Record of Decision
No Further Action at Fourteen Sites
Savanna Army Depot Activity
Savanna, Illinois

Final

Prepared for:
U.S. Army Corps of Engineers
Louisville District
Louisville, Kentucky 40202

Prepared by:
Science Applications International Corporation
8301 Greensboro Drive
McLean, Virginia 22102

Contract No. DACW62-03-D-0003, Delivery Order CY01
Contract No. DACW62-03-D-0003, Delivery Order CY05
Contract No. F44650-99-D-0007, Delivery Order CY04

May 2012
Record of Decision
No Further Action at Fourteen Sites
Savanna Army Depot Activity
Savanna, Illinois

Final

Prepared for:

U.S. Army Corps of Engineers
Louisville District
Louisville, Kentucky  40202

Prepared by:

Science Applications International Corporation
8301 Greensboro Drive
McLean, Virginia  22102

Contract No. DACW62-03-D-0003, Delivery Order CY01
Contract No. DACW62-03-D-0003, Delivery Order CY05
Contract No. F44650-99-D-0007, Delivery Order CY04

May 2012
THIS PAGE WAS INTENTIONALLY LEFT BLANK
CERTIFICATION 4 
CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Science Applications International Corporation (SAIC) has completed the Record of Decision for No Further Action at Fourteen Sites at Savanna Army Depot Activity, Savanna, Illinois. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project as defined in the SAIC Quality Assurance Plan. During the independent technical review, compliance with established policy principles and procedures, using justified and valid assumptions, was verified. This included review of assumptions, methods, procedures, and materials used in analyses; the appropriateness of data used and the level of data obtained; and reasonableness of the results, including whether the product meets the customer’s needs consistent with U.S. Army Corps of Engineers (USACE) policy.

Monique M. Larriva, P.E., PMP 
Project Manager 
April 20, 2012 

Joseph E. Peters 
QA Manager 
April 20, 2012 

Connie D. Samson, PMP 
Independent Technical Review Team Leader 
April 20, 2012 

Significant concerns and explanation of the resolutions are documented within the project file.

As noted above, all concerns resulting from independent technical review of the project have been considered.

Lisa D. Jones-Bateman, PMP 
Vice President 
April 20, 2012
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DECLARATION OF THE RECORD OF DECISION</td>
<td>1-1</td>
</tr>
<tr>
<td>1.1 Site Names and Installation Location</td>
<td>1-1</td>
</tr>
<tr>
<td>1.2 Statement of Basis and Purpose</td>
<td>1-1</td>
</tr>
<tr>
<td>1.3 Description of Selected Remedy and assessment of the sites</td>
<td>1-3</td>
</tr>
<tr>
<td>1.4 Statutory Determinations</td>
<td>1-3</td>
</tr>
<tr>
<td>1.5 ROD Data Certification Checklist</td>
<td>1-3</td>
</tr>
<tr>
<td>1.6 Authorizing Signatures</td>
<td>1-5</td>
</tr>
<tr>
<td>2. DECISION SUMMARY</td>
<td>2-1</td>
</tr>
<tr>
<td>2.1 Installation History, Site Names, and Locations</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2 Site History and Regulatory Activities</td>
<td>2-1</td>
</tr>
<tr>
<td>2.3 Community Participation</td>
<td>2-7</td>
</tr>
<tr>
<td>2.4 Environmental Setting</td>
<td>2-7</td>
</tr>
<tr>
<td>2.5 Scope and Role of Selected Sites</td>
<td>2-7</td>
</tr>
<tr>
<td>2.6 Site Descriptions</td>
<td>2-8</td>
</tr>
<tr>
<td>2.6.1 UDMH Burn Area (Site 6)</td>
<td>2-8</td>
</tr>
<tr>
<td>2.6.2 White Phosphorus Burn Area (Site 10)</td>
<td>2-9</td>
</tr>
<tr>
<td>2.6.3 TNT and Ammonium Nitrate Burn Area (Site 11)</td>
<td>2-10</td>
</tr>
<tr>
<td>2.6.4 Explosives Contaminated Scrap Burn Area (Site 12)</td>
<td>2-11</td>
</tr>
<tr>
<td>2.6.5 Manganese Ore Storage Pits (Site 46)</td>
<td>2-12</td>
</tr>
<tr>
<td>2.6.6 Function Test Area Burn Pits (Site 71)</td>
<td>2-13</td>
</tr>
<tr>
<td>2.6.7 I-Gate Cafeteria Outdoor Oil Changing Area (Site 82OC)</td>
<td>2-14</td>
</tr>
<tr>
<td>2.6.8 I-Gate Cafeteria Septic System (Site 82SS)</td>
<td>2-15</td>
</tr>
<tr>
<td>2.6.9 Pesticide Burial Area (Site 89)</td>
<td>2-16</td>
</tr>
<tr>
<td>2.6.10 K Road Trench Site (Site 101)</td>
<td>2-17</td>
</tr>
<tr>
<td>2.6.11 CL Plant Northern Septic System (Site 122)</td>
<td>2-18</td>
</tr>
<tr>
<td>2.6.12 Wildlife Area Asphalt Dump (Site 180)</td>
<td>2-19</td>
</tr>
<tr>
<td>2.6.13 West Road Sludge Application Area (Site 193)</td>
<td>2-20</td>
</tr>
<tr>
<td>2.6.14 Classification Yard Sludge Application Area (Site 194)</td>
<td>2-21</td>
</tr>
<tr>
<td>2.7 Historical and Potential Future Land Uses</td>
<td>2-22</td>
</tr>
<tr>
<td>2.8 Summary of Site Risks</td>
<td>2-23</td>
</tr>
<tr>
<td>2.8.1 Sites Without Data Screening or Risk Assessment</td>
<td>2-23</td>
</tr>
<tr>
<td>2.8.2 Data Screening</td>
<td>2-23</td>
</tr>
<tr>
<td>2.8.3 Summary of Human Health Screening and Risk Assessment</td>
<td>2-24</td>
</tr>
<tr>
<td>2.8.4 Summary of Ecological Risk Assessment</td>
<td>2-25</td>
</tr>
<tr>
<td>2.9 Description of the No Action Alternative</td>
<td>2-25</td>
</tr>
<tr>
<td>2.10 Statutory Determinations</td>
<td>2-25</td>
</tr>
<tr>
<td>2.11 Documentation of Significant Changes</td>
<td>2-26</td>
</tr>
<tr>
<td>3. RESPONSIVENESS SUMMARY</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1 Background on Community Involvement</td>
<td>3-1</td>
</tr>
<tr>
<td>3.2 Summary of Comments Received During the Public Comment Period</td>
<td>3-1</td>
</tr>
<tr>
<td>3.2.1 Nature and Extent of Contamination</td>
<td>3-2</td>
</tr>
<tr>
<td>3.2.2 Remedial Alternatives</td>
<td>3-3</td>
</tr>
<tr>
<td>3.2.3 Public Participation Process</td>
<td>3-4</td>
</tr>
<tr>
<td>3.2.4 Environmental Concerns Regarding Potential Hot Spot Contaminants</td>
<td>3-4</td>
</tr>
<tr>
<td>3.2.5 Environmental Concerns Regarding Potential Data Gaps Associated with Groundwater</td>
<td>3-4</td>
</tr>
<tr>
<td>3.2.6 Ecological Risk Assessment Concerns</td>
<td>3-5</td>
</tr>
<tr>
<td>4. REFERENCES</td>
<td>4-1</td>
</tr>
</tbody>
</table>
LIST OF APPENDICES

Appendix A. Human Health Risk Assessment Summary
Appendix B. Ecological Risk Assessment Summary
Appendix C. Public Comments

LIST OF FIGURES AND TABLES

| Figure 1. | Savanna Army Depot Activity Installation Location | 1-2 |
| Figure 2. | Record of Decision Sites | 2-6 |
| Table 1. | Data Certification Checklist for 14 NFA Sites Record of Decision | 1-4 |
| Table 2. | Summary of Key Site Information | 2-2 |

LIST OF PHOTOS

| UDMH Burn Area (Disposal Pit) (Site 6) | 2-8 |
| White Phosphorus Burn Area (Site 10) | 2-9 |
| TNT and Ammonium Nitrate Burn Area (Site 11) | 2-10 |
| Explosives Contaminated Scrap Burn Area – West of West Road (Site 12) | 2-11 |
| Manganese Ore Storage Pit 6 (Site 46) | 2-12 |
| Function Test Area Burn Pits (Site 71) | 2-13 |
| I-Gate Cafeteria Outdoor Oil Changing Area (Site 82OC) | 2-14 |
| I-Gate Cafeteria Septic System (Site 82SS) | 2-15 |
| Pesticide Burial Area (Site 89) | 2-16 |
| K Road Trench Site (Site 101) | 2-18 |
| CL Plant Northern Septic System (Site 122) | 2-19 |
| Wildlife Area Asphalt Dump (Site 180) | 2-20 |
| West Road Sludge Application Area (Site 193) | 2-21 |
| Classification Yard Sludge Application Area (Site 194) | 2-22 |
### ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>ACRONYM</th>
<th>ABBREVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3,5-TNB</td>
<td>1, 3, 5-Trinitrobenzene</td>
</tr>
<tr>
<td>2,4-D</td>
<td>2,4-Dichloropenoxyacetic Acid</td>
</tr>
<tr>
<td>2,4-DNT</td>
<td>2,4-Dinitrotoluene</td>
</tr>
<tr>
<td>ARAR</td>
<td>Applicable or Relevant and Appropriate Requirement</td>
</tr>
<tr>
<td>ASR</td>
<td>Archives Search Report</td>
</tr>
<tr>
<td>B2EHP</td>
<td>Bis(2-ethylhexyl)phthalate</td>
</tr>
<tr>
<td>BCT</td>
<td>BRAC Cleanup Team</td>
</tr>
<tr>
<td>BERA</td>
<td>Baseline Ecological Risk Assessment</td>
</tr>
<tr>
<td>BLS</td>
<td>Below Land Surface</td>
</tr>
<tr>
<td>BNA</td>
<td>Base/Neutral and Acid Extractable</td>
</tr>
<tr>
<td>BRAC</td>
<td>Base Realignment and Closure</td>
</tr>
<tr>
<td>CCR</td>
<td>Construction Completion Report</td>
</tr>
<tr>
<td>CERCLA</td>
<td>Comprehensive Environmental Response, Compensation, and Liability Act</td>
</tr>
<tr>
<td>CERCLIS</td>
<td>Comprehensive Environmental Response, Compensation, and Liability Information System</td>
</tr>
<tr>
<td>COPC</td>
<td>Chemical of Potential Concern</td>
</tr>
<tr>
<td>DNBP</td>
<td>di-N-Butyl Phthalate</td>
</tr>
<tr>
<td>DNOC</td>
<td>Dinitro-ortho-cresol</td>
</tr>
<tr>
<td>DOD</td>
<td>U.S. Department of Defense</td>
</tr>
<tr>
<td>EBS</td>
<td>Environmental Baseline Survey</td>
</tr>
<tr>
<td>ecoCOPC</td>
<td>Ecological Chemical of Potential Concern</td>
</tr>
<tr>
<td>ESE</td>
<td>Environmental Science and Engineering</td>
</tr>
<tr>
<td>ESV</td>
<td>Ecological Screening Value</td>
</tr>
<tr>
<td>FFA</td>
<td>Federal Facility Agreement</td>
</tr>
<tr>
<td>FFS</td>
<td>Focused Feasibility Study</td>
</tr>
<tr>
<td>FS</td>
<td>Feasibility Study</td>
</tr>
<tr>
<td>GQS</td>
<td>Groundwater Quality Standard</td>
</tr>
<tr>
<td>HE</td>
<td>High Explosives</td>
</tr>
<tr>
<td>HI</td>
<td>Hazard Index</td>
</tr>
<tr>
<td>HQ</td>
<td>Hazard Quotient</td>
</tr>
<tr>
<td>I.D.</td>
<td>Identification</td>
</tr>
<tr>
<td>IDNR</td>
<td>Illinois Department of Natural Resources</td>
</tr>
<tr>
<td>IEPA</td>
<td>Illinois Environmental Protection Agency</td>
</tr>
<tr>
<td>IR</td>
<td>Information Repository</td>
</tr>
<tr>
<td>IRP</td>
<td>Installation Restoration Program</td>
</tr>
<tr>
<td>ISPCS</td>
<td>Illinois State Plane Coordinate System</td>
</tr>
<tr>
<td>L&amp;D</td>
<td>Lock and Dam</td>
</tr>
<tr>
<td>LRA</td>
<td>Local Redevelopment Authority</td>
</tr>
<tr>
<td>MCL</td>
<td>Maximum Contaminant Level</td>
</tr>
<tr>
<td>MCPA</td>
<td>2-Methyl-4-chlorophenoxyacetic Acid</td>
</tr>
<tr>
<td>MEC</td>
<td>Munitions and Explosives of Concern</td>
</tr>
<tr>
<td>MWH</td>
<td>Montgomery Watson Harza</td>
</tr>
<tr>
<td>NCP</td>
<td>National Oil and Hazardous Substances Pollution Contingency Plan</td>
</tr>
<tr>
<td>NFA</td>
<td>No Further Action</td>
</tr>
<tr>
<td>NPL</td>
<td>National Priorities List</td>
</tr>
<tr>
<td>OE</td>
<td>Ordnance and Explosives</td>
</tr>
<tr>
<td>PAH</td>
<td>Polynuclear Aromatic Hydrocarbon</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative, and Toxic</td>
</tr>
<tr>
<td>PCB</td>
<td>Polychlorinated Biphenyl</td>
</tr>
<tr>
<td>PCP</td>
<td>Pentachlorophenol</td>
</tr>
<tr>
<td>PMP</td>
<td>Project Management Professional</td>
</tr>
<tr>
<td>PRG</td>
<td>Preliminary Remediation Goal</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>RAB</td>
<td>Restoration Advisory Board</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>RDX</td>
<td>Cyclo-1,3,5-trimethylene-2,4,5-trinitramine</td>
</tr>
<tr>
<td>RFNA</td>
<td>Red Fuming Nitric Acid</td>
</tr>
<tr>
<td>RI</td>
<td>Remedial Investigation</td>
</tr>
<tr>
<td>ROD</td>
<td>Record of Decision</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
</tr>
<tr>
<td>SERA</td>
<td>Screening-Level Ecological Risk Assessment</td>
</tr>
<tr>
<td>SI</td>
<td>Site Investigation</td>
</tr>
<tr>
<td>SSL</td>
<td>Soil Screening Level</td>
</tr>
<tr>
<td>SVDA</td>
<td>Savanna Depot Activity</td>
</tr>
<tr>
<td>SVOC</td>
<td>Semivolatile Organic Compound</td>
</tr>
<tr>
<td>T&amp;E</td>
<td>Threatened and Endangered</td>
</tr>
<tr>
<td>TACO</td>
<td>Tiered Approach to Corrective Action Objectives</td>
</tr>
<tr>
<td>TCE</td>
<td>Trichloroethene</td>
</tr>
<tr>
<td>TNT</td>
<td>2,4,6-Trinitrotoluene</td>
</tr>
<tr>
<td>TOC</td>
<td>Total Organic Carbon</td>
</tr>
<tr>
<td>TRV</td>
<td>Toxicity Reference Value</td>
</tr>
<tr>
<td>TTFW</td>
<td>TetraTech-Foster Wheeler, Inc.</td>
</tr>
<tr>
<td>UDMH</td>
<td>Unsymmetrical Dimethylhydrazine</td>
</tr>
<tr>
<td>USACE</td>
<td>U.S. Army Corps of Engineers</td>
</tr>
<tr>
<td>USEPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>USGS</td>
<td>U.S. Geological Survey</td>
</tr>
<tr>
<td>UXO</td>
<td>Unexploded Ordnance</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compound</td>
</tr>
</tbody>
</table>
1. DECLARATION OF THE RECORD OF DECISION

