate seeps that should develop.
- The electrical shop where PCB transformers were drained and serviced.
- Oil/water separators (petroleum products).
- Outdoor pistol and rifle ranges (metals).



- Former storage areas (specifically south of Buildings 45 and 46 (volatile organic compounds and petroleum products)).
- Pesticide mixing areas.
- Past and current fire training areas (petroleum products).
- Former coal storage area.

These areas warrant further investigation to determine whether contamination exists and, if so, to determine the nature and extent of the contamination present.

#### **4.4 RELEASES TO AIR**

There are currently several areas of concern that involve sources of air contamination at FBH. These include radon emissions, asbestos in buildings, boiler plant emissions, volatile organic vapors from weapons cleaning operations, and airborne particulate and/or volatile organic compounds from contaminated soils. The primary receptors of potential radon and asbestos exposure would be humans occupying buildings containing these materials. Potential human receptors include office and maintenance personnel as well as remediation and demolition personnel. Basewide surveys are presently underway for both radon and asbestos to determine the potential and the extent of these contaminants. Results of these surveys were pending at the time of this writing. Initial results indicate that asbestos is present in numerous buildings at the base, and radon may be present at concentrations above the regulatory level.

The boilers on the installation are operating under permit from the City of Indianapolis Air Pollution Control Board (IAPCB). Variances from required stack emissions maximums generally occur when there is some type of equipment or maintenance failure. The boilers were upgraded and retrofitted with multicyclones and baghouses during the 1980s to reduce the particulate emissions from these sources. The potential impact from these sources is low.

Weapons cleaning operations at FBH involve alkaline butyl cleaner, which is used in covered soaking tubs and on rags by service personnel to clean their weapons. Organic vapors were noticeable (not overpowering) in the air upon inspection of this area. No supplemental ventilation was observed. The length of time an individual spends in this area is unknown, and the potential risk to personnel cannot therefore be fully examined. This risk will dissipate once weapons cleaning operations cease. Supplemental ventilation (a ventilation hood) is recommended in the interim.

Airborne particulate and/or volatile organic compound emissions from contaminated soils are not currently a primary concern at FBH. AREEs have been identified that have potentially contaminated soils associated with them. Air release from these areas becomes a greater concern during site investigation and remediation activities than it is at present.



## SECTION 5

### CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER ACTION

The AREEs identified at FBH and recommendations for further action are summarized in Table 5-1 and shown in Figure 5-1. A summary of findings and a discussion of recommendations for further action for each AREE identified in Section 3 are discussed in the following subsections.

The implications associated with excessing property at FBH for unrestricted use and the potential effects on the significant number of sensitive environments and archeological and historically significant areas must be considered. Input should be obtained from appropriate natural resource trustees, such as the U.S. Fish and Wildlife Service, the U.S. Historical Register, and other appropriate agencies or experts in related fields.

Recommendations for analysis of samples for RCRA metals refer to the following metals:

- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Silver

#### 5.1 FACILITY OPERATIONS

##### 5.1.1 DPCA FIELD PRINTING SHOP (AREE 1)

###### 5.1.1.1 Conclusions

The DPCA Field Printing Shop produces printed material, photographic copy, and graphics for FBH. Wastes from the shop operations, which include petroleum distillates, solvents, and ferric cyanide, are stored in containers outside at the loading dock, which appeared to be well managed and free of spills. There have been no known or suspected releases or spills of hazardous wastes. Some minor staining was noted on the concrete floors within the shop area. The possibility exists that small isolated spills or releases could have occurred in the past.

###### 5.1.1.2 Recommendations

No recommendations for sampling or other investigations are made at this time due to the fact that shop operations are contained within the building. However, prior to

Table 5-1  
AREES Identified at FBH and Recommendations for Further Action

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
Facility Operations					
1	DPCA Field Printing Shop (Bldg. 1)	No known or suspected releases have been reported. Minor staining was noted on shop floors. Operations conducted inside building with concrete/tile floors and no floor drains.	Ferric cyanide, petroleum distillates, solvents.	Remove all printing and cleaning chemicals and solvents. Clean all exposed surfaces.	NA
2	TASO Devices Shop (Bldgs. 479, 481)	No known or suspected releases have been reported. Minor staining was noted on shop floors. Operations conducted inside building with concrete/tile floors and no floor drains.	Paints, paint thinner, solvents, cleaning agents.	Remove all printing and cleaning chemicals, solvents, and paints. Clean all exposed surfaces.	NA
3	Graphics Shop (Bldg. 1)	Shop wastes discharged to sanitary sewer, which in past flowed to on-site sewage treatment plant (STP). POTW currently accepts and has knowledge of contents of wastestreams. Potential for carbon dust in air during operations.	Ammonia, xylol, acetone, carbon dust.	Remove all printing and cleaning chemicals and acetone. Clean all exposed surfaces.	NA
4	Photographic Processing (Bldgs. 1, 300, 400, 434, 470, 479)	No known or suspected major releases have been reported. In the past, untreated photographic wastes disposed to sanitary sewer from Bldg. 1, Bldg. 434 which flowed to on site STP. Untreated wastes currently discharged to sanitary sewer from Bldg. 1 Graphics Shop. Some staining noted on shop floors.	Fixative photographic solution wastes, silver, cadmium, chromium, mercury.	Remove all photographic processing solutions and wastes and silver recovery units. Clean all exposed surfaces. Wipe and chip sample surfaces for metals if buildings are to be accessed (post-remediation activity).	Metals (post-remediation).
5	Weapons Cleaning Area (Bldg. 613)	No known or suspected releases have been reported. Odors from cleaning compound noted during site visit. Operations conducted inside building with concrete/tile floors.	Solvents, alkaline butyl cleaner.	None (potential contaminants in form of air emissions).	NA

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
6	Carpentry Shop (Bldg. 1)	No known or suspected releases have been reported. Operations conducted inside building with concrete floor. One floor drain noted near waste storage area. Some staining noted on shop floor.	Paints, paint thinner, solvents.	Remove all paints, paint thinner, and solvents. Clean all exposed surfaces.	NA
<b>Maintenance and Fueling Operations</b>					
7	Maintenance Shops				
	- Electrical Shop (Bldg. 4)	No known or suspected releases have been reported. Operations are conducted at the job site, with some minor work inside building. Past operations on PCB-containing transformers at the shop.	PCBs.	See AREE 17.	See AREE 17.
	- Four Vehicle Maintenance Shops (Includes Roads and Grounds Shop) (Bldgs. 33, 127, 422, 706)	No known or suspected major releases have been reported. Operations are conducted inside buildings with concrete floors. Some staining noticed on floors and around underground waste oil storage tanks. Floor drains in all shops.	Solvents, waste oil and other petroleum products, battery storage.	Remove all waste oils and other petroleum products. Clean all exposed surfaces, including concrete floors, that show any staining or other signs of spills. Install four to six soil borings (sample 0 to 6 inches and 1 to 2 feet) around fill valve and other areas near waste oil tank at auto craft shop.	TPH, metals.
	- Office Equipment Repair Shop (Bldg. 424)	No known or suspected releases have been reported. Operations are conducted inside building with concrete floors and floor drains. Some staining noticed on floors. Furniture repair formerly conducted.	Solvents, petroleum products, paint.	Remove all solvents and degreasing tanks. Clean all exposed surfaces, including concrete floors.	NA
	- Plumbing Shop (Bldg. 604)	No known or suspected releases have been reported. Operations are conducted at the job site.	Acids, bases, phosphates.	Remove all chemicals and clean all exposed surfaces, including concrete floors if there is staining.	NA

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
8	Former Maintenance Shops (Bldgs. 13, 36, 38, 109, 116, 424, 426, 428, 619)	No documentation of releases exists. Past operations conducted in buildings on concrete floors.	Waste oil and other petroleum products, solvents, battery storage.	Clean all surfaces including concrete floors if there is staining. Install one to two borings (sample 0 to 6 inches and 2 to 3 feet) adjacent to Bldgs. 619, 13, and 38 and former location of Building 109.	TPH, VOCs, metals.
9	Wash Racks, Grease Racks, and Oil/Water Separators (Bldgs. 4, 36, 116, 127, 422-426, 500, 516, 706)	Some oil/water separators formerly discharged to storm sewer. No visible evidence of major spills at wash racks, grease racks, or oil/water separators. Minor staining was noted at some locations.	Oil and other petroleum products, other engine fluids, solvents.	Inspect all oil/water separators to ensure proper operation without any leaks. Conduct tests/inspections to verify/determine outlet locations. Advance soil borings at and/or downslope of all oil/water separators, wash racks, and grease racks (sample 0 to 6 inches and 2 to 3 feet). One to two sediment samples if oil/water separators drain/drain to ditch/storm sewer.	TPH, VOCs, metals.
10	POL Drum Accumulation Areas/POL Waste Staging (Bldgs. 34, 36, 109, 116, 127, 422, 424, 706)	Minor spills of waste solvents and petroleum products.	Waste oil and other petroleum products, solvents, antifreeze, and other engine fluids.	Clean all surfaces including concrete floors. Install one to two soil borings (sample 0 to 6 inches and 2 to 3 feet) at outdoor and former outdoor storage locations (Buildings 127 and 422).	TPH, VOCs, metals.
11	Fueling Stations (Bldgs. 33, 239)	Former spills noted in past reports at Building 33. Minor spills of gasoline, fuel oil, and leaks of minor engine oils.	Petroleum products.	Clean concrete and asphalt cover in the vicinity of all gasoline dispensers if heavily stained. See AREE 21.	See AREE 21.

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
12	DIS Engineering/ Maintenance Building - Bldg. 26 - Bldg. 108 (former location)	Maintenance operations conducted mainly at the job site. Woodworking, painting and other activities conducted inside building. Storage of paints, paint thinner, and other solvents in former storage of transformers in northwest corner of shop. Possibility exists that activities could have occurred outside building. Activities at Building 108 included salt and ash bag storage and, potentially, activities similar to those at Building 26.	Paints, paint thinner, solvents, PCBs, ash.	Clean all surfaces including concrete floors if there is staining. Collect destructive samples of the concrete floor in the northwest corner of Building 26. Install one to two soil borings outside each building (sample 0 to 6 inches and 2 to 3 feet).	PCBs (concrete in Bldg. 26).  PCBs, metals, TPH, VOCs, BNAs (soil in Bldgs. 26 and 108).
<b>Water Treatment Operations</b>					
13	Water Treatment Laboratory/Plant - Laboratory (Bldg. 604) - Heating Plant (Bldg. 2)	Testing reagents are discharged to sanitary sewer via Building 604 sink drains, which formerly discharged to the on-site STP. All drains are currently linked to POTW. Water treatment chemicals are stored and used inside Building 2.	Fluoride reagent, hydrochloric acid, sulfuric acid, phosphates.	Remove all laboratory and water treatment chemicals and reagents. Clean all exposed surfaces. Containize spent reagents in laboratory-grade waste drums for disposal.	NA

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Training Areas</b>					
14	<p><b>Training Areas/Ranges</b></p> <ul style="list-style-type: none"> <li>- Indoor Pistol Range (Bldg. 802)</li> <li>- Foreman Rifle Range (Bldg. 811, 812)</li> <li>- State Police Pistol Range (Bldg. 816)</li> <li>- Skeet/Rifle Range (Bldgs. 819-822)</li> <li>- Troop training areas including north troop training area.</li> </ul>	<p>No known or suspected releases have been reported for the indoor pistol range.</p> <p>During firearm discharge, antimony, barium, lead, and other metals are released into the environment at outdoor ranges. No ammunition recovery program is in place. Soils and sediments may be contaminated with heavy metals. No evidence of existence of UXOs at FBH.</p> <p>Areas used for marching training only. POL products including fuel for fuel-operated heaters used in north troop training area.</p>	<p>Metals.</p>	<p>None at indoor range.</p> <p>Conduct sediment and surface water sampling in Schoen Creek Tributary to Lawrence Creek and in Lawrence Creek downstream and upstream of Foreman and State Police ranges.</p> <p>Install two to four soil borings at each outdoor firing range area (sample 0 to 6 inches and 2 to 3 feet). Install and sample monitoring wells based on results of soil borings.</p> <p>Survey north troop training area and install two to four soil borings at locations where POL products were used (sample 0 to 6 inches and 2 to 3 feet). Conduct further site reconnaissance for troop training areas to determine if further recommendations for sampling are to be made.</p>	<p>NA</p> <p>Metals.</p> <p>Metals.</p> <p>TPH (north troop training area).</p>

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
<b>Hazardous Materials Storage and Waste Handling Areas</b>					
15	Former Drum Storage Area (So. of Bldgs. 45 and 46)	Site records indicate that drums and other wastes such as PCB transformers were stored and that a paint shop was located in area that is now open/grassed. VOCs were detected in groundwater from monitoring wells installed for pre-construction testing purposes.	VOCs, TPH, PCBs, other unknown constituents.	Sample existing wells. Install and sample three to four additional monitoring wells. Install two to four soil borings to depth of water table.	VOCs, BNAs, TPH, pesticides, PCBs, metals.
16	DRMO Hazardous Waste Storage Area (Bldgs. 124, 125 and outdoor area between buildings)	No known or suspected releases have been reported for RCRA-permitted indoor storage facility. Hazardous wastes such as batteries formerly stored outdoors between buildings.  Waste oil currently stored outdoors on uncurbed asphalt yard. Hazardous wastes also formerly stored in Bldg. 124, which has completed partial closure and has been certified closed.	Waste oils, petroleum products, PCB transformers, battery fluids, pesticides and other wastes.	Install a total of two to four soil borings at and downslope of outdoor storage area (sample from 0 to 6 inches and 2 to 3 feet). Install and sample three to four monitoring wells.  No recommendations for Building 124. Building 125 is under Part B permit; facility Closure Plan should, therefore, be implemented prior to excess.	VOCs, BNAs, metals, TPH, pesticides, PCBs (soil and groundwater at outdoor area).  As per facility Closure Plan (Bldg. 125).
17	PCB-containing Waste Storage Areas (Adjacent to Bldgs. 4, 46 and 110, Bldgs. 124, 126)	PCB-containing transformers were formerly stored at locations adjacent to Buildings 4, 46, and 110 in uncontained areas.	PCBs.	Two to four surface soil samples (sample from 0 to 6 inches at each area).	PCBs.
18	Pesticide Mixing and Storage Areas  - DIS Former Storage (Bldg. 27)	Periodic former storage of pesticides in basement of Bldg. 27, which has since flooded several times.	Pesticides.	Install two soil borings in downslope direction (sample from 0 to 6 inches and 2 to 3 feet). Wipe and/or chip samples of building surfaces.	Pesticides.

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
18	Pesticide Mixing and Storage Areas (continued)				
	- DRMO (Bldg. 125)	See AREE 16.	Pesticides.	See AREE 16.	See AREE 16.
	- Former Storage (Bldg. 514)	Soil may be contaminated from past mixing operations.	Pesticides.	Two surface soil samples (sample from 0 to 6 inches). Wipe and/or chip samples of building surfaces.	Pesticides.
	- DIS Storage and Mixing (Bldg. 606)	Past sampling indicates releases to Hawthorne Lake.	Pesticides.	Two to four soil borings (sample 0 to 6 inches and 2 to 3 feet). Two to four sediment samples in drainageway and in Hawthorne Lake; include background sample (sample 0 to 6 inches and 1 to 2 ft where possible). Wipe and/or chip samples of building surfaces.	Pesticides.
19	- Golf course (Bldg. 674)	Soil may be contaminated from past storage at shed adjacent to Bldg. 674 and mixing operations on side of building.	Pesticides.	Two surface soil samples (sample 0 to 6 inches). Wipe and/or chip samples of building surfaces.	Pesticides.
	Buried Lithium Bromide Drums (Adj. to Bldg. 810)	Drums containing lithium bromide and potentially pesticides possibly buried in former sewage treatment tank or sludge drying beds.	Pesticides.	First conduct geophysical survey using GPR to locate drums. Based on results of survey, excavate area and remove drums. Following removal of drums, collect one to two composite soil sample(s) at excavated area.  See AREE No. 20 for monitoring well recommendations.	Pesticides (soil).  See AREE 20 (monitoring wells).

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
<b>Sanitary Wastewater Treatment Plants</b>					
20	<p>Former Sewage Treatment Plants</p> <ul style="list-style-type: none"> <li>Current Fire Training Area (Bldg. 810)</li> </ul>	<p>Potential contaminants such as waste oils, pesticides, photographic fixative solution, solvents, and other petroleum products have discharged to STPs in past from various base operations.</p>	<p>Residual wastes (metals, petroleum products) not fully treated by STP; pesticides; petroleum products from fire training.</p>	<p>Four surface soil samples (sample 0 to 6 inches) from former sludge drying beds and one sediment sample (sample 0 to 6 inches) downstream of former outfall. Install two soil borings to water table in former treatment tank areas. Determine integrity of existing wells; sample existing wells and install two to four additional monitoring wells up- and downgradient of STP (based on integrity sampling of existing wells).</p>	<p>Metals, VOCs, BNAs, pesticides, PCBs, TPH, nitrates (soil, sediment, and groundwater) at Bldg. 810.</p>
	<ul style="list-style-type: none"> <li>Historic maps/south of Shafter Road (west of Bldg. 674)</li> </ul>			<p>Use geophysical survey, if necessary, to locate boundaries of former treatment beds off Shafter Road. Install two to four soil borings (sample 0 to 6 inches and 2 to 3 feet).</p>	<p>Metals, VOCs, BNAs, pesticides, PCBs, nitrates (former treatment bed soil, former Shafter Road location).</p>
	<ul style="list-style-type: none"> <li>Historic files/east area of installation</li> </ul>			<p>Conduct further site reconnaissance to locate former east sewage plant. If location is found, use geophysical survey (if necessary) to locate boundaries and install two to four soil borings (sample at 0 to 6 inches and 2 to 3 feet).</p>	<p>Metals, VOCs, BNAs, pesticides, PCBs, nitrates (soil, former east plant).</p>

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Storage Tanks</b>					
21	Underground Storage Tanks - See listing in Subsection 3.7.1	Majority of USTs have been leak-tested. Leaking tanks and most out-of-service tanks have been removed. Groundwater monitoring in place at major leak areas.	Petroleum products, metals (from waste oil).	Continue current installation program, which includes removal of tanks as scheduled, leak-testing of tanks periodically, removal of any leaking tanks or tanks taken out of service, and verification sampling of soil following tank removal.  Continue current follow-up program for leaking tanks (LUST program).	NA (ongoing).
22	Aboveground Storage Tanks - See listing in Subsection 3.7.2	Majority of ASTs have berms. Staining noted on soils surrounding AST at Bldg. 674.  Soil sampling program in place for fuel spill at AST Bldg. 4.	Fuel oil.	Install two or four soil borings (sample from 0 to 6 inches and 2 to 3 feet) near fill valves/points and in additional areas near ASTs without concrete berms/secondary containment. Additional sampling may be required in stained areas.	TPH, BTXE (depending on contents of tank).
<b>Landfills and Incinerators</b>					
23	Former Sanitary Landfill (east) (NW of Bldg. 304)	Complete operating records not available; available records indicate that wastes were identical to those disposed of in west landfill. Results of past sampling of monitoring wells show presence of some VOCs and BNAs in certain groundwater samples.	Potential for petroleum products, metals, solvents, pesticides, and other hazardous wastes.	Sample seepage (leachate) and resample surface water at southern extreme of landfill. Determine integrity of existing wells and then sample all wells where appropriate. Install and sample new wells, if necessary, east and north of landfill. Coordinate sampling program with City of Lawrence due to deed status of land.	VOCs, BNAs, pesticides, PCBs, metals, TPH, typical landfill parameters (BOD, COD, etc).

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
24	Former Sanitary Landfill (west) (West of Bldg. 800-809)	Records state that municipal solid waste from FBH was disposed of in landfill. Results of sampling from existing monitoring wells indicate little to no impact on local groundwater due to presence of chemical constituents (only a few isolated occurrences of VOCs detected).	Potential for petroleum products, metals, solvents, pesticides, and other hazardous wastes.	Determine integrity of existing monitoring wells and then sample. Install and sample new wells if necessary. Sample seepage at the north end of landfills.	VOCs, BNAs, pesticides, PCBs, metals, TPH, typical landfill parameters (BOD, COD, etc.)
25	Former Incinerators - Hospital (Bldg. 300)  - Sanitary Waste Incinerator (Bldg. 518)	No known or suspected releases have been reported for former incinerator in hospital. Information indicates that ash was disposed of in on-site landfill(s).  No known or suspected releases have been reported for sanitary waste incinerator. Ash may have been disposed of near the incinerator and/or in on-site landfill(s).	Metals in ash that was potentially disposed of in landfill(s).  Metals in ash. Unknown material(s).	None for former hospital incinerator. See AREEs 23 and 24 for recommendations for landfills.  Conduct geophysical survey using GPR to determine if ash or other wastes have been disposed of adjacent to incinerator building and extent of disposal area. Two to four test pits, depending on results of geophysical survey.	NA for hospital incinerator. See AREEs 23 and 24.  Metals, TPH, VOCs, BNAs, pesticides, PCBs.

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
<b>Medical Facilities</b>					
26	<p>Hospital and Clinics</p> <ul style="list-style-type: none"> <li>Occupational Health Clinic (Bldg. 1)</li> <li>Hawley Army Hospital (Bldg. 300)</li> <li>Dental Clinic (Bldg. 300)</li> <li>Veterinary Clinic (Bldg. 805)</li> </ul>	<p>No known or suspected contamination has resulted from handling and disposal of medical waste or handling small amounts of hazardous chemicals. Silver recovery and former incinerator discussed under AREEs 4 and 25, respectively.</p>	<p>Infectious waste, miscellaneous hazardous chemicals.</p>	<p>Remove all hazardous constituents and infectious wastes prior to excessing property. See AREEs 4 and 25 for photographic processing areas and former incinerator.</p>	<p>NA</p> <p>See AREEs 4 and 25.</p>
<b>Burn Pit Areas</b>					
27	<p>Fire Training Area</p> <ul style="list-style-type: none"> <li>Training Pit Area (Adj. to Bldg. 810)</li> <li>Former Training Areas (North of Bldg. 518, east of west landfill)</li> </ul>	<p>Fire training activities conducted using diesel fuel on old automobiles and in metal troughs in gravel-filled former sewage treatment tanks.</p> <p>No substantial evidence found of other training areas based on site visit, interviews, and records. One report indicates fuel oil was ignited in metal troughs in these areas.</p>	<p>Diesel fuel.</p> <p>Fuel oil.</p>	<p>See recommendations for Former Sewage Treatment Plant, AREE 20.</p> <p>Confine all fire training activities to training pit area. No further recommendations for former training areas.</p>	<p>See AREE 20.</p> <p>NA</p>

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analytes
<b>Spill Areas and Other Releases</b>					
28	<p><b>Spill Areas</b></p> <ul style="list-style-type: none"> <li>PCB Spill Areas</li> <li>Other Spills (see Subsection 3.11 for locations)</li> </ul>	<p>Groundwater sampling in vicinity of PCB spill area(s) indicates that PCBs were not released to the environment.</p> <p>Numerous spills of petroleum products have flowed into streams and/or ponds/lakes at the installation.</p>	PCBs, Diesel fuel, gasoline, engine oils, solvents.	Four to six sediment samples in creeks/ponds/lakes (sample 0 to 6 inches) at locations throughout the installation. Collect samples for TPH analysis from the waterline areas. Further investigate supposed off-post asphalt spill. No further recommendations for other spill areas.	TPH, metals, NA for other spill areas.
<b>Ammunition Storage</b>					
29	Ammunition Storage Areas (Buildings 519-522)	No evidence of spills or releases on exterior of buildings or noted in site reports. However, buildings were inaccessible and could not be fully inspected.	Ammunition, pentachlorophenols (PCP) in treated ammo boxes.	Obtain access to buildings; remove all ammunition and boxes prior to excess. Consider disposal options for PCP in ammo boxes. Two to four soil samples (sample 0 to 6 inches). Wipe and/or chip samples of building surfaces for building closure.	Metals (soil); PCP (wipe and chip samples).
<b>Coal Storage Yard</b>					
30	Former Coal Storage Yard (NE of Bldg. 2)	Open storage of large amounts of coal; coal sludge associated with rainwater runoff drained to storm sewer. Results of soil sampling indicate presence of some elevated levels of metals, which may be naturally occurring and have not shown to be leachable.	Runoff from coal (similar to acid mine drainage).	Install two to four confirmatory soil borings (sample 0 to 6 inches and 2 to 3 feet) in locations not previously sampled. Two to four sediment samples in drainage pathways.	Metals, pH.

Table 5-1  
AREES Identified at FBH and Recommendations for Further Action  
(continued)

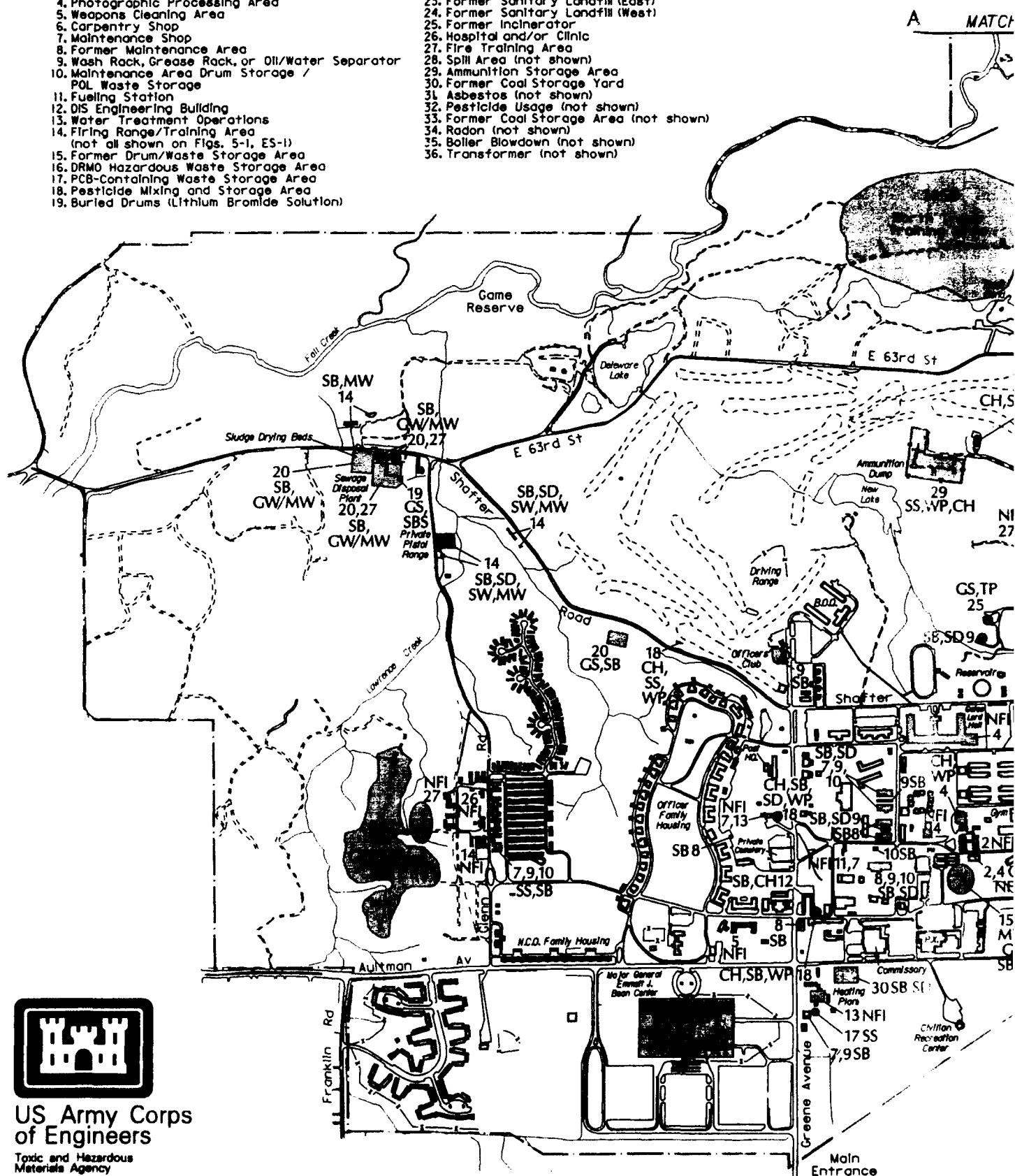
AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
Facility-wide AREES					
31	Asbestos (base-wide)	Survey of buildings on installation by FBH personnel is in progress. Results indicate asbestos is of concern in Building 1 and other buildings.	Inhalation of asbestos fibers.	Continue surveying buildings. Generate asbestos management and abatement plan. Remove or encapsulate known exposed friable asbestos.	NA (ongoing).
32	Pesticide Usage (Base-wide)	No known major releases have occurred; however, potential exists for soil, sediment, and groundwater contamination resulting from pesticide, herbicide, and fungicide usage. In the past, USEPA threshold levels for pesticides were exceeded in some areas of the installation.	Pesticides, herbicides, fungicides.	Four to six sediment samples in creeks/ponds/lakes (sample 0 to 6 inches) at locations throughout the installation.	Pesticides.
33	Former Coal Storage Areas (Base-wide)	In the past, numerous small coal piles were located throughout the installation and utilized for heating purposes. Practice was ceased in 1930s (small piles). Larger amounts were stored north of boiler plant and in area where Building 21 is now located. Top 3 feet of soil was removed from these areas in 1984.	Runoff from coal.	No further recommendations.	NA
34	Radon (Base-wide)	A radon screening program is in progress at the installation. Phase I Radon results indicate that radon may be present in numerous buildings at the installation at concentrations above the EPA action level. Retesting is currently in progress.	Radon.	Continue screening program to include all buildings at the installation and implement appropriate remediation measures where necessary, based on results (if above EPA action level).	NA (ongoing).

**Table 5-1**  
**AREES Identified at FBH and Recommendations for Further Action**  
**(continued)**

AREE No.	Description/Location	Summary of Findings	Concern	Recommended Activity	Analyses
35	Boiler Blowdown (Base-wide)	Chemicals from blowdown from the boilers discharged to soil and storm sewer ditches/drains.	Treatment chemicals such as phosphates, sulfite polymers, sludge conditioners, and/or pH adjusters.	None (small potential for contamination due to concentration and types of chemicals used).	NA
36	Transformers (Base-wide)	All transformers at installation have been sampled and all transformers/transformer oil have been removed that contain PCBs above regulatory level.	PCBs.	No further recommendations.	NA

1. DPCA Field Printing Shop
2. TASO Devices Shop
3. Graphics Shop
4. Photographic Processing Area
5. Weapons Cleaning Area
6. Carpentry Shop
7. Maintenance Shop
8. Former Maintenance Area
9. Wash Rack, Grease Rack, or Oil/Water Separator
10. Maintenance Area Drum Storage / POL Waste Storage
11. Fueling Station
12. DIS Engineering Building
13. Water Treatment Operations
14. Firing Range/Training Area (not all shown on Figs. 5-1, ES-1)
15. Former Drum/Waste Storage Area
16. DRMO Hazardous Waste Storage Area
17. PCB-Containing Waste Storage Area
18. Pesticide Mixing and Storage Area
19. Buried Drums (Lithium Bromide Solution)

20. Former Sewage Treatment Plant (not all shown)
21. Underground Storage Tank (not shown)
22. Aboveground Storage Tank (not shown)
23. Former Sanitary Landfill (East)
24. Former Sanitary Landfill (West)
25. Former Incinerator
26. Hospital and/or Clinic
27. Fire Training Area
28. Spill Area (not shown)
29. Ammunition Storage Area
30. Former Coal Storage Yard
31. Asbestos (not shown)
32. Pesticide Usage (not shown)
33. Former Coal Storage Area (not shown)
34. Radon (not shown)
35. Boiler Blowdown (not shown)
36. Transformer (not shown)



US Army Corps  
of Engineers

Toxic and Hazardous  
Materials Agency

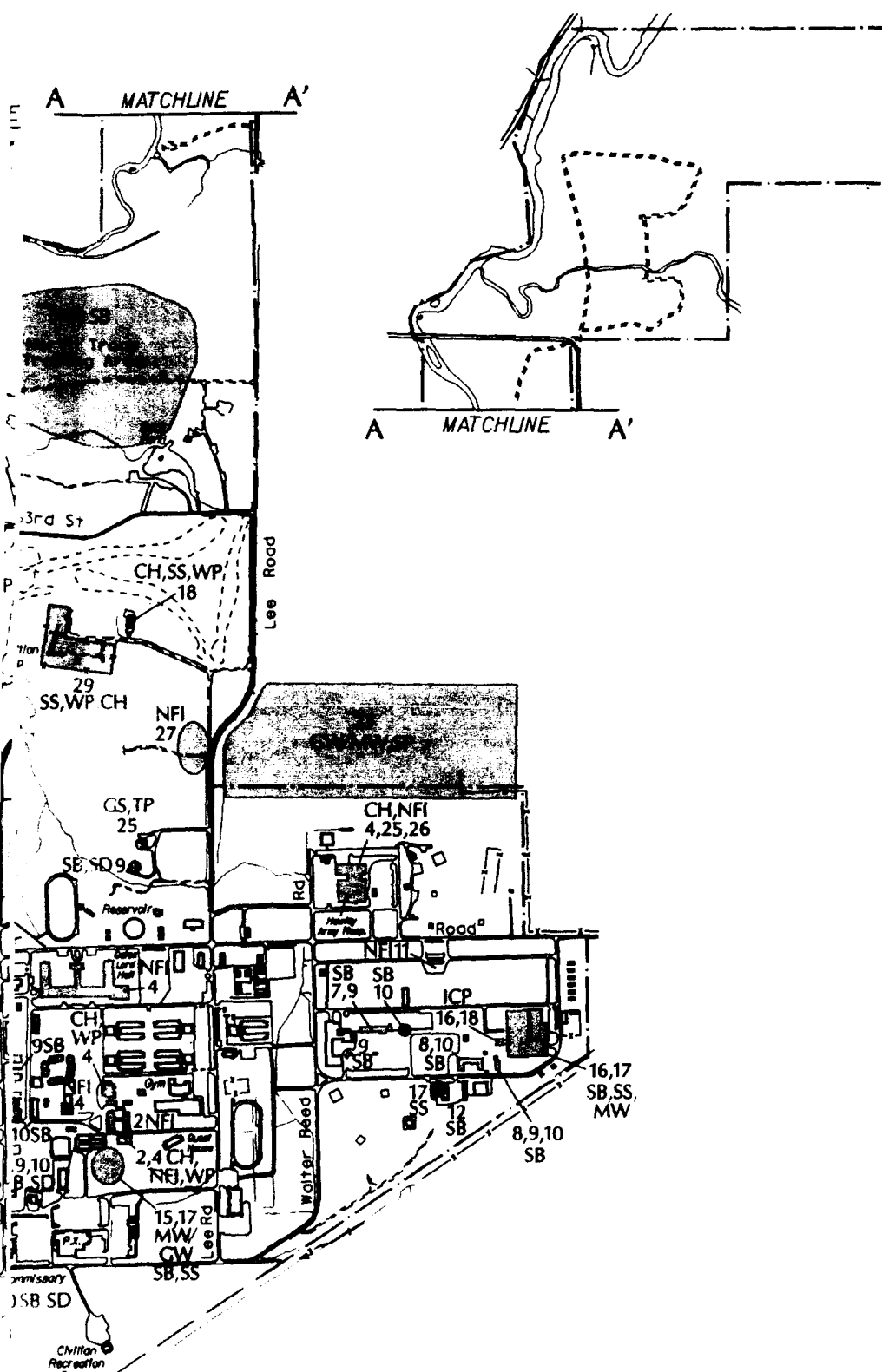
U. S. Army  
Base Closure Preliminary Assessment  
Fort Benjamin Harrison  
Indianapolis, IN - December 1991

Figure 5-1  
Recommended Sampling  
Locations

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



0 meters 300  
0 feet 1200



- CH Chip (Destructive) Sample
- FSR Further Site Reconnaissance
- GS Geophysical Survey
- GW Groundwater (existing MW)
- ICP Implement Closure Plan (Part B Permit, Bldg. 125)
- MW Monitoring Well / Sample Groundwater
- NFI No Further Investigation
- SB Soil Boring
- SBS Subsurface Soil
- SD Sediment
- SP Seep
- SS Surface Soil
- SW Surface Water
- TP Test Pit
- WP Wipe

Note: For Troop Training Areas, AREE 14 (not shown), the recommendation is FSR

24 AREE Number



AREE

- Installation Boundary
- Hydrography
- Road/Pavement Edge
- Gravel Edge
- Railroad
- Powerline
- Pipeline
- Fence
- Structure



excessing the property, all chemicals used for printing and graphic services, solvents, and wastes should be removed from the areas, and all exposed surfaces should be cleaned to remove residual materials/wastes.

### **5.1.2 TASO DEVICES SHOP - BUILDINGS 479 AND 481 (AREE 2)**

#### **5.1.2.1 Conclusions**

The TASO Devices Shop is located in two buildings. Activities associated with Building 479 include graphic services, photographic processing and copying, and video services.

Building 481 is currently used for materials storage and formerly housed a wood shop. The graphics process utilizes an ammonia solution; however, no waste is generated, as ammonia is consumed in the process. The materials contained in the former wood shop, i.e., mixed paints, thinner, and solvents/cleaning agents, were transferred to DRMO for disposal. Materials stored in Building 481 include paints and thinners, which are stored in metal cabinets.

No known or suspected releases have been reported in the past, although minor staining was noted on some floor areas in both buildings. The possibility exists that small isolated spills or raw materials could have occurred in the past.

#### **5.1.2.2 Recommendations**

No recommendations for sampling or other investigations are made at this time, since all activities associated with the Devices Shop are contained inside the two buildings. Also, the two buildings are connected by an enclosed walkway, and therefore, no migration path exists for wastes and materials; no floor drains are evident. However, prior to excessing the property, all chemicals used for printing and graphic services, including paints, paint thinner, solvents, cleaning agents, and wastes, must be removed from the area, and all exposed surfaces must be cleaned to remove residual materials and wastes.

### **5.1.3 GRAPHICS SHOP - BUILDING 1 (AREE 3)**

#### **5.1.3.1 Conclusion**

The Graphics Shop, located on the second floor of Building 1, performs various graphic services including blueprinting, sign printing, silk screening, and a minor amount of photographic processing. The wastes generated at the shop include waste xylol and acetone from screen printing and ammonia-containing blueprint solution, all of which are poured down a sink that drains to the sanitary sewer.

No records were found concerning major spills of chemicals or wastes at the Graphics Shop. However, past and current operations allow for waste disposal to the sanitary sewer, which in the past flowed to the on-site sewage treatment plant. A POTW currently accepts and has knowledge of the contents of the wastestreams. At the time



of the site visit, operations within the shop area appeared to be well maintained otherwise, with no visible evidence of major spills or staining of shop floors. The potential exists for the presence of carbon dust from shop operations. However, this was not evident during the site visit. Carbon dust presents a concern because of possible inhalation exposure.

#### **5.1.3.2 Recommendations**

No recommendations for sampling or other investigations are made at this time, since all activities associated with the Graphics Shop are contained inside the building and no migration path exists for wastes and materials. No floor drains were evident. However, prior to excessing the property, all chemicals used for graphic services, including ammonia, xylol, acetone, and other wastes, must be removed from the area, and all exposed surfaces, if any, must be cleaned to remove residual materials and wastes.

### **5.1.4 PHOTOGRAPHIC PROCESSING AREAS (AREE 4)**

#### **5.1.4.1 Conclusions**

Currently, there are five facilities that perform photographic processing services. They are located at the Field Printing Shop (Building 1), the TASO Devices Shop (Building 479), the Graphics Shop (Building 1), the Photojournalism School (Building 470), Dental and x-ray (Building 300). The chemicals used and wastes generated during photographic processing operations include paper developer, fixative solution containing silver, rinsewater, and stop bath. Silver is filtered from the fixative solution (from black-and-white process), which is then allowed to drain to the sanitary sewer. Wastes from the other processes were also allowed to drain to the sanitary sewer via sinks.

No records were found concerning major spills of chemicals or wastes at the photographic processing facilities. However, the possibility exists that small isolated spills have occurred in the past. The units appeared to be in good operating order at the time of the site visit, although some units had stains on the adjacent concrete and tile floor areas.

#### **5.1.4.2 Recommendations**

No recommendations for sampling or other investigations are made at this time. However, prior to excessing the areas, all photographic processing solutions, wastes, and silver recovery units must be removed. In addition, all exposed surfaces must be cleaned to remove any residuals. Surfaces must be chipped and sampled for metals as a post-remediation activity.



### **5.1.5 WEAPONS CLEANING AREA - BUILDING 613 (AREE 5)**

#### **5.1.5.1 Conclusions**

The Weapons Cleaning Area is located in the basement of Building 613. Cleaning of small arms, such as rifles and handguns, is performed in this building. The majority of the cleaning involves small amounts of cleaning compounds (solvents and detergents) on swabs, which volatilize, leaving no waste solvents. In addition, solvent baths, which contain alkaline butyl cleaner, were also used.

No records were found concerning major spills or releases of chemicals or wastes at the Weapons Cleaning Area. The possibility exists, however, that small isolated releases of spent or raw materials have occurred during past operations. Odors were noted during the site visit, indicating minor releases of solvents to the air.

#### **5.1.5.2 Recommendations**

No recommendations for sampling and other investigations are made at this time, since all operations were conducted inside the building. The building floor consists of concrete and tile, and therefore no migration path exists to the outside of the building, with the exception of releases to the air. This area is a potential air pathway risk due to the volatile organics used in cleaning weapons. However, the potential for migration of releases outside the building is low; moreover, releases are evident only during cleaning operations. Because of the temporary nature of such releases and their low migration potential, no air sampling is recommended.

### **5.1.6 CARPENTRY SHOP - BUILDING 1 (AREE 6)**

#### **5.1.6.1 Conclusions**

The Carpentry Shop is located in the basement of Building 1. Activities including woodworking, furniture repair, and small-scale painting and paint stripping are conducted. Wastes including paints, paint thinners, and paint removers are stored in a small drum on a wood pallet and are sent to the DRMO for storage and ultimate disposal at a permitted facility. Sawdust is placed in a dumpster that was formerly taken to the on-site sanitary landfill for disposal.

There was no known or suspected evidence of any major releases or spills of hazardous waste associated with the Carpentry Shop. The possibility exists, however, that small isolated releases of spent or raw materials could have occurred in the past. At the time of the site visit, some staining was observed on the shop floor in the vicinity of the painting and hazardous waste storage area.

#### **5.1.6.2 Recommendations**

No recommendations for sampling or other investigations are made at this time, since all operations of the Carpentry Shop were conducted inside the building. There are no



apparent migration paths for wastes. However, prior to excessing the property, all chemicals used for Carpentry Shop operation, i.e., paints, paint thinners, and solvents, must be removed from the area, and all exposed surfaces must be cleaned to remove any residual materials or wastes.

## **5.2 MAINTENANCE OPERATIONS**

### **5.2.1 MAINTENANCE SHOPS (AREE 7)**

#### **5.2.1.1 Conclusions**

There are several maintenance shops located throughout FBH. They are located in Building 4, 33, 127, 422, 424, 604, and 705. The maintenance activities conducted at the maintenance shops include storage and routine service of vehicles, office equipment and other equipment, and general road, buildings, and ground maintenance operations. Chemicals used during maintenance operations include PCBs, solvents, acids, bases, phosphates, paints, and other petroleum products.

Spills have been reported in the past in the soil adjacent to the Electrical Shop, in and around the dumpster at AAFES, and in the northeast parking lot at the U.S. Army Reserve Center. Investigations have been conducted at the time of these incidents, and contaminated soils have been removed where necessary. Currently, some stains appear on the ground surface at the base of the fill pipe to the underground waste oil tank.

#### **5.2.1.2 Recommendations**

See Subsection 5.5.3.2 for recommendations concerning Building 4. It is recommended that four to six soil borings be taken with samples at 0 to 6 inches and 1 to 2 feet around fill valves and other areas near the waste oil tank at the Auto Craft Shop (Building 705) and analyzed for TPH and RCRA metals.

No recommendation for sampling or other investigations is made at this time for other maintenance shops, since all operations are conducted inside the buildings and no migrations paths appear to exist. However, before excessing the area, all solvents, waste oils, and other petroleum products must be removed, and all exposed surfaces, including concrete floors, must be cleared to remove any residual materials and wastes.

### **5.2.2 FORMER MAINTENANCE SHOPS (AREE 8)**

#### **5.2.2.1 Conclusions**

There are several areas located throughout FBH where maintenance operations were conducted in the past, including Buildings 36, 38, 109, 116, 424, 425, 426, 619, and a demolished building near Building 13. The chemicals used and the wastes generated in former maintenance shops include solvents, waste oil, and other petroleum products.



There are no records of reported spills or releases associated with former maintenance shops. However, the possibility exists that solvents, waste oils, and other petroleum products may have been released during these operations.

#### **5.2.2.2 Recommendations**

It is recommended that one or two soil borings be installed at depths of 0 to 6 inches and 2 to 3 feet adjacent to Buildings 13, 38, and 619 and at the location of former Building 109 and analyzed for TPH, RCRA metals, and VOCs. Prior to accessing these properties, all surfaces, including concrete floors, must be cleaned if any stains are observed.

### **5.2.3 WASH RACKS, GREASE RACKS, AND OIL/WATER SEPARATORS (AREE 9)**

#### **5.2.3.1 Conclusions**

Wash racks, grease racks, and oil/water separators are located throughout FBH. Wash racks are used to clean vehicles, including the engines, on a regular basis and are primarily associated with the vehicle maintenance areas. Grease racks are used to lubricate mechanical parts and/or change oil in vehicles. It is likely that solvents have been used in the past at wash racks and grease racks. Oil/water separators are used to separate any floating product from effluent water from wash racks, grease racks, and other operations prior to being discharged. If not used properly, oil/water separators can overflow, which causes the release of hazardous substances to the sanitary sewer, storm sewer, or the areas adjacent to the oil/water separator.

There has been one reported case of overflows from an oil/water separator to a storm sewer. In addition, the possibility exists that unreported amounts of oil, grease, solvents, and other engine fluids could have contaminated the soil. Also, the possibility exists that runoff from the wash racks, grease racks, and oil/water separators could have contaminated areas, including drainage ditches and streams. Minor staining has been noted at some locations.

#### **5.2.3.2 Recommendations**

The following recommendations are made for wash racks, grease racks, and oil/water separators:

- All oil/water separators should be inspected to ensure proper operation without leaks.
- Tests and/or inspections should be conducted to verify or determine outlet locations.
- Soil borings should be advanced at and/or downgradient of wash racks, grease racks, and oil/water separators, and samples should be taken at



depths of 0 to 6 inches and 2 to 3 feet and analyzed for TPH, RCRA metals, and VOCs.

- One to two sediment samples should be taken at oil/water separators that drain or drained to a ditch or a stormwater drain and analyzed for TPH, RCRA metals, and VOCs.

## **5.2.4 POL DRUM ACCUMULATION/WASTE STAGING AREAS (AREE 10)**

### **5.2.4.1 Conclusions**

Several of the maintenance operations discussed above have temporary drum accumulation areas for hazardous materials and hazardous wastes and POL materials/wastes. The drum accumulation areas are located at the following buildings:

- Buildings 34 and 36 (indoor, former).
- Buildings 109 and 116 (indoor, former).
- Buildings 127 (outdoor).
- Building 422 (indoor and former outdoor).
- Building 424 (indoor).
- Building 705 (indoor, former).

Materials and wastes stored in these areas include oil, gasoline and other petroleum products, hydraulic fluids, transmission fluids, brake fluids, antifreeze, and solvents. Wastes generated during maintenance operations include waste oils and greases, other spent engine fluids, spent solvents, brake shoes and linings (containing asbestos), and lead and acids from batteries.

No records of reported spills or releases from drum accumulation areas at maintenance operations have been found. During the site visit, it was apparent that the concrete floors at several areas were stained, indicating minor spills and leaks. Past reports have noted evidence of minor spills at several of the outdoor drum accumulation areas. Any releases or spills at the drum accumulation areas, especially the outdoor areas, may have contaminated soils and the runoff from these areas may have affected the ditches, streams, and other surface water bodies at the post. Based on the volume of materials stored in these drum storage areas, it is unlikely that the groundwater has been affected by these operations.

### **5.2.4.2 Recommendations**

It is recommended that one or two soil borings be installed at outdoor and former outdoor accumulation locations, as noted in Subsection 5.2.4.2, and samples be taken at 0 to 6 inches and 2 to 3 feet and analyzed for TPH, RCRA metals, and VOCs. Prior to accessing the drum accumulation areas, all surfaces including concrete floors must be cleaned to remove any chemical residuals.



## **5.2.5 FUELING STATIONS (AREE 11)**

### **5.2.5.1 Conclusions**

There are two fueling stations located at FBH. The AAFES gas station (Building 33) sells gasoline to private vehicle owners. Gasoline is stored at the AAFES gas stations in four underground storage tanks. The POL service station (Building 239) distributes lead and unleaded gasoline and diesel fuel to government-owned vehicles. Gasoline and diesel fuel are stored at the POL service station in three underground storage tanks.

Gasoline spills have been reported on three different occasions in the past. Spills or releases from the underground storage tanks at the fueling stations are discussed in Subsection 5.7. Routine fueling operations have the potential for minor spills of gasoline and diesel fuel; however, the fueling operations are conducted on concrete surfaces, and there is little potential for contamination to soils, surface water, and groundwater from these minor spills.

### **5.2.5.2 Recommendations**

No recommendations for sampling or other investigations are made at this time. However, prior to exiting the property, concrete and asphalt cover in the vicinity of all gasoline dispensers must be cleaned if heavily stained. See recommendations for USTs in Subsection 5.7.1.2.

## **5.2.6 DIS ENGINEERING/MAINTENANCE BUILDING (AREE 12)**

### **5.2.6.1 Conclusions**

The DIS Engineering/Maintenance Building, located in Building 26, consists of a carpentry shop, an electrical shop, a preventive maintenance shop, and a heating and air conditioning shop. Activities associated with these shops are primarily conducted at the job site. The activities included removal of PCB-contaminated equipment, painting, minor repairs to plumbing fixtures, and removal of asbestos-containing insulation. The chemicals associated with the operations include acids, bases, alcohols, used naphtha, phosphates, biocides, paints, paint strippers, and thinners. Building 108 was designated the Engineering Yard, which potentially housed similar activities. In addition, activities at Building 108 included salt storage and blowdown/ash storage.

There are no reported spills or releases associated with either DIS Engineering/Maintenance Building. However, the potential exists that minor spills and releases typically associated with these activities could include, but are not limited to, oils, fuels, paints, acids, bases, and solvents. In addition, releases of oils, fuels, greases, and other engine fluids from the vehicles at the outdoor storage are possible.



### **5.2.6.2 Recommendations**

It is recommended that one or two soil borings be installed outside each building and samples be taken at 0 to 6 inches and 2 to 3 feet. They should be analyzed for TPH, RCRA metals, BNAs, and VOCs. Destructive samples should be taken of the concrete floor in the northwest corner of Building 26 and analyzed for PCBs. Prior to excessing either DIS Engineering/Maintenance Building, all surfaces including concrete floors must be cleaned to remove any residual chemicals or wastes.

## **5.3 WATER TREATMENT OPERATIONS (AREE 13)**

### **5.3.1 CONCLUSIONS**

A water test laboratory for the WTP is located in Building 604. The WTP laboratory performs routine analyses on both potable water and wastewater. Small quantities of fluoride reagent, standards, and hydrochloric acid are used for the analyses. Generated waste is discharged via building drains to the sanitary sewer, which presently discharges to a POTW. Water treatment activities at the heating plant involve storage of treatment chemicals inside the building and accumulation of waste petroleum products and oils adjacent to the building. No records were found that indicate that spills or releases have occurred due to laboratory or water treatment operations at the WTP. In the past, the sanitary sewer discharged to the FBH STP.

### **5.3.2 RECOMMENDATIONS**

No recommendations for sampling or other investigations are made at this time. However, prior to excessing the property, all laboratory and water treatment chemicals must be removed, all exposed surfaces must be cleaned, and all spent reagents must be containerized in laboratory grade drums for disposal.

## **5.4 TRAINING AREAS/RANGES (AREE 14)**

### **5.4.1 CONCLUSIONS**

Four firing ranges are located on the installation: the Foreman Range (adjacent to Buildings 811 and 812); the State Police Range (near Building 815); the Pistol Target Range (in Building 802); and the Skeet/Trap Range (near Buildings 819 to 822). In addition, troop training activities have occurred in the northern and northwestern areas of the installation. Activities in the north troop training area have included use of POL products for fuel-operated heaters.

No records were found that indicate that releases have occurred due to firing range activities or troop training. Because there is no ammunition recovery program for the outdoor ranges, it is suspected that lead and other heavy metals are present in the soils. Runoff from the range areas may also have contaminated surface waters, particularly in the Foreman Range and State Police Range. Observations made during the site visit indicate evidence of rounds fired directly into the bank of a tributary of Lawrence



Creek at the Foreman Range. The potential exists for release of POL products in the north troop training area.

#### **5.4.2 RECOMMENDATIONS**

It is recommended that:

- A sediment and surface water sampling program be conducted in Schoen Creek (tributary to Lawrence Creek) and in Lawrence Creek at locations downstream and upstream of the Foreman and Police Ranges. Samples should be analyzed for RCRA metals.
- Two to four soil borings be installed at each outdoor firing range area and samples be taken at depths of 0 to 6 inches and 2 to 3 feet and analyzed for RCRA metals. Monitoring wells be installed based on soil boring results.
- Survey north troop training area and install two to four soil borings at location(s) where POL products were used/stored and fuel-operated heaters were used/stored (sample 0 to 6 inches and 2 to 3 feet). Analyze samples for TPH.
- Further site reconnaissance be conducted for troop training areas to determine if further recommendations are to be made.

No sampling or other investigations are recommended at the indoor range.

### **5.5 HAZARDOUS MATERIALS STORAGE AND WASTE HANDLING AREAS**

#### **5.5.1 FORMER DRUM STORAGE AREA (AREE 15)**

##### **5.5.1.1 Conclusions**

The Former Drum Storage Area is located in a 4-acre open grassed area south of Buildings 45 and 46. The reports indicate that this area was used for storage of drummed waste materials. In addition, this area has been the site for a paint shop, which was destroyed by fire, and has been used to store PCB transformers.

Complete information does not exist to determine if major spills have occurred at the Former Drum Storage Area; however, the potential exists for spills of the kind related to paint shop operations or storage of waste materials including PCB transformers. A site report states that a small spill of PCB transformer oil was released from a leaking transformer. The soil contaminated by this spill was removed and disposed of off-site. A previous investigation indicated that the area is potentially contaminated with VOCs and TPH.



### **5.5.1.2 Recommendations**

It is recommended that the existing wells be sampled and three to four additional monitoring wells be installed. Groundwater samples should be analyzed for VOCs, BNAs, TPH, pesticides, PCBs, and RCRA metals. In addition, it is recommended that two to four soil borings be advanced to the depth of the water table and samples be analyzed for VOCs, BNAs, TPH, pesticides, PCBs, and RCRA metals.

## **5.5.2 DRMO HAZARDOUS WASTE STORAGE AREA (AREE 16)**

### **5.5.2.1 Conclusions**

The DRMO Hazardous Waste Storage Area is located in Buildings 124 and 125 and includes an approximately 2-acre fenced area between these buildings. The DRMO storage area is used for storage and disposal of hazardous materials and wastes. In the past, PCB liquids, PCB capacitors, used batteries, and other wastes have been stored in this area.

Available information indicates evidence of minor spills of PCB oil and a paint remover on the asphalt caused by mishaps during handling of waste storage drums or by runoff from uncovered wastes stored outdoors. In addition, there is a potential that releases of petroleum hydrocarbons or metals have occurred due to spills from used oil stored in drums outside of Building 125. At the time of the site visit, Buildings 124 and 125 and the outside storage area appeared to be well managed, and only minor stains were visible on the outside area. Building 124 has been certified closed by the U.S. Army Corps of Engineers.

### **5.5.2.2 Recommendations**

No sampling or other investigation is recommended for Building 124 because it has been certified closed by the U.S. Army Corps of Engineers. Building 125, the currently permitted facility, should be closed and investigated according to the existing Closure Plan, which is included as Attachment VI of the facility Part B permit. This plan calls for cleaning of storage areas and sampling soils adjacent to Building 125. For the outdoor area between the two buildings, which was formerly used for storage and currently stores waste oil, it is recommended that two to four soil borings be installed at and downgradient of the area and samples be taken at depths of 0 to 6 inches and 2 to 3 feet.

Samples collected from these soil borings associated with the outdoor area should be analyzed for VOCs, BNAs, metals, TPH, pesticides, and PCBs. In addition, it is recommended that three to four monitoring wells be installed in the vicinity of the outdoor area and groundwater samples be analyzed for VOCs, BNAs, metals, TPH, pesticides, and PCBs.



### **5.5.3 PCB-CONTAINING WASTE STORAGE AREAS (AREE 17)**

#### **5.5.3.1 Conclusions**

The PCB-Containing Waste Storage Area is located at the DRMO waste storage facility; such areas were formerly located adjacent to Buildings 4, 46, and 110. According to site reports, transformers containing PCB oil were stored in the area adjacent to Building 4.

Available information indicates that no major spills or releases have occurred associated with the PCB-containing waste storage areas at Buildings 4, 46, and 110. However, the possibility exists that small isolated spills of oil could have occurred during transport or management of the wastes. In addition, minor spills have occurred at the DRMO storage facility and the old DPDO storage yard.

#### **5.5.3.2 Recommendations**

It is recommended that two to four surface soil samples be taken at a depth of 0 to 6 inches at each site and analyzed for PCBs.

### **5.5.4 PESTICIDE MIXING AND STORAGE AREAS (AREE 18)**

#### **5.5.4.1 Conclusions**

Pesticides, herbicides, insecticides, and rodenticides are currently stored and mixed by the DIS Entomology section in Building 605 and stored in Building 125 at DRMO. Former storage and mixing areas include the DIS maintenance storage shed at Building 27, golf course storage at Building 514, and golf course storage and mixing at Building 674.

A review of site reports indicates that pesticide mixing operations at FBH have been relatively well maintained, with no major spills or releases. The potential exists for isolated spills to have occurred at any of the storage or mixing facilities. Potential pathways include releases to soils at the former storage area at Building 514, the former storage/mixing area outside of Building 674, and the shed next to Building 674. In addition, runoff from Building 605 and associated equipment as well as potential leaching of pesticide residues through seams, cracks, and porous materials could cause releases to Hawthorne Lake. Water samples from Hawthorne Lake collected on 9 September 1987 contained a concentration of 4.37 parts per billion malathion, while water sampled upstream of the pesticide storage/mixing facility showed no detectable concentrations of malathion. In addition, triple-rinsed drained containers and unrinsed containers were disposed of in the past in the on-site landfills.