This Record of Decision (ROD) presents the selected remedy of no further action (NFA) for 14 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites investigated at Savanna Army Depot Activity (SVDA), Savanna, Illinois. The ROD considers public comment received on the Final Proposed Plan dated July 2011 and is a legal, technical, and public document that describes the selected remedy for the 14 sites. Section 1 presents key information regarding the sites presented in this ROD. Section 2 summarizes site information and investigation conclusions and explains how the selected remedies fulfill statutory and regulatory requirements. Section 3 summarizes information about the views of the public and regulatory agencies regarding the site recommendations and any general concerns about the sites.

1.1 SITE NAMES AND INSTALLATION LOCATION

SVDA was a 13,062-acre installation located on the eastern bank of the Mississippi River. The installation is located in Carroll and Jo Daviess Counties approximately 7 miles north of the city of Savanna, Illinois and approximately 150 miles west of Chicago, Illinois (Figure 1). The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) identification (I.D.) number for SVDA is IL3210020803. Sites addressed in this ROD include the following:

- UDMH (Unsymmetrical Dimethylhydrazine) Burn Area (Site 6)
- White Phosphorus Burn Area (Site 10)
- TNT (2,4,6-Trinitrotoluene) and Ammonium Nitrate Burn Area (Site 11)
- Explosives Contaminated Scrap Burn Area (Site 12)
- Manganese Ore Storage Pits (Site 46)
- Function Test Area Burn Pits (Site 71)
- I-Gate Cafeteria Outdoor Oil Changing Area (Site 82OC)
- I-Gate Cafeteria Septic System (Site 82SS)
- Pesticide Burial Area (Site 89)
- K Road Trench Site (Site 101)
- CL Plant Northern Septic System (Site 122)
- Wildlife Area Asphalt Dump (Site 180)
- West Road Sludge Application Area (Site 193)
- Classification Yard Sludge Application Area (Site 194).

1.2 STATEMENT OF BASIS AND PURPOSE

This ROD presents the resolution for NFA for 14 sites at SVDA as selected by the U.S. Environmental Protection Agency (USEPA), in consultation with the U.S. Army and Illinois Environmental Protection Agency (IEPA), and in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986; the Resource Conservation and Recovery Act (RCRA); and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). IEPA concurs with the selected remedy. The remedy solution is consistent with RCRA-CERCLA integration, as discussed in Sections I, III, and XIII of the Federal Facility Agreement (FFA). USEPA has determined that no action is necessary to protect public health or welfare or the environment. This decision is supported and based upon the Administrative Record for the 14 sites.
SAVANNA ARMY DEPOT ACTIVITY
INSTALLATION LOCATION
SAVANNA, ILLINOIS
PROJECT: GIS_DATA/SAVAD/Projects/NFA ROD\Figure 1 Installation Location.mxd
FIGURE: 1 DATE: 9/15/2011
1.3 DESCRIPTION OF SELECTED REMEDY AND ASSESSMENT OF THE SITES

This ROD has been prepared for 14 sites addressed in Remedial Investigation/Feasibility Study (RI/FS) and Construction Completion Reports (CCRs) completed between 1994 and 2007. No unacceptable ecological or human health risks were identified for current and anticipated future land use scenarios at the 14 sites and, as a result, NFA is being taken at these sites. The remedy presented in this ROD is protective of public health, welfare, and the environment from actual or threatened releases of hazardous substances. There is no cost associated with the NFA remedy at the 14 sites.

1.4 STATUTORY DETERMINATIONS

SVDA was placed on the National Priorities List (NPL) in 1989. As a result of the NPL listing, the Army entered a three-party FFA with USEPA Region 5 and IEPA in September 1989 (DA 1989). Environmental restoration activities under the FFA (Sections I, III, and XIII) must comply with CERCLA and RCRA requirements and procedures in accordance with the FFA. In 1995, SVDA was selected for closure under the Base Closure and Realignment Act of 1990 (Base Closure Act), as amended, and SVDA officially closed in March 2000. Currently, the only onsite Army activities are associated with the assessment and remediation of site-related contamination as required under CERCLA and the Base Realignment and Closure (BRAC) Act and the preparation for transferring ownership of land parcels to other governmental entities or the Local Redevelopment Authority (LRA). The selected remedy (NFA) for the 14 sites is based on CERCLA-mandated Site Investigations (SIs), laboratory analyses, review of current and future conditions and land reuse, removal activities, and, where necessary, assessment of the human health and ecological risks. Investigations, cleanup actions, and assessments at these sites are complete.

Based on these findings, USEPA and the Army believe that these sites may be used without restrictions and that NFA is needed to protect human health and the environment. In light of the decision not to select a remedial action, the requirements of CERCLA Section 121, including the provisions of CERCLA Section 121(d)(2) concerning applicable or relevant and appropriate requirements (ARARs), are not triggered; that section applies only in those cases where a remedial action is selected. Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining onsite above levels that do not allow for unlimited use and unrestricted exposure, a 5-year review will not be required for these 14 sites.

1.5 ROD DATA CERTIFICATION CHECKLIST

A data certification checklist is provided in Table 1. The checklist certifies that the ROD contains information pertinent to the remedy selection and identifies the ROD section within the body of this document. As a result of the decision not to select a remedial action, all of the requirements of the CERCLA data certification checklist are not triggered, since portions only apply in those cases where a remedial action is selected.
Table 1. Data Certification Checklist for 14 NFA Sites Record of Decision
Savanna Army Depot Activity, Savanna, Illinois

<table>
<thead>
<tr>
<th>Information</th>
<th>Information in ROD</th>
<th>ROD Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>COCs</td>
<td>√</td>
<td>Section 2.5</td>
</tr>
<tr>
<td>Baseline Risk</td>
<td>√</td>
<td>Section 2.7, Appendices A and B</td>
</tr>
<tr>
<td>Cleanup Levels</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Source Materials</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Current and Future Land Use</td>
<td>√</td>
<td>Section 2.6</td>
</tr>
<tr>
<td>Land Use with Remedy</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Costs Associated with Remedy</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Key Factors for Remedy Selection</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

NA: Information not required, since sites require NFA.
1.6 AUTHORIZING SIGNATURES

No further remedial action is necessary to ensure protection of human health and the environment at the 14 sites (Sites 6, 10, 11, 12, 46, 71, 82OC, 82SS, 89, 101, 122, 180, 193, and 194) in this ROD. Concur and recommend for immediate implementation:

Thomas E. Lederle
Deputy
U.S. Army Base Realignment and Closure Division

Date

Richard C. Karl
Superfund Division Director
U.S. Environmental Protection Agency, Region 5

Date

John J. Kim
Interim Director
Illinois Environmental Protection Agency

Date
2. DECISION SUMMARY

The U.S. Army is the lead agency responsible for remedial actions for the 14 sites proposed for NFA under this ROD. USEPA and IEPA are support agencies and provide regulatory oversight, technical review, and approval. The U.S. Department of Defense (DOD) is the source of cleanup-related funding.

2.1 INSTALLATION HISTORY, SITE NAMES, AND LOCATIONS

SVDA is a 13,062-acre installation located on the eastern bank of the Mississippi River. The installation is located in Carroll and Jo Daviess Counties, approximately 7 miles north of the city of Savanna, Illinois and approximately 150 miles west of Chicago, Illinois (see Figure 1). The CERCLIS I.D. number for SVDA is IL3210020803.

The U.S. Army purchased the installation property in 1917 for the construction of a proof and test facility for artillery guns and ammunition. Operations at the installation expanded to ordnance storage facilities and loading and renovating shells and bombs. In 1970, a special weapons workshop was added to the installation. While active, the installation activities at SVDA included the handling, processing, and storing of munitions, explosives, and industrial chemicals.

The storage, maintenance, and industrial functions at SVDA historically have resulted in the generation of hazardous wastes. Facilities and operations at SVDA handled, processed, and managed munitions, explosives, and industrial chemicals since operations began in 1918. Several areas of the installation were historically used for the demolition and burning of obsolete ordnance. The Installation also provided housing, office space, and industrial plant areas with attendant infrastructure. The 14 sites identified for NFA under this ROD consist predominantly of ammunition storage, septic systems, sludge application, testing, and burn areas. Table 2 summarizes key information for each of the 14 sites identified for NFA in this ROD, including sampling efforts, chemicals detected, and risk assessment recommendations. The site locations are shown in Figure 2.

2.2 SITE HISTORY AND REGULATORY ACTIVITIES

In February 1995, the Secretary of Defense submitted a recommendation that SVDA be selected for closure. The Base Closure Act and Public Laws 100-526 and 101-510 designated SVDA for closure and realignment. The Base Closure Act requires environmental issues at base closure properties to be investigated pursuant to CERCLA. The BRAC Environmental Restoration Program began by conducting an Environmental Baseline Survey (EBS) (SAIC 1999). The EBS described the environmental condition of the property and has been used to determine the suitability to lease or transfer excess BRAC property. These efforts resulted in the identification of various areas of concern (sites) throughout the installation.

Subsequently, it became necessary to investigate and clean up, as necessary, environmental contamination prior to the release and reuse of the land. The scope of the investigation activities conducted at sites included preparing project work plans, conducting field investigations, validating and managing analytical data, evaluating the risk to human health and the environment, and documenting the results of the investigations and analyses presented in RI reports (SAIC 2007a, 2007b, 2007c, 2009, and USACE 2008). At Sites 82SS, 89, and 180, additional documents included CCRs following remediation or cleanup activities (Montgomery Watson 2001, MWH 2004, CAPE 2006). Upon completion, these documents were submitted to members of the BRAC Cleanup Team (BCT), U.S. Army, IEPA, and USEPA Region 5 for review and comments. Following a review of this information, the BCT concurred with the Army’s proposed determination that NFA is required at these 14 sites.
## Table 2. Summary of Key Site Information
### Savanna Army Depot Activity, Savanna, Illinois

<table>
<thead>
<tr>
<th>Site</th>
<th>Sampling Conducted</th>
<th>Chemical Constituents Detected</th>
<th>Human Health Assessment&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Ecological Assessment&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Supporting Documents</th>
</tr>
</thead>
</table>
| Site 6 – UDMH Burn Area | Soil and groundwater | VOCs, SVOCs, explosives, metals, and anions | Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site. | HQs from ecoCOPCs were below 1 for all receptors. Therefore, ecological risks are acceptable at this site. | • Rapid Response Environmental Survey (ESE 1982)  
• Environmental Monitoring (Hunter/ESE 1989)  
• RI Report (Dames & Moore 1994)  
• RI Report for the Upper Post (SAIC 2009) |
| Site 10 – White Phosphorus Burn Area | Soil and groundwater | VOCs, SVOCs, metals, and anions | Lead concentrations in groundwater exceeded the IEPA GQS in a single sampling round; during a subsequent round, lead was detected below the GQS. All other site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site. | HQs from the ecoCOPC were below 1 for all receptors. Therefore, ecological risks are acceptable at this site. | • RI Report (Dames & Moore 1994)  
• RI Report for the Upper Post (SAIC 2009) |
| Site 11 – TNT and Ammonium Nitrate Burn Area | Soil, sediment, and groundwater | VOCs, SVOCs, explosives, metals, and anions | Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site. | HQs from ecoCOPCs were below 1 for all receptors. Therefore, ecological risks are acceptable at this site. | • Rapid Response Environmental Survey (ESE 1982)  
• RI Report (Dames & Moore 1994)  
• RI Report for Sites 11, 32, and 82SS (SAIC 2007b) |
| Site 12 – Explosives Contaminated Scrap Burn Area | Soil, surface water, sediment, and groundwater | SVOCs, VOCs, explosives, metals, anions, and pesticides | Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site. | Complete ecological exposure pathways are not present at Site 12 for any medium (see Appendix B). Therefore, ecological risks are acceptable at this site. | • Rapid Response Environmental Survey (ESE 1982)  
• RI Report (Dames & Moore 1994)  
• RI Report for the Upper Post (SAIC 2009) |
| Site 46 – Manganese Ore Storage Pits | Soil, groundwater, and sump water | Metals and anions | Noncancer risks are below the target HI. Cancer risks are within the target risk range for the industrial worker and resident due solely to arsenic. However, detected arsenic concentrations at the site are below state background concentrations. Therefore, human health risks are acceptable at this site. | Although one HQ from thallium was above 1, this constituent was detected in only 2 of 20 soil samples and judged unlikely to cause adverse effects. Therefore, ecological risks are acceptable at this site. | • RI Report for Sites 46, 76CS, 84, and 184 (SAIC 2007a) |
### Table 2. Summary of Key Site Information
Savanna Army Depot Activity, Savanna, Illinois (Continued)

<table>
<thead>
<tr>
<th>Site</th>
<th>Sampling Conducted</th>
<th>Chemical Constituents Detected</th>
<th>Human Health Assessment</th>
<th>Ecological Assessment</th>
<th>Supporting Documents</th>
</tr>
</thead>
</table>
| Site 71 – Function Test Area Burn Pits | Soil               | VOCs, SVOCs, and metals        | Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site. | The magnitude of HQs from selenium and DNB was low (e.g., HQs were below 3 with the conservative assumptions of the SERA). Although HQs from lead and thallium were above 10, these constituents were detected in only 1 of 11 sample locations above their ESVs. In addition, the arithmetic mean concentrations were below their ESVs. Therefore, ecological risks are acceptable at this site. | • RI Report (Dames & Moore 1994)  
• RI Report for the Upper Post (SAIC 2009) |
| Site 82OC – I-Gate Cafeteria Outdoor Oil Changing Area | Soil and groundwater | VOCs, SVOCs, metals, and anions | Hypothetical residential cancer risks are within the target risk range due to PAHs. Only a single concentration of benzo(a)pyrene slightly exceeds the TACO residential remediation goal and PAH risks are likely overestimated. Noncancer risks are below the target HI. Therefore human health risks are considered acceptable at this site. | Two metals (calcium and magnesium) were identified as ecoCOPCs. However, in the surface soil, calcium and magnesium are essential nutrients and pose minimal risk to terrestrial plants and wildlife. Therefore ecological risks are acceptable at this site. | • RI Report for the Upper Post (SAIC 2009) |
| Site 82SS – I-Gate Cafeteria Septic System | Soil and groundwater | VOCs, SVOCs, metals, and anions | Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site. | Although HQs from antimony in the shallow subsurface soil were above 1 (14.4 for shrews, 3.6 for plants), this constituent was detected in only one of eight shallow subsurface soil samples and judged unlikely to cause adverse effects. Therefore, ecological risks are acceptable at this site. | • RI Report for Sites 11, 32, and 82SS (SAIC 2007b)  
• CCR, Segregation and Disposal of Small Arms Debris, Asbestos Removal, Replacement of Loading Dock, Imhoff Tank Demolition (CAPE 2006) |
<table>
<thead>
<tr>
<th>Site</th>
<th>Sampling Conducted</th>
<th>Chemical Constituents Detected</th>
<th>Human Health Assessment</th>
<th>Ecological Assessment</th>
<th>Supporting Documents</th>
</tr>
</thead>
</table>
| Site 89 – Pesticide Burial Area | Soil, groundwater, surface water, and sediment | DNOC, SVOCs                   | Post-remedial soil concentrations are below the DNOC remediation objective for unrestricted use and post-remedial groundwater concentrations of site-related constituents are either nondetect (DNOC was not detected) or below regulatory screening criteria for unrestricted use. Therefore, human health risks are acceptable at this site. | DNOC has not been detected in surface water and sediment in the nearby stream. Subsequent to the 2002 removal action for soil, DNOC has not been detected in groundwater. As part of the DNOC soil removal action, overburden material was backfilled into the trench. Thus, DNOC is not available for ecological receptors to be exposed to and there is not a complete exposure pathway. Therefore, ecological risks are acceptable at this site. | • CCR for Pesticide Disposal Area (Site 89) Removal Action (MWH 2004)  
• RI Report for Pesticide Disposal Area (Site 89) (USACE 2008) |
| Site 101 – K Road Trench Site | Soil and groundwater               | VOCs, SVOCs, metals, and anions | Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site. | No ecoCOPCs or PBT chemicals were identified at the site. Therefore, ecological risks are acceptable at this site. | • RI Report (Dames & Moore 1994)  
• RI Report for the Upper Post (SAIC 2009) |
| Site 122 – CL Plant Northern Septic System | Soil, groundwater, and septic tank water and sediment | VOCs, SVOCs, PCBs, explosives, metals, and anions | The use of current toxicity values substantially lowers the groundwater risk. In addition, soil and groundwater concentrations are below TACO screening levels for residential use. Therefore human health risks are considered acceptable at this site. | HQs from ecoCOPCs were below 1 for all receptors. Therefore, ecological risks are acceptable at this site. | • RI Report (Dames & Moore 1994)  
• RI for the CL and CN Plant Areas and the Remaining LRA Parcel (SAIC 2007c)  
• Plant Area FFS (SAIC 2008) |
| Site 180 – Wildlife Area Asphalt Dump | Soil, groundwater, surface water, and sediment | VOCs, SVOCs, and metals      | The site has been remediated to meet the TACO residential cleanup standard, which is protective of human health. Therefore, human health risks are acceptable at this site. | All visible asphalt was removed from this site. Sampling of the underlying soil after the removal confirmed concentrations of PAHs were below the TACO residential cleanup standard. Because PAH concentrations were below the TACO residential cleanup standards, which are lower than the SVDA ESVs for those compounds, ecological receptors would not be exposed to PAHs at elevated concentrations. Therefore, ecological risks are acceptable at this site. | • CCR for Site 180 Asphalt Debris Removal (Montgomery Watson 2001) |
Table 2. Summary of Key Site Information
Savanna Army Depot Activity, Savanna, Illinois (Continued)

<table>
<thead>
<tr>
<th>Site</th>
<th>Sampling Conducted</th>
<th>Chemical Constituents Detected</th>
<th>Human Health Assessment</th>
<th>Ecological Assessment</th>
<th>Supporting Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 193 – West Road Sludge Application Area</td>
<td>Soil</td>
<td>SVOCs, PCBs, pesticides, herbicides, and metals</td>
<td>Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site.</td>
<td>Although HQs from the ecoCOPCs 2,4-D and MCPA were above 1 with conservative exposure assumptions, the HQ from 2,4-D was below 1 when a more realistic exposure point concentration was incorporated. Because of the analytical challenge posed by MCPA and the rapid degradation of the compound under conditions similar to those at Site 193, the actual presence of MCPA is highly uncertain. Therefore, ecological risks are acceptable at this site.</td>
<td>• RI Report for the Upper Post (SAIC 2009)</td>
</tr>
<tr>
<td>Site 194 – Classification Yard Sludge Application Area</td>
<td>Soil and groundwater</td>
<td>SVOCs, pesticides, herbicides, and metals</td>
<td>Detected site concentrations are below regulatory residential human health screening criteria. Therefore, human health risks are acceptable at this site.</td>
<td>Although HQs from the ecoCOPCs 2,4-D and MCPA were above 1 with conservative exposure assumptions, the HQ from 2,4-D was below 1 when a more realistic exposure point concentration was incorporated. Exposure of wildlife to MCPA is limited spatially as MCPA was detected in only 1 of 18 surface soil and 3 of 27 shallow subsurface soil locations. Because of the analytical challenge posed by MCPA and the rapid degradation of the compound under conditions similar to those at Site 194, the actual presence of MCPA is highly uncertain. Therefore, ecological risks are acceptable at this site.</td>
<td>• RI Report for the Upper Post (SAIC 2009)</td>
</tr>
</tbody>
</table>

\[a\] Human health risk estimates are summarized in Appendix A.
\[b\] Ecological risk assessments are summarized in Appendix B.
Final Record of Decision, NFA at 14 Sites 2-6 May 2012

Savanna Army Depot Activity

Figure 2 NFA Sites_v2 8x11.mxd

Legend
- Installation Boundary
  - Site 6 - UDMH Burn Area
  - Site 10 - White Phosphorus Burn Area
  - Site 11 - TNT and Ammonium Nitrate Burn Area
  - Site 12 - Explosives Contaminated Scrap Burn Area
  - Site 46 - Manganese Ore Storage Pits
  - Site 71 - Function Test Area Burn Pits
  - Site 82OC - I-Gate Cafeteria Outdoor Oil Changing Area
  - Site 82SS - I-Gate Cafeteria Septic System
  - Site 89 - Pesticide Burial Area
  - Site 101 - K Road Trench Site
  - Site 122 - CL Plant Northern Septic System
  - Site 180 - Wildlife Area Asphalt Dump
  - Site 193 - West Road Sludge Application Area
  - Site 194 - Classification Yard Sludge Application Area

MAP EXTENT

RECORD OF DECISION SITES
SAVANNA ARMY DEPOT ACTIVITY
SAVANNA, ILLINOIS

FIGURE: 2  DATE: 9/20/2011

PROJECT: USGS DATA/SVAD/Projects/NFA ROD
Figure 2 NFA Sites_v2 8x11.mxd
2.3 COMMUNITY PARTICIPATION

Supporting documents describing field investigations, laboratory analysis results, risk assessments, and closure details are part of the SVDA Administrative Record and Information Repositories and are available for public review at the following locations:

- Savanna Public Library
  SVDA Information Repository
  326 Third Street
  Savanna, IL  61074

- Hanover Township Library
  SVDA Information Repository
  204 Jefferson Street
  Hanover, IL  61041

- Savanna Army Depot Activity
  SVDA Administrative Record
  Building 246
  18935 B Street
  Savanna, IL  61074

The libraries are information repositories that contain only key documents relating to these sites. The full administrative record is available at SVDA. A notice of availability of these documents was published in the Savanna Times Journal, Galena Gazette, Dubuque Telegraph Herald, Prairie Advocate, and Clinton Herald in July and August 2011. A public comment period for the Proposed Plan was held from July 13, 2011 through August 12, 2011. In addition, a public meeting and poster session was held on August 10, 2011 at the Building 247 conference room at SVDA to present the Proposed Plan to a broader community audience than has been involved at the site. At this meeting, representatives from SVDA, USEPA, and IEPA were available to answer questions regarding concerns at the site. Written public comments were received on the Proposed Plan. The responsiveness summary is provided in Section 3. In addition, since 1995, Restoration Advisory Board (RAB) meetings that solicit a cross-section of the community are held at SVDA quarterly. During these RAB meetings, the Army has apprised the community of the status of the ROD sites.

2.4 ENVIRONMENTAL SETTING

SVDA is in northwestern Illinois adjacent to the Mississippi River in Jo Daviess and Carroll Counties. The installation is in the central lowlands of the interior plains physiographic province. The installation occupied 13,062 acres at the time of closure and is bordered by agricultural land to the north and east, the Apple River to the southeast, and the Mississippi River to the south and west. SVDA is encompassed on the Blackhawk, Illinois and Green-Island, Iowa U.S. Geological Survey (USGS) quadrangle maps (1952-53 revision, photo-revised 1975) approximately between coordinates 466,000 feet to 484,000 feet (east) and 2,006,000 feet to 2,017,000 feet (north) in the Illinois (west) State Plane Coordinate System (ISPCS). The majority of the northern and central portions of the Installation (Upper Post) are in Jo Daviess County, Illinois, and the southernmost acreage (Lower Post) is in Carroll County, Illinois.