#### **5.5.4.2 Recommendations**

The following are recommended for pesticide mixing and storage areas:

- Building 27 - Two soil borings should be installed in the drainage path/downslope direction; samples should be taken at depths of 0 to 6 inches and 2 to 3 feet; wipe and/or chip samples should be taken for building surfaces. All samples should be analyzed for pesticides.
- Building 125 - See recommendations for Subsection 5.5.2.2.
- Building 514 - Two surface soil samples should be taken at 0 to 6 inches, wipe and/or chip samples should be taken from building surfaces, and all samples should be analyzed for pesticides.
- Building 605 - Two to four soil borings should be installed, and samples should be taken at 0 to 6 inches and 2 to 3 feet; two to four sediment samples should be taken in the drainway and in Hawthorne Lake, including background samples; samples should be taken at 0 to 6 inches and 1 to 2 feet wherever possible. Also, wipe and/or chip samples should be taken from building surfaces. All samples should be analyzed for pesticides.
- Building 674 - Two surface soil samples should be taken at 0 to 6 inches and analyzed for pesticides.

### **5.5.5 BURIED LITHIUM BROMIDE DRUMS (AREE 19)**

#### **5.5.5.1 Conclusions**

Drums containing used lithium bromide solution with a noncorrosive additive and potentially containing pesticides (AREE 19) were possibly buried adjacent to Building 810, the former sewage treatment plant and current fire training area. Reports indicate that the drums were buried at an unknown depth under the backfill (crushed stone) in the trickling filter beds, the settling basins, or in the clarifying tanks.

There is potential for the contents of the buried drums to leach to shallow groundwater in the area of the former STP. Although lithium bromide, a waste from air conditioning systems, is not listed as a hazardous waste by the U.S. Environmental Protection Agency, potential release of other constituents in the drums could be a threat to groundwater. Results of groundwater monitoring in the area of the former sewage treatment tank indicate that lithium bromide may have migrated to the groundwater (lithium metal was detected in one monitoring well sample). Analyses performed for VOCs, fuels, and BNAs indicated that these constituents are not present in groundwater samples from these wells, although some detection limits were high. Manganese and iron were detected at levels above drinking water criteria; however,



manganese was also evident at an elevated level in the background sample. Analyses were not performed for pesticides.

#### **5.5.5.2 Recommendations**

It is recommended that a geophysical survey be conducted using ground-penetrating radar to locate the drums. Based on conclusive results of the survey, it is recommended that the area above the drums be excavated and that the drums be removed. Following removal of the drums, one to two composite samples should be collected at the excavated area and analyzed for pesticides. Monitoring well recommendations are presented in Subsection 5.6.2.

### **5.6 SANITARY WASTEWATER TREATMENT PLANTS (AREE 20)**

#### **5.6.1 CONCLUSIONS**

Sanitary wastewater was treated on-post in a sewage treatment plant (STP) until November 1980. This former STP is located at Building 810 in the northwestern portion of FBH on Shafter Road, due south of a skeet range. During its operation, effluent from the STP was discharged to Fall Creek under a National Pollution Discharge Elimination System (NPDES) permit. Prior to 1980, the effluent from oil/water separators of the wash racks may have been drained to the former STP. Samples taken from the photographic wastes in 1981 indicate EP toxicity levels exceeding the acceptable levels for cadmium, chromium, and mercury. It was also noted that waste xylol, acetone, and ammonia-containing blueprint solution were disposed of by pouring down a sink that drains to the former on-post STP.

There was no evidence found of known or suspected major releases associated with the on-post STP. However, if the treatment bed/tank/basin areas or sludge drying beds were not lined, the possibility exists that releases of spent materials from the Maintenance Shops, Building 1, and Building 434 could have occurred. Results of groundwater monitoring in the area of the former STP at Building 810 indicate elevated concentrations of manganese and iron and the presence of lithium, as discussed in Subsection 5.5.5.1. However, detection limits were high for some other constituents.

Information is not available concerning the former STP south of Shafter Road and the east area former STP.

#### **5.6.2 RECOMMENDATIONS**

The following have been recommended for sanitary treatment plants:

##### **Building 810**

- Four surface soil samples at 0 to 6 inches depth should be taken from former sludge drying beds, as well as one sediment sample from



downstream of the former outfall. Samples should be analyzed for metals, VOCs, BNAs, pesticides, PCBs, TPH, and nitrates.

- Two soil borings should be installed up to the water table in former treatment areas and analyzed for metals, VOCs, BNAs, pesticides, PCBs, TPH, and nitrates.
- The integrity of existing wells should be assessed. Existing wells should be sampled to verify results at lower detection limits and assess pesticide presence, and two to four additional monitoring wells should be installed up- and downgradient of the STP, based on the integrity of the existing wells and results of resampling (to determine the extent, if any, of manganese and any other identified constituents of concern in groundwater). All groundwater samples should be analyzed for metals, VOCs, BNAs, pesticides, PCBs, TPH, and nitrates.

#### Former Treatment Beds Off Shafter Road, West of Building 674

- Two to four soil borings should be installed and samples taken from depths of 0 to 6 inches and 2 to 3 feet. Samples should be analyzed for metals, VOCs, BNAs, pesticides, PCBs, TPH, and nitrates. (Geological survey may be used if necessary to locate boundaries of former treatment beds off Shafter Road.)

#### Former Plant, East Area of Installation

- Further site reconnaissance should be conducted on located former east sewage plant. Geological survey (if necessary) should be conducted and two to four soil borings installed. If the former plant is located, samples should be taken from depths of 0 to 6 inches and 2 to 3 feet and analyzed for metals, VOCs, BNAs, pesticides, PCBs, TPH, and nitrates.

### **5.7 STORAGE TANKS**

#### **5.7.1 UNDERGROUND STORAGE TANKS (AREE 21)**

##### **5.7.1.1 Conclusions**

There are 12 USTs at FBH that are currently in use. These include five USTs at the AAFES gas station and three at the POL gas station for gasoline storage. These USTs are less than 5 years old. The remaining USTs at FBH in use are located at Buildings 1, 300, 604, and 705. The UST located at Building 300 stores fuel oil and leaked during a leak test in August 1985. The other three USTs in use have not been leak-tested. USTs at FBH which have been leak-tested in the past and have shown to be leaking have been taken out of service and have either been removed or are to be removed. Five USTs at Building 619 (the former PX gas station) and three USTs at Building 4 have recently been removed.



One incident of a gasoline leak and one incident of a fuel oil leak have been reported in the past.

#### **5.7.1.2 Recommendations**

It is recommended that the current installation tank program be continued, which includes removal of tanks as scheduled; periodic leak testing of tanks; removal of leaking tanks or tanks taken out of service; and verification sampling of soil following removal of tanks. The current LUST follow-up program for leaking tanks must be continued.

### **5.7.2 ABOVEGROUND STORAGE TANKS (AREE 22)**

#### **5.7.2.1 Conclusions**

There are several areas throughout FBH where aboveground storage tanks (ASTs) are known, or have been reported, to be located. It is estimated, however, that 10 ASTs are currently located throughout FBH. Three 29,990-gallon ASTs, located outside the boiler plant, are used to store No. 2 fuel oil for the boiler and backup generators. These are the major ASTs at FBH, and they are the only ones covered in the SPCC Plan. At the time of the site visit, the secondary containment for these ASTs was removed for soil sampling. The results of these samples were not available. This secondary containment consists of a berm constructed from concrete block and a base of gravel. The gravel base was removed for the sampling and is to be replaced with a concrete slab. Other ASTs at FBH may or may not have secondary containment.

In the past, a 4-gallon oil spill and another oil spill of unknown quantity have been reported.

The potential exists for isolated spills of minimal amounts of oil at ASTs that were not reported. These spills could have occurred during filling or draining.

#### **5.7.2.2 Recommendations**

It is recommended that a total of two to four soil borings (at each AST) be installed near fill valves/points and in additional areas near ASTs that do not have secondary concrete containment. Samples should be collected at depths of 0 to 6 inches and 2 to 3 feet and analyzed for TPH or BTXE, depending on the contents of the tank. Additional sampling may be required in stained areas.



## **5.8 SANITARY LANDFILLS AND FORMER INCINERATORS**

### **5.8.1 FORMER SANITARY LANDFILL (EAST) (AREE 23)**

#### **5.8.1.1 Conclusions**

Complete operating records are not available for this landfill. However, the types of wastes disposed of at the east landfill were identical to those disposed of at the west landfill, including office and household wastes, demolition and construction debris, tree trimmings, and ash from incinerator operations.

The potential exists that hazardous wastes such as used oils, solvents, pesticides, and paints could have been incorporated with office/household wastes and disposed of in the landfill.

The closed landfill was deeded to the City of Lawrence in 1974 with recapturable rights (in time of war). There is widespread differential settling apparent at the site due to inadequate compacting operations.

Surface water from precipitation can readily percolate through the buried waste in the closed landfill because the landfill was not properly covered and closed. As a result, contaminants can be carried into the shallow groundwater table, which is only 10 to 15 feet below the surface (USAEHA, 1988). There has been evidence of leachate seeping from the southern and western ends of the landfill and an intermittent stream flow in a westerly direction along the southern portion of the landfill (USAEHA, 1989). Available results of groundwater and surface water sampling indicate the presence of some VOCs and BNAs in shallow groundwater in the vicinity of the landfill. However, available reports do not indicate that all wells were sampled in consecutive quarters to confirm current results.

#### **5.8.1.2 Recommendations**

It is recommended that the leachate seeps at the southern end of the landfill be sampled (and the formerly sampled surface water point be resampled) and analyzed for VOCs, BNAs, pesticides, PCBs, metals, TPH, and typical landfill parameters (BOD, COD, etc.). In addition, a thorough review of the existing well information (installation procedures, integrity, etc.) should be conducted. These wells should be sampled and/or new wells installed to coordinate with the existing sampling program and to enhance existing information. Groundwater samples should be analyzed for VOCs, BNAs, pesticides/PCBs, metals, TPH, and typical landfill parameters. If necessary, sampling efforts should be coordinated with the City of Lawrence due to the deed status of the land.



## **5.8.2 FORMER SANITARY LANDFILL (WEST) (AREE 24)**

### **5.8.2.1 Conclusions**

Types of wastes placed in the former sanitary landfill (which no longer accepted wastes as of 1 October 1991) included office and household wastes, tires, ash from the boiler plant, autoclaved waste from the hospital, demolition and construction debris, and tree trimmings (USAEHA, 1988; 1989). The potential exists that hazardous wastes such as used oils, solvents, pesticides, and paints could have been incorporated with office/household wastes and disposed of in the landfill.

Surface water from precipitation can percolate through the landfill cover and potentially contaminate the shallow groundwater, because the clay cover over most of the landfill was inadequate in the past and may still be inadequate in some areas (USAEHA, 1988). There also has been evidence of seepage of leachate due to poorly compacted cover (USAEHA, 1988).

Results of quarterly groundwater sampling indicate that the landfill is impacting the shallow groundwater table based on elevated levels of specific conductivity, total dissolved solids (TDS), and iron in downgradient wells. Data from the 1986 USAEHA report indicated high barium and lead levels; however, the laboratory data was suspect.

A review of available analytical data indicates that organic compounds have not been detected in groundwater samples from monitoring wells surrounding the west landfill, with the exception of methylene chloride, a common lab contaminant, which was found in two samples at a maximum concentration of 20 micrograms per liter ( $\mu\text{g/L}$ ). In addition, in the October 1990 quarterly sampling, chloroethane was found in the duplicate sample from MW-3 at a concentration of 16  $\mu\text{g/L}$ . High levels of iron were noted in two samples from MW-3 and in one from MW-4 concentrations of 5.3, 4.9, and 46 milligrams per liter ( $\text{mg/L}$ ), respectively. Other data indicate most samples having concentrations of iron less than 1  $\text{mg/L}$  with some levels at 2  $\text{mg/L}$ .

### **5.8.2.2 Recommendations**

It is recommended that the leachate seeps at the northern end of the landfill be sampled and analyzed for VOCs, BNAs, pesticides/PCBs, metals, TPH, and typical landfill parameters (BOD, COD, etc.). In addition, a thorough review of the existing well information (installation procedures, integrity, etc.) should be conducted and these wells should be sampled and/or new wells installed to coordinate with the existing sampling program and enhance existing information. Groundwater samples should be analyzed for VOCs, BNAs, pesticides/PCBs, metals, TPH, and typical landfill parameters.



### **5.8.3 FORMER INCINERATORS (AREE 25)**

#### **5.8.3.1 Conclusions**

The two former incinerators are the medical/infectious waste incinerator located on the first floor of the Hawley Army Community Hospital (Building 300) and the refuse incinerator located at Building 518. The ash from the medical waste incinerator was disposed of in the on-site landfill.

All combustible sanitary wastes or hazardous materials were incinerated and the ash was disposed of as landfill. Complete records are not available on this incinerator; therefore, types of wastes are not known.

There are no documented releases of contaminants to soil or groundwater at the former medical waste incinerator or refuse incinerator. However, there is potential that ash and/or hazardous waste materials could have been buried adjacent to Building 518 from the refuse incinerator. This could contaminate the local soil and groundwater.

#### **5.8.3.2 Recommendations**

No further recommendations for investigation are recommended for the former medical waste incinerator. Recommendations for the former incinerator at Building 518 include conducting a geophysical survey using ground-penetrating radar (GPR) to determine the extent of the area, if any, where wastes/ash were disposed of adjacent to the building. Following this survey, if necessary, test pit sampling should be conducted to see what buried materials, if any, are present, and to collect soil samples and analyze for RCRA metals, TPH, VOCs, BNAs, pesticides, and PCBs.

### **5.9 MEDICAL FACILITIES (AREE 26)**

#### **5.9.1 CONCLUSIONS**

The medical facilities (AREE 26) at FBH include Hawley Hospital (Building 300), the dental clinics (Buildings 300, 602, and 237), and the veterinary clinic (Building 805).

The first hospital at FBH, FBH Post Hospital, was opened in 1908. In 1941, Billings General Hospital was constructed to service the expanding military staff generated by World War II. Billings served the base from July 1941 until March 1946, when the base's medical needs were again met by the Post Hospital. Hawley Army Hospital was completed in 1973 and currently serves the personnel at FBH.

Medical facilities typically store and handle small quantities of hazardous materials such as alcohols, acetone, and weak acids.

Hazardous materials are stored in a warehouse that has concrete floors; flammable materials are stored separately.



Medical wastes generated by the hospital and clinics are stored in the incinerator room and disposed of off-site. Former practices for the disposal of infectious waste (i.e., needles, lab waste) included separate collection and incineration.

Silver is recovered from x-ray and photographic solutions generated by HAH.

Current practices for the disposal of infectious wastes at the veterinary clinic include the storage of waste in small containers and then staging in the hospital for disposal.

No known or suspected releases or contamination have resulted from handling and disposal of medical wastes or handling of small amounts of hazardous chemicals. Silver recovery operations and the former incinerator are discussed in Subsections 5.1.4 and 5.8.3.

## **5.9.2 RECOMMENDATIONS**

No recommendations for investigation are made for the medical facilities. All hazardous constituents and medical wastes should be removed from the building prior to exiting the property. Also, see recommendations for photographic processing areas and the former incinerator.

## **5.10 BURN PIT AREAS (AREE 27)**

### **5.10.1 FIRE TRAINING PIT**

#### **5.10.1.1 Conclusions**

Fire training exercises are conducted at the former site by placing fuel on old car bodies or in 55-gallon drum halves partially filled with water, which are placed on top of the old treatment tanks, and igniting the fuel.

There may be a small potential for groundwater contamination associated with current firefighting activities in the area and past operations of the STP and burial of the lithium bromide/pesticide drums. Monitoring wells were installed in 1990 in the vicinity of the fire training pit/former STP. Results of groundwater sampling are discussed in Subsection 5.5.5.1.

#### **5.10.1.2 Recommendations**

See recommendations for the former Sewage Treatment Plant in Subsection 5.6.2.



## **5.10.2 FORMER FIRE TRAINING AREAS**

### **5.10.2.1 Conclusions**

The supposed former fire training activities reportedly conducted adjacent to the former landfills consisted of igniting fuel oil in large metal troughs to train firefighting personnel. All remaining fuel was allowed to burn off.

The potential exists that small amounts of fuel oil could have been released to the soil in the areas of the fire training activities. It is unlikely that local groundwater would be impacted by these training activities because the amounts of fuel oil were so small. Evidence of these firefighting training areas could not be found during the site visit and the reports could not be substantiated by site personnel.

### **5.10.2.2 Recommendations**

All fire training activities should be confined to the training pit area at the former STP. There are no further recommendations for investigation of these former fire training areas.

## **5.11 SPILL AREAS AND OTHER RELEASES (AREE 28)**

### **5.11.1 CONCLUSIONS**

Numerous spills have been documented throughout FBH. Most have been cleaned up, although there is little or no information available on some spills. A number of the these involved petroleum products that spilled or drained into creeks and/or lakes at FBH.

### **5.11.2 RECOMMENDATIONS**

Four to six sediment samples should be collected from the creeks, lakes, and ponds at locations throughout the installation and analyzed for TPH and RCRA metals. Samples collected for TPH analysis should be taken at the waterline areas (because hydrocarbons float in water). Consideration should be given to locations of former spills and background sampling. In addition, the reported off-post asphalt spill should be investigated further.

## **5.12 AMMUNITION STORAGE (AREE 29)**

### **5.12.1 CONCLUSIONS**

Ammunition is stored in Buildings 519 through 522. The potential exists that boxes used to store ammunition are made of lumber treated with pentachlorophenols.

No records were found that indicate that releases have occurred due to ammunition storage at the installation. During the site visit, no evidence of any past or present



releases was observed from outside the fenced area. A slight possibility exists for a release of pentachlorophenols if utilized for storage boxes.

### **5.12.2 RECOMMENDATIONS**

A thorough inspection of the inside of the ammunition storage buildings should be conducted, and all ammunition and boxes should be removed prior to excess. Consideration of pentachlorophenol (PCP) in ammunition boxes should be given when determining a location for disposal. Two to four surface soil samples (0 to 6 inches) should be collected from the storage compound area and analyzed for RCRA metals. For building closure, wipe and/or chip samples should be collected from building surfaces and analyzed for PCP.

## **5.13 FORMER COAL STORAGE YARD (AREE 30)**

### **5.13.1 CONCLUSIONS**

Several hundred tons of coal to be used in the heating plant were stored in a pile outdoors on an approximately 1-acre uncovered concrete slab over a period of years.

During wet weather, the coal stored at the yard reportedly produced a sludge that flowed onto the pond and into the storm drains and a nearby settling/evaporation basin.

Some of the coal stored in the yard had spilled off the edges of the storage pad. There is potential for soil, sediment, and/or groundwater contamination associated precipitation runoff from the coal storage area. The runoff from coal is of concern because it can create an acid-mine drainage-type situation that can produce metals contamination and abnormal soil pH. Results of analyses of samples from soil borings installed by USAEHA in this area indicated the presence of elevated levels of some metals. However, no metals were shown to be leachable using the toxic extraction procedure.

### **5.13.2 RECOMMENDATIONS**

Two to four confirmatory soil borings should be installed (samples at 0 to 6 inches and 2 to 3 feet) in the vicinity of the former coal pile at locations not previously sampled. In addition, two to four sediment samples should be collected in the drainage pathways and/or storm sewer outlet. All samples should be analyzed for RCRA metals and soil pH.



## **5.14 FACILITY-WIDE AREEs**

### **5.14.1 ASBESTOS (AREE 31)**

#### **5.14.1.1 Conclusions**

Several asbestos surveys have been conducted at various areas of FBH. Asbestos-containing materials were found mainly in the boiler and mechanical rooms of buildings in the 400 and 600 building areas; however, materials that contained asbestos were found on domestic water piping, shingles, and duct wall sleeve linings.

In general, the results of these surveys indicated that there are asbestos-containing materials in several buildings at FBH. For example, the ceiling in Building 1 contains asbestos. In general, hazard indices were low for buildings surveyed.

No known release of asbestos has been reported. The primary concern in these buildings is friable asbestos-containing materials.

#### **5.14.1.2 Recommendations**

Known exposed friable asbestos should be removed or encapsulated. Asbestos surveys should be continued to include all buildings at FBH and an asbestos management and abatement plan/program should be established.

### **5.14.2 PESTICIDE USAGE (AREE 32)**

#### **5.14.2.1 Conclusions**

Pesticides have been used throughout FBH, which in essence constitutes a release. The concern, however, is for the accumulation of pesticides in soils, sediments, and wildlife.

Analytical results of these samples showed elevated levels (greater than 5 ppm total pesticides in soils, greater than 0.1 ppm total pesticides in sediments, and greater than 1.0 ppm total pesticides in fish and birds) in two soil samples, one sediment sample, and three fish samples. Soil samples collected at the sewage treatment plant and the pesticide storage/mixing facility showed total concentrations of 45.68 ppm and 26.77 ppm, respectively. Concentrations of total pesticides in sediments ranged from ND (not detected above the analytical detection limit) to 0.28 ppm. Concentrations of total pesticides in fish samples ranged from 0.519 ppm to 2.68 ppm (ESE, 1984).

In the past, surveys of pesticide contamination were conducted of the streams on FBH. The results of these samples showed no significant amounts of pesticides in the stream sediments at FBH. It was concluded by USAEHA that pesticide operations at FBH do not contribute to contamination of the streams or waterways passing through FBH.



#### **5.14.2.2 Recommendations**

Four to six sediment samples should be collected from the creeks, lakes, and ponds at FBH at locations throughout the installation and analyzed for pesticides. Consideration should be given to locations of heaviest pesticide usage and background sampling.

#### **5.14.3 FORMER COAL STORAGE AREAS (AREE 33)**

##### **5.14.3.1 Conclusions**

In the past, coal was stored outside of buildings with a coal burning unit in piles on the ground surface. Generally, these coal piles were not covered. Larger amounts of coal were stored in the field north of the boiler plant and in the field where Building 21 is now located.

It is suspected that releases did occur associated with the coal piles; however, the amount of coal stored in each area and the amount of associated runoff are not expected to have had any impact on the groundwater or surface water at the post. In the areas where the larger amounts of coal were stored, the top 3 feet of soil was removed.

##### **5.14.3.2 Recommendations**

No further investigations associated with former base-wide coal storage piles are recommended at this time.

#### **5.14.4 RADON (AREE 34)**

##### **5.14.4.1 Conclusions**

Currently, FBH personnel are in the process of testing the buildings at the post for radon. Phase I Radon results indicate that there may be several buildings on post that have levels of radon greater than the EPA action level of 4 pCi/cm<sup>3</sup>. Retesting of areas where the action level was exceeded is currently in progress.

##### **5.14.4.3 Recommendations**

The current radon screening program at FBH should be continued to include all buildings at the installation. Appropriate remediation measures should be implemented in areas where radon levels are greater than the EPA action level.

#### **5.14.5 BOILER BLOWDOWN (AREE 35)**

##### **5.14.5.1 Conclusions**

Treatment chemicals such as phosphates, sulfite, polymers, sludge conditioners, and/or pH adjusters are added to boiler feed waters at FBH. Blowdown from steam generating



boilers generally can occur continuously or manually and can contain these chemicals. Blowdown may either be discharged to the storm sewer or the sanitary sewer.

There are no recorded discharges of this process wastewater; however, the potential exists that process wastewater from the boiler plant could contaminate soils and groundwater.

#### **5.14.5.2 Recommendations**

No further investigations are recommended for boiler blowdown areas at this time.

### **5.14.6 TRANSFORMERS (AREE 36)**

#### **5.14.6.1 Conclusions**

Polychlorinated biphenyl (PCB)-containing transformers have been used at FBH. In 1989, FBH conducted a survey of all transformers on post that were in service.

Removal of PCB-contaminated transformers has been an ongoing process at FBH.

There are records of several documented spills and releases of PCBs and PCB-containing fluids at FBH associated with transformers.

#### **5.14.6.2 Recommendations**

No further recommendations are made for transformers at FBH.

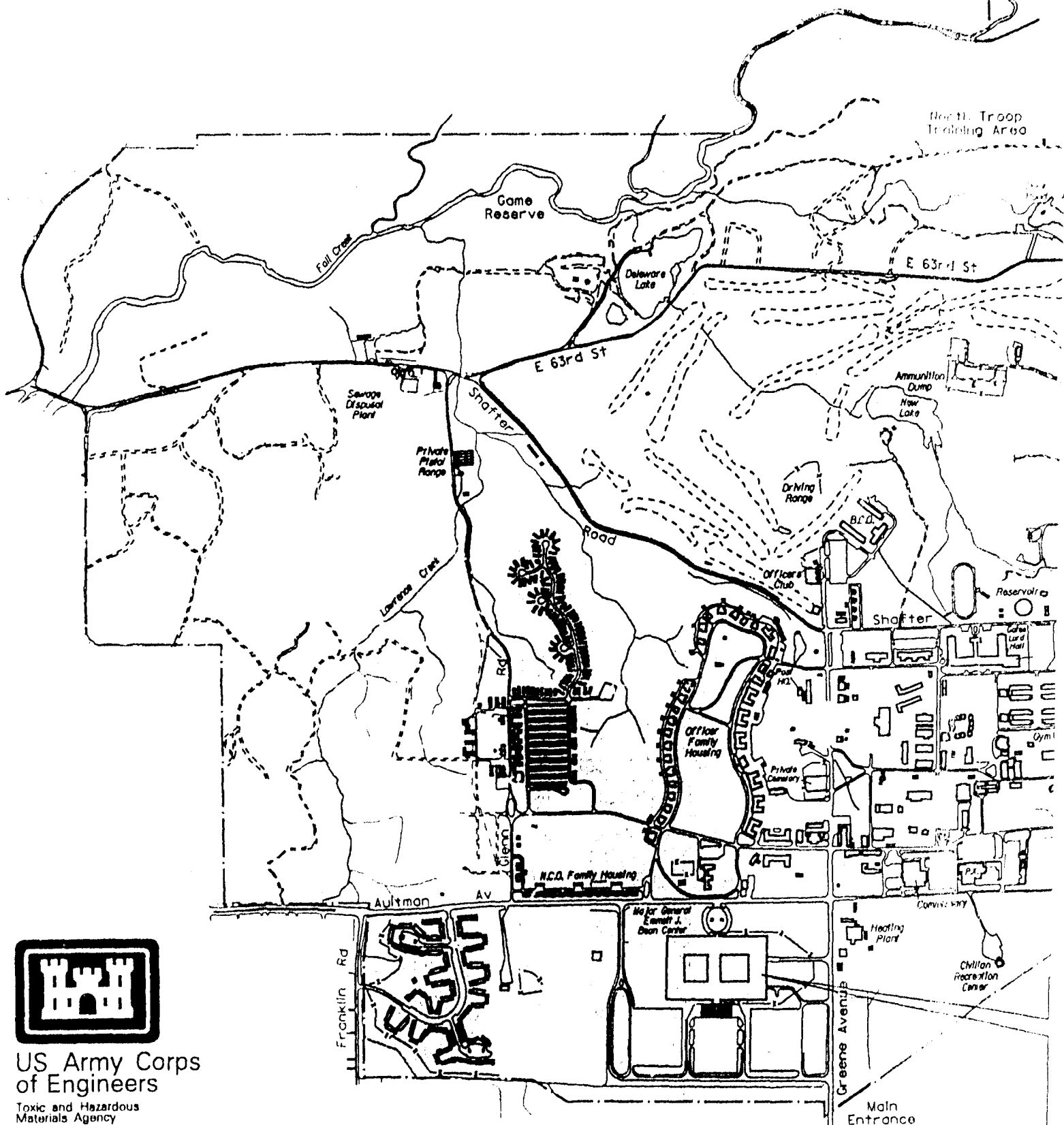
### **5.15 AREAS WITH MINIMAL POTENTIAL FOR ENVIRONMENTAL PROBLEMS**

This Enhanced Preliminary Assessment report is based primarily on the environmental conditions observed at Fort Benjamin Harrison, Indiana during the period of this study. Past site conditions and management practices were evaluated, based on readily available records and the recollections of people interviewed. Every effort was made, within the scope of the task, to interview all identified site personnel, especially those personnel with a historical perspective of site operations.

Through a review of available information, site visits, and interviews with FBH personnel, the following areas (shown in Figure 5-2) have been identified as those that can be excessed (under real estate transfer) with minimal additional environmental investigation, including but not limited to asbestos, radon, and lead paint surveys:

- The golf course located in the northern part of the installation.
- The mobile home trailer park complex located in the western part of the installation.