2.5 SCOPE AND ROLE OF SELECTED SITES

In 1989, an FFA was signed by the Army, IEPA, and USEPA. In 1995, SVDA was selected for closure under the Base Closure Act, as amended, and SVDA officially closed in March 2000. The BCT, which has responsibility for making site decisions across all environmental programs at SVDA, was
assembled in accordance with the FFA and consists of representatives from the Army, USEPA, and IEPA. There are 127 Installation Restoration Program (IRP) sites at SVDA with 62 of these sites having achieved response complete. Fourteen of these IRP sites are presented in this ROD.

The 14 sites presented in this ROD were evaluated in RIs, FSs, and/or CCRs completed between 1994 and 2007. No unacceptable ecological or human health risks were identified for current and anticipated future land use scenarios at the 14 sites and, as a result, NFA is being taken at these sites. This ROD presents the final response for these sites.

2.6 SITE DESCRIPTIONS

This section summarizes the characteristics of the 14 NFA sites at SVDA, including the individual site history and summary of investigation and remediation results. Thirteen of the 14 NFA sites are within or adjacent to ammunition storage areas located on the Upper Post Area and the remaining site is within the CL Plant Area.

2.6.1 UDMH Burn Area (Site 6)

The UDMH Burn Area (Site 6), in the northern portion of SVDA (see Figure 2), was reportedly used as a burn area for the disposal of surplus UDMH and acid from approximately 1954 to 1965 (USATHAMA 1979). In addition, the site may have been used for disposal of red fuming nitric acid (RFNA). Based on the LRA land use plan, Site 6 will be transferred to the Illinois Department of Natural Resources (IDNR).

UDMH Burn Area (Disposal Pit) (Site 6)

Initial site characterization of Site 6 was conducted by Environmental Science and Engineering (ESE) (1982). Soil and groundwater samples were collected for explosives, anions, base/neutral and acid extractables (BNAs), and metals (groundwater only) analyses. During this investigation, no site-related chemical constituents were detected at Site 6.

Hunter/ESE (1989) collected one groundwater sample for explosives, volatile organic compound (VOC), metals, and anions analyses. Two explosive compounds (2,4-dinitrotoluene [2,4-DNT] and 1,3,5-trinitrobenzene [1,3,5-TNB]) were detected at concentrations above the applicable screening criteria. Because these explosive compounds were not detected in the previous sampling conducted in 1982, the explosives may have been from the adjacent TNT Washout Facility Upper Lagoons (Site 22) (Dames & Moore 1994).

Dames & Moore (1994) sampled soil and groundwater for BNAs (soil samples only), nitrate/nitrite, and explosives. Explosives and BNAs were not detected in the soil, supporting the conclusion that the
explosives detected in the groundwater during the 1989 sampling event were from the adjacent site. No explosives were detected in the groundwater (Dames & Moore 1994).

In 2000, SAIC collected soil and groundwater samples for VOC, semivolatile organic compound (SVOC), explosives, metals, and anions (groundwater only) analyses. Site-related concentrations for two metals, four VOCs, and three SVOCs in the soil did not exceed the human health or migration to groundwater screening criteria with the exception of mercury. An isolated mercury concentration exceeded the migration to groundwater screening criteria in the deep subsurface soil interval at 18 feet below land surface (BLS); however, mercury was not detected in samples collected below 18 feet BLS and was not detected in groundwater at Site 6, indicating that mercury has not migrated to groundwater. Three site-related metals, two VOCs, one SVOC, and two anions were detected in the groundwater; however, none exceeded the human health screening criteria (SAIC 2009).

Explosives were not detected in the soil or groundwater during the 2000 sampling event, confirming the explosives detected in the groundwater in 1989 is likely a result of activities at adjacent Site 22 rather than activities associated with Site 6 (SAIC 2009).

TetraTech-Foster Wheeler, Inc. (TTFW) (2004) conducted a munitions and explosives of concern (MEC) investigation in Archives Search Report (ASR) Zone V, which includes Site 6. The investigation did not identify MEC components at Site 6 (TTFW 2004). Based on these results, the BCT concluded that no further MEC investigation or actions were warranted for Site 6.

**2.6.2 White Phosphorus Burn Area (Site 10)**

The White Phosphorus Burn Area (Site 10) is near the northeastern boundary of SVDA along K Road and north of the SVDA ammunition storage F-Area (see Figure 2). Site 10 was used from 1952 through 1954 to burn various types of white phosphorus-filled munitions, including 155 mm projectiles (SVDA 1977, USATHAMA 1979). Six depressions at Site 10, likely created by excavation, are each partially surrounded by a horseshoe-shaped berm and were likely used for burning.

A 1976 surveillance report indicated that after burning, the projectile bodies were gathered and sold for scrap (SVDA 1977). Flames and the high temperature from the burning activities may have destroyed residual chemicals. Based on the LRA land use plan, Site 10 will be transferred to the U.S. Fish and Wildlife Service (USFWS) to be managed as a refuge for wildlife protection and public use.

![White Phosphorus Burn Area (Site 10)](image)

Initial site characterization at Site 10 was conducted by Dames & Moore (1994). Soil and groundwater samples were collected and analyzed the samples for explosives, BNAs, anions, and metals (groundwater only). The investigations identified benzo(a)anthracene, phenanthrene, and nitrite as
site-related contaminants. The 1994 RI concluded that these results indicated the need for additional sampling (Dames & Moore 1994).

In 1999 and 2000, SAIC conducted a soil and groundwater investigation at Site 10. Samples were analyzed for VOCs, SVOCs, explosives, metals, and anions (groundwater only). Although site-related concentrations of four metals and three organic constituents were detected in the soil, none exceeded the human health screening criteria. Nickel and pentachlorophenol (PCP) were detected at concentrations exceeding the USEPA migration to groundwater screening criteria but did not exceed the IEPA Tiered Approach to Corrective Action Objectives (TACO) migration to groundwater screening criteria. PCP concentrations also exceeded the ecological screening value (ESV) in the shallow subsurface soil. However, migration to groundwater is not considered a concern because no site-related detections of nickel or PCP were identified in the monitoring wells or Hydropunch® groundwater samples. Nickel concentrations in the soil are considered to be naturally occurring (SAIC 2009).

The site-related metals aluminum, lead, and potassium were detected in groundwater samples at Site 10; however, concentrations of these metals were below background in the soil, indicating a naturally occurring source. Lead concentrations exceeded the TACO screening criteria for protection of human health and the IEPA Groundwater Quality Standard (GQS), but did not exceed the Federal action level for lead (SAIC 2009).

The 1999 ASR indicated that Site 10 was located within the 1918 Long Range Impact Area or Zone W (USACE 1999). Based on additional MEC investigations, the ASR boundary for the Long Range Impact Area was adjusted by the BCT. As a result of the revised boundary, Site 10 is not located within Zone W and the BCT concluded that no further MEC investigation or actions were warranted for Site 10.

### 2.6.3 TNT and Ammonium Nitrate Burn Area (Site 11)

The TNT and Ammonium Nitrate Burn Area (Site 11) was reportedly used in 1942 for burning TNT and ammonium nitrate wastes (USATHAMA 1979). The quantity of TNT and ammonium nitrate burned at Site 11 is unknown. The exact location of the activity is uncertain because of the limited burning activities, the age of the site, and significant construction with associated earth-moving activities. The suspected location of Site 11 is in the northern part of the Installation, between West Road and the first row of the F-Area igloos (see Figure 2). To the east of Site 11 (approximately 145 feet) is an unnamed tributary that flows into the Straight Slough of the Mississippi River. Based on the LRA land use plan, Site 11 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.

![TNT and Ammonium Nitrate Burn Area (Site 11)](image-url)
Initial site characterization at Site 11 was conducted by ESE (1982). One soil sample and one groundwater sample were collected. The soil sample was analyzed for explosives, anions, and BNAs. The groundwater sample was analyzed for explosives, thiodiglycol, metals, and anions. No constituents were identified as potentially site-related chemicals in the soil. Nitrate, phosphate, sulfate, and zinc were identified as potentially site-related groundwater constituents (Dames & Moore 1994).

Dames & Moore (1994) collected groundwater and sediment samples. Groundwater samples were analyzed for explosives, metals, and anions. Sediment samples were analyzed for explosives, metals, anions, total organic carbon (TOC), and pH. Because site-related constituents were not detected in the groundwater or sediment, the 1994 RI determined that Site 11 was not a source of contamination (Dames & Moore 1994).

In 2000, SAIC collected soil samples to confirm previous soil investigation results. Soil samples were analyzed for VOCs, SVOCs, and explosives. Although organic constituents were detected in the soil, none was detected at concentrations above the human health screening criteria. Cyclo-1,3,5-trimethylene-2,4,5-trinitramine (RDX) was detected in the surface soil at a concentration exceeding migration to groundwater screening criteria; however, it was not detected in the subsurface soil, indicating that it is not migrating through the soil. These results confirm the findings of the 1982 and 1994 investigations that Site 11 does not appear to be a source of contamination (SAIC 2007b).

The 1999 ASR indicated that Site 11 was located within the 1918 Long Range Impact Area or Zone W (USACE 1999). Based on additional MEC investigations, the ASR boundary for the Long Range Impact Area was adjusted by the BCT. As a result of the revised boundary, Site 11 is not located within Zone W and the BCT concluded that no further MEC investigation or actions were warranted for Site 11.

2.6.4 Explosives Contaminated Scrap Burn Area (Site 12)

The Explosives Contaminated Scrap Burn Area (Site 12) is in the northwest portion of the ammunition storage area along West Road in the central portion of SVDA (see Figure 2). Site 12 includes two U-shaped, bermed bunkers east of West Road and an area along the west of West Road, near the southernmost bermed bunker. Based on historical aerial photographs, the area west of West Road appeared as an area of disturbed soil that may have been used as a burning area (Dames & Moore 1994). The area reportedly was used in 1940 and 1941 for burning explosives-contaminated scrap and inert material (USATHAMA 1979). The quantity of material burned at the site and the frequency of burning activities are unknown. Based on the LRA land use plan, Site 12 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.
Initial site characterization at Site 12 was conducted by ESE (1982). Surface water and sediment samples were collected and analyzed for explosives, anions, metals, VOCs, BNAs, thiodiglycol, and/or polychlorinated biphenyl (PCB) analyses. Delta-BHC, bis(2-ethylhexyl)phthalate (B2EHP), and TNT were detected in the sediment. Nitrate, phosphate, sulfate, mercury, methylene chloride, and B2EHP were detected in the surface water.

Dames & Moore (1994) sampled soil, groundwater, and surface water/sediment at Site 12 for explosives and anions analyses. Based on the environmental data collected during the 1994 RI, no potential site-related contaminants were identified at Site 12 (Dames & Moore 1994).

In 2000, SAIC collected groundwater samples as part of the Installation-wide groundwater monitoring program. The samples were analyzed for VOCs, SVOCs, explosives, metals, anions, and pH. Samples confirmed the 1994 RI results because no site-related metals or organic constituents were detected in the groundwater. Only nitrate was detected in the groundwater with a concentration below the human health screening criteria (SAIC 2009).

### 2.6.5 Manganese Ore Storage Pits (Site 46)

The Manganese Ore Storage Pits (Site 46) are in the upper portion of SVDA between A Road and I Road North (see Figure 2) and are adjacent to and south of Site 111. Site 46 extends across a 12.9-acre area that consists of eight reinforced concrete storage pits and surrounding soil. Each pit measures approximately 234 by 1,634 feet, with a depth of 9.5 feet (USDOI 1984). Gutters run atop the outer walls and drain through troughs on the eastern side of the pits and box culverts on the western side of the pits. These storage pits have been used for multiple purposes, including a war reserve storage of sodium nitrate (between 1914 and 1933), segregation of ammunition (between 1951 and 1953), to function test CN tear gas and CS tear gas mechanisms, and most recently, for storage of manganese ore piles (between 1960 and 2000) (SOD 1952, 1953, and 1959). Although the manganese ore piles were removed, small quantities of residual manganese ore remains in one of the pits and on the ground surface adjacent to the pits. Based on the LRA land use plan, the site will be used for industrial/commercial purposes.

![Manganese Ore Storage Pit 6 (Site 46)](image)

In 2000 and 2003, SAIC collected soil samples from locations in and around the pits and along the culvert outfalls on the western side of the pits, water samples from the sumps along the concrete pits, and a Hydropunch® groundwater sample (SAIC 2007a). The samples collected in 2000 were analyzed for metals and anions and soil samples collected in 2003 were analyzed for metals only.

Three site-related metals (arsenic, nickel, and thallium) were detected in the soil associated with the pits at concentrations exceeding human health, migration to groundwater screening criteria, and/or the
ESV. Arsenic was detected in the shallow subsurface soil at concentrations exceeding the human health and migration to groundwater screening criteria. In addition, arsenic was detected in the Hydropunch® groundwater sample at concentrations above the human health screening criteria. Nickel was detected in the shallow subsurface soil at concentrations above the migration to groundwater screening criteria and in the Hydropunch® groundwater above State of Illinois Class I GQSs. The maximum concentrations in soil of arsenic (10.5 mg/kg) and nickel (10.4 mg/kg) were below the Illinois state background arsenic concentration of 11.3 mg/kg and nickel concentration of 13 mg/kg for counties outside metropolitan statistical areas (SAIC 2007a).