A MATCH



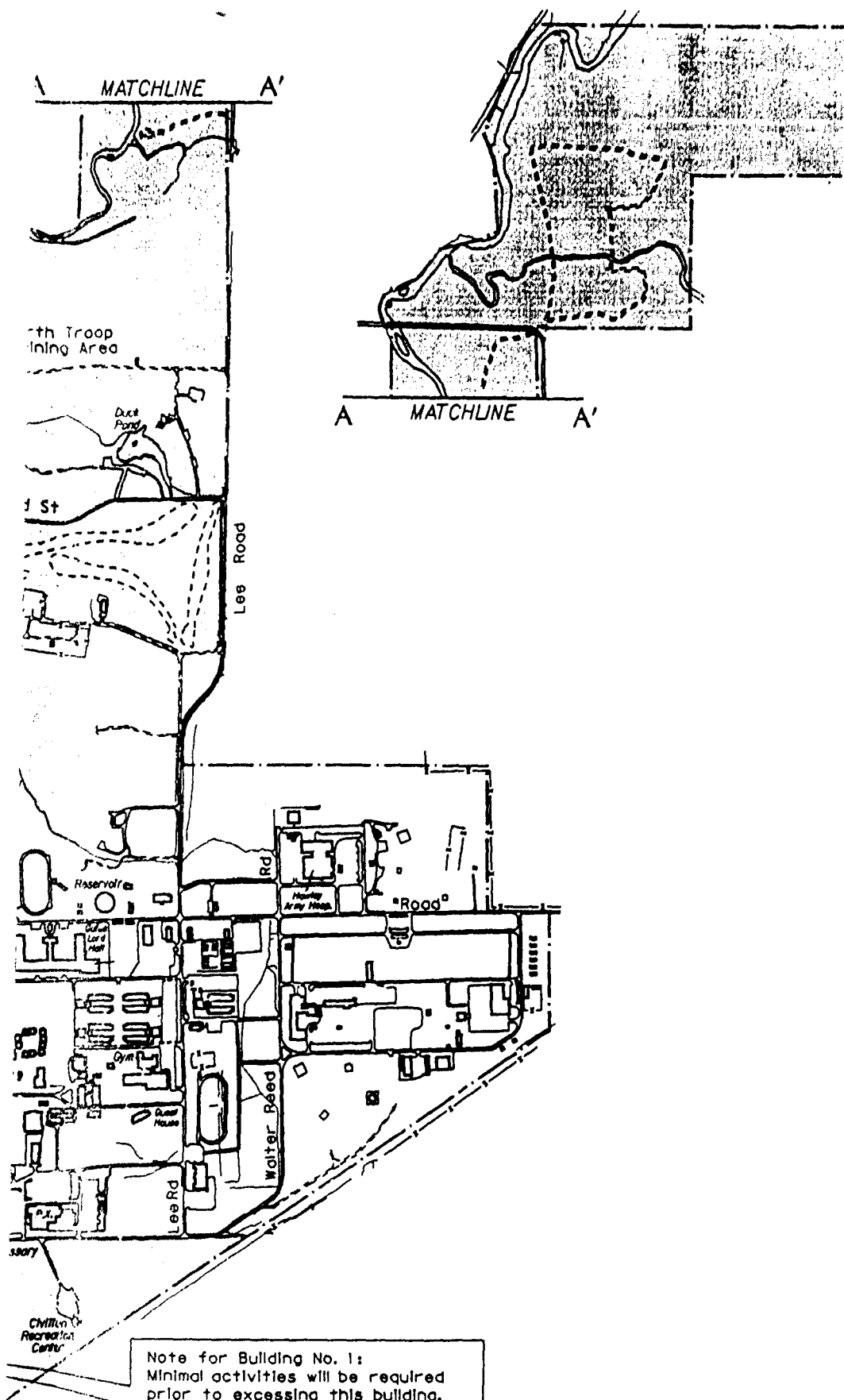
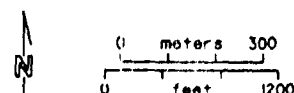
US Army Corps  
of Engineers

Toxic and Hazardous  
Materials Agency

Best Available Copy

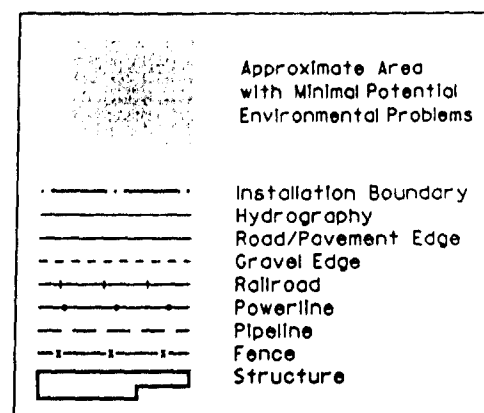
## Figure 5-2 Areas with Minimal Potential for Environmental Problems

Compiled in 1991 from various sources  
provided by the U.S. Army Toxic and  
Hazardous Materials Agency



Note: The areas with minimal potential for environmental problems, identified on this figure, may require minimal investigation, including but not limited to asbestos, radon and lead paint surveys, prior to being accessed. In addition, the presence of sensitive environments such as wetlands, endangered habitats, archaeological sites, and historically significant areas may become a factor when planning to access certain areas at Fort Benjamin Harrison. These environmentally sensitive areas are depicted on Figure 2-8.

Note for Building No. 1:  
Minimal activities will be required prior to accessing this building. These activities include removal of solvents, paints, photo processing solutions and cleaning chemicals; cleaning and sampling exposed surfaces; and performing asbestos survey to identify asbestos removal needs.





- NCO family housing located in the southwest part of the installation.
- Officer housing in the central region of the installation.
- Housing/condominium complex located in the southwestern corner of the installation.
- Troop training areas located in the north and northwestern regions of the installation not associated with other identified AREEs.
- The Major General Emmet J. Bean Center, located on the southern part of the installation.

In addition, several recreational areas/buildings and administration buildings could be excessed with minimal investigation, including, but not limited to, asbestos, radon, and lead paint surveys and sampling.

It should be noted that even though the above areas may have a minimal potential for environmental problems, the subsurface and/or groundwater could be contaminated by operation adjacent to, or downgradient of, these areas. In addition, institutional considerations may become a factor when planning to excess certain areas at FBH, including the presence of sensitive environments such as wetlands, endangered habitats, archeological sites, and historically significant areas.



## SECTION 6

### REFERENCES

Bieber, Gunnery Sergeant. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 16 October 1991.

Boese, J. 1991. City of Lawrence. Phone Conversation with Rick Callahan, Roy F. Weston, Inc. 30 October 1991.

Bower, Stephen E. 1984. The History of Fort Benjamin Harrison. Command History Office, U.S. Army Soldier Support Center, Fort Benjamin Harrison, Indiana.

Buchart-Horn, Inc. 1990. Fort Benjamin Harrison Land Use Plan. Prepared for the Department of the Army.

Carpentry Shop Employee. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 17 October 1991.

CEW (Clyde E. Williams & Associates). 1991. Master Plan, City of Lawrence Water Inventory Map. Thomas D. Schneider, Mayor. 1 January 1991.

Choate, Kin. 1991. Manager, Office Equipment Supply and Repair Shop, Fort Benjamin Harrison. Interview with Stacie Popp, Roy F. Weston, Inc. 16 October 1991.

D.E. McGillem and Associates, Inc. 1990. Archaeological Field Reconnaissance, Fort Benjamin Harrison, Marion County, Indiana. Prepared by Thomas C. Beard. July 1990.

DIS (Department of Installation Services). 1990. Natural Resources Management Division. Spill Prevention, Control, and Countermeasure Plan. July 1990.

Duck, Philip. 1991. Manager, Army Reserve Center, Fort Benjamin Harrison. Interview with Stacie Popp, Roy F. Weston, Inc. 18 October 1991.

EAI (Environmental Audit, Inc.). 1991. EAI Environmental Report Services, USATHAMA - Fort Benjamin Harrison. 17 November 1991.

EIB (Everett I. Brown Co.). 1986. Final Report of An Asbestos Survey, Fort Benjamin Harrison, Indiana. Indefinite Delivery Contract DACA 27-85-D-0033. Prepared for U.S. Army Corps of Engineers, Louisville District. Indianapolis, IN.

Electric Shop Manager. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 17 October 1991.



ERC (Environmental and Energy Services Company, Inc.). 1991. Construction Clearance Study-Phase II, Monitor Well Installation, Learning Resource Center, Fort Benjamin Harrison, Indianapolis, Indiana. 24 June 1991.

ESE (Environmental Science and Engineering, Inc.). 1984. Installation Assessment of U.S. Army Soldier Support Center and Fort Benjamin Harrison, Indiana. Report No. 331. Prepared by B.N. McMaster et al. January 1984.

EPA, 40 CFR 230.3 and U.S.CO.E, 33 CFR 328.3

FBH (Fort Benjamin Harrison). 1991a. Letter from LTC Gregory S. Miller, Director of Installation Support, to U.S. EPA Region V (William Messenger, Chief, Pre-Remedial Unit). 28 June 1991.

FBH. 1991b. Letter from LTC Gregory S. Miller, Director of Installation Support, to U.S. EPA Region V (William Messenger, Chief, Pre-Remedial Unit). 12 July 1991.

FBH. 1991c. Memorandum to Commander, U.S. Army Training and Doctrine Command, Ft. Monroe, VA. Prepared by LTC Gregory S. Miller, Director of Installation Support. 4 September 1991.

FICWD (Federal Interagency Committee for Wetland Delineation). 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. January 1989.

Fitzwater, Jim. 1991. Manager, DIS Engineering Shop. Interview with Stacie Popp, Roy F. Weston, Inc. 18 October 1991.

Forrester, B. 1991. Fire Chief, Fort Benjamin Harrison. Interview with Stacie Popp, Roy F. Weston, Inc. 18 October 1991.

Graphics Shop Manager. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 17 October 1991.

Hedge, Cloyce L. 1991. Coordinator of the Indiana Natural Heritage Program, Division of Natural Preserves, Indiana Department of Natural Resources. Letter to Tom Shafer, Installation Historic Preservation Officer, Division of Engineering, Plans, and Services, Fort Benjamin Harrison. 16 October 1991.

Harrison, W. 1963. Geology Of Marion County. Indiana Department of Conservation, Geological Survey. Bulletin No. 28. (Including Plate Nos. 1, 2 & 3).

IDEM (Indiana Department of Environmental Management). 1989. Agreed Order, Cause No. A-947, v. complainant U.S. Army Soldier Support Center, FBH. October 1989.

IDEM. 1991. Part B Hazardous Waste Management Permit issued to U.S. Army Soldier Support Center, Fort Benjamin Harrison, Indiana. 30 September 1991.



IDNR (State of Indiana Department of Natural Resources). 1980. Geology for Environmental Planning in Marion County, Special Report 19, Environmental Study 15.

Indianapolis Chamber of Commerce. 1990. Facts Indianapolis, 1990-1991

Lawson, Michael L. 1991. Director, Office of Economic Development, Lawrence County, IN. Received 17 October 1991.

McClure, D. 1991. Marion County Health Department. Phone Conversation with Rick Callahan, Roy F. Weston, Inc. 17 October 1991.

Merck (Merck and Co., Inc.). 1976. The Merck Index, ninth edition.

NET (National Environmental Testing, Inc.) 1990. Letter to Ron Smith, Natural Resources Management Division, Fort Benjamin Harrison, IN. October 1990 Collection and Analysis of Samples from Fort Benjamin Harrison. Indianapolis, IN. 20 December 1990.

NET (National Environmental Testing, Inc.) 1991a. Letter to Mary Ellen Sullivan, Natural Resources Management Division, Fort Benjamin Harrison, IN. Second Quarter, 1991 Collection and Analysis of Samples from Ft. Benjamin Harrison. Indianapolis, IN. March 22, 1991.

NET (National Environmental Testing, Inc.) 1991b. Letter to Ron Smith, Natural Resources Management Division, Fort Benjamin Harrison, IN. Third Quarter, 1991 collection and analysis of samples from Ft. Benjamin Harrison. Indianapolis, IN. 20 June 1991.

NET (National Environmental Testing, Inc.) 1991c. Letter to Ron Smith, Natural Resources Management Division, Fort Benjamin Harrison, IN. Fourth Quarter, 1991 collection and analysis of samples from Ft. Benjamin Harrison. Indianapolis, IN. 16 August 1991.

Newton, Corporal. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 18 October 1991.

NRMP (Fort Benjamin Harrison Natural Resources Management Plan). 1983. Part III, Forest Management Plan, Fort Benjamin Harrison.

NWI (National Wetlands Inventory Group). 1991. Telephone conversation with John Sontag, Jr., Roy F. Weston, Inc. 22 November 1991.

PEI (PEI Associates, Inc.). 1987a. Inventory of Friable Asbestos-Containing Materials and Recommendations for Corrective Action in Selected Temporary Buildings at Fort Benjamin Harrison. PN 3698-21. Prepared for U.S. Army Corps of Engineers, Louisville District. Cincinnati, OH. October 1987.



PEI. 1987b. Inventory of Friable Asbestos-Containing Materials and Recommendations for Corrective Action in Selected Buildings of the 600 Block at Fort Benjamin Harrison. PN 3698-20. Prepared for U.S. Army Corps of Engineers, Louisville District. Cincinnati, OH. October 1987.

PEI. 1987c. Inventory of Friable Asbestos-Containing Materials and Recommendations for Corrective Action in Selected Family Housing Units at Fort Benjamin Harrison. PN 3698-23. Prepared for U.S. Army Corps of Engineers, Louisville District. Cincinnati, OH. November 1987.

PEI. 1988a. Inventory of Friable Asbestos-Containing Materials and Recommendations for Corrective Action in Selected Buildings of the 600 Block at Fort Benjamin Harrison (Modification 1 to Work Order No. 0018). PN 3698-20. Prepared for U.S. Army Corps of Engineers, Louisville District. Cincinnati, OH. May 1988.

PEI. 1988b. Inventory of Friable Asbestos-Containing Materials and Recommendations for Corrective Action, Various Large Buildings at Fort Benjamin Harrison. PN 3698-22. Prepared for U.S. Army Corps of Engineers, Louisville District. Cincinnati, OH. July 1988.

Print Shop Manager. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 17 October 1991.

Quitclaim Deed. 1974. State of Indiana, County of Marion. ID#74-64359. 11 October 1974.

Ralston, Patrick R. 1991. State Historic Preservation Officer, Indiana Department of Environmental Resources, Division of Historic Preservation and Archeology. Letter to Tom Shafer, Installation Historic Preservation Officer, Division of Engineering, Plans, and Services, Fort Benjamin Harrison, 5 March 1991

Raney, Charles D. 1988. LTC, Director of Installation Support, Fort Benjamin Harrison, IN. Letter to Karyl K Schmidt, Indiana Department of Environmental Management, Office of Solid and Hazardous Waste Management. 28 September 1988.

Richardson, R. 1991. Manager, Roads and Grounds Maintenance, Fort Benjamin Harrison. Interview with Stacie Popp, Roy F. Weston, Inc. 16 October 1991.

Schafer, Thomas. 1991. Chief, Natural Resources Management Division, U.S. Army Soldier Support Center, FBH. Interview with Stacie Popp, Roy F. Weston, Inc. 18 October 1991.

SCS (Soil Conservation Service in cooperation with Purdue University Agricultural Experiment Station). 1978. Soil Survey of Marion County, United States Department of Agriculture. September 1978.



TASO Devices Shop Manager. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 16 October 1991.

Thies, Paul R. 1988. Chief, Waste Disposal Engineering Division, Fort Benjamin Harrison. Memorandum to Commander, U.S. Army Training and Doctrine Command, Ft. Monroe, VA. 13 June 1988.

TRADOC (U.S. Army Training and Doctrine Command). 1984. Environmental Assessment of Cu-Going Mission, Fort Benjamin Harrison, Indiana. March 1984.

USACE (U.S. Army Corps of Engineers), Louisville District. 1990. Fort Sheridan Final Environmental Impact Statement. October 1990.

USAEHA (U.S. Army Environmental Hygiene Agency). 1975. Water Quality Monitoring Consultation No. 24-L08-75/76, Fort Benjamin Harrison, Indiana. 16 October 1973 - 22 October 1975. 23 September 1975.

USAEHA. 1980. Water Quality Engineering Consultation (WC) No. 32-24-0237-80, Fort Benjamin Harrison, Indiana. 9 July 1980.

USAEHA. 1981a. Potable/Recreational Water Quality Survey No. 31-61-0103-82, Fort Benjamin Harrison, Indiana, Army Pollution Abatement Program Study, Installation of Monitoring Wells. 8-14 June 1981.

USAEHA. 1981b. Hazardous Waste Management Survey No. 37-26-0138-81, Fort Benjamin Harrison, Indianapolis, IN. 2-6 March 1981. 21 April 1981.

USAEHA. 1986. Executive Summary, Groundwater Potential Contamination Survey, No. 38-26-0910-86, Fort Benjamin Harrison, Indiana. 15-18 April 1986.

USAEHA. 1987. Geohydrologic Study No. 38-26-0920-87, Fort Benjamin Harrison. 22-26 September 1986. 11 May 1987.

USAEHA. 1988. Interim Final Report, Hazardous Waste Consultation No. 37-26-7000-88. Evaluation of Solid Waste Management Units, Fort Benjamin Harrison, Indiana. 3-6 August 1987. 25 May 1988.

USAEHA. 1989. Environmental Program Review No. 43-21-7150-90, U.S. Army Soldier Support Center and Fort Benjamin Harrison, Fort Benjamin Harrison, Indiana. 24-28 July 1989.

USAEHA. 1990. Geohydrologic Study No. 38-26-K847-90, RCRA Facility Assessment - Sampling Visit, U. S. Army Soldier Support Center and Fort Benjamin Harrison, Fort Benjamin Harrison, Indiana. 2-13 April 1990. 27 July 1990.



USAEHA. 1991. LTC Paul R. Thies, Chief, Waste Disposal Engineering Division. Memorandum to Commander, Fort Benjamin Harrison, Attn: Ms. Mary Ellen Sullivan. 28 January 1991.

USATHAMA (U.S. Army Toxic and Hazardous Materials Agency). 1990. Property Report, Fort Benjamin Harrison. Property Number 18175, FFIS Number IN-213720402. Aberdeen Proving Ground, MD. 8 August 1990.

USATHAMA. 1992. Salvatore P. Torrissi, Chief, Base Closure Division. Letter to Stacie Popp, Roy F. Weston, Inc. 30 January 1992.

USEPA (U.S. Environmental Protection Agency). 1989. Region VII. Federal Facility Compliance Agreement. Docket No. V-W-89-R-4. October 1989.

USEPA. 1990. William Messenger, Chief, Pre-Remedial Unit. Letter to Chief, Natural Resources, Management Division U.S. Army Soldier Support Center, Fort Benjamin Harrison (Mary Ellen Sullivan). 21 December 1990.

USEPA. 1991. Drinking Water Regulations and Health Advisories. Office of Water. April 1991.

Viani, Michael L. 1983. LTC, Fort Benjamin Harrison, IN. Letter to Dan Magoun, Chief, Indiana State Board of Health, Division of Land Pollution Control. 4 April 1983.

Wiles, John. 1991. Memorandum on landfills at FBH to Stacie Popp, Roy F. Weston, Inc. 21 October 1991.

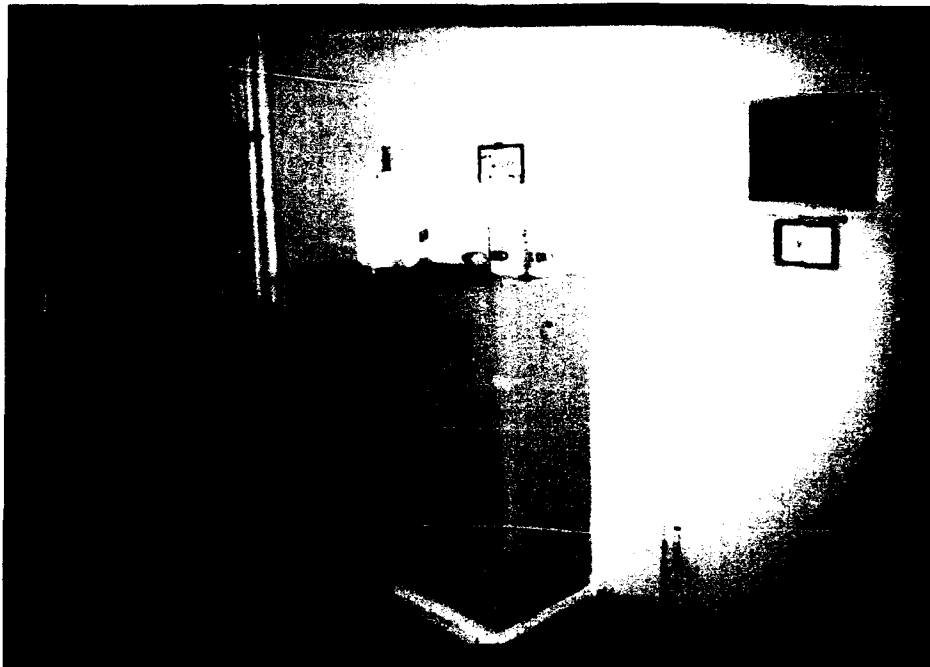
Wilson, Major. 1991. Director, Hawley Army Hospital, FBH. Interview with Stacie Popp, Roy F. Weston, Inc. 17 October 1991.

Zimmer, Wayne. 1991. Interview with Stacie Popp, Roy F. Weston, Inc. 16 October 1991.



**SECTION 7**  
**PHOTOGRAPHS**

**WESTON**

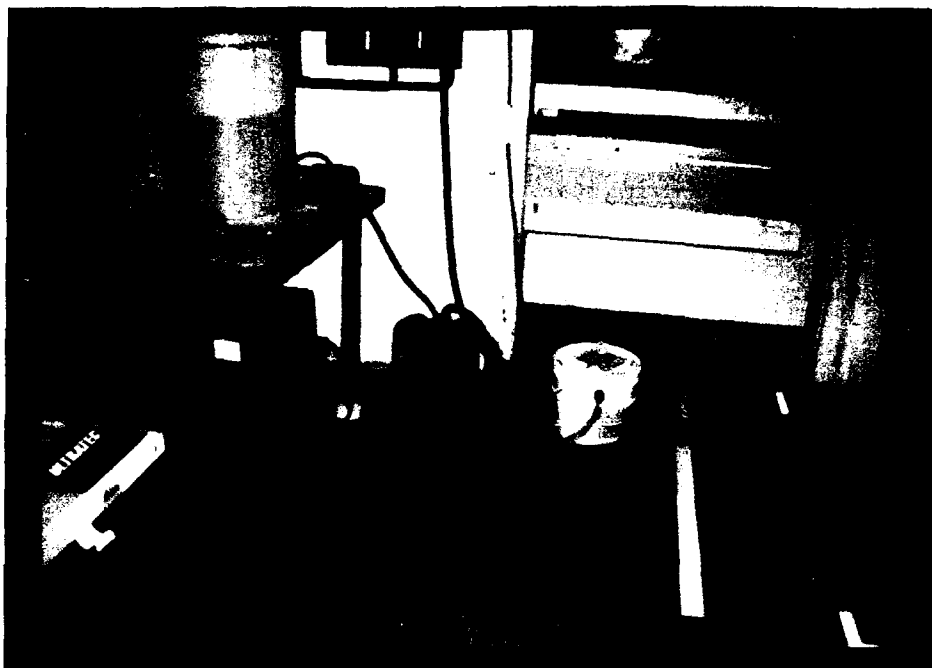


**1. FLAMMABLE MATERIAL STORAGE, DPCA FIELD PRINTING SHOP  
(BUILDING 1)**



**2. FLAMMABLE MATERIAL STORAGE, TASO DEVICES SHOP  
(BUILDING 481)**

**WESTON**



**3. SILVER RECOVERY UNIT, DPCA PRINT SHOP  
(BUILDING 1)**



**4. HAZARDOUS WASTE STORAGE, CARPENTRY SHOP  
(BUILDING 1)**

**WESTON**  
INVESTIGATIVE SERVICES



**5. MAINTENANCE SHOP, AAFES GAS STATION  
(BUILDING 33)**



**6. MAINTENANCE AREA  
(BUILDING 422)**

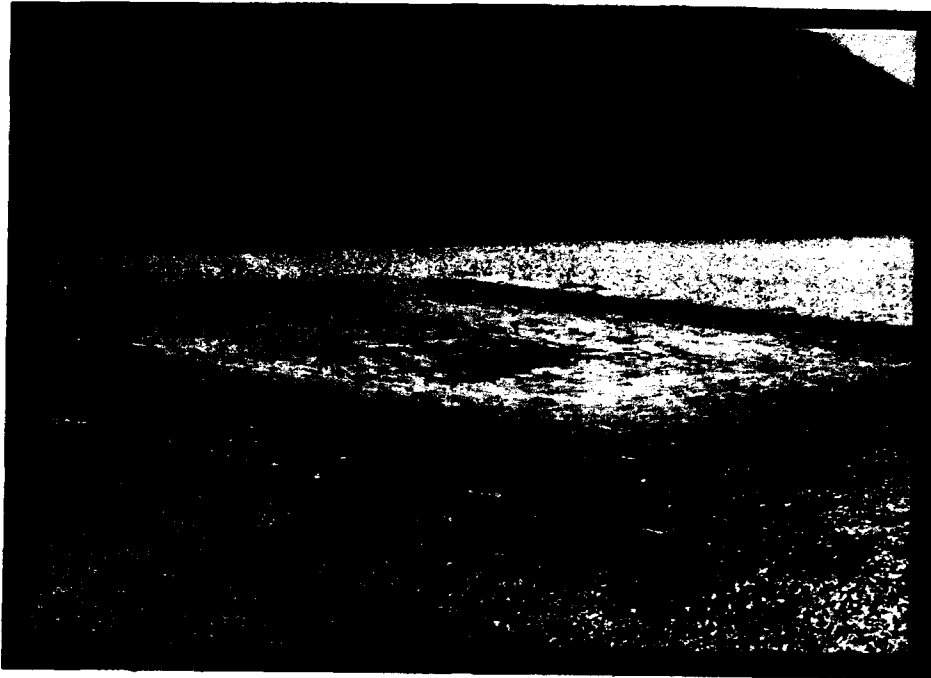
**WESTON**  
COMMERCIAL



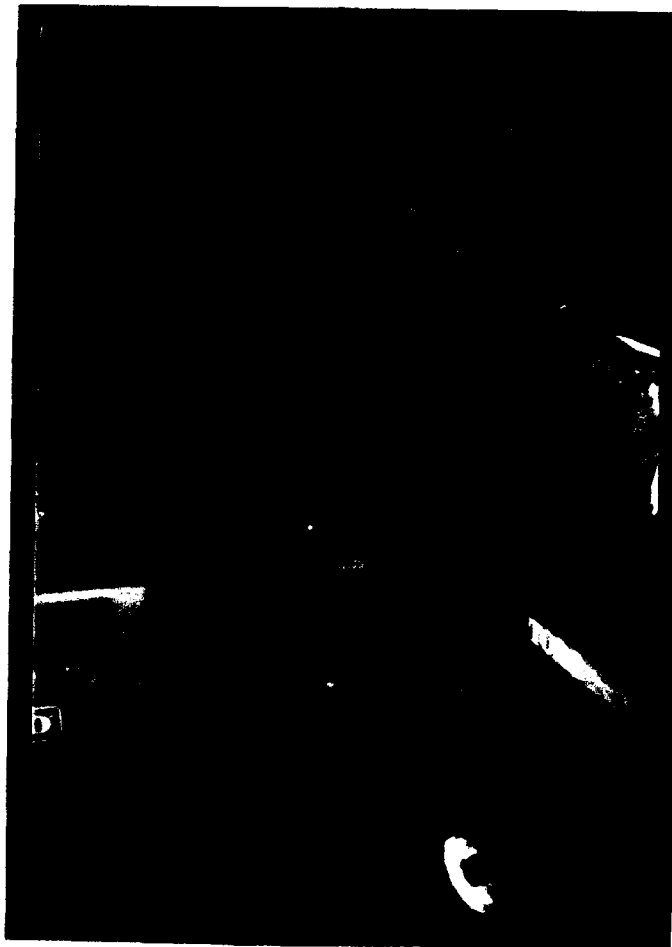
**7. STAINING AT WASTE OIL TANK, AUTO CRAFT SHOP  
(BUILDING 705)**



**8. WASH RACK, U.S. ARMY RESERVE CENTER  
(BUILDING 127)**



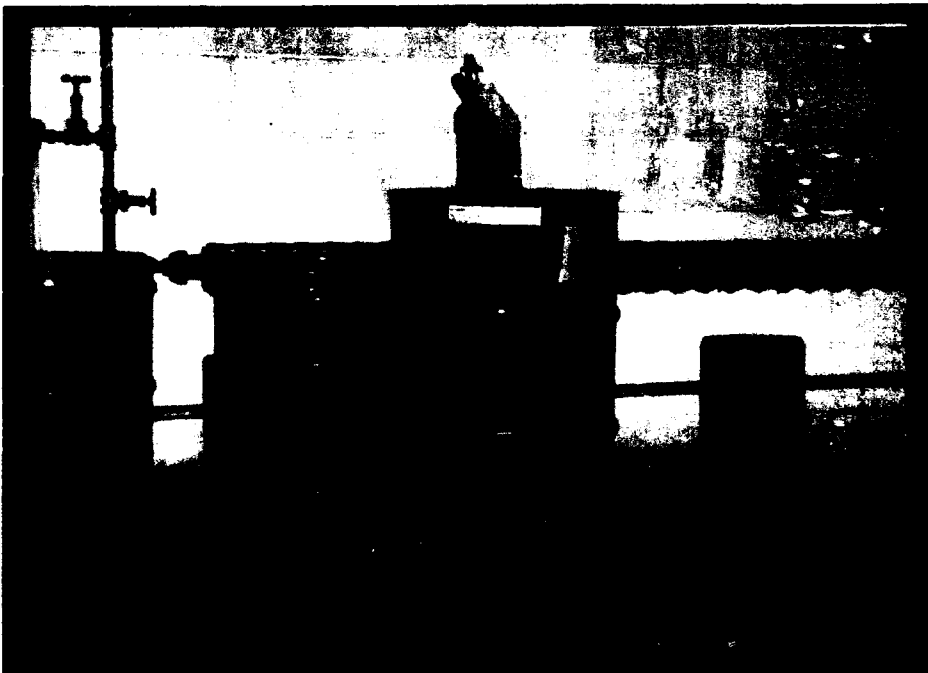
**9. FORMER WASH RACK BETWEEN  
BUILDINGS 425 AND 426**