Arsenic, lead, manganese, and nickel concentrations exceeded risk-based human health screening criteria and/or State of Illinois Class I GQSs for groundwater; however, concentrations of metals are likely overestimated because of turbidity associated with the Hydropunch® sampling technique. Similar concentrations of these metals were detected in the Hydropunch® groundwater samples from adjacent Site 111; however, these metals were detected below background and below Illinois Class I GQSs in monitoring wells at adjacent Site 111 (SAIC 2007a).

The water in the sumps at Site 46 was analyzed to determine if the water served as a potential release pathway to the surrounding soil. Although the water contained two metals (mercury and thallium) and one anion (nitrate) that was site related in the soil, the concentrations of these metals and the anion were below human health and migration to groundwater screening criteria in the soil (SAIC 2007a).

During MEC field investigations conducted at Site 46 (Zone N), ordnance items or scrap were not recovered (TTFW 2004). Although one expended riot control grenade was recovered during a surface sweep of a path leading to the site, the BCT concluded that no further MEC investigation or actions were warranted for Site 46.

### 2.6.6 Function Test Area Burn Pits (Site 71)

The Function Test Area Burn Pits (Site 71) were constructed prior to 1946 along West Road north of U.S. Army Corps of Engineers (USACE) Lock and Dam (L&D) No. 12 in the northern post area (see Figure 2). The site encompasses approximately 6.1 acres in a wooded area south of the function test ranges at Sites 5, 29, and 100. The burn areas include two concrete pads and six horseshoe-shaped berms approximately 4 feet high. The ASR (USACE 1999) described Zone AA (Site 71) as a World War II training area, used to teach storage practices at English airfields. The pads were used to store high explosives (HE) bombs for training. No evidence of remaining unexploded ordnance (UXO) was found (USACE 1999). Based on the LRA land use plan, Site 71 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.
Initial site characterization at Site 71 was conducted by Dames & Moore (1994). Soil samples were collected and analyzed for explosives and anions. Explosives were not detected in the soils. Although nitrate/nitrite was detected, these anions were considered to be naturally occurring. The 1994 RI concluded that Site 71 was not a contaminant source and did not pose a potential for contaminant migration (Dames & Moore 1994).

In 2000, SAIC conducted additional Site 71 investigations to confirm previous investigation results of Dames & Moore (1994) with more sensitive analytical methods. Surface soil samples were collected from within each of the berm areas, adjacent to remnant drums, and adjacent to a trough potentially used to clean rifles. Soil samples were analyzed for VOCs, SVOCs, metals, and explosives (SAIC 2009).

Five site-related metals and 13 organic constituents were detected in the surface soil; however, none of the detected constituents exceeded human health screening criteria. Concentrations of antimony (0.71 mg/kg), selenium (0.92 to 1.1 mg/kg), and an isolated concentration of vinyl chloride (2 µg/kg) exceeded the USEPA migration to groundwater criteria but did not exceed the IEPA TACO migration to groundwater screening criteria. Antimony, lead, selenium, thallium, di-N-butyl phthalate (DNBP), and phenol were detected at concentrations exceeding the ESVs (SAIC 2009).

TTFW (2004) conducted a MEC investigation at ASR Zone V, which includes Site 71. The investigation did not identify MEC components at Site 71. Based on these results, the BCT concluded that no further MEC investigation or actions were warranted for Site 71.

2.6.7 I-Gate Cafeteria Outdoor Oil Changing Area (Site 82OC)

The I-Gate Cafeteria Outdoor Oil Changing Area (Site 82OC) is in the central upland area of the Installation, northwest of the I-Gate Cafeteria (Building 1023) and southwest of Shinske Road (see Figure 2). Prior to 1961, the Army Reserve used the gravel hardstand area near the I-Gate Cafeteria for changing vehicle oil. The area stopped being used for oil changing activities when the Reserve Motor Pool (Site 75) was constructed in 1961. The exact dates of use of the changing area are unknown.

Installation employees indicated that oil could have been discharged to the ground surface in this area as a result of maintenance activities (Clarke 1996, Dahlman 1996). The 1984 real property list indicated that Building 1024, south of Site 82OC, was an oil storage building (SVDA 1984). Building 1024 probably was used to store oil for the oil changing activities at the gravel hardstand area. Based on the LRA land use plan, Site 82OC will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.
In 2000, SAIC collected surface soil and groundwater samples at Site 82OC (SAIC 2009). Samples were analyzed for VOCs, SVOCs, metals, and anions (groundwater only). Site-related metals concentrations in the soil samples did not exceed any screening criteria. Benzo(a)pyrene was detected at a concentration that exceeded the human health screening criteria and benzo(b)fluoranthene was detected at a concentration that exceeds the migration to groundwater screening criteria. Concentrations of polynuclear aromatic hydrocarbons (PAHs) are limited to the surface soil at the southwest corner of the gravel hardstand area. Benzo(b)fluoranthene was not detected in the subsurface soils or the groundwater sample (SAIC 2009).

Sixteen metals, four organic constituents, and three anions were detected in the groundwater sample. Site-related iron, lead, manganese, and nickel were detected in groundwater at concentrations exceeding the human health screening criteria; however, none of the metals exceeded background concentrations in soil. Organic constituents and anions were not detected at concentrations exceeding screening criteria in the groundwater samples (SAIC 2009).

The 1999 ASR indicated that Site 82OC was located within the Graze Impact Area or Zone K (USACE 1999). Based on additional MEC investigations, the ASR boundary for the Graze Impact Area was adjusted by the BCT. As a result of the revised boundary, Site 82OC is not located within Zone K and the BCT concluded that no further MEC investigation or actions were warranted for Site 82.

2.6.8 I-Gate Cafeteria Septic System (Site 82SS)

The I-Gate Cafeteria Septic System (Site 82SS) is in the central upland area of the Installation, northwest of the I-Gate Cafeteria (Building 1023) and southwest of Shinske Road (see Figure 2). The septic system was likely installed in 1944 when Building 1023 was constructed and used for lavatories within the I-Gate Cafeteria. The septic system includes a leaching field, an Imhoff tank, a sludge drying bed, and a dosing tank. Oil from activities associated with Site 82OC (the I-Gate Cafeteria Outdoor Oil Changing Area) may have been discharged to the septic system. Based on the LRA land use plan, Site 82SS will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.

In 2000, SAIC collected soil samples from the sludge drying beds and leaching beds, water samples from the Imhoff tank, and groundwater samples (SAIC 2007b). Samples were analyzed for VOCs, SVOCs, metals, and anions (groundwater and tank water only). Site-related concentrations of 4 metals and 10 organic constituents in the soil samples did not exceed the human health screening criteria (SAIC 2007b).

Concentrations of the metals antimony, selenium, and nickel exceeded migration to groundwater criteria. Antimony and selenium each were detected in only one sample collected from 8 feet BLS. These metals were not detected in the deeper samples collected from 20 feet BLS and were not site
related in the Hydropunch® groundwater sample; thus, these metals have not migrated to the groundwater underlying the site. The deep subsurface soil concentrations of nickel (6.3 to 14.8 mg/kg) are below the maximum background concentration at SVDA (20.5 mg/kg), indicating that the presence of nickel is not a result of Site 82SS activities.

Ten metals, six organic constituents, and five anions were detected in the Hydropunch® groundwater sample. Organic constituents and anions were not detected at concentrations exceeding the screening criteria for groundwater (SAIC 2007b). Manganese and lead were detected at concentrations exceeding the human health screening criteria for groundwater. The elevated manganese and lead concentrations in groundwater are potentially attributed to turbidity associated with the Hydropunch® sampling technique because manganese and lead concentrations in the overlying soil are below background concentrations. In addition, Site 82SS is located near the northeastern boundary of SVDA in an area with no upgradient sources for manganese and lead.

One VOC, 10 PAHs, 2 non-PAH SVOCs, 1 anion, and 6 metals were detected in the tank water. Contamination is no longer present, since the contents of the Imhoff and dosing tanks were removed and the tanks were decommissioned in May 2006 (CAPE 2006).

The 1999 ASR indicated that Site 82SS was located within the Graze Impact Area or Zone K (USACE 1999). Based on additional MEC investigations, the ASR boundary for the Graze Impact Area was adjusted by the BCT. As a result of the revised boundary, Site 82SS is not located within Zone K and the BCT concluded that no further MEC investigation or actions were warranted for Site 82.

### 2.6.9 Pesticide Burial Area (Site 89)

The Pesticide Burial Area (Site 89) is in the northeast Upper Post Area of the Installation north of Igloo F1501. Based on an interview with a former SVDA employee and historical memoranda reviewed as part of the EBS, Site 89 was used for the disposal of the pesticide dinitro-ortho-cresol (DNOC) between 1952 and 1956 (SAIC 1999). Site 89 consisted of an unlined monofill believed to contain approximately 836 tons of DNOC pesticide material. Based on the LRA land use plan, Site 89 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.

In 1997, SAIC conducted a geophysical survey and drilled soil borings at Site 89 to locate and delineate the extent of the DNOC disposal area. Once the disposal area was located, soil and groundwater samples were collected and analyzed for DNOC to determine the potential impacts to human health and the environment. In addition, surface water and sediment samples were collected from a nearby stream to determine if there was migration from the site. Soil, surface water, and sediment sampling confirmed DNOC was not migrating through these media away from the site. The groundwater results showed the
presence of DNOC in one of the four wells, which contained DNOC concentrations exceeding the residential groundwater preliminary remediation goal (PRG).

In 1999, SAIC collected two samples of DNOC material from the trench to determine the appropriate material disposal method. The sample results indicated that DNOC was not a characteristic hazardous waste; however, DNOC was later determined to be a USEPA listed (P047) hazardous waste. Subsequently, excavated DNOC waste was handled, transported, and disposed of (incinerated) as a listed hazardous waste. In 2001, SAIC installed four additional monitoring wells and all eight of the Site 89 wells were sampled to determine the extent of DNOC migration from the site. The groundwater results indicated that DNOC was present in three of the eight monitoring wells.

From November 2001 through May 2002, SAIC and Montgomery Watson Harza (MWH) performed additional sampling and analyses of trench and overburden materials at Site 89. The data/sampling materials were used for a bench-scale screening study, to develop soil cleanup criteria, and to determine the thickness of the overburden soil above the pesticide material (i.e., soil above the pesticide material). In 2001, DNOC was detected in three of the nine overburden samples. However, the May 2002 analytical data indicated that DNOC was not present in any of the 10 overburden samples collected. The overburden sampling determined that this material could be used as backfill for the trench (MWH 2004).

Between July and October 2002, a removal action was conducted at Site 89. The removal action consisted of excavation, transportation, and disposal activities (incineration) of approximately 6,087 tons of DNOC material. Confirmation soil sampling verified that the residual soil concentrations of DNOC are below the Army cleanup criterion of 103 mg/kg and the unrestricted use remediation objective of 24 mg/kg (MWH 2004).

Two years of quarterly groundwater sampling was conducted at Site 89 between September 2002 and May 2004 to assess the effectiveness of the DNOC removal action. Three SVOCs were detected in the groundwater: benzyl butyl phthalate, DNBP, and B2EHP. Benzyl butyl phthalate and DNBP were detected at concentrations below the screening criteria. B2EHP was detected at concentrations above the screening criteria; however, after evaluation of pre- and post-removal data, it was determined to be unrelated to site activities. A single concentration of DNOC was detected in one well during the September 2002 sampling event, but the concentration was below the screening criteria. This sampling event occurred during the removal action and was not considered indicative of post-remedial characterization. Since the completion of the removal action in October 2002, DNOC has not been detected in the groundwater at Site 89 (USACE 2008).

2.6.10 K Road Trench Site (Site 101)

The K Road Trench Site (Site 101) is in the northern portion of SVDA, approximately 800 feet northeast of West Road and K Road (see Figure 2). Two areas of disturbed land were identified from historical (1954) aerial photographs (Dames & Moore 1994). The aerial photograph indicated ground disturbance at the site was associated with piled materials (Site 101M) and a possible trench (Site 101T) (Dames & Moore 1994). The ASR (USACE 1999) visual inspection found no evidence of recent ordnance and explosives (OE) usage and the area is considered to have no OE presence (USACE 1999). Based on the LRA land use plan, Site 101 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.

Dames & Moore (1994) conducted a site reconnaissance of the Site 101 area using a magnetometer and was unable to identify further evidence of the land disturbance or buried metallic debris. Surface soil samples were collected near the pile of materials and possible trench area and were analyzed for explosives, BNAs, and anions. Phenanthrene was the only site-related contaminant detected (Dames & Moore 1994).
In 2000, SAIC conducted investigation activities at Site 101 to verify the 1994 investigation results with more sensitive analytical methods. Soil samples and a Hydropunch® groundwater sample were analyzed for VOCs, SVOCs, metals, explosives, and anions (water sample only) (SAIC 2009).

Five site-related metals and five organics were detected in the soil. None of the detected concentrations exceeded human health or ecological screening criteria. Concentrations of two metals (nickel and silver) exceeded migration to groundwater screening criteria; however, the presence of these metals is not likely due to site activities and they were not found in the groundwater at concentrations above screening criteria. Nickel was detected in the shallow and deep subsurface soil at concentrations below SVDA’s maximum background and detected below human health screening criteria in the groundwater. Silver was detected in only one isolated location in the deep subsurface soil interval and not detected in the groundwater (SAIC 2009).

Three metal constituents (arsenic, lead, and manganese) were detected in the groundwater at concentrations exceeding the human health screening criteria. None of these metals was site related in the soil and the metals are likely due to turbidity associated with the Hydropunch® sampling procedure. One VOC (carbon disulfide) and four anions (chloride, fluoride, nitrate, and sulfate) also were detected; however, concentrations did not exceed the human health screening criteria. The SAIC investigation confirmed the results of the 1994 RI. Site 101 did not serve as a contaminant source or pose the potential for contaminant migration (SAIC 2009).

2.6.11 CL Plant Northern Septic System (Site 122)

The CL Plant Northern Septic System (Site 122) is outside the southwestern side of the CL Plant fence line (see Figure 2). The initial septic system configuration included a 1,425-gallon-capacity septic tank and an associated leaching pit. A 1943 map depicted expansions of the treatment system that included eight new settling chambers that received wastewater discharged through the existing leaching pit. In addition, two sludge beds west of the settling chambers were depicted on the 1943 map. A historical map indicated that the septic system pipeline discharged into a lift station and ultimately to the Mississippi River. This septic system was abandoned and the settling chambers were filled in 1956 when the sanitary sewer was connected to the Industrial Sewage Plant (Site 36) (SOD 1955, USATHAMA 1979). A review of a 1986 utilities map indicated that wastewater from Site 122 was directed to the south through an 8-inch sewerline that ended at the leaching beds associated with Site 36. No direct discharge to the Mississippi River was shown on the 1986 utilities map. Based on the LRA land use plan, the site will be used for industrial/commercial purposes.
Based on a review of aerial photographs, Dames & Moore (1994) sampled locations within the leaching pit and downgradient from the leaching pits at Site 122. Soil samples were collected from these two locations and analyzed for explosives and nitrate/nitrite. During this investigation, no explosives were detected at Site 122 (Dames & Moore 1994).

In 1998, SAIC collected soil samples from leaching pit, visible settling chambers, and the sludge drying beds, as well as a Hydropunch® groundwater sample, to determine if releases to the environment had occurred (SAIC 2007c). A visual inspection of the septic tank revealed that the tank is constructed of concrete and that there were no visible cracks. There was no indication that there was an imminent exposure hazard or environmental release at the Site 122 septic tank. A sediment and water sample were collected from the septic tank to determine chemicals that may have been released to the septic system. All samples at Site 122 were analyzed for VOCs, SVOCs, PCBs, explosives, metals, and anions (water samples only). In addition, monitoring wells were installed and developed, and two rounds of groundwater samples were collected (October 1999 and March 2000). Groundwater samples were analyzed for VOCs, SVOCs, PCBs, explosives, metals, and anions (SAIC 2007c).

Site-related metals and organic constituents were detected in the soils; however, none of the site-related constituents was detected at concentrations above the screening criteria for protection of human health. Selenium was detected at a concentration above the ESV; however, it was detected only in the surface soil at concentrations greater than the ESV at one soil boring location (SAIC 2007c).

Trace explosive compounds, explosive breakdown products, and an isolated PAH were detected in the groundwater at Site 122. The explosives and breakdown products were detected exclusively in downgradient well MW-122-01 at the southern boundary of the site. The detected explosives, explosive breakdown products, and PAH concentrations exceeded USEPA Region 9 PRGs but did not exceed the IEPA Class I GQSs (IEPA 2001), IEPA Groundwater Remediation Objectives for Chemicals Not Listed in TACO (IEPA 2004), or Federal maximum contaminant levels (MCLs) (USEPA 2002). The detected compounds were evaluated in the human health risk assessment (SAIC 2007c).

2.6.12 Wildlife Area Asphalt Dump (Site 180)

The Wildlife Area Asphalt Dump (Site 180) is located on the northeastern portion of SVDA in a low area northeast of K Road (see Figure 2). The site was identified as an area of concern in 1999 by USFWS during a nearby site walk. Unused asphalt had apparently been dumped over the edge of a slope into a depression that had a small pond at the bottom of the slope. The asphalt covered an area that was approximately 65 feet wide at the top of the slope, 32 feet wide at the bottom, and 136 feet in length, and appeared to be up to 8 inches thick. The small pond, which measures approximately 45 by 85 feet, was
north of the limit of the asphalt disposal area. Based on the LRA land use plan, Site 180 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.

Wildlife Area Asphalt Dump (Site 180)

In 2000, SAIC collected soil samples from locations upslope of the asphalt, within the edge of the asphalt, within the center of the asphalt area, approximately 5 feet away from the edge of the asphalt area, and immediately downslope from the asphalt area. In addition, a Hydropunch® groundwater sample, a surface water sample from the pond, and a sediment sample from the pond were collected to determine if releases to the environment had occurred. All samples were analyzed for VOCs, SVOCs, metals, and anions (water samples only). Because the SVOC analytical results of the sampling exceeded residential TACO screening criteria for the protection of human health and the environment, the BCT decided to proceed directly to a removal action of the asphalt.

Montgomery Watson conducted debris removal at Site 180 in 2000. The activities associated with the debris removal included UXO clearance, removal and disposal of the asphalt, and post removal sampling. Approximately 130 tons of asphalt debris, soil beneath the asphalt (approximately 6 inches), and 5 feet of soil beyond the edge of the visible asphalt were removed from the site and disposed of as clean construction and demolition debris at the Clinton County Landfill. Post excavation soil samples were collected and analyzed for PAHs. PAH concentrations in the soil were below TACO residential standards (Montgomery Watson 2001).

The 1999 ASR indicated that Site 180 was located within the 1918 Long Range Impact Area or Zone W (USACE 1999). Based on additional MEC investigations, the ASR boundary for the Long Range Impact Area was adjusted by the BCT. As a result of the revised boundary, Site 180 is not located within Zone W and the BCT concluded that no further MEC investigation or actions were warranted for Site 180.

2.6.13 West Road Sludge Application Area (Site 193)

The West Road Sludge Application Area (Site 193) is between West Road and B Road, approximately 350 feet east of the Mississippi River (see Figure 2). Although little historical information is available for Site 193, the area has been used over the years to grow corn for deer feed and was likely seasonally grazed by cattle through 1999. Prior to 1988, sanitary sewer sludge generated from the SVDA Main Sewage Disposal Plant (Site 35) was pumped from the digester and disposed of offsite (Melaas 1996). Between 1988 and 1994 and in 1996, the sanitary sewer sludge generated from Site 35 was spread over Sites 193 and 194 annually.
In both 1991 and 1992, 37,000 gallons of sludge were removed from the digester and applied to 15 acres at both Sites 193 and 194 (SVDA 1991 and 1992). In 1994, 44,000 gallons of sludge were applied to 15 acres at both Sites 193 and 194. In accordance with the IEPA permit for onsite land application of sludge, the sludge samples were analyzed by National Environmental Testing Laboratory in Rockford, Illinois. The analytical results were reviewed by IEPA for approval prior to the land application. Site 193 has not been used for sludge application since 1996 (SAIC 1999). Based on the LRA land use plan, Site 193 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.

### West Road Sludge Application Area (Site 193)

In 2001, SAIC conducted soil sampling at Site 193 to delineate the horizontal and vertical extent of contamination that may have resulted from sludge application. Samples were analyzed for SVOCs, PCBs, metals, pesticides, and herbicides. Two site-related metals and 21 organic constituents were detected in the soils; however, none of these constituents was detected at concentrations exceeding the human health screening criteria (SAIC 2009).

Concentrations of the metals nickel and selenium, the pesticide beta-BHC, and the herbicide 2-methyl-4-chlorophenoxyacetic acid (MCPA) exceeded the migration to groundwater screening criteria; the concentrations of these constituents are not likely impacting the groundwater underlying Site 193. The concentrations of nickel are below the SVDA background maximum and regional maximum background concentrations, which indicates the concentrations detected at Site 193 may be naturally occurring. Selenium was detected in only 1 of 12 surface soil samples and not in any shallow subsurface soil samples; therefore, selenium is not migrating into the groundwater. Although MCPA is a mobile compound and, when present, could migrate to the groundwater, the detected concentrations of MCPA are likely a result of sample analysis limitations rather than the actual presence of the herbicide. MCPA is rapidly degraded by soil microorganisms and has a low persistence in the environment. The sludge was last applied at Site 193 in 1996. Any MCPA that may have been present in the soil from the sludge application is likely degraded. Although beta-BHC and MCPA were detected in the soil at Site 193, these constituents were not detected in the groundwater samples collected from the site (SAIC 2009).

### 2.6.14 Classification Yard Sludge Application Area (Site 194)

The Classification Yard Sludge Application Area (Site 194) is north of the XM railroad yard between Robinson Spur and Whitton Gate (see Figure 2). Site 194 has little historical information available but was used over the years to grow corn for deer feed, was likely used seasonally for cattle grazing until 1999, and was used as a land application area of sanitary sewer sludge generated from Site 35 between 1988 and 1996 (excluding 1995).
In both 1991 and 1992, 37,000 gallons of sludge were removed from the digester and applied to 15 acres at both Sites 193 and 194 (SVDA 1991 and 1992). In 1994, 44,000 gallons of sludge were applied to 15 acres at both Sites 193 and 194. In accordance with the IEPA permit for onsite land application of sludge, the sludge samples were analyzed by National Environmental Testing Laboratory in Rockford, Illinois. The analytical results were reviewed by IEPA for approval prior to the land application. Site 194 has not been used since 1996 (SAIC 1999). Based on the LRA land use plan, Site 194 will be transferred to USFWS to be managed as a refuge for wildlife protection and public use.

Classification Yard Sludge Application Area
(Site 194)

In 2001, SAIC conducted soil sampling at Site 194 to delineate the horizontal and vertical extent of contamination that may have resulted from sludge application. Soil samples were collected from various depths at 18 locations and analyzed for pesticides, herbicides, and metals. Two groundwater samples were collected and analyzed for SVOCs, pesticides, and herbicides. Two site-related metals and 20 organic constituents were detected in the soils; however, none of these constituents was detected at concentrations exceeding the human health screening criteria (SAIC 2009).

Concentrations of the metals nickel and selenium, the pesticides beta-BHC and alpha-BHC, and the herbicide MCPA exceeded the migration to groundwater screening criteria; however, the concentrations of these constituents are not likely impacting the groundwater underlying Site 194. The concentrations of nickel are below the SVDA background maximum and regional maximum background concentrations, which indicates the concentrations detected at Site 194 may be naturally occurring. Selenium was not detected above the regional background concentration below 5 feet BLS. Because the depth to groundwater ranges from 12 to 21 feet at Site 194, elevated concentrations of selenium have not likely impacted the groundwater. The pesticides beta-BHC and alpha-BHC and the herbicide MCPA were not detected in the groundwater samples (SAIC 2009).

Four pesticides (4,4’-DDD, endosulfan sulfate, endrin, and endrin ketone) were detected in one of the two Hydropunch® groundwater samples; however, concentrations did not exceed the human health screening criteria (SAIC 2009).

2.7 HISTORICAL AND POTENTIAL FUTURE LAND USES

SVDA was a 13,062-acre installation that closed in March 2000. Former land use on the Upper Post at SVDA consisted predominantly of ammunition storage, explosives washout facilities, burn and waste burial sites, bomb disassembly facilities, melt and pour facilities, and test ranges. Bottomland facilities on the Upper Post consisted of detonation and burning ground site areas. The current and future Upper Post recreational land uses include hunting, fishing, and boating. Designated preservation areas,
such as Bellevue State Park, the Upper Mississippi River Wildlife and Fish Refuge, and the Green Island State Wildlife Management Area, are near the Installation. Agricultural land use adjacent to the Installation consists of livestock (i.e., beef cattle) and crop farming (i.e., corn, soybeans, wheat, hay, and oats).

The Local Redevelopment Plan (ERA 1997) and Reuse Plan Map (MSA 1999, revised by SAIC 2011a) have identified a variety of reuse alternatives for the land and facilities at SVDA. The Upper Post Area of SVDA, which includes 12 of the 14 NFA sites, is projected to be primarily recreational with properties administered by USFWS and IDNR. Two of the 14 NFA sites (i.e., Sites 46 and 122) are designated for industrial/commercial redevelopment.

2.8 SUMMARY OF SITE RISKS

The 14 sites presented in this ROD were grouped into the following 3 broad categories for the determination of NFA:

- Sites without data screening or risk assessment
- Sites with human health data screening and ecological risk assessment
- Sites with human health and ecological risk assessment.