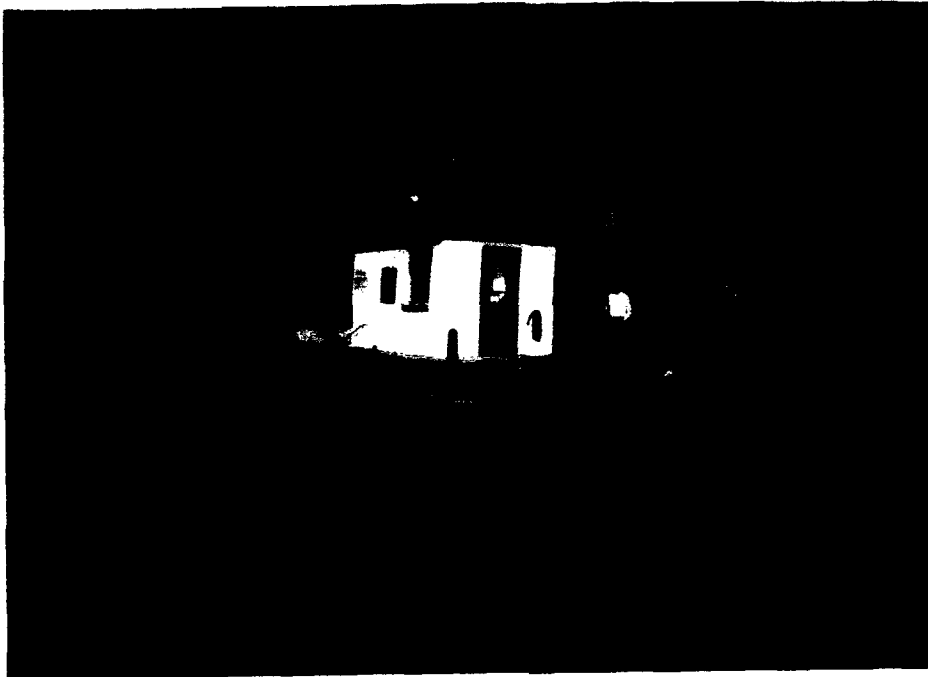
**10. OIL/WATER SEPARATOR  
(BUILDING 422)**



**11. POL DRUM ACCUMULATION AREA  
EAST OF BUILDING 127**



**12. DRUM ACCUMULATION AREA, OFFICE EQUIPMENT REPAIR  
(BUILDING 424)**



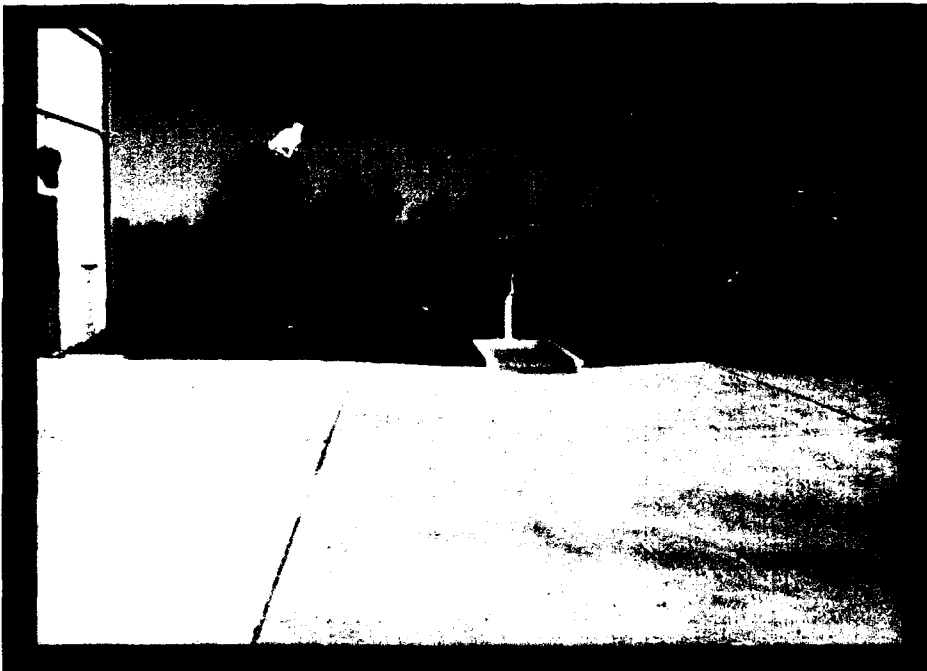
**13. POL FUELING STATION WITH USTs,  
(BUILDING 239)**



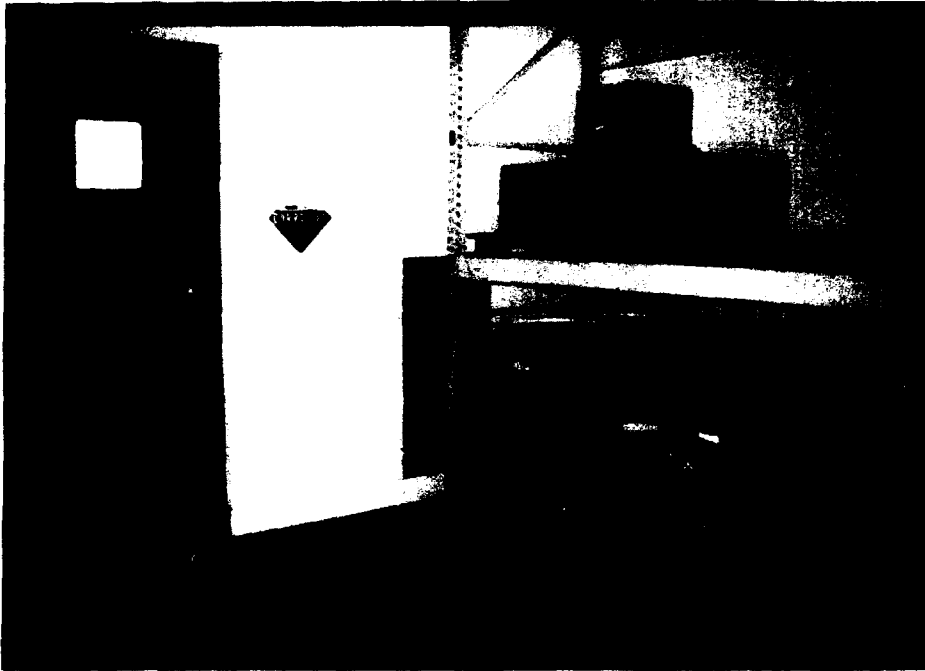
**14. FIRING BANK BY STREAM, FOREMAN RIFLE RANGE  
(BUILDINGS 811 AND 812)**



**15. FIRING BANK BY STREAM, STATE POLICE RANGE  
(BUILDING 815)**



**16. SPILL CONTAINMENT AREA, DRMO HAZARDOUS WASTE STORAGE  
(BUILDING 125)**



**17. RCRA-PERMITTED STORAGE FACILITY, DRMO  
(BUILDING 125)**



**18. PESTICIDE MIXING AREA, DEH STORAGE AND MIXING  
(BUILDING 605)**



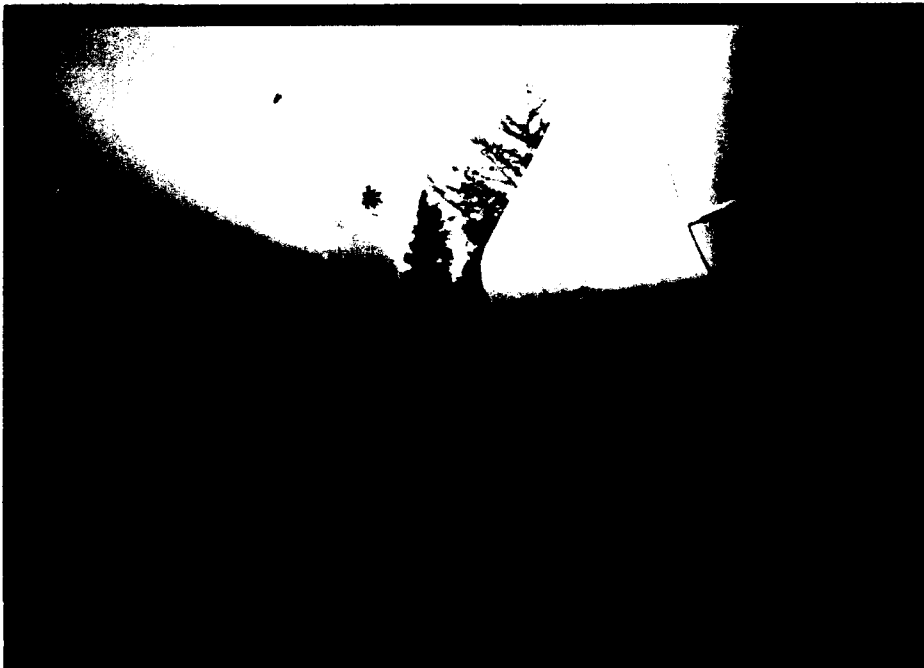
**19. BURIED DRUMS, FORMER STP, AND FIRE TRAINING PIT  
(BUILDING 810)**



**20. STAINING NEAR WASTE OIL UST, AAFES STATION  
(BUILDING 33)**



**21. STAINING AT GOLF COURSE AST  
(BUILDING 674)**



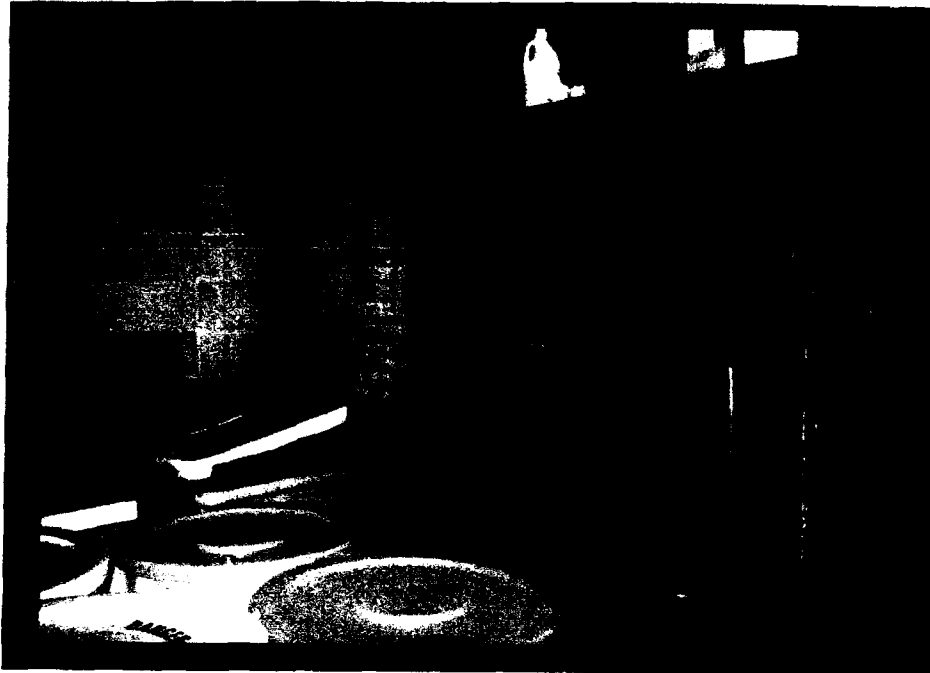
**22. SAMPLED AREA NEAR ASTs AT HEATING PLANT  
(BUILDING 2)**



**23. FORMER SANITARY LANDFILL (EAST)**



**24. FORMER INCINERATOR  
(BUILDING 518)**



**25. FORMER INCINERATOR, HAWLEY HOSPITAL  
(BUILDING 300)**



**26. CHEMICAL STORAGE, HAWLEY HOSPITAL  
(BUILDING 300)**

**WESTON**



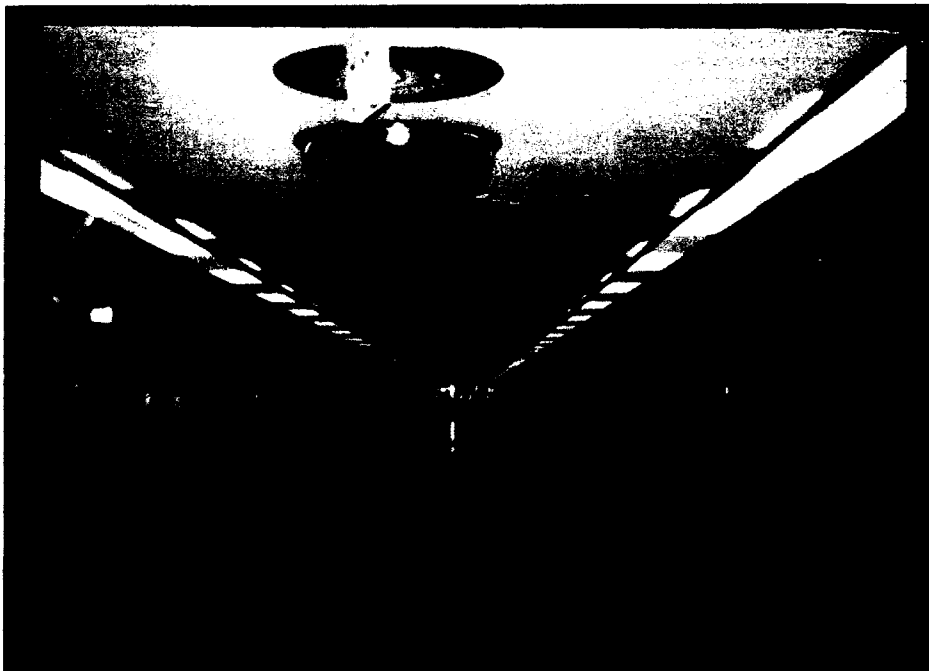
**27. FIRE TRAINING PIT AT FORMER STP  
(BUILDING 810)**



**28. AMMUNITION STORAGE AREA  
(BUILDING 520)**



**29. FORMER COAL STORAGE YARD  
(BUILDING 2)**



**30. ASBESTOS CEILING INSIDE  
BUILDING 1**

**APPENDIX A**  
**PHASE I RADON RESULTS**

### Results of Testing

Bldg.	Floor	Room	Level (in pCi/cm <sup>3</sup> )
1020	1	Apt. F	3.1
1021	1	Apt. A	3.1
1027	1	Apt. A	3.1
671	Bsmt.	F	3.1
458S	1	149	3.2
458S	1	155	3.2
T512	Bsmt.	Furance Room	3.2
615			3.2
646	Bsmt.		3.2
1009	1	Apt. F	3.2
646	Bsmt.		3.3
1004		Apt. B	3.3
700		South Wall	3.3
700	1	Store Room	3.4
615		Boiler Room	3.4
T512		Furnace Room	3.6
1022	1	Apt. C	3.7
1010	1	Apt. A	3.7
700	1	Furnace Room	3.7
657	Bsmt.	Front Room	3.8
700*	1	Kitchen	4.0
1003*		Apt. D	4.1
1013*	1	Apt. F	4.1
1003*		Apt. A	4.4
1003*		Apt. A	4.5
657*		Boiler Room	4.7

**Results of Testing  
(continued)**

Bldg.	Floor	Room	Level (in pCi/cm <sup>3</sup> )
646*	Bsmt.		4.8
1003*	1	Apt. B - Utility Room	4.8
906*		B	4.9
657*		Boiler Room	6.3
404*	1	2	6.5
615*	Bsmt.	Front Hall	8.4
615*	Bsmt.	Store Room	12.8

\*Areas being retested (results exceed EPA action level).



**APPENDIX B**  
**TYPES OF PESTICIDES STORED AT FBH**  
**(As Received)**

TABLE V-1  
PESTICIDE INVENTORY AND EQUIPMENT

NSN COMMON CHEMICAL NAME	PERCENT	FORMULATION	ESTIMATED ANNUAL REQUIREMENTS	ON HAND	ON ORDER	PRIMARY USES
Sevin 4L	42.0	liquid	0 gal	0 gal	0	Insect Control on trees and shrubs
Maxforce (Ants)	1.65	bait	10 cs	45 bx	0	Roach control
Cygon 2-E (disethoate)	23.4	Liquid	1 gal's	2 gal	0	Insect Control on trees and shrubs
Drione	1.0	Dust	10 lbs	2.5 lbs	0	Insect Control
Diazinon	14.3	Grn	300 lbs	175 lbs	0	Turf Insect Control
Oil & Ethion	94.0 2.0	Liquid	110 gal	90 gal	0	Tree and shrub Insect and Scale Control
Talon-6	.005	Grn	200 pks	200 pks	0	Mice Control
Resmethrin	1.0	Aer	120 cans	6 cans	0	Roach Control
Arsenal	27.6	Liquid	5 gal	6 gal	0	weed Control
Eutrine Plus	3.7	Grn	180 lbs	180 lbs	0	Algae Control
Surflan AS	40.4	Liquid	18 gal	18 gal	0	weed Control
Diphacione	.005	bait	20 bts	200 bts	0	Mice Control
Methomyl	1.0	bait	15 lbs	15 lbs	0	Fly Control
Malathion	57.0	Liquid	10 gal	10 gal	0	Tree and shrub Insect Control

TABLE V-1 con't  
PESTICIDE INVENTORY AND EQUIPMENT

ASN COMMON	PERCENT	FORMULATION	ESTIMATED ANNUAL	ON HAND	ON ORDER	PRIMARY USES
Chlorpyrifos	41.2	liquid	3 gal	18 pints	0	Roaches (crack crevice)
Berthcarb	76.0	powder	5 lbs	3 lbs	0	Fleas
Malathion	91.0	liquid	50 gal	35 gal	0	Mosquito Fogging
Pyrethrum	3.0	liquid	15 gal	15 gal	0	Roach Fogging
Copper (Cutrine)	9.0	liquid	20 gal	5 gal	0	Algae Control
Glyphosate	41.0	liquid	30 gal	5 gal	0	Total Vegetation Control
Mefluidide	28.0	liquid	5 gal	8 gal	0	Growth Regu- lator for turf
Atrazine	40.6	liquid	15 gal	17 gal	0	Needs on wildlife food-plots
2-4-D	49.0	liquid	250 gal	75 gal	0	Broadleaf weed control
Abasurf Larvicide	100.0	liquid	10 gal	44 gal	0	Mosquito Larvae
Maxforce	1.65	bait	50 cs	34 boxes	0	Ant Control
Roost No-More	3.0	liquid	3	2 gal	0	Bird Repellent
Roundup G	2.0	grn	2000 lbs	250 lbs	0	Crabgrass Control
Sonar-SP (flourdone)	5.0	grn	300 lbs	160 lbs	0	Weed Control in lakes

MEMPHIS: 201100Zenhya.opp

**197001**

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 1: *DPCA Field Printing Shop (Bldg. 1)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with 24 full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See attached well survey form for FBH production (potable) wells and see Figure 2-6 of Enhanced Preliminary Assessment.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*No.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*A minimal amount of printing wastes is temporarily stored in the shop.*

- Are berms present? Are they maintained? How much freeboard is present?

*NA*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 1, which houses the Printing Shop, also houses the Graphics Shop (AREE 3), the Carpentry Shop (AREE 6) and the Occupational Health Clinic (AREE 26).*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes. The Printing Shop employs a full-time staff of 24.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

# WATER USE SURVEY



1887 LAKESIDE PARKWAY  
SUITE 814  
TUCKER, GEORGIA 30084  
404-838-7710

Name and address of resident

Fort Benjamin Harrison  
Lawrence Township, Indiana  
c/o DIS Environmental Chief  
( 317 ) 549-5386

Check water source(s) used by resident

1. DRILLED WELL	<u>7</u>	DEPTH	<u>unknown</u>	WATER LEVEL	<u>70-150 ft bgs</u>
2. DUG WELL	<u>NA</u>	DEPTH		WATER LEVEL	
3. SPRING	<u>NA</u>	ARTESIAN		GRAVITY	
4. SURFACE WATER	<u>NA</u>				
5. PUBLIC SUPPLY	<u>NA</u>				
6. OTHER	<u>NA</u>				

Check water use(s) and specify water source of each

DRINKING	<u>X</u>	NUMBER OF USERS	<u>20,000*</u>	SOURCE	<u>No. 1 above</u>
HOUSEHOLD	<u>X</u>	NUMBER OF USERS	<u>2,000</u>	SOURCE	<u>No. 1 above</u>
IRRIGATION	<u>NA</u>	ACRES		CROP	
OTHER		<u>Base support activities (No. 1 above).</u>			

ANY PROBLEMS WITH WATER? Water must be treated for hardness. Potable water sampling at installation has shown isolated cases of VOCs detected in composite potable water samples.

HOW LONG HAVE SOURCES BEEN IN USE? Since the 1970s.

ANY MONITORING WELLS ON PROPERTY? 29 monitoring wells currently exist. See Figure 2-8 of Enhanced Preliminary Assessment.

PREPARED BY Stacie Popp DATE 12/20/91

COMMENTS Groundwater use is approximately 1 MGD.

\*Number of users based on number of people supported by FBH.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 2: *TASO Devices Shop (Buildings 449, 481)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with 9 full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Some wastes that were temporarily stored in shop include waste paints, thinners, solvents and cleaning agents. Work in this area discontinued in 1990. Materials stored in Building 481 include paints and thinners.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Storage inside building. No soil contact. Floor drains and sink drains are discharged to the sanitary sewer.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*NA*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*The nearest building is within 100 yards, Building 46.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, through routine business use. The TASO Devices Shop employs 9 full-time workers.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 3: *Graphics Shop (Building 1)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?  
*The site is active with 9 full-time workers.*
- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes used inside building. No soil contact.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*The volume of waste flushed to drain is believed to be minimal.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*No berms present.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*NA*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 1 housing the Graphics Shop also houses the Printing Shop (AREE 1), the Carpentry Shop (AREE 6), and the Occupational Health Clinic (AREE 26).*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes. The Graphics Shop employs a full-time staff of 3.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 4: *Photographic Processing Areas (Buildings 1, 470, 479, 300)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*These sites are active with various numbers of full-time workers ranging from 3 to 15.*

- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes have been flushed to drain lines directly to the sanitary sewer. Waste liquid includes heavy metals such as cadmium, chromium and mercury. Prior to being discharged, the waste liquid is filtered for recovery of silver.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Processing areas are inside the buildings. No soil contact.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Waste is discharged to sewer; not stored.*

- Are berms present? Are they maintained? How much freeboard is present?

*NA*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*Some evidence of stained concrete and tile floors was observed.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

##### Process Area

##### Nearest Building

*Building 1  
Building 470  
Building 479  
Building 300*

*Building 616  
Building 474  
Building 474  
Building 301*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine business use.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*NA*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 5: *Weapons Cleaning Area (Building 613)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with 5 to 6 full-time workers and routinely 100 soldiers cleaning weapons.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Solvent volatilizes and cleaner is added as required. No waste solvent is generated.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Weapons cleaning performed inside building. No soil contact is expected.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*There is no waste generated. Fifty gallons of solvent/cleaner solution is used in soaking baths.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 613 housing the weapons cleaning area and also houses a dormitory on floors above.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operations.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 6: *Carpentry Shop (Building 1)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with 2 full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes such as paints, paint thinners, and paint remover are stored in the shop.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Operations are conducted inside building. No soil contact.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*A minimal amount of carpentry shop wastes are temporarily stored in the shop.*

- Are berms present? Are they maintained? How much freeboard is present?

*NA*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 1, which houses the Carpentry Shop, also houses the Printing Shop (AREE 1), the Graphics Shop (AREE 3) and the Occupational Health Clinic (AREE 26).*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, the Carpentry Shop is active and employees a full-time staff of 2.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 7: *Maintenance Shops (Buildings 4, 33, 127, 422, 424, 604, 705)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*These sites are active various numbers of full-time workers ranging approximately from 2 to 8.*

- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes are stored in liquid form in drums and underground storage tanks. See AREEs 10 and 22.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Maintenance operations occur inside buildings. No soil contact.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Various volumes of wastes stored at maintenance shops.*

- Are berms present? Are they maintained? How much freeboard is present?

*NA*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*Maintenance shop floors are stained with oil and grease in maintenance areas and in drum storage areas.*

- Is there a leachate collection system?

*NA*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*In general, nearest regularly occupied building is within 200 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes. Maintenance work performed by employees.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 8: *Former Maintenance Areas (Adjacent to Building 13 and Buildings 36, 38, 109/116, 424, 425, 426, and 619)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*All sites are presently active, except the former gas station adjacent to Building 13. Current operations, however, are not related to maintenance except operations in Building 424 where there are two full-time workers (see AREE 7).*

- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes are stored in drums and aboveground and underground storage tanks.  
See AREE 10 and AREE 22.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Operations occurred within buildings. No soil contact.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Currently there is no waste stored at the buildings related to former maintenance operations (see AREE 10 for Building 424).*

- Are berms present? Are they maintained? How much freeboard is present?

*NA*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*None (former operations).*

- Is there a leachate collection system?

*NA*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*In general, nearest regularly occupied building is within 200 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Not any longer.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 9: *Wash Racks, Grease Racks, and Oil/Water Separators (Buildings 4, 36, 116, 127, 422, 423, 425/426, 500, 515, and 705)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?  
*Several of these are active. Full-time workers - NA.*
- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Waste were deposited at wash racks and grease racks as liquids which were generally discharged to oil/water separators. Potential for discharge of wastes to soils and sediments from oil/water separators, wash racks, and grease racks.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Not known.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Wash racks and grease racks have a concrete or brick base.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Potential for wastes in oil/water separators. Not known.*

- Are berms present? Are they maintained? How much freeboard is present?

*Wash racks still in use have berms.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No visual evidence encountered.*

- Is there a leachate collection system?

*NA*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*In general, nearest regularly occupied building is within 200 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Workers may come in contact with wastes at wash racks and grease racks.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 10: *Drum Storage Areas/POL Waste Storage (Buildings 34/36, 109/116, 127, 422, 424, and 705)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*Drum storage in Buildings 127, 422, and 424 is active with various numbers of full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Waste and unused chemicals stored in 55-gallon drums for pickup.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Not known.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Currently drums are stored indoors on concrete floors. Past operations included outdoor, gravel, drum storage pads.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Various amounts of wastes currently stored, up to seven 55-gallon drums.*

- Are berms present? Are they maintained? How much freeboard is present?

*No berms present.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*There is evidence of leaking drums at Buildings 422 and 424. Past reports noted evidence of leaking drums in outdoor storage areas.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*In general, nearest regularly occupied building is within 200 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes. Wastes are handled by full-time workers.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 11: *Fueling Stations (Buildings 33 and 239)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*These sites are active. Building 33 has six full-time workers and Building 239 has one full-time worker.*

- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes not deposited. Possible gasoline spills.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Fueling operations occur on concrete foundations outdoors.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*NA*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*Some evidence of spills.*

- Is there a leachate collection system?

*NA*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Nearest regularly occupied building is within 200 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Yes. Building 33 is a public gas station. No signs of recreation.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 12: *DEH Maintenance Building (Building 26)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with 40 to 50 full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes stored in liquid form.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Building 26 has a concrete floor. Maintenance operations generally occur at the job site.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Small amounts of waste stored in Building 26 including paint thinner, paints, solvents, etc.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*The nearest regularly occupied building (Building 28) is within 50 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 13: *Water Treatment Laboratory (Building 604)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with 5 full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Waste liquids are flushed to the sanitary sewer through the building drain lines. Waste liquids include small quantities of fluoride reagent, standards, and hydrochloric acid.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*The lab is inside Building 604. No soil contact.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*NA*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 605 is within 100 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operations.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 14: *Firing Ranges (Rifle Range - Building 811, 812)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*This site is active with approximately 5,000 persons using the range annually.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Rifle rounds containing lead are fired into a hillside adjacent to a tributary of Lawrence Creek. There are signs of impact along the tributary bank.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*The depth of the embedded rifle rounds is not known.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*No.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*Impact area is native soil.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*No. The stream is in front of, and downslope from, the impact area.*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*The nearest regularly occupied building is Building 63 approximately 800 feet from the Range.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operations.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Yes, the site is accessible and attractive; however, there are no signs of recreation.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 14: *Firing Ranges (Skeet/Rifle Range - Building 821)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*This site is active. There are no full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Rifle rounds containing lead are fired into impact area.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*The depth of the embedded waste is not known.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*The impact area is native soil.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*The impact area is bermed.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*The nearest regularly occupied building is Building 61 located approximately 850 yards to the southeast.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operations.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Yes, the site is accessible and attractive; however, there are no signs of recreation.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 14: *Firing Ranges (Pistol Range - Building 815)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*This site is active. There are no full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Pistol rounds, containing lead, are fired into a bank of a tributary of Lawrence Creek.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*The depth of the embedded waste is not known.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*No.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*Impact areas is native soil.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*The nearest regularly occupied building is Building 61 approximately 275 yards from the Range.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operations.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Yes, the site is accessible and attractive; however, there are no signs of recreation.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 15: *Former Drum/Waste Storage Area (South of Buildings 45 and 46)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is not active.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include a site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes potentially in liquid, sludge, and/or dry state were stored in 55-gallon drums. Potentially sludge and liquid wastes deposited from former paint shop and storage of PCB transformers.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Depth unknown. Contamination detected at depths of 2 feet below surface and greater.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*No.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*Yes, native soil of cover 18 inches thick.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*NA*

- Is there a leachate collection system?

*No.*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Several buildings surround this area and are approximately 50 to 200 feet away. Buildings include a fast food restaurant, recreational buildings, and a guest house.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*No.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Area is accessible and attractive. No signs of recreation but area is grassed, with some mature trees.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 16: *DRMO Hazardous Waste Storage Area (Building 125)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with a full-time staff of 12 workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Liquids and solids are stored. Only minor quantities of sludge were handled. The following materials are not handled: biological wastes, wastewater sludges, radioactive wastes, and trash.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*October 15, 1991 inventory attached.*

- Are berms present? Are they maintained? How much freeboard is present?

*Yes, there are berms at Building 125. These berms are constructed of 6-inch curbing. The area is dry.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*There are no drains inside Building 125. The entrance to Building 125 has a spill containment area which is equipped with a drain, which has a manually operated discharge valve.*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 124 is within 100 yards.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operations and spill response emergencies.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No. There is an alarm system installed at the storage area.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

RMO BLDG. 125 HAZARDOUS INVENTORY 15 OCTOBER 1991 WEL  
 LPOT.. ITEM..... QUANTITY..... DOT NAME..... EPA.

0101A0	LEAD PAINT RESIDUE	4 DRUMS	HAZARDOUS WASTE SOLI	D008
0101B0	PAPER CHEMICAL TEST	50 ROLLS	N/A	N/A
101B0	PAPER. CHEMICAL	10 ROLLS	N/A	N/A
103A0	PAINT RESIDUE WITH L	4 DRUMS	HAZARDOUS WASTE SOLI	D008
0105A0	PAINT RESIDUE WITH L	4 DRUMS	HAZARDOUS WASTE SOLI	D008
401A0	CLEANING COMPOUND, P	16 DRUMS	N/A	N/A
402A0	EMPTY DECON. APPARAT	7 EA	N/A	N/A
0402A0	GASOLINE WITH WATER	25 GL.	GASOLINE	D001
0402B0	BATTERY. LITHIUM	ONE EACH	EXEMPT	N/A
402B0	BATTERIES. LITHIUM	8 EACH	EXEMPT	N/A
0402B0	BATTERY. LITHIUM	ONE EACH	EXEMPT	N/A
0402B0	ASBESTOS MITTENS	3 EA	ASBESTOS	N/A
402B0	BATTERIES. MAGNESIUM	242 EA	N/A	N/A
402B0	LENS CLEANING COMPOU	10 DZ	N/A	N/A
0402B0	BATTERY LITHIUM	2 EA	N/A	N/A
0402B0	BATTERY LITHIUM	1 EA	N/A	N/A
402B0	BATTERY. LITHIUM	ONE EACH	EXEMPT	N/A
0402B0	BATTERY. LITHIUM	ONE EACH	EXEMPT	N/A
0403A0	CARC POLYURETHANE CO	40 GALLONS	PAINT	D001
403A0	POLYURETHANE, GREEN	5 KITS	PAINT	D001
0403A0	R-84-G ENAMEL EPOXY	12 GALLONS	PAINT RELATED MATERI	D001
0403A0	MICROSOL GREEN PAIN	ONE GALLON	PAINT	D001
403B0	SEALING COMPOUND	ONE BOTTLE	ADHESIVE	D001
403B0	SEALING COMPOUND	ONE KIT	CEMENT	D001
0403B0	ADHESIVE POLYCHLOROP	ONE KIT	ADHESIVE	D001
0403B0	ADHESIVE	ONE KIT	ADHESIVE	D001
403B0	SEALING COMPOUND	ONE KIT	ADHESIVE	D001
0403B0	ADHESIVE	3 PINTS	ADHESIVE	D001
0403B0	SEALING COMPOUND	11 EACH	CEMENT	D001
403B0	SEALING COMPOUND	ONE EACH	ADHESIVE	D001
403B0	SEALING COMPOUND. FI	ONE EACH	ADHESIVE	D001
0403B0	SEALING COMPOUND	2 BOTTLES	N/A	N/A
403B0	ADHESIVE	2 PINTS	ADHESIVE	D001
403B0	SEALING COMPOUND. TO	ONE TUBE	COMBUSTIBLE LIQUID.	D001
0403B0	SEALING COMPOUND	ONE KIT	FLAMMABLE LIQUID. NO	D001
0403B0	SEALING COMPOUND	2 EACH	FLAMMABLE LIQUID, NO	D001
403B0	ADHESIVE SEALER	2 TUBES	N/A	N/A
0404A0	LEAK TEST FLUID	105 BOTTLES	N/A	N/A
0404A0	ACTIVATED DESICCANT	25 POUNDS	N/A	N/A
0404A0	PERMETHRIN INSECT RE	10 AEROSOL CANS	CONSUMER COMMODITY	N/A
0404A0	CLOTH CLEANER. POOL	2 AEROSOL CANS	N/A	N/A
0404B0	EMPTY FUEL TANKS PLA	2 EA	N/A	N/A
0405A0	PAINT. LEAD BASED	13 CANS	PAINT	D001
0405B0	BUFFER RUBBING COMPO	31 GALLONS	N/A	N/A

DRMO BLDG. 125 HAZARDOUS INVENTORY 15 OCTOBER 1991 WEL  
 SPOT.. ITEM..... QUANTITY..... DOT NAME..... EPA.

0602A0	DESCALER. GLYCOLIC A	50 GALLONS	CORROSIVE LIQUID. NO	D002
0602A0	DESCALER	100 GALLONS	CORROSIVE LIQUID. NO	D002
0602A0	DESCALER	50 GALLONS	CORROSIVE LIQUID. NO	D002
0602B0	NO-SLIP EPOXY FLOOR	27 KITS	CORROSIVE LIQUID. NO	D002
0604A0	ROSIN CLEANER	100 GALLONS	CORROSIVE ALKALINE.	D002
0604A0	SPRAY WHITE E SOLVEN	50 GALLONS	N/A	N/A
0604B0	BATTERIES. NI-CAD	2 EACH	BATTERY. ELECTRIC ST	D002
0803AT	LEAK TEST FLUID	16 BOTTLES	N/A	N/A
0803AT	CORROSION INHIBITOR	110 GALLONS	CMFD. RUST PREVENTIN	D002
0803AT	DC 200 SILICONE FLUI	5 GALLONS	N/A	N/A
0803AT	COPIER DISPERSANT	60 QUARTS	COMBUSTIBLE LIQUID.	N/A
0803AT	AEROSOL. SMOKE DETEC	24 CANS	CONSUMER COMMODITY	N/A
0804AT	ENAMEL. OLIVE DRAB	6 QUARTS	PAINT	D001
0805A0	FREON R-113	4 DRUMS	N/A	N/A
0805B0	FREON TF SOLVENT	110 GALLONS	N/A	N/A
0805BT	XYLENE	ONE DRUM	XYLENE	D001
0806AT	SEALING COMPOUND	4 EACH	CEMENT	N/A
0806AT	SEALING COMPOUND	ONE EACH	CEMENT	N/A
0806AT	FUEL TANK COATING	2 KITS	FLAMMABLE LIQUID. NO	D001
0806AT	SEALING COMPOUND	ONE KIT	CEMENT	D001
0806BT	ACETONE ADHESIVE PRI	2 QUARTS	ACETONE	D001
0806BT	ADHESIVE. DISC 4081	2 EACH	ADHESIVE	D001
0807AT	CHLORINATED LIME	270 POUNDS	BLEACHING POWDER	N/A
0807AT	MONOETHANOLAMINE	100 GALLONS	CORROSIVE ALKALI. NO	D002
0807B0	TALC POWDER	1 LB	N/A	N/A
0807BT	NAPTHA MOTHBALL FLAK	10 BOXES	NAPTHALENE. CRUDE	D001
0807BT	METHANOL. TECHNICAL	9 QUARTS	METHYL ALCOHOL	D001
0807BT	GLYCERINE. TECHNICAL	19 PINTS	N/A	N/A
0807CT	AMMONIUM PERSULFATE	3 DRUMS	AMMONIUM PERSULFATE	D001
0808AT	OIL. LUBRICATING	3 DRUMS	N/A	N/A
0808AT	OIL. 2 CYCLE	24 BOTTLES	N/A	N/A
0808BT	GREASE. PLUG VALVE	2 CANS	N/A	N/A
0808BT	GREASE. PLUG VALVE	ONE CAN	N/A	N/A
0808BT	OIL. LUBRICATING	6 PINTS	N/A	N/A
0808BT	GREASE	ONE EACH	N/A	N/A
0808BT	LUBRICANT. SOLID FIL	9 QUARTS	FLAMMABLE LIQUID. NO	D001
0808BT	GREASE. AIRCRAFT	2 TUBES	N/A	N/A
0808BT	GREASE. AUTOMOTIVE	44 CANS	N/A	N/A
11TEMP	PESTICIDES/INSECTICI	VARIES	N/A	N/A

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 17: *PCB-Containing Waste Storage Areas (Buildings 4, 46, 110, 124, and 125).*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*Currently all buildings are active with various numbers of full-time workers. No PCBs are presently stored on-site. If there are any PCBs requiring storage on-site in the future, they would be stored in the DRMO (Building 125).*

- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Wastes were stored in liquid form.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*The DRMO has a concrete floor with secondary containment for spills. Several past PCB storage areas.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*No longer any storage of PCBs.*

- Are berms present? Are they maintained? How much freeboard is present?

*The DRMO has berms for spill containment. There were no berms at other storage areas.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Storage of PCBs at Buildings 4, 46, and 110 was outdoors. The nearest regularly occupied buildings were Buildings 4, 46, and 110, respectively. Building 124 is within 100 yards of Building 125.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, there are 12 full-time workers at the DRMO.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 18: *Pesticide Mixing and Storage Areas (Buildings 27, 125, 514, 605, and 674)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*These sites are active. However, pesticide mixing is currently only conducted in Building 605. There are 5 full-time workers in Building 605 and 12 full-time workers at the DRMO.*

- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Liquid wastes were generated and stored in this area. Waste may have included pesticide mixes and fuels.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Sampling of soils at Building 605 indicated elevated levels of pesticides in surface soils.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Pesticide mixing operations are conducted indoors and outdoors on a cement pad.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown (see AREE 16).*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No visual evidence of leaking from pesticide mixing operations.*

- Is there a leachate collection system?

*No.*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*The nearest regularly occupied building to Building 605 is Building 604 located approximately 50 yards to the west.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operation.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Yes. There are no signs of recreation.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 19: *Buried Drums (Lithium Bromide Solution) (Building 810)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*Partially active, no full time workers (used only during fire training).*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Liquid state in drums.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Unknown.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Soil liner.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*Limestone gravel cover. Thickness unknown.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*NA*

- Is there a leachate collection system?

*No.*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Firing ranges are regularly occupied (daytime) and are located approximately 100 to 200 yards from the buried drum area.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*No.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No. Fenced and locked area.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 20: *Former Sewage Treatment Plant (Building 810)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?  
*Partially active; no full-time workers (used only during fire training).*
- Provide a site sketch to scale. Include in the sketch the following features if present:
  - buildings
  - paved areas
  - fences and security points
  - railroad tracks
  - source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
  - drainage/diversion structures (describe)
  - storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Liquid/sludge state.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Unknown.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Native soil liner.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*Limestone gravel cover, thickness unknown. Native soil cover on former drying beds; thickness unknown.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown amount. Waste was treated in clarification/treatment tanks and sludge deposited in drying beds. Sludge was reportedly removed after STP was closed.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*NA*

- Is there a leachate collection system?

*No.*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Firing ranges are regularly occupied (daytime) and are located approximately 100 to 200 yards from the former treatment plant.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*No.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No. Fenced and locked area with the exception of former sludge drying beds which are covered with native soil.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 23: *Former Sanitary Landfill (East)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*Site is currently used as a public park. No full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Records state that solid wastes were disposed in this landfill. These wastes included office and household wastes, demolition and construction debris, tree trimmings, and ash from incinerator operations. The potential exists, however, that hazardous liquid wastes such as used oils, solvents, pesticides, and paints could have been incorporated with the office/household wastes.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Unknown, however it is assumed to be at least 2 feet bls.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*No.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*A native soil cover of unknown thickness covers the landfill.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No evidence noted.*

- Is there a leachate collection system?

*No.*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 300, approximately 400 yards to the south, is the nearest regularly occupied building.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*NA*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Access to the public.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 24: *Former Sanitary Landfill (West)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The landfill is no longer active. There are now no full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Solid wastes were disposed in this landfill. These wastes included office and household wastes, demolition and construction debris, tree trimmings, and ash from incinerator operations. The potential exists, however, that hazardous liquids could have been incorporated with the office/household wastes.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*15 to 20 feet below land surface.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*There is a single 12-inch soil cover.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*The 12-inch soil cover is a mix of clay and topsoil. Grass (farm mix) is grown on the cover.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*The landfill was operated for 23 years and approximately 5,600 tons of solid waste disposed annually.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*Yes. Leachate is collected.*

- Is there a leachate collection system?

*Yes. The leachate collection system consists of drainage ditches lined with rip-rap which flow to a sedimentation pond.*

## **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*There is a mobile home park approximately 400 yards to the east with several community support buildings.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*No workers.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*The landfill is not attractive to the public and there is light security.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 25: *Former Incinerator (See AREE 26 for Hospital Incinerator) (Building 515)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*Site is not active.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Solid waste burned in incinerator; ash may have been buried in areas outside of building.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Unknown.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*No.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*Native soil cover; depth unknown.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No.*

- Is there a leachate collection system?

*NA*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 400 (Lord Gates Hall), which has classroom training (regularly occupied during the day), is located approximately 400 yards from the former incinerator.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*No.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Area is accessible but is semi-remotely located. It is not very attractive to the public.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

**If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.**

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 26: *Occupational Health Clinic (Building 1)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active with an estimated 2 to 4 full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*No waste materials deposited or stored.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

NA

- Are berms present? Are they maintained? How much freeboard is present?

NA

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

No.

- Is there a leachate collection system?

NA

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 1, which houses the Occupational Health Clinic, also houses the Printing Shop (AREE 1), the Graphics Shop (AREE 3) and the Carpentry Shop (AREE 9).*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, the Occupational Health Clinic is active with FBH personnel routinely visiting.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 26: *Hospitals and Clinics (Veterinary Clinic Building 805) and Hawley Army Hospital (Building 300)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The veterinary clinic is active and employs 6 to 8 full-time workers. The hospital is active and employs approximately 230 full-time workers.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water (including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Infectious wastes (carcasses) are handled in the veterinary clinic area as well as small amounts of formaldehyde, which is flushed to the sanitary sewer. The carcasses are picked up by the hospital. Medical wastes are stored in the hospital and were formerly incinerated at the hospital. None were deposited. Treated liquid waste from silver recovery units (x-ray solutions) is disposed of in sanitary sewer.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA for both buildings.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*NA for both buildings.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA for both buildings.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*NA for both buildings.*

- Are berms present? Are they maintained? How much freeboard is present?

*No for both buildings.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*No for both buildings.*

- Is there a leachate collection system?

*NA for both buildings.*

## **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*There is a recreational area located across the street from the clinic. Hospital is occupied 24 hours per day.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*Yes, during routine operation at both facilities.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*Waste storage areas are not accessible to the public. The buildings are attractive and accessible to the public.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

**If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.**

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 27: *Fire Training Area (Building 810)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*Partially active; no full-time workers (used only during fire training).*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Liquid state (fuel oil mixed with water from extinguishing fires).*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Unknown.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Native soil liner.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*Limestone gravel cover, thickness unknown. Fire training done on top of covered area.*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*Unknown. Minimal amounts; fire training done with small amounts of fuel oil in troughs or on automobiles.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*Minor amounts of staining on graveled areas.*

- Is there a leachate collection system?

*No.*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Firing ranges are regularly occupied (daytime) and are located approximately 100 to 200 yards from the training area.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*No, except during fire training activities.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No. Fenced and secure area.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 29: *Ammunition Storage Areas (Buildings 519-522)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is active; however, there are no full-time employees.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*This area contains no waste material; however, it contains manufactured munitions.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*NA*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*Materials stored in buildings.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*NA*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*NA*

- Is there a leachate collection system?

*NA*

#### **SITE AND AREA USE DATA COLLECTION**

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*The nearest building is Building 539 located approximately 1/4 mile to the south.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*NA*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

## SITE INSPECTION (SI) PHASE II DOCUMENTATION CHECKLIST

Record this information in as much detail as you can, providing attachments (e.g. well logs, blue prints) as necessary. This information is required for all Screening Site Inspections and should be recorded in field logbooks by the project manager or his designee. Cite the source for all information obtained for all sections. Lists of HRS-specific definitions, sensitive environment identifications, and a well survey form are attached.

Site Name: *Fort Benjamin Harrison*

AREE 30: *Former Coal Storage Pile (NE of Building 2)*

City, County, State: *Lawrence Township, Marion County, Indiana*

EPA ID No.: *IN4210090003*

Person responsible for documentation: *Stacie A. Popp, Roy F. Weston, Inc.*

Date: *December 20, 1991*

### ON-SITE DATA COLLECTION

#### 1. Site Layout

- Is the site active? If so, how many full-time workers are employed?

*The site is not active; there are no workers employed.*

- Provide a site sketch to scale. Include in the sketch the following features if present:

- buildings
- paved areas
- fences and security points
- railroad tracks
- source location and size (a source is defined as any area where a hazardous substance has been deposited, stored, disposed, or placed, or soil that has become contaminated due to migration)
- drainage/diversion structures (describe)
- storage areas (describe)

*See Figure 3-1 of Enhanced Preliminary Assessment.*

- Describe (and sketch) the probable overland flow direction of runoff from source area(s), and the approximate distance to perennial surface water

(including wetlands). Consult the topo for this information and confirm while on-site.

*See Figures 2-4, 2-8, and 3-1 of Enhanced Preliminary Assessment*

- Complete well survey forms for industrial and/or potable wells on-site, focusing on location (include in site sketch), depths, pumpage, and the number of workers served by each well.

*See AREE 1 for this information.*

## II. Waste and Containment Description

- Were the wastes initially deposited in a liquid, sludge, or dry state?

*Dry coal was deposited in this area. Sludge due to precipitation runoff was noted in the past.*

- Is the depth of wastes (bls) known? Is there waste or contaminated soil at 2 feet bls or higher?

*Extent of contamination unknown.*

- Is there an engineered liner and/or cover (other than clay)? Is the liner single or double?

*The coal was stored on a concrete slab equipped with drains.*

- Is there a soil cover? If so, is it native soil? How thick (in inches) is it? Describe the soil type and the extent of vegetation on a source and on-site.

*NA*

- How much waste is present in each source? Can describe by amount deposited, or volume of source, or area of source.

*There is no waste present at this time.*

- Are berms present? Are they maintained? How much freeboard is present?

*No.*

- Is there any evidence of overflow, leaking, etc. in source and/or storage areas(s)?

*There is currently no evidence of leakage; however, the reports indicate that during wet weather the former coal pile produced a sludge which ran off the concrete pad.*

- Is there a leachate collection system?

*No. There are storm drains located near the storage area.*

#### SITE AND AREA USE DATA COLLECTION

- Identify the nearest residence or regularly occupied building. Specify whether the residence/building is on a source, contiguous to a source, or nearby.

*Building 19 is located less than 100 yards from the former storage area.*

- Are workers likely to come into contact with the source area(s)? (i.e. are work areas on or contiguous to a source?)

*No. Coal has been removed.*

- Is the source area accessible and attractive to the public? Are there any signs of recreation in source area(s)? Describe.

*No. The area is fenced.*

- Confirm the location of the nearest drinking water well if not on-site.

*There are drinking water wells on-site.*

If any target information from the Recon Documentation Checklist is lacking or needs to be updated, this data must be obtained or confirmed during the SSI Phase II.

**WESTON**

**APPENDIX D**  
**DRMO INVENTORY**  
**(As Received)**

DRMO BLDG. 125 HAZARDOUS INVENTORY 15 OCTOBER 1991 WEL  
 SPOT.. ITEM..... QUANTITY..... DOT NAME..... EPA.

0101A0	LEAD PAINT RESIDUE	4 DRUMS	HAZARDOUS WASTE SOLI	D008
0101B0	PAPER CHEMICAL TEST	50 ROLLS	N/A	N/A
0101B0	PAPER, CHEMICAL	10 ROLLS	N/A	N/A
0103A0	PAINT RESIDUE WITH L	4 DRUMS	HAZARDOUS WASTE SOLI	D008
0105A0	PAINT RESIDUE WITH L	4 DRUMS	HAZARDOUS WASTE SOLI	D008
0401A0	CLEANING COMPOUND, P	16 DRUMS	N/A	N/A
0402A0	EMPTY DECON. APPARAT	7 EA	N/A	N/A
0402A0	GASOLINE WITH WATER	25 GL.	GASOLINE	D001
0402B0	BATTERY, LITHIUM	ONE EACH	EXEMPT	N/A
0402B0	BATTERIES, LITHIUM	8 EACH	EXEMPT	N/A
0402B0	BATTERY, LITHIUM	ONE EACH	EXEMPT	N/A
0402B0	ASBESTOS MITTENS	3 EA	ASBESTOS	N/A
0402B0	BATTERIES, MAGNESIUM	242 EA	N/A	N/A
0402B0	LENS CLEANING COMPOU	10 DZ	N/A	N/A
0402B0	BATTERY LITHIUM	2 EA	N/A	N/A
0402B0	BATTERY LITHIUM	1 EA	N/A	N/A
0402B0	BATTERY, LITHIUM	ONE EACH	EXEMPT	N/A
0402B0	BATTERY, LITHIUM	ONE EACH	EXEMPT	N/A
0403A0	CARC POLYURETHANE CO	40 GALLONS	PAINT	D001
0403A0	POLYURETHANE, GREEN	5 KITS	PAINT	D001
0403A0	R-84-G ENAMEL EPOXY	12 GALLONS	PAINT RELATED MATERI	D001
0403A0	MICCROSOL GREEN PAIN	ONE GALLON	PAINT	D001
0403B0	SEALING COMPOUND	ONE BOTTLE	ADHESIVE	D001
0403B0	SEALING COMPOUND	ONE KIT	CEMENT	D001
0403B0	ADHESIVE POLYCHLOROP	ONE KIT	ADHESIVE	D001
0403B0	ADHESIVE	ONE KIT	ADHESIVE	D001
0403B0	SEALING COMPOUND	ONE KIT	ADHESIVE	D001
0403B0	ADHESIVE	3 PINTS	ADHESIVE	D001
0403B0	SEALING COMPOUND	11 EACH	CEMENT	D001
0403B0	SEALING COMPOUND	ONE EACH	ADHESIVE	D001
0403B0	SEALING COMPOUND, FI	ONE EACH	ADHESIVE	D001
0403B0	SEALING COMPOUND	2 BOTTLES	N/A	N/A
0403B0	ADHESIVE	2 PINTS	ADHESIVE	D001
0403B0	SEALING COMPOUND, TO	ONE TUBE	COMBUSTIBLE LIQUID,	D001
0403B0	SEALING COMPOUND	ONE KIT	FLAMMABLE LIQUID, NO	D001
0403B0	SEALING COMPOUND	2 EACH	FLAMMABLE LIQUID, NO	D001
0403B0	ADHESIVE SEALER	2 TUBES	N/A	N/A
0404A0	LEAK TEST FLUID	105 BOTTLES	N/A	N/A
0404A0	ACTIVATED DESICCANT	25 POUNDS	N/A	N/A
0404A0	PERMETHRIN INSECT RE	10 AEROSOL CANS	CONSUMER COMMODITY	N/A
0404A0	CLOTH CLEANER, POOL	2 AEROSOL CANS	N/A	N/A
0404B0	EMPTY FUEL TANKS PLA	2 EA	N/A	N/A
0405A0	PAINT, LEAD BASED	13 CANS	PAINT	D001
0405B0	BUFFER RUBBING COMPO	31 GALLONS	N/A	N/A

DRMO BLDG. 125 HAZARDOUS INVENTORY 15 OCTOBER 1991 WEL  
 SPOT.. ITEM..... QUANTITY..... DOT NAME..... EPA.

0602A0	DESCALER. GLYCOLIC A	50 GALLONS	CORROSIVE LIQUID. NO	D002
0602A0	DESCALER	100 GALLONS	CORROSIVE LIQUID. NO	D002
0602A0	DESCALER	50 GALLONS	CORROSIVE LIQUID. NO	D002
0602B0	NO-SLIP EPOXY FLOOR	27 KITS	CORROSIVE LIQUID. NO	D002
0604A0	ROSIN CLEANER	100 GALLONS	CORROSIVE ALKALINE.	D002
0604A0	SPRAY WHITE E SOLVEN	50 GALLONS	N/A	N/A
0604B0	BATTERIES. NI-CAD	2 EACH	BATTERY. ELECTRIC ST	D002
0803AT	LEAK TEST FLUID	16 BOTTLES	N/A	N/A
0803AT	CORROSION INHIBITOR	110 GALLONS	CMPD. RUST PREVENTIN	D002
0803AT	DC 200 SILICONE FLUI	5 GALLONS	N/A	N/A
0803AT	COPIER DISPERSANT	60 QUARTS	COMBUSTIBLE LIQUID.	N/A
0803AT	AEROSOL. SMOKE DETEC	24 CANS	CONSUMER COMMODITY	N/A
0804AT	ENAMEL. OLIVE DRAB	6 QUARTS	PAINT	D001
0805A0	FREON R-113	4 DRUMS	N/A	N/A
0805B0	FREON TF SOLVENT	110 GALLONS	N/A	N/A
0805BT	XYLENE	ONE DRUM	XYLENE	D001
0806AT	SEALING COMPOUND	4 EACH	CEMENT	N/A
0806AT	SEALING COMPOUND	ONE EACH	CEMENT	N/A
0806AT	FUEL TANK COATING	2 KITS	FLAMMABLE LIQUID. NO	D001
0806AT	SEALING COMPOUND	ONE KIT	CEMENT	D001
0806BT	ACETONE ADHESIVE PRI	2 QUARTS	ACETONE	D001
0806BT	ADHESIVE. DISC 4081	2 EACH	ADHESIVE	D001
0807AT	CHLORINATED LIME	270 POUNDS	BLEACHING POWDER	N/A
0807AT	MONOETHANOLAMINE	100 GALLONS	CORROSIVE ALKALI. NO	D002
0807B0	TALC POWDER	1 LB	N/A	N/A
0807BT	NAPTHA MOTHBALL FLAK	10 BOXES	NAPTHALENE. CRUDE	D001
0807BT	METHANOL. TECHNICAL	9 QUARTS	METHYL ALCOHOL	D001
0807BT	GLYCERINE. TECHNICAL	19 PINTS	N/A	N/A
0807CT	AMMONIUM PERSULFATE	3 DRUMS	AMMONIUM PERSULFATE	D001
0808AT	OIL. LUBRICATING	3 DRUMS	N/A	N/A
0808AT	OIL. 2 CYCLE	24 BOTTLES	N/A	N/A
0808BT	GREASE. PLUG VALVE	2 CANS	N/A	N/A
0808BT	GREASE. PLUG VALVE	ONE CAN	N/A	N/A
0808BT	OIL. LUBRICATING	6 PINTS	N/A	N/A
0808BT	GREASE	ONE EACH	N/A	N/A
0808BT	LUBRICANT. SOLID FIL	9 QUARTS	FLAMMABLE LIQUID. NO	D001
0808BT	GREASE. AIRCRAFT	2 TUBES	N/A	N/A
0808BT	GREASE. AUTOMOTIVE	44 CANS	N/A	N/A
11TEMP	PESTICIDES/INSECTICI	VARIES	N/A	N/A

DRMO BLDG. 125 ITEMS ELIGIBLE FOR R/T/D/SALES 15 OCTOBER 1991 WEL  
 SPOT.. ITEM..... QUANTITY..... STOCK NUMBER... TURN-IN PAPER..