2.8.1 Sites Without Data Screening or Risk Assessment

Sites 89 and 180 did not require data screening or a risk assessment to be conducted. Human health risks for these sites are acceptable based on site response actions to residential standards. Soil response actions at Sites 89 and 180 removed site-related constituents associated with unacceptable risk. At Site 89, post-response action soil concentrations were below the objectives for unrestricted use and post-response action groundwater concentrations were either nondetect or below regulatory screening criteria for unrestricted use. At Site 180, concentrations of constituents remaining in the soil following the response action meet the residential TACO cleanup standards. Ecological risk for Sites 89 and 180 also were acceptable based on the site response actions; no complete exposure pathways remain at Site 89 and all the asphalt was removed from Site 180 (see Appendix B for further details).

2.8.2 Data Screening

Data screening was completed for 12 of the 14 sites (i.e., Sites 6, 10, 11, 12, 46, 71, 82OC, 82SS, 101, 122, 193, and 194) to compare analytical data to background and regulatory screening values. The results of the data screen were used to: 1) evaluate the nature and extent of site-related chemical constituents, 2) conduct a screening-level human health risk assessment and/or select chemicals of potential concern (COPCs) to be evaluated in a baseline human health risk assessment, and 3) select ecological chemicals of potential concern (ecoCOPCs) for the screening-level ecological risk assessment (SERA). The data screen has four components, which are described below:

- **Background Comparison**—Comparison of site and background data to distinguish naturally occurring metal constituents from metals that are present as a result of activities conducted at the site; all detected nonmetal constituents are considered site related.

- **Human Health Screen**—Comparison of site concentrations to USEPA Region 9 PRGs (USEPA 2000, 2002, 2004) and IEPA TACO Tier I remediation objectives (IEPA 2001, 2002) designed to protect human health. In addition, an additivity screen is conducted to account for exposure to multiple constituents. The screening values are conservative because they are based on a hypothetical residential land use scenario (typically the scenario with the greatest exposure and therefore the highest risks).
• **Ecological Screen**—Assessment of habitat; determination of the presence of persistent, bioaccumulative, and toxic (PBT) chemicals; and comparison of site concentrations to screening values designed to protect the environment.

• **Migration to Groundwater Screen**—Comparison of site soil concentrations to USEPA soil screening levels (SSLs) (USEPA 2000, 2002, 2004) or TACO Tier I remediation objectives (IEPA 2001, 2002) designed to assess the potential for migration of soil constituents to groundwater.

### 2.8.3 Summary of Human Health Screening and Risk Assessment

Baseline risks are risks to human or ecological receptors in the absence of remediation or institutional controls at a site. Baseline risk assessments were conducted for Sites 46, 82OC, and, 122 to estimate the human health risk that could result from potential exposure to chemicals detected at the site if no remedial actions were taken. Based on the LRA land use plan, Sites 46 and 122 will continue to be used for industrial/commercial purposes and no residential land use is expected. Site 82OC will be transferred to USFWS to be managed as a refuge for wildlife protection and public use. The human health risk assessments evaluated the potential for adverse health effects for groups of people likely to be present under an industrial/commercial scenario (i.e., industrial and construction workers) at Sites 46 and 122 and recreational scenario (i.e., recreational, industrial, and construction workers) at Site 82OC. In addition, the human health risk assessments evaluated the potential for adverse health effects for groups of people present under hypothetical or unlikely land use scenarios (i.e., residential). Residential land use is considered a conservative land use because use is unrestricted and is typically the scenario with the highest risks. The evaluated exposure pathways included ingestion and dermal contact with soil and inhalation of contaminated dust and vapors in the air. Additional pathways for residents included ingestion of produce grown in soil, drinking groundwater, and contact with groundwater while bathing/showering.

Risks are expressed as the potential for developing cancer and adverse noncancer health effects. USEPA has established target risk levels for use in determining the need for site remediation. For noncancer effects, USEPA sets the target at a hazard index (HI) of 1; if a hazard quotient (HQ) or the HI is greater than 1, the potential for adverse health effects is of concern. For cancer effects, the target risk range has been set at $1 \times 10^{-6}$ to $1 \times 10^{-4}$. Cancer risks less than $1 \times 10^{-6}$ are not considered a concern. Lead exposures are assumed to pose an unacceptable risk if more than 5 percent of the exposed children or fetuses (of adult female workers) experience a blood lead level in excess of the 10 μg/dL blood lead level of concern (USEPA 1994 and 1998).

Data screening or risk assessments for Sites 6, 10, 11, 12, 46, 71, 82OC, 82SS, 101, 122, 193, and 194 indicate that detected environmental constituent concentrations were below regulatory screening criteria or that estimated human health risks were primarily at or below the noncancer target HI of 1 and lower bound of the target cancer risk range (i.e., $1 \times 10^{-6}$). At three sites (Sites 46, 82OC, and 122), cancer risks fell within the target risk range and the following site-specific evidence supported the NFA recommendation:

- At Site 46, soil risks were driven by arsenic concentrations that were below the state background level (11.3 mg/kg) at all sampled locations.
- At Site 82OC, the cancer risk for the hypothetical residential scenario is within the target risk range due to the presence of PAHs in soil. The maximum detected concentrations of PAHs are below the TACO Tier I remediation objectives for residential land use with the exception of benzo(a)pyrene, which only slightly exceeds the objective. In addition, the PAH risk estimates are conservative because the maximum detected concentration was used to estimate the risk.
• At Site 122, risks for hypothetical residents are within the target cancer risk range due to groundwater risks driven by the presence of TNT breakdown products and PAHs, and produce risks driven by the presence of Aroclor 1260 in the soil. A re-examination of the human health assessment resulted in an NFA recommendation for the site because groundwater risks within the target range were calculated using out-of-date toxicity values (currently recommended toxicity values would result in risks below regulatory targets) and soil and groundwater concentrations are below IEPA screening values for residential use.

A human health risk assessment summary is presented in Appendix A.

2.8.4 Summary of Ecological Risk Assessment

A SERA was conducted for Sites 6, 10, 11, 12, 46, 71, 82OC, 82SS, 101, 122, 193, and 194 to estimate the potential adverse effects to ecological receptors that could result from exposure to chemicals detected at the sites if no remedial action were taken. The first level of evaluation in the SERA included an analysis of habitat to determine if the quality and quantity were sufficient to support wildlife (referred to as a habitat screen), determination of the presence of PBT chemicals (referred to as a PBT chemical screen), and a comparison of maximum site concentrations to screening values protective of the environment (i.e., identification of ecoCOPCs) (referred to as an ecotoxicity screen). When ecological habitat and PBT chemicals and/or ecoCOPCs were present, further evaluation was conducted using food-chain modeling. Representative wildlife receptors evaluated at each site included shrews, robins, hawks, and eagles. Plants also were evaluated at those sites designated for transfer to USFWS. Burrowing animals were evaluated at a few sites where inhalation of VOCs was a potential pathway. For each wildlife receptor, an HQ was calculated for ecoCOPCs. An HQ of less than 1 indicates that adverse effects for wildlife receptors would not be expected. Further evaluation of HQs above 1 occurred in the SERA to place these values into proper context (i.e., should further evaluation occur in a baseline ecological risk assessment [BERA] or is NFA appropriate). Sites where ecological HQs were greater than 1 were often resolved under more realistic exposure point assumptions. However, for some of these sites, other information such as frequency of detection was examined. Table B-1 in Appendix B provides the ecological rationale for the NFA determinations at the various sites. Ecological risks for Sites 6, 10, 11, 12, 46, 71, 82OC, 82SS, 101, 122, 193, and 194 were acceptable based on screening against regulatory ecological criteria or the results of the SERA.

2.9 DESCRIPTION OF THE NO ACTION ALTERNATIVE

This alternative does not involve the implementation of further remedial actions or land use controls to protect human health and the environment at the 14 sites.

2.10 STATUTORY DETERMINATIONS

SVDA was placed on the NPL in 1989. As a result of the NPL listing, the Army entered a three-party FFA with USEPA Region 5 and IEPA in September 1989 (DA 1989). Environmental restoration activities under the FFA (Sections I, III, and XIII) must comply with CERCLA and RCRA requirements and procedures in accordance with the FFA. In 1995, SVDA was selected for closure under the Base Closure Act, as amended, and SVDA officially closed in March 2000. Currently, the only onsite Army activities are associated with the assessment and remediation of site-related contamination as required under CERCLA and the BRAC Act and the preparation for transferring ownership of land parcels to other governmental entities or the LRA. The selected remedy (NFA) for the 14 sites is based on CERCLA-mandated SIs, laboratory analyses, review of current and future conditions and land reuse, removal activities, and, where necessary, assessment of the human health and ecological risks. Investigations, cleanup actions, and assessments at these sites are complete.
Based on these findings, USEPA and the Army believe that these sites may be used without restrictions and that NFA is needed to protect human health and the environment. In light of our decision not to select a remedial action, the requirements of CERCLA Section 121, including the provisions of CERCLA Section 121(d)(2) concerning ARARs, are not triggered; that section applies only in those cases where a remedial action is selected. Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining onsite above levels that do not allow for unlimited use and unrestricted exposure, a 5-year review will not be required for these 14 sites.

2.11 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the 14 sites at SVDA was released for public comment in July 2011. The Proposed Plan identified the No Action Alternative as the Preferred Alternative. The written and verbal comments submitted during the comment period have been reviewed. It was determined that no significant changes to the NFA alternative, as originally identified in the Proposed Plan, were necessary or appropriate.
3. RESPONSIVENESS SUMMARY

The responsiveness summary provides an overview of the general comments received during the public comment period and provides additional information to support the conclusions of the ROD.

3.1 BACKGROUND ON COMMUNITY INVOLVEMENT

Community involvement with the remedy selection process for the 14 sites comprising the ROD started with the invitation to attend a public meeting held on August 10, 2011. Although no members of the community attended the public meeting; written comments were submitted to SVDA during the public comment period. Community involvement activities conducted for the 14 sites have included the following:

- The Army placed the Final CCR for Site 180 Asphalt Debris Removal in the Information Repository (IR) (May 2001)
- The Army placed the Final MWH CCR for Pesticide Disposal Area (Site 89) Removal Action in the IR (June 2004)
- The Army placed the Final CCR, Segregation and Disposal of Small Arms Debris, Asbestos Removal, Replacement of Loading Dock, Imhoff Tank Demolition in the IR (December 2006)
- The Army placed the Final RI Report for the CL and CN Plant Areas and the Remaining LRA Parcel in the IR (April 2007)
- The Army placed the Final RI Report for Sites 11, 32, and 82SS in the IR (May 2007)
- The Army placed the Final Revision 1 RI Report for Sites 46, 76CS, 84, and 184 in the IR (December 2007)
- The Army placed the Final RI Report for the Upper Post in the IR (April 2009)
- The Army prepared and distributed the Proposed Plan for NFA at 14 Sites and public meeting notices (July 2011)
- The Army issued multiple public notices in five area newspapers notifying the citizens of the public meeting and public comment period (July and August 2011)
- The Army held a public meeting at SVDA to describe the Proposed Plan and respond to citizen questions.

3.2 SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

The public comment period for the Proposed Plan for NFA at 14 Sites was between July 13 and August 12, 2011. Comments received during this period are summarized below. Because there were no attendees from the public, there were no comments or questions received during the August 10, 2011 public meeting. Comments were provided in writing by one commenter. A copy of the original comment letter received is provided in Appendix C. The following sections present and address stakeholder comments, technical, and legal concerns. The comments received were consolidated and categorized into the following sections by topic.
3.2.1 Nature and Extent of Contamination

In written comments received from one participant, the following questions were posed with respect to the nature and extent of contamination:

- How can it be determined that mercury was below background concentrations?

  Army Response: Concentrations of metals compounds occur naturally (background) in all geologic media. Site-specific background concentrations have been determined for SVDA by sampling areas that are unaffected by historical site activities. The distinction between naturally occurring inorganic metals and site-related metals is made using statistical methodology established through USEPA guidance or using regional values established by IEPA. The concentration of mercury detected in the surface soil at Site 6 was compared to the accepted background distribution of concentrations for SVDA. Based on this comparison, the concentrations of mercury at Site 6 are statistically consistent with the background distribution and are naturally occurring or “below background.”

- What happened to contaminants at Site 12 that were found in 1982, but not found in the sediment and surface water by Dames & Moore in 1994?

  Army Response: Surface water and sediment associated with the Mississippi Slough area adjacent to Site 12 occur in a highly transitory environment; therefore, differences in detected constituents are expected. Further, laboratory analytical protocols and quality assurance methods were considerably improved between 1982 and 1994 such that laboratory or sampling-related constituents were more readily identified.

- When the Hydropunch® was used at Site 101 to evaluate groundwater, chemicals that were not site-related in soil were detected in the groundwater. If the chemicals were found there, aren’t the chemicals site-related? Perhaps another tool could be used.