0803AT	LEAK TEST FLUID	16 BOTTLES	6850006211819	FB465412560307
0803AT	CORROSION INHIBITOR	110 GALLONS	685000AMERCDR	FB465412680489
0803AT	DC 200 SILICONE FLUI	5 GALLONS	685000SILICONE	FB465412700077
0803AT	COPIER DISPERSANT	60 QUARTS	685000COPIER	FB465412680485
0803AT	AEROSOL, SMOKE DETEC	24 CANS	685000SMOKE	FB465412700075
0804AT	ENAMEL, OLIVE DRAB	6 QUARTS	8010000810809	WB1JR812609000
0805AO	FREDN R-113	4 DRUMS	681000LLL709049	N0016312498200
0805BO	FREDN TF SOLVENT	110 GALLONS	681000FREDN	N0016312738200
0805BT	XYLENE	ONE DRUM	6810007534787	W53C4712330010
0806AT	SEALING COMPOUND	4 EACH	8030011840329	FB465412560332
0806AT	SEALING COMPOUND	ONE EACH	8030011840329	FB465412531778
0806AT	FUEL TANK COATING	2 KITS	8030000627580	FB465412700314
0806AT	SEALING COMPOUND	ONE KIT	8030002976677	FB465412700320
0806BT	ACETONE ADHESIVE PRI	2 QUARTS	8040008700877	FB465412700317
0806BT	ADHESIVE, DISC 4081	2 EACH	804000DISC	FB465412700323
0807AT	CHLORINATED LIME	270 POUNDS	6810002555917	WB1JR811138117
0807AT	MONOETHANOLAMINE	100 GALLONS	681000MONO	N0016311548208
0807BO	TALC POWDER	1 LB	6810002709989	FB613212330724
0807BT	NAPTHA MOTHBALL FLAK	10 BOXES	6810002866018	WB1JR802825574
0807BT	METHANOL, TECHNICAL	9 QUARTS	6810002929676	WB1JR811138131
0807BT	GLYCERINE, TECHNICAL	19 PINTS	6810002646637	N0016311548219
0807CT	AMMONIUM PERSULFATE	3 DRUMS	6810002348360	N0016311968200
0808AT	OIL, LUBRICATING	3 DRUMS	9150002359062	FB465411832796
0808AT	OIL, 2 CYCLE	24 BOTTLES	915000OIL	FB465412690299
0808BT	GREASE, PLUG VALVE	2 CANS	9150002575360	FB465411630451
0808BT	GREASE, PLUG VALVE	ONE CAN	9150002575360	FB465411630446
0808BT	OIL, LUBRICATING	6 PINTS	9150005437220	FB465411980307
0808BT	GREASE	ONE EACH	9150009354018	FB465411910012
0808BT	LUBRICANT, SOLID FIL	9 QUARTS	9150009547422	FB465412030179
0808BT	GREASE, AIRCRAFT	2 TUBES	9150001199291	FB465412320271
0808BT	GREASE, AUTOMOTIVE	44 CANS	9150001900907	WB1JR812678119

DRMO BLDG. 125 ITEMS FOR SERVICE CONTRACT 15 OCTOBER 1991 WEL  
SPOT.. ITEM..... QUANTITY..... STOCK NUMBER... TURN-IN PAPER..

0101A0	LEAD PAINT RESIDUE	4 DRUMS	801000PAINT	W53C4712609104
0101B0	PAPER CHEMICAL TEST	50 ROLLS	665001-PAPER	FB613212400700
0101B0	PAPER. CHEMICAL	10 ROLLS	6665010498982	FB613212610271
0103A0	PAINT RESIDUE WITH L	4 DRUMS	801000PAINT	W53C4712730001
0105A0	PAINT RESIDUE WITH L	4 DRUMS	8010-00-PAINT	W53C4712760001

DRMD BLDG. 125 ITEMS FOR SERVICE CONTRACT 15 OCTOBER 1991 WEL  
 SPOT.. ITEM..... QUANTITY..... STOCK NUMBER... TURN-IN PAPER..

0401A0	CLEANING COMPOUND, P	16 DRUMS	6850002560157	W81JR811558019
0402A0	EMPTY DECON. APPARAT	7 EA	423000SPRAYER	W53C4612544001
0402A0	GASOLINE WITH WATER	25 GL.	913000GAS	W53C4712566001
0402B0	BATTERY, LITHIUM	ONE EACH	614000BATTERY	FB465412380092
0402B0	BATTERIES, LITHIUM	8 EACH	6135011067740	FB465412410759
0402B0	BATTERY, LITHIUM	ONE EACH	614000BATTERY	FB613212470670
0402B0	ASBESTOS MITTENS	3 EA	8415010920039	W81JR81234800
0402B0	BATTERIES, MAGNESIUM	242 EA	6135009268322	W81JR812328602
0402B0	LENS CLEANING COMPOU	10 DZ	6850005923283	FB465412240407
0402B0	BATTERY LITHIUM	2 EA	6135011426456	FB613212410750
0402B0	BATTERY LITHIUM	1 EA	614000-BATTERY	FB613212350638
0402B0	BATTERY, LITHIUM	ONE EACH	614000BATTERY	FB613212550560
0402B0	BATTERY, LITHIUM	ONE EACH	6135011426456	FB613212630296
0403A0	CARC POLYURETHANE CO	40 GALLONS	8010012763640	W81JR810648090
0403A0	POLYURETHANE, GREEN	5 KITS	8010011606741	W81JR810665869
0403A0	R-84-G ENAMEL EPOXY	12 GALLONS	801000ENAMEL	N0016311548211
0403A0	MICROSOL GREEN PAINT	ONE GALLON	801000PAINT	N0016311548218
0403B0	SEALING COMPOUND	ONE BOTTLE	8030000812328	FB613210650543
0403B0	SEALING COMPOUND	ONE KIT	8030002976677	FB465410780330
0403B0	ADHESIVE POLYCHLOROP	ONE KIT	8040005152246	FB465410880322
0403B0	ADHESIVE	ONE KIT	8040008105414	FB465411200320
0403B0	SEALING COMPOUND	ONE KIT	8030002976677	FB465411200317
0403B0	ADHESIVE	3 PINTS	8040002738717	W81JR811138130
0403B0	SEALING COMPOUND	11 EACH	8030008812618	FB465411200549
0403B0	SEALING COMPOUND	ONE EACH	8030007535003	FB465411790227
0403B0	SEALING COMPOUND, FI	ONE EACH	8030007838886	FB465412120408
0403B0	SEALING COMPOUND	2 BOTTLES	8030001112762	FB465412120420
0403B0	ADHESIVE	2 PINTS	8040006644318	W81JR811895554
0403B0	SEALING COMPOUND, TO	ONE TUBE	8030004081137	FB465412410748
0403B0	SEALING COMPOUND	ONE KIT	8040009271513	FB465412410745
0403B0	SEALING COMPOUND	2 EACH	8030007535003	FB465412410753
0403B0	ADHESIVE SEALER	2 TUBES	8040009419984	FB465412410742
0404A0	LEAK TEST FLUID	105 BOTTLES	6850006211820	FB465410650494
0404A0	ACTIVATED DESICCANT	25 POUNDS	6850002646573	W81JR811138013
0404A0	PERMETHRIN INSECT RE	10 AEROSOL CANS	684000INSECT	FB465412210978
0404A0	CLOTH CLEANER, POOL	2 AEROSOL CANS	793000CLOTH	FB465412110772
0404B0	EMPTY FUEL TANKS PLA	2 EA	291000TANKS	SX138512590002
0405A0	PAINT, LEAD BASED	13 CANS	8010002445792	W81JR812558000
0405B0	BUFFER RUBBING COMPO	31 GALLONS	916000WAX	FB465412260288

DRMO BLDG. 125		ITEMS FOR SERVICE CONTRACT		15 OCTOBER 1991	WEL
SPOT..	ITEM.....	QUANTITY.....	STOCK NUMBER...	TURN-IN PAPER..	
0602A0	DESCALER, GLYCOLIC A	50 GALLONS	685000LT070	N0016311548201	
0602A0	DESCALER	100 GALLONS	685000ALPHA926	N0016311548214	
0602A0	DESCALER	50 GALLONS	685000ALPHA926	N0016311548215	
0602B0	NO-SLIP EPOXY FLOOR	27 KITS	803000NOSLIP	N0016311548213	
0604A0	ROSIN CLEANER	100 GALLONS	685000ROSIN	N0016311548202	
0604A0	SPRAY WHITE E SOLVEN	50 GALLONS	685000SPRAY	N0016311548217	
0604B0	BATTERIES. NI-CAD	2 EACH	613500BATTERY	FB613212630300	

**WESTON**

**APPENDIX E**  
**HOSPITAL INVENTORY**  
**(As Received)**

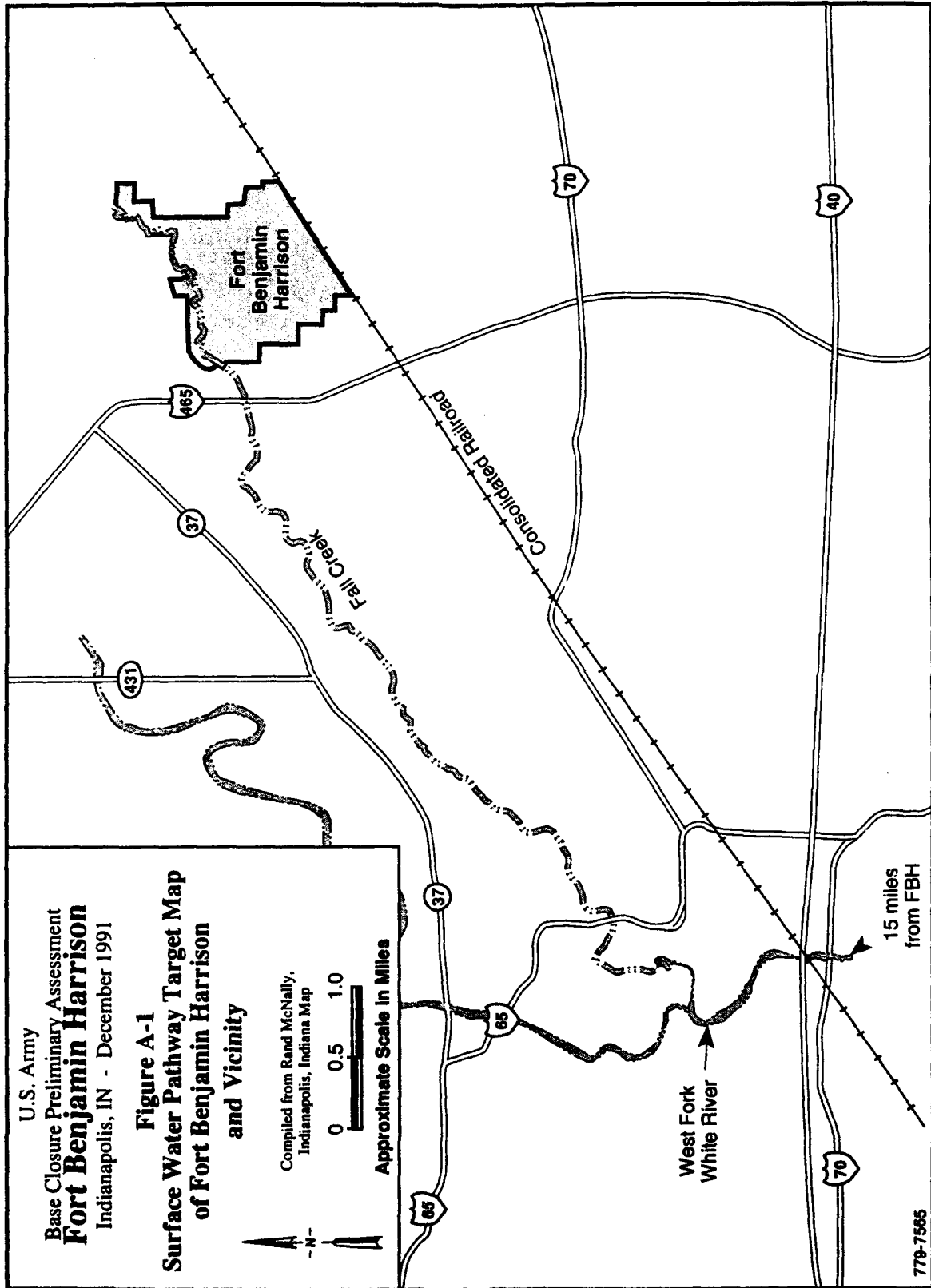
RECEIVED 11/10/94

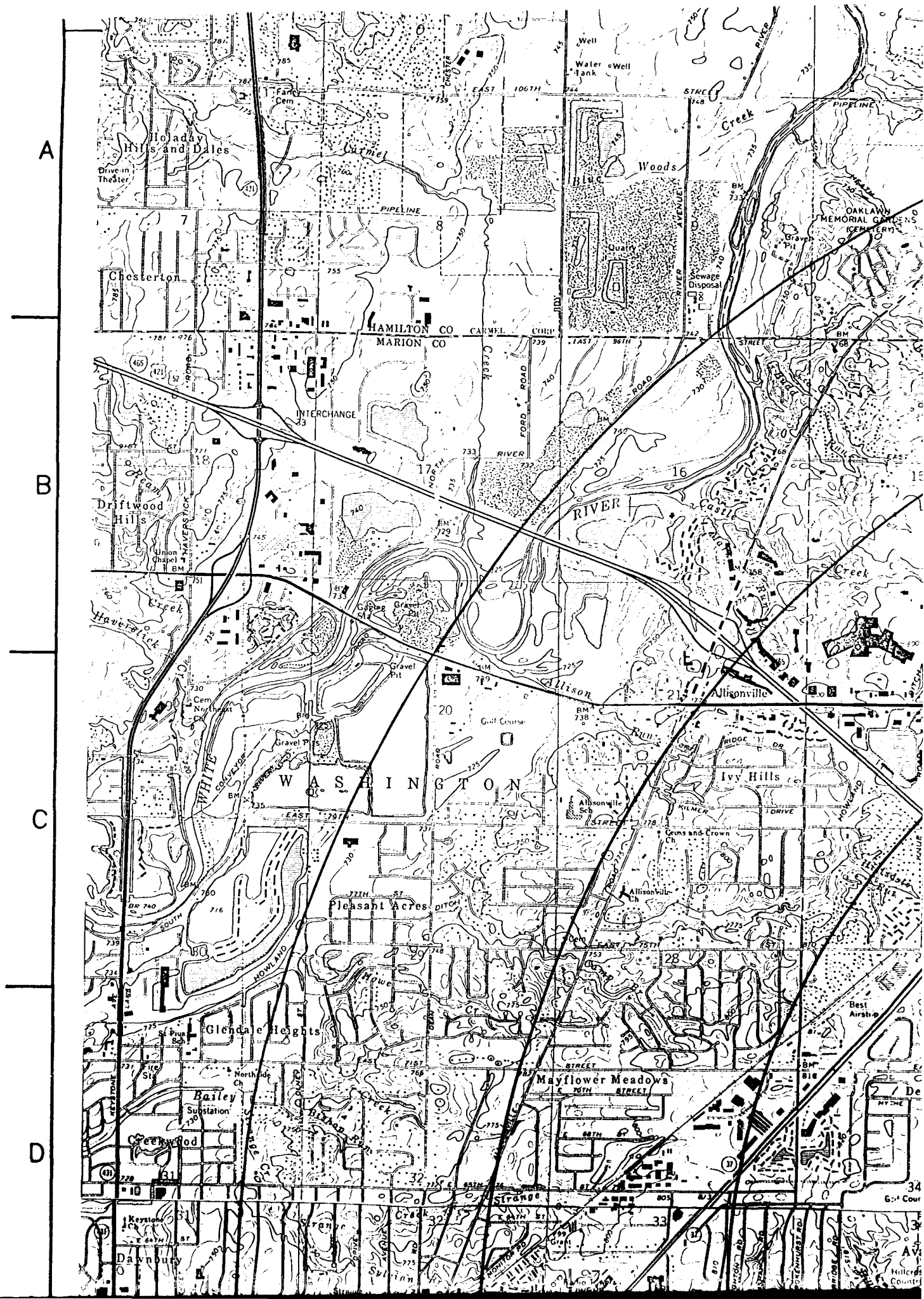
[illegible]

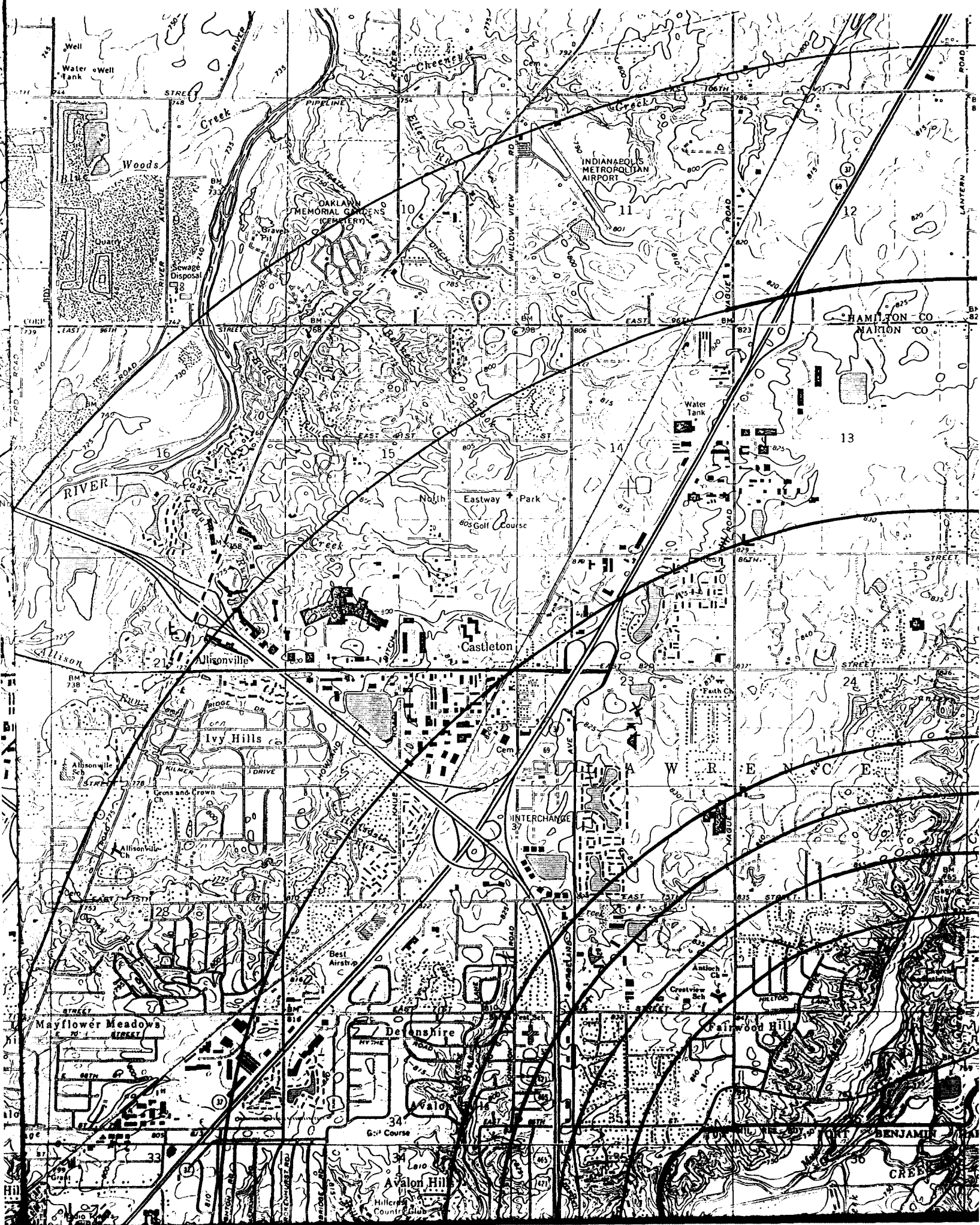
NAME NO. T  
09/24/91

Hazardous Material Data Base File  
Hawley Army Community Hospital  
Logistics Division-Medical Warehouse  
Captain Daniel Madden

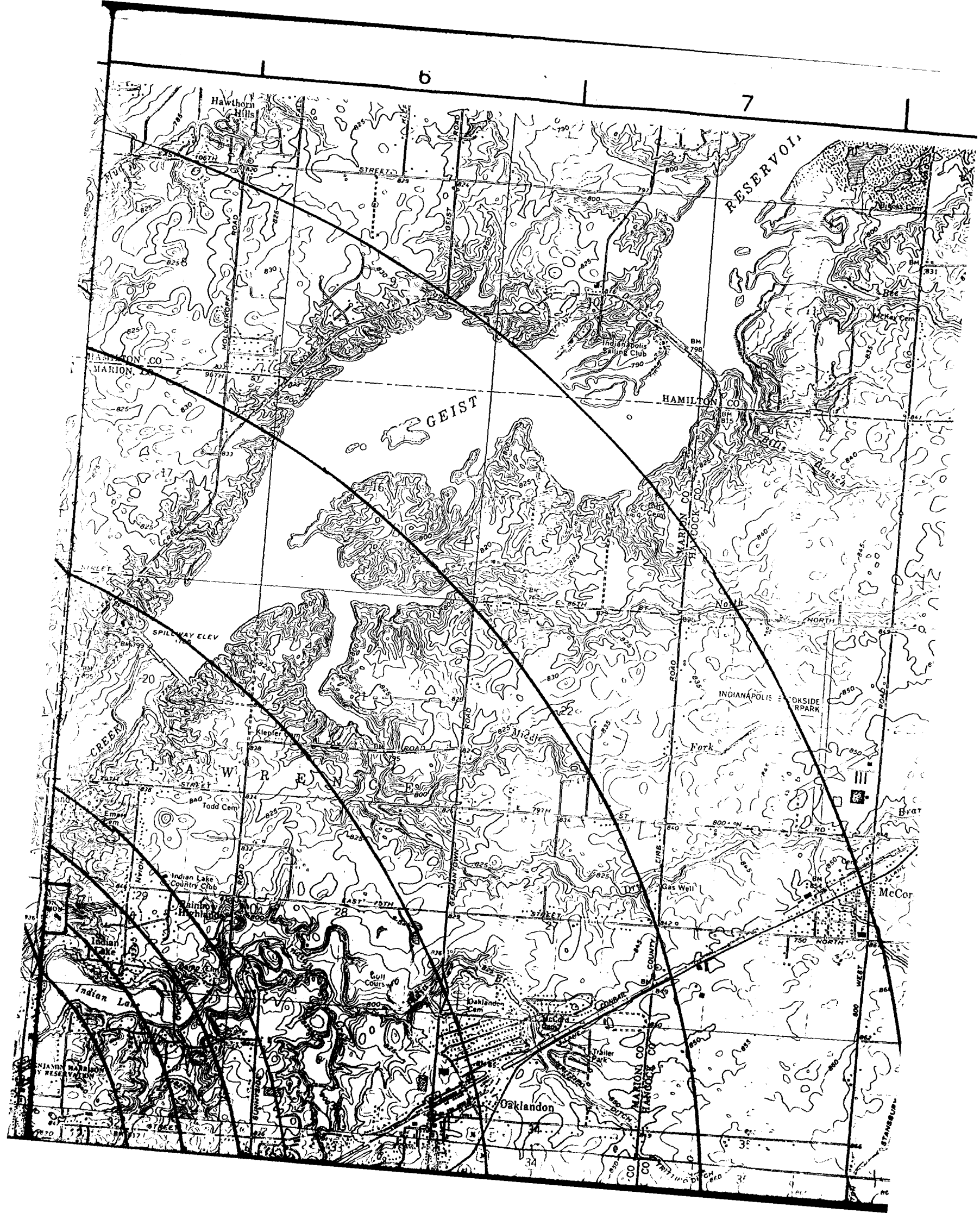
MSN	MSN	TEST KIT	DOTNAME	DOTCLASS	DOTLABEL	RCQTY	LOCATION	UNIT	TYPESTORAG	WFG	PRODUCT ID	DISPCODE	CLIN COST
6259-01-145-4539	TEST KIT	LYSEA 3 III DIFF R	FLAMMABLE LIQUID	F	NO	LI	LI	UN230	FLAMMABLE SHED	SANMA BIOD	8-270	HM01	LAB RE
6259-01-190-3537	AMERICAN SILVER POWDER		(CONTAINS METALLIC MERCURY)	POISON B	P	POISON B	LI	UN230	GENERAL PURPOSE	CPS	199331	AC01	LAB
6259-01-070-0443	REE STING KIT (PO42, W101)		DRUGS LIQUID, NOS W02810	POISON B	P	POISON B	LI	UN230	VALUITY	KERR, USA	0000	RM06	DENT
6259-01-043-6793	REF-CTINE		CORROSIVE	CORROSIVE		CORROSIVE	REFRIG	W03810	REFERIGERATED	HOLLISTER-ST	0118998101	HA02	PHARM
6259-01-007-3642	ACETONE		TOXIC	FLAMMABLE		FLAMMABLE	DOOR						
6259-01-753-4790	ETHANOL		TOXIC	FLAMMABLE		FLAMMABLE	FLAM RM						
6259-01-753-4793	I-SAY DEVELOPER		TOXIC	FLAMMABLE		FLAMMABLE	FLAM RM						
6259-01-199-1905							FOIAB						

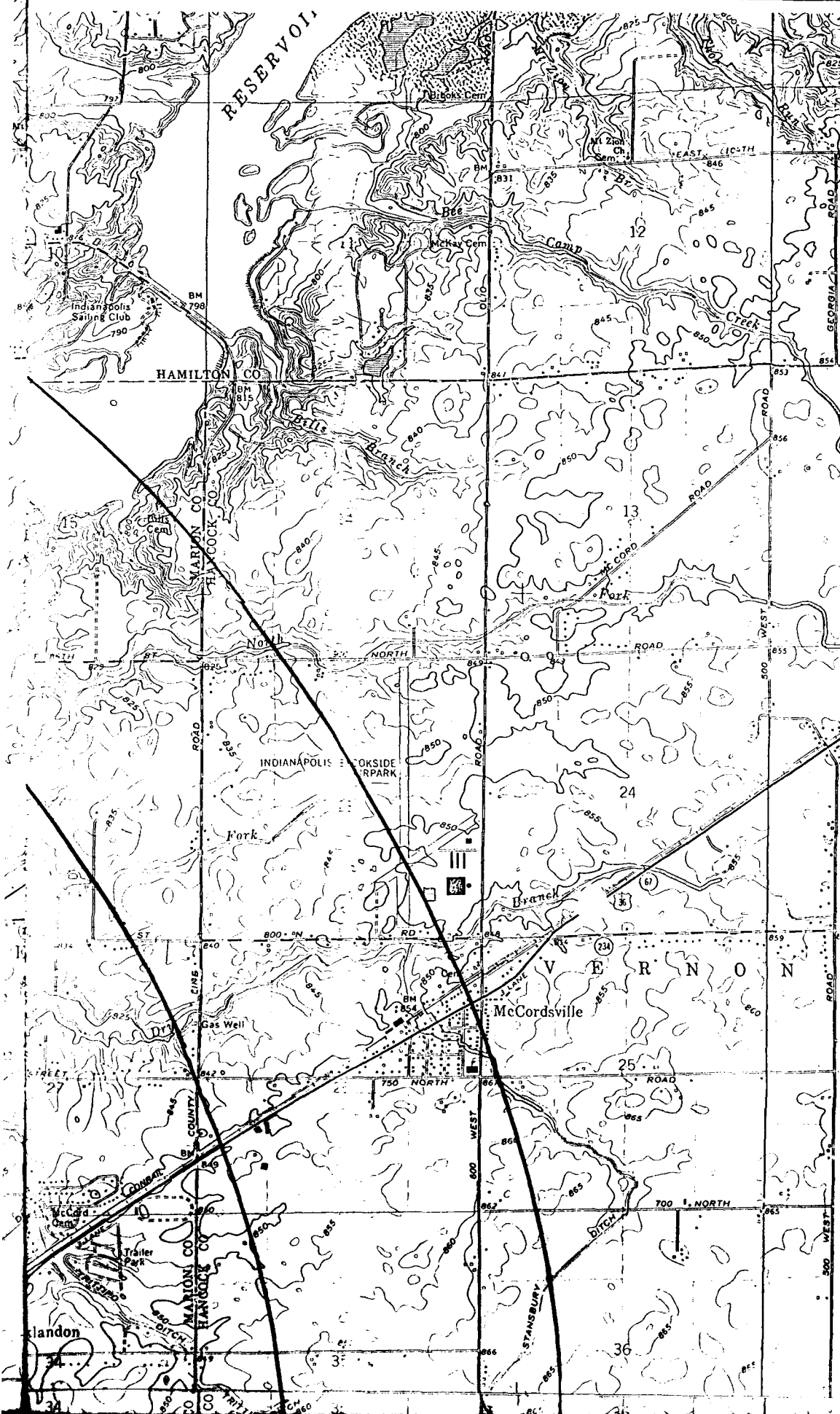






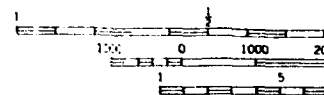




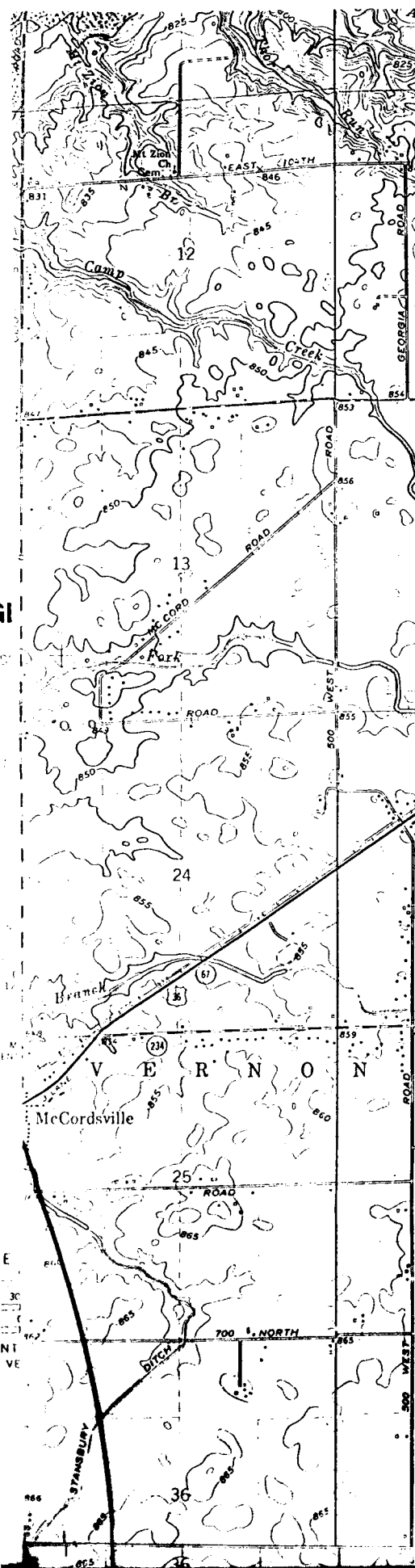


ROA  
 Primary highway, all wea  
 hard surface  
 Secondary highway, all w  
 hard surface  
 ( ) Interstate Route

UTM GRID A  
 DECLINATIO



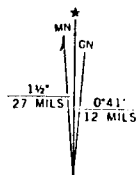
CONTI  
 NATIONAL GEC



## LEGEND

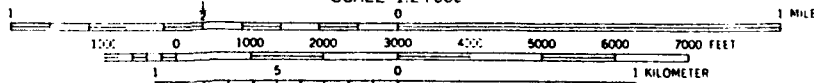
### ROAD CLASSIFICATION

Primary highway, all weather, hard surface —————  
 Secondary highway, all weather, hard surface —————  
 Light duty road, all weather, improved surface —————  
 Unimproved road, fair or dry weather —————  
 Interstate Route (thick line with red shield) U. S. Route (thin line with blue shield) State Route (thin line with black shield)

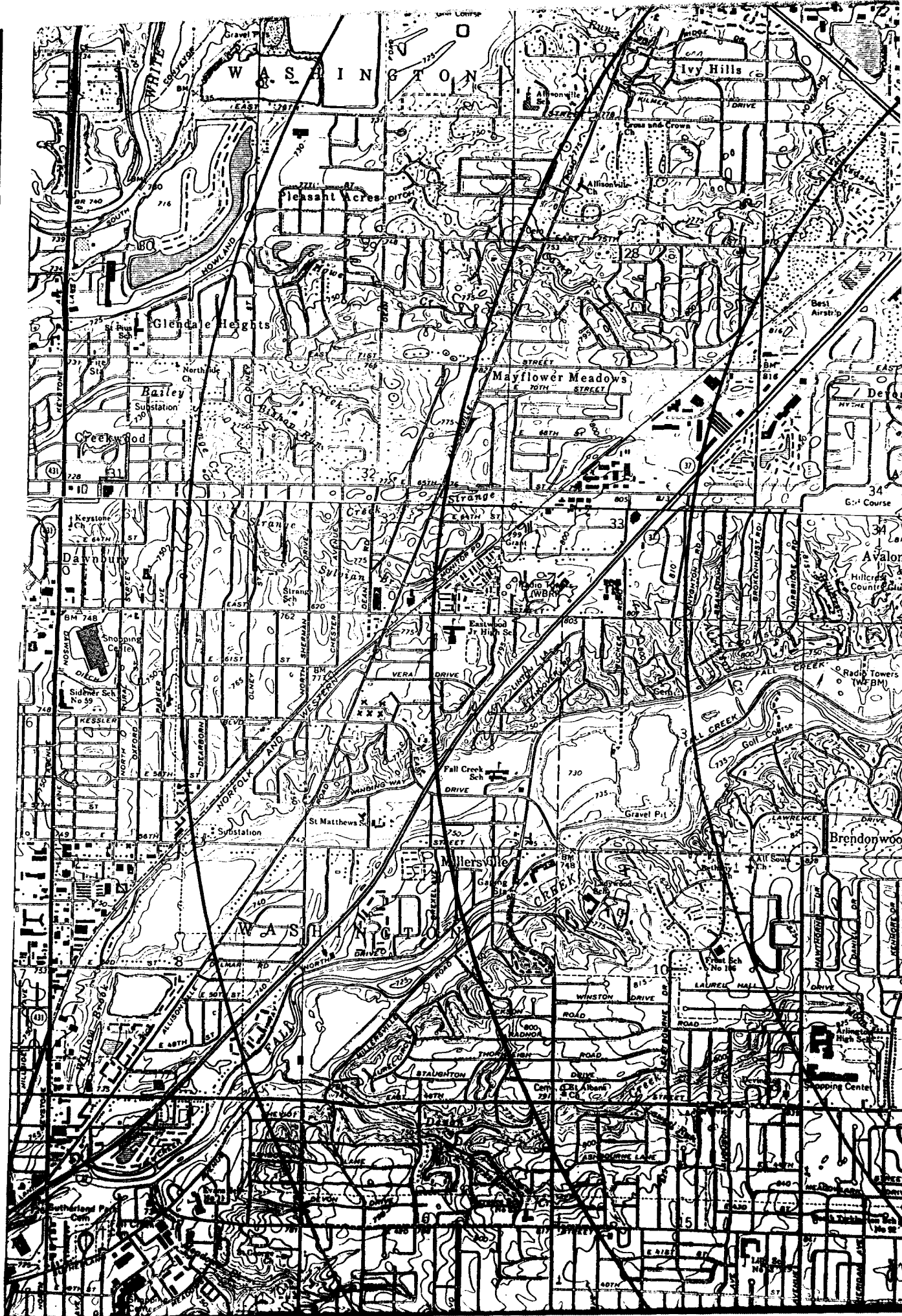


UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000



CONTOUR INTERVAL 5 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

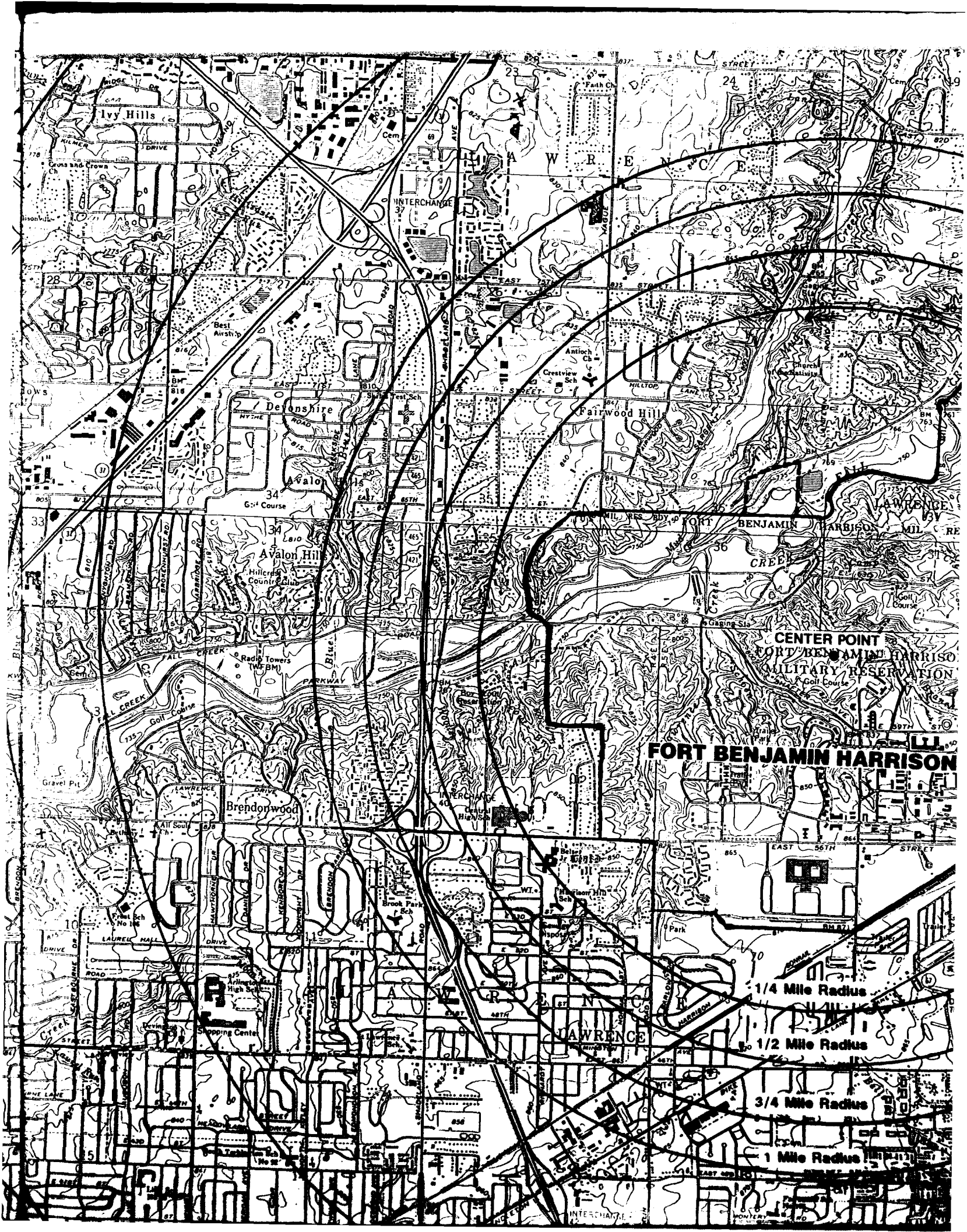


C

D

E

F



CENTER POINT  
FORT BENJAMIN HARRISON  
MILITARY RESERVATION

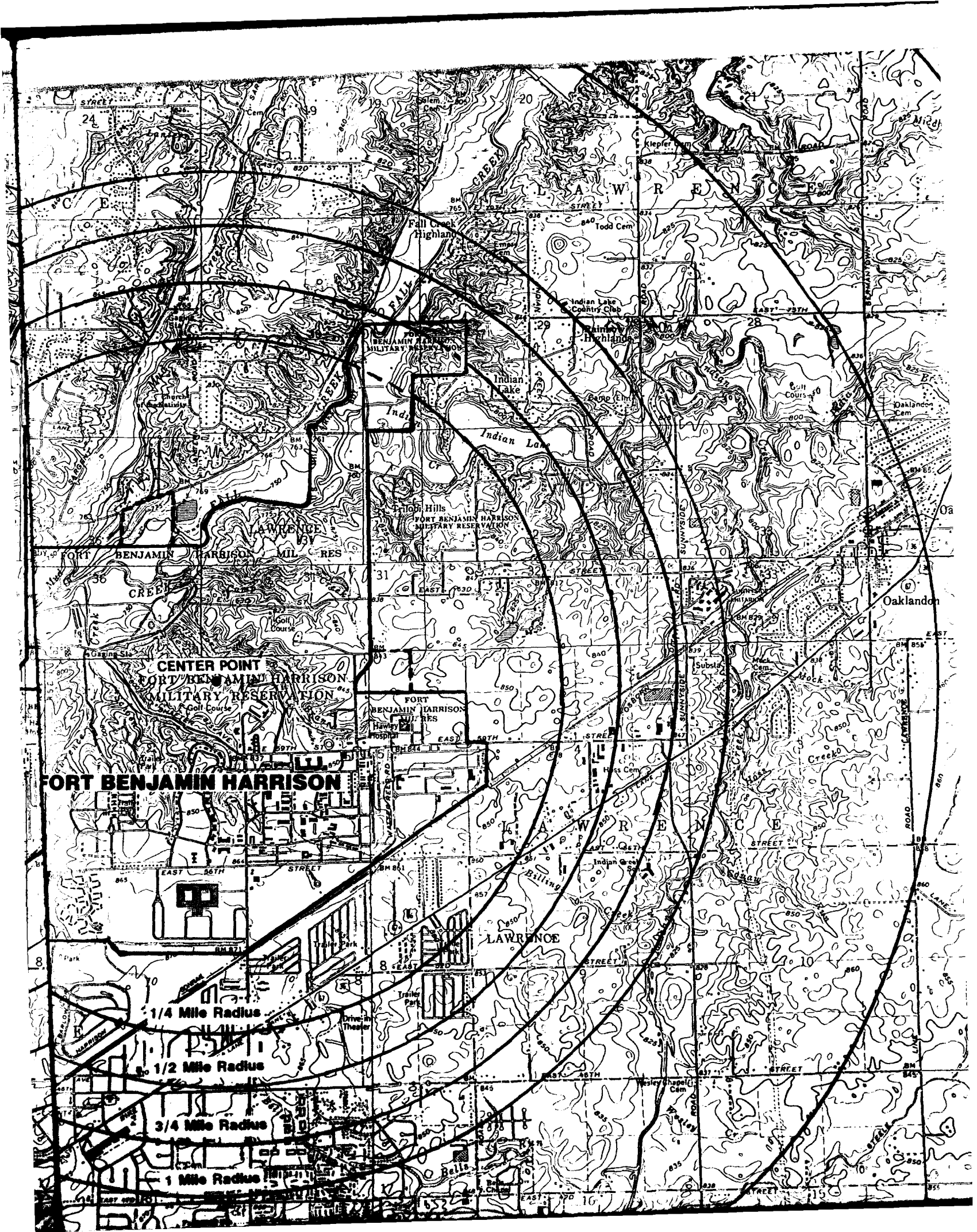
**FORT BENJAMIN HARRISON**

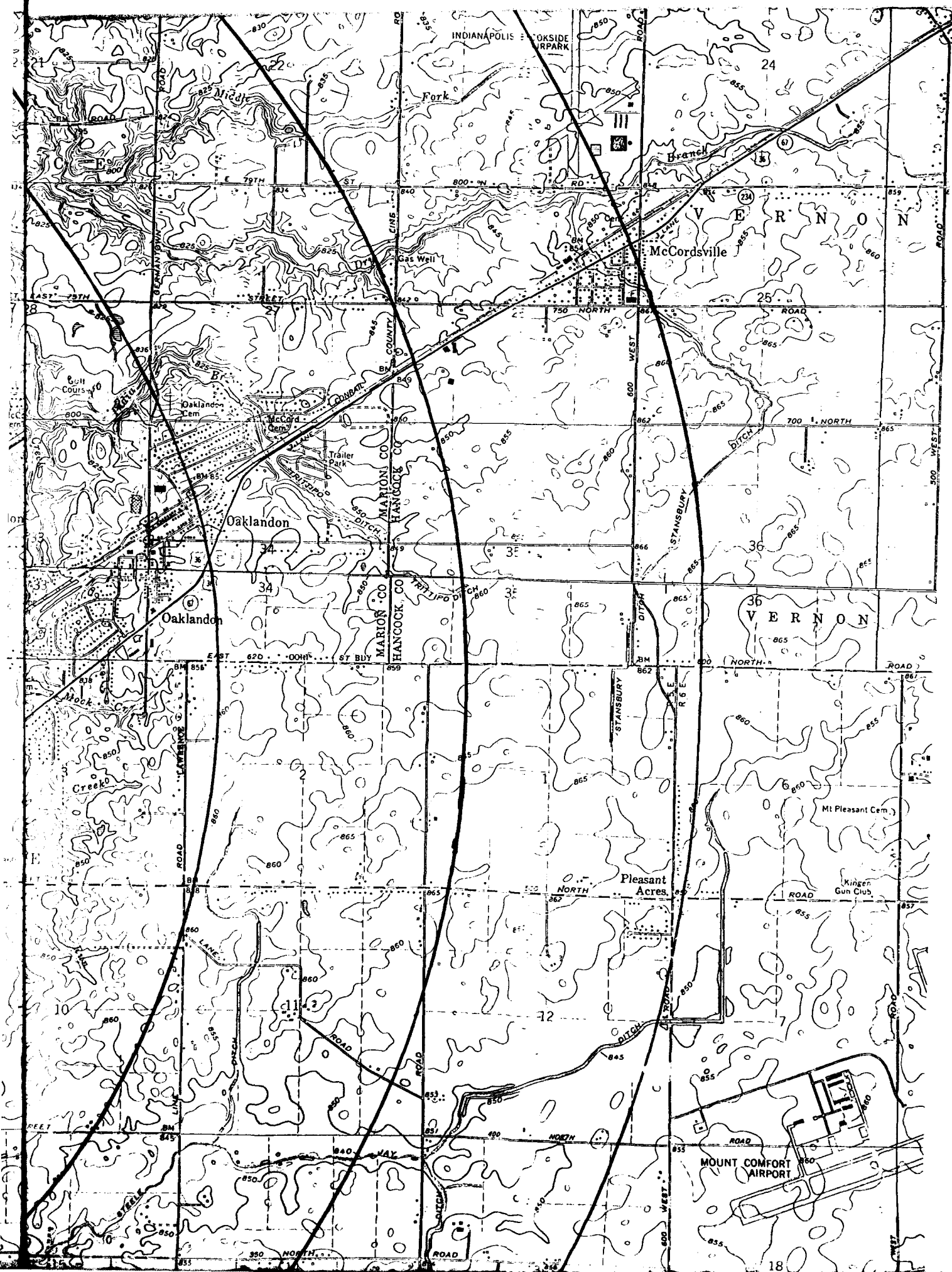
1/4 Mile Radius

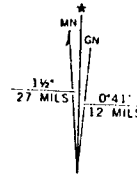
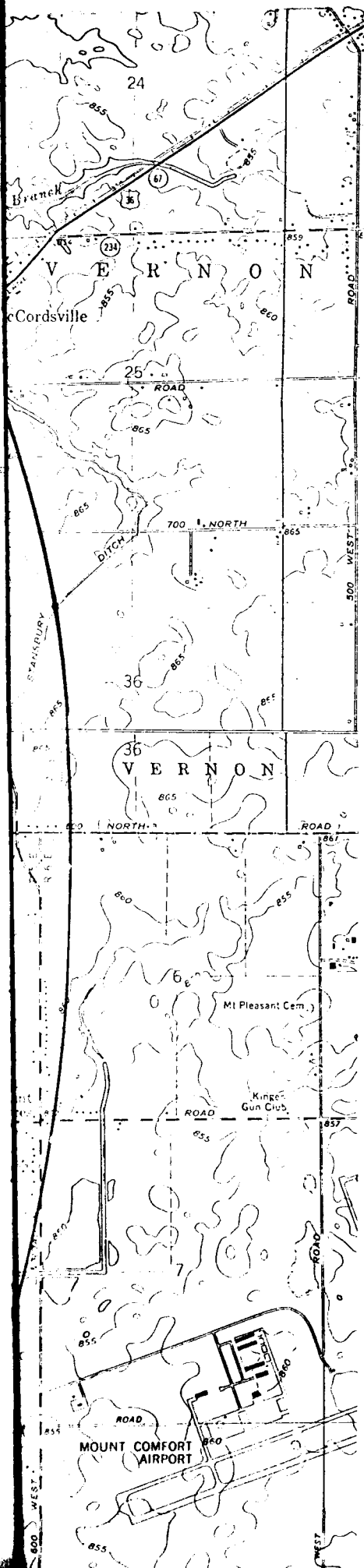
1/2 Mile Radius

3/4 Mile Radius

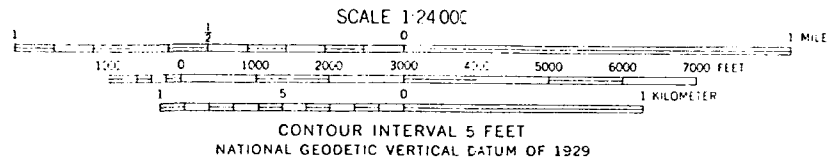
1 Mile Radius







UTM GRID AND 1981 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET



Source : USGS Quadrangle, 7.5 Series, Maps

Cumberland, IND.  
Fishers, IND.  
Indianapolis East, IND.  
McCordsville, IND.

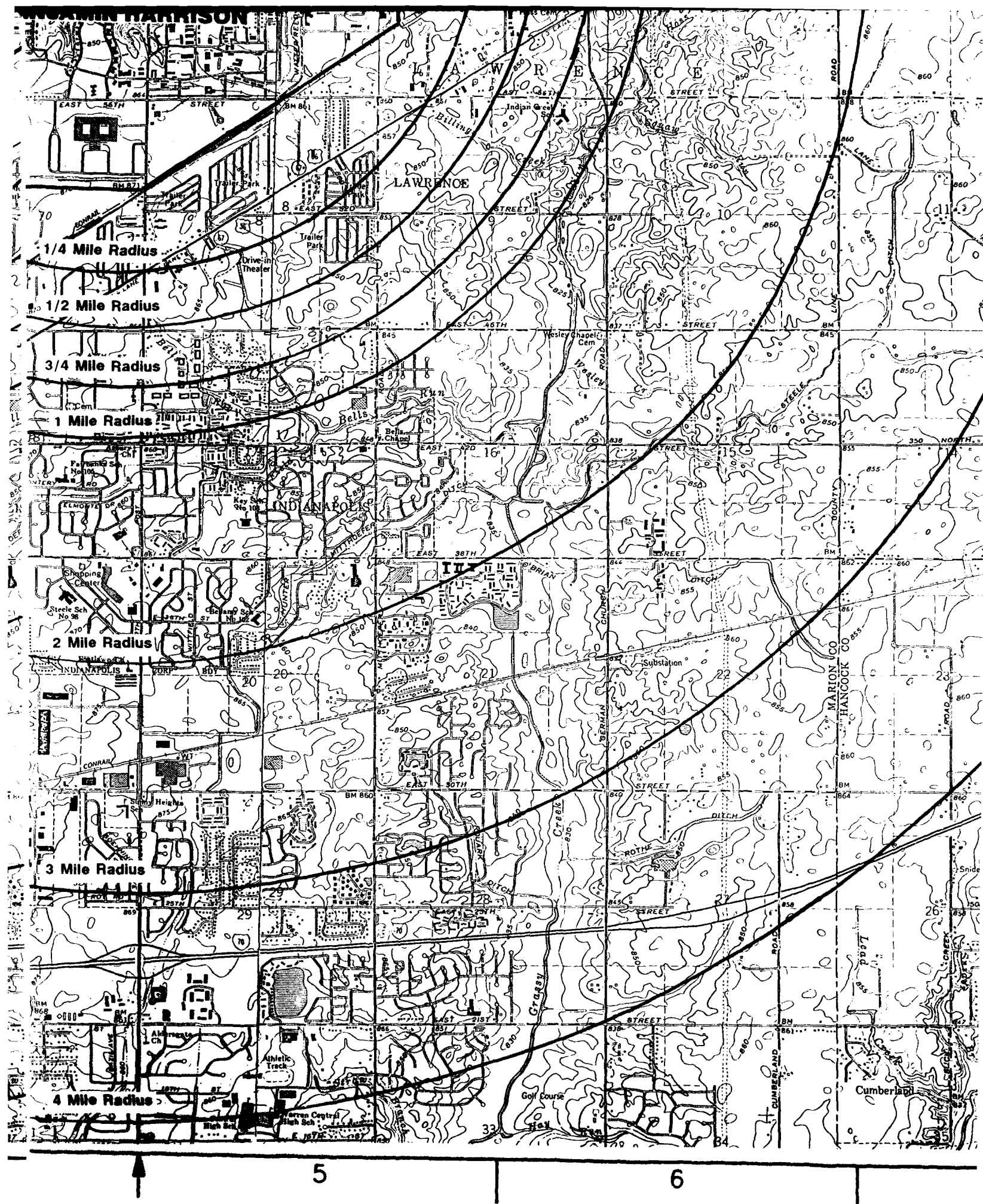


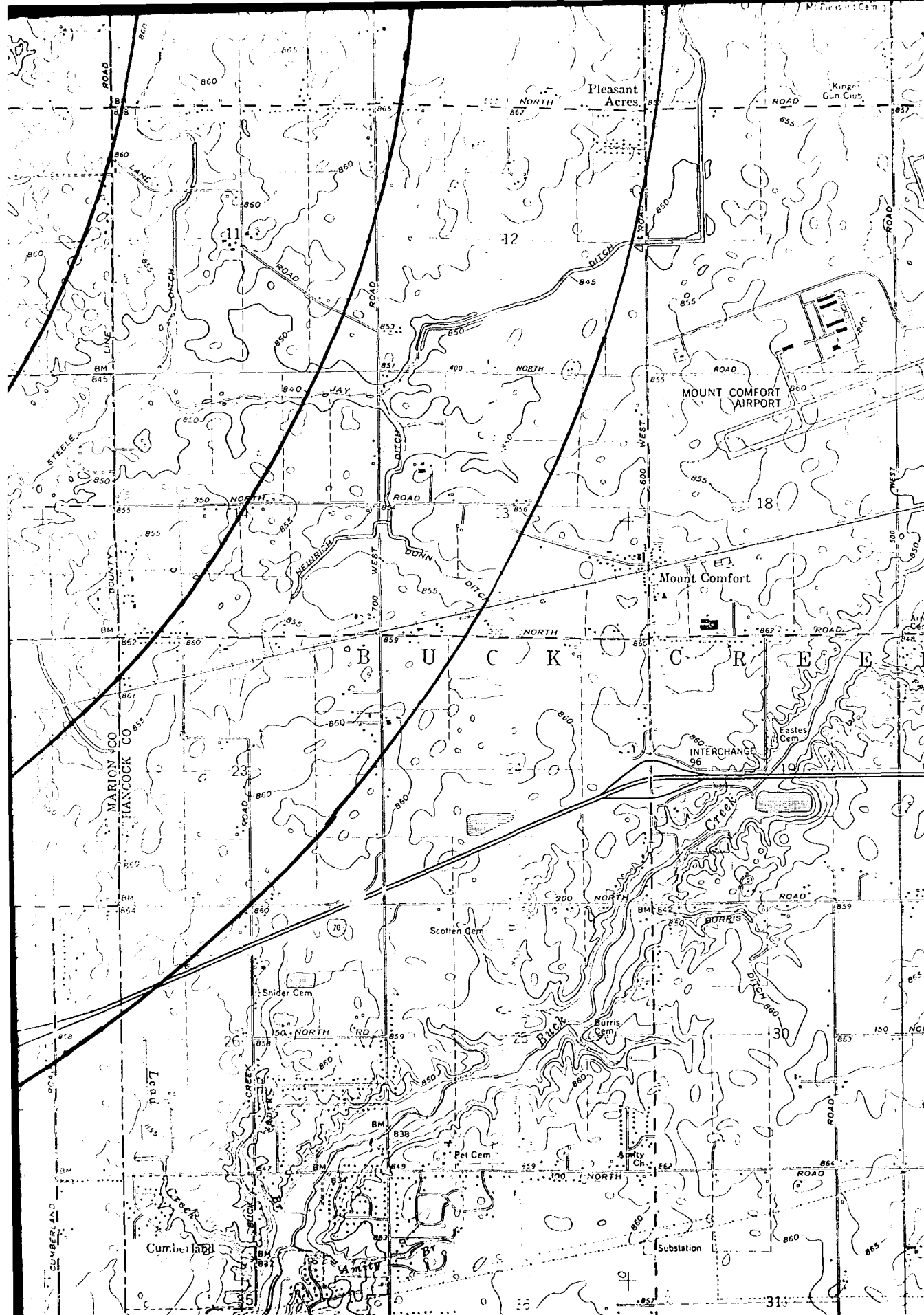




3

4





Sc

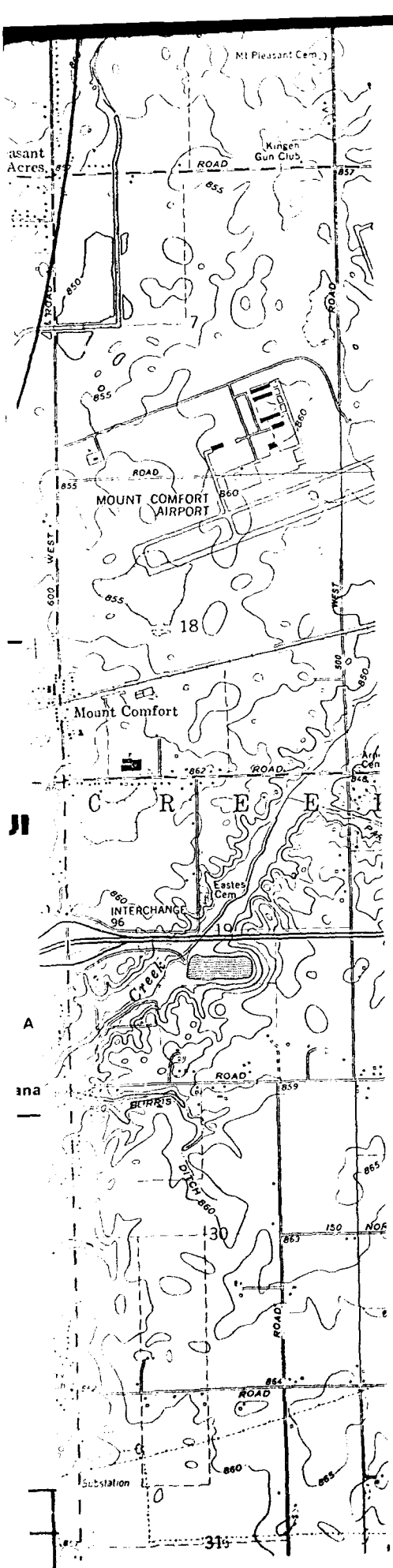
GR

DRAWN

SCALE

7

8



Source : USGS Quadrangle, 7.5 Series, Maps

Cumberland, IND.  
Fishers, IND.  
Indianapolis East, IND.  
McCordsville, IND.



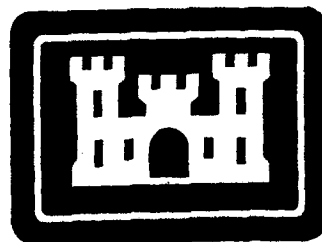
## FIGURE A-2

### GROUNDWATER PATHWAY TARGETS

U.S. Army Base Closure Preliminary Assessment  
FORT BENJAMIN HARRISON

Indianapolis, IN

February 1992



US Army Corps  
of Engineers

Toxic and Hazardous  
Materials Agency

DRAWN	DATE	DWG. NO.	REV. NO.
SCALE	W.O. NO.	SHT. _____ OF _____	