  Army Response: Concentrations of inorganic compounds occur naturally (background) in all geologic media. Chemicals detected in the soil at Site 101 were determined to be naturally occurring at the site when compared to the distribution of SVDA background concentrations. The source of elevated inorganic constituents in the groundwater is attributed to sample turbidity (cloudiness caused by soil particles) commonly associated with groundwater sampling using the Hydropunch® technique.

- The detection of B2EHP at Site 89 should be examined further to ensure the laboratory results are accurate.

  Army Response: Laboratory analysis for B2EHP used Gas Chromatography-Mass Spectroscopy (GC-MS). This analytical technique uses GC to separate the compounds of interest and the MS to positively identify compounds based on the mass fragment fingerprint. GC-MS provides one of the most accurate forms of compound identification because it identifies compounds based on the retention time of the compound and the unique fingerprint of the mass fragments of a compound. While the identification of B2EHP is very accurate, the potential for B2EHP cross-contamination is high as B2EHP is a common laboratory or sampling-related contaminant and is also a component of PVC well casings. The February 2004 sampling event did not confirm the presence of B2EHP identified in the initial analysis, indicating that the B2EHP detection in the initial analysis was potentially attributable to a non-environmental source.
3.2.2 Remedial Alternatives

In written comments, a request for land use controls and/or additional cleanup was made for four sites (Sites 10, 11, 46, and 122) to address the following concerns:

- **Site 10**—Land use restrictions should be placed on the deed before transfer to address the exceedance the IEPA GQS and TACO screening criteria for lead in groundwater.

  **Army Response:** Lead was detected in Site 10 monitoring well 301002 at a concentration (10.2 μg/L) exceeding the TACO screening criteria and the IEPA Class I GQS of 7.5 μg/L, but below the USEPA action level of 15 μg/L. Examination of the groundwater data for Site 10 show that lead was detected at 2 μg/L during the second round of sampling from the same well. Lead concentrations at this site generally fall within the range of concentrations detected in background monitoring wells (0.15 to 10.1 μg/L). In addition, the monitoring well logs for the development and sampling from the well showed turbidity above 700 nephelometric turbidity units (NTUs) during development, approximately 200 NTUs when the first sample was collected, and approximately 100 NTUs when the second sample was collected. These values are all well above the level of 5 NTUs desired for groundwater samples and could result in metal concentrations that are biased high. Based on the decrease of well concentrations below the IEPA and USEPA standards, comparability to background concentrations, and high turbidity readings at the time of sampling, lead concentrations in the groundwater at Site 10 do not pose a human health concern and land use restrictions are not warranted.

- **Site 11**—Land use controls should be implemented in the event the RDX found in the surface soil is found in the subsurface soil at a later date.

  **Army Response:** RDX was detected in 1 of 14 soil samples at a concentration (487 µg/kg) that was well below the conservative human health screening criteria for residential use (4,422 µg/kg). If RDX were to migrate to the subsurface soil, it would not be present in the subsurface soil at a concentration higher than what was found in the surface soil. Concentrations at this level are not a human health concern because they are well below the residential screening level. For these reasons, land use controls to prevent residential development of the site are not warranted to address the presence of RDX in the soil.

- **Site 46**—Residual manganese ore should be removed from the pits prior to transfer of the property.

  **Army Response:** Although the bulk of the manganese ore piles were removed, small quantities of residual manganese ore remain in one of the pits and on the ground surface adjacent to the pits. Based on the LRA land use plan, the site will be used for industrial/commercial purposes. Estimated non-cancer risks are below the target hazard index (HI). Cancer risks are within the target risk range for the industrial worker and resident and are due solely to arsenic concentrations. However, detected arsenic concentrations at the site are below Illinois regional background concentrations established in the TACO guidance. Therefore, human health risks are acceptable at this site. Removal of the residual ore is not required because the sampling results and risk assessments concluded that risks to humans and the environment are acceptable for the proposed industrial/commercial land use.

- **Site 122**—Land use controls should be implemented to prevent residential use of this property.

  **Army Response:** Based on the concentrations of constituents present in soil and groundwater at Site 122 and the results of the human health risk assessment, land use controls to prevent residential development of this property are not necessary to be protective of human health. In
the human health risk assessment, residential risks meet regulatory targets and are therefore acceptable.

3.2.3 Public Participation Process

In written comments, one comment was provided on the rescheduling of the public meeting and not knowing the rescheduled date.

**Army Response:** The public meeting was originally scheduled for July 28, 2011, as presented in the Final Proposed Plan and published in local newspapers. Flooding conditions prevented access to SVDA and the public meeting was rescheduled for August 10, 2011. Public notices of the rescheduled date were published in 5 local newspapers prior to the meeting date.

3.2.4 Environmental Concerns Regarding Potential Hot Spot Contaminants

In written comments received, concern was expressed for the presence of specific constituents in soil at four sites (thallium at Site 46, lead and thallium at Site 71, antimony at Site 82SS, and MCPA and 2,4-D at Site 193). Further action recommended in the comments for these sites included additional investigation and potential hot spot removals.

**Army Response:** Human health risks at Sites 71, 82SS, and 193, were evaluated by comparing site concentrations to conservative risk-based screening values protective of residential exposures. Because site concentrations did not exceed the human health screening criteria, no further investigation or land use controls are required at these sites to be protective of human health.

At Site 46, a baseline human health risk assessment was conducted and resulted in acceptable risks for all exposures. Ecological risks at all four sites were evaluated through food-chain modeling using conservative exposure and toxicity assumptions. Although hazard quotients (HQs) were present at the sites for one or more receptors above 1, the magnitude of the HQs and the conservative assumptions in the ecological risk assessment were considered in determining that no further action in the form of a baseline ecological risk assessment (a more realistic ecological risk evaluation) or feasibility study was required at the site to protect populations of wildlife. As a result of following the CERCLA process for these sites, it was determined that no further action was required.

3.2.5 Environmental Concerns Regarding Potential Data Gaps Associated with Groundwater

In written comments received, the commenter was concerned the nickel, selenium, beta-BHC, alpha-BHC, and MCPA, detected in soil at Sites 193 and/or 194, could be impacting underlying groundwater at the sites. The commenter recommended further investigation and studies to confirm concentrations in soil have not impacted groundwater at the sites. In addition, the Commenter questioned if a point source was present for the four pesticides detected in the Hydropunch samples at Site 194.

**Army Response:** Concentrations of nickel and selenium exceeded the migration to groundwater screening criteria at Sites 193 and 194; nickel concentrations are below the SVDA background maximum at each site and selenium was detected in only 1 of 12 surface soil samples and was not detected in the shallow subsurface soil at Site 193. Selenium concentrations at Site 194 also were reported in the laboratory method blank samples; therefore, nickel and selenium concentrations do not pose a site-related threat to groundwater. Concentrations of alpha-BHC, beta-BHC, and MCPA also exceeded the migration to groundwater screening criteria. BHC and MCPA concentrations in the shallow soil at Site 193 were below the human health screening criteria; these compounds were not detected in groundwater underlying Site 194.
Although groundwater samples were not collected from Site 193, groundwater sampling at Site 194 did confirm the beta-BHC, alpha-BHC, and MCPA were not present at detectable concentrations in groundwater. The pesticides 4,4’-DDD, endosulfan sulfate, endrin, and endrin ketone were detected in the Site 194 groundwater at concentrations below the human health screening criteria. The groundwater sampling confirmed that concentrations of pesticides were not a concern for human health (i.e., the detected concentrations were below applicable human health screening criteria for residential use of the site).

### 3.2.6 Ecological Risk Assessment Concerns

In written comments received by one participant, concern was expressed for the potential risks to ecological receptors. Two particular issues the commenter had noted include 1) the use of only four possible ecological receptors (shrews, robins, hawks, and eagles) for evaluation of potential contamination at all sites in food-chain modeling, and 2) the timeframe the size of the pond at Site 180 was measured may underestimate the ecological risks associated with the site.

**Army Responses:** During the RI/FS, ecological risk assessments were completed using the most recent USEPA guidance, current toxicological data, and site-specific considerations, including the selection of representative species. Because it is not possible to study all of the species present at SVDA, a “representative species” approach was developed in which animals were placed in functional groups (animals with similar biology and feeding preferences) based on the species observed at SVDA. The shrews, robins, hawks, and eagle species are representative of each functional group and were the species at SVDA selected for detailed evaluation at sites where threatened and endangered (T&E) species are not known to be present. The results of the risk assessment for the individual representative species (shrews, robins, hawks, and eagles) are then assumed to apply to all species that share similar biology and feeding preferences. Because the ecological risks for the sites in this Proposed Plan are protective of shrews, robins, hawks, and eagles, the risks are considered protective of all similar wildlife at the sites. Additional details on the selection of the representative species at SVDA and the specific sites can be found in the following document available in the Administrative Record archive:


The size of the pond varies with season and rainfall amounts, but is typically approximately 15 feet in diameter during dry weather (MWH 2001). The pond at Site 180 was described as approximately 45 by 85 feet in the Proposed Plan for No Further Action at 14 Sites (SAIC 2011b). The limit of the asphalt debris, which was removed in November 2000, did not extend to the pond (MWH 2001).
THIS PAGE WAS INTENTIONALLY LEFT BLANK
4. REFERENCES


SAIC. 2011a. Reuse Plan Map as revised by John Clarke (SVDA).


APPENDIX A

HUMAN HEALTH RISK ASSESSMENT SUMMARY
Table A-1. Summary of Baseline Human Health Risk Assessment Results

<table>
<thead>
<tr>
<th>Site and Medium</th>
<th>Cancer Risk</th>
<th>Noncancer HI</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Industrial Worker</td>
<td>Construction Worker</td>
<td>Recreational Integrated</td>
<td>Residential Integrated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Subsurface Soil and Plants</td>
<td>3E-06</td>
<td>3E-07</td>
<td>NA</td>
<td>1E-04</td>
<td>2E-02</td>
<td>2E-02</td>
</tr>
<tr>
<td>Surface Soil and Plants</td>
<td>7E-07</td>
<td>5E-08</td>
<td>4E-07</td>
<td>4E-05</td>
<td>5E-03</td>
<td>4E-04</td>
</tr>
<tr>
<td>Subsurface Soil and Plants</td>
<td>3E-10</td>
<td>2E-11</td>
<td>NA</td>
<td>2E-08</td>
<td>3E-06</td>
<td>2E-06</td>
</tr>
<tr>
<td>Surface Soil, Groundwater, and Plants</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>2E-05</td>
<td>4E-03</td>
<td>8E-04</td>
</tr>
<tr>
<td>Subsurface Soil, Groundwater, and Plants</td>
<td>1E-08</td>
<td>2E-09</td>
<td>NA</td>
<td>2E-05</td>
<td>1E-06</td>
<td>2E-06</td>
</tr>
</tbody>
</table>

NA - pathway not evaluated
An integrated receptor combines both child and adult exposures
APPENDIX B

ECOLOGICAL RISK SUMMARY
### Appendix B. Ecological Risk Summary

<table>
<thead>
<tr>
<th>Site</th>
<th>Area (acres)</th>
<th>Range of Hazard Quotients</th>
<th>Rationale for Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 6 - UDMH Burn Area</td>
<td>1.1</td>
<td>None None None None</td>
<td>No ecoCOPCs were identified. All HQs for the only PBT chemical, mercury, were below 1.</td>
</tr>
<tr>
<td>Site 10 – White Phosphorus Burn Area</td>
<td>0.7</td>
<td>None None None None</td>
<td>PCP was identified as the only ecoCOPC in the shallow subsurface soil. All HQs for PCP were below 1.</td>
</tr>
<tr>
<td>Site 11 – TNT and Ammonium Nitrate Burn Area</td>
<td>1.2</td>
<td>None None None None</td>
<td>None of the ecoCOPCs at Site 11 with dietary TRVs had HQs above 1. Two ecoCOPCs (chloroform and phenol) without TRVs were infrequently detected (1 of 14 for chloroform) or unlikely to be a risk driver (3 of 12 for phenol). Although the VOCs chlorobenzene and toluene were detected in the shallow subsurface soils, the subsurface inhalation pathway is not an issue at the site due to limited frequency of detection (chlorobenzene) and a predicted burrow concentration below the inhalation ESV (toluene).</td>
</tr>
<tr>
<td>Site 12 – Explosives Contaminated Scrap Burn Area</td>
<td>3.9</td>
<td>NA NA NA NA</td>
<td>The Site 12 SERA focused on groundwater because historical sampling of soil, surface water, and sediment indicated these media were not contaminated by Site 12. Only one anion (nitrate) was detected in the groundwater at Site 12. Ecological receptors are not likely to be exposed to COPCs associated with Site 12 groundwater from surface water runoff or groundwater discharges to the Mississippi River slough area. Complete ecological exposure pathways are not present at Site 12 for any media (soil, surface water, sediment, or groundwater). Ecological receptors are not likely to be exposed to COPCs associated with Site 12 from groundwater discharges to the Mississippi River slough area. A SERA was not conducted for this site.</td>
</tr>
<tr>
<td>Site 46 – Manganese Ore Storage Pits</td>
<td>12.9</td>
<td>Yes None None None</td>
<td>Thallium was the only HQ above 1 for shrews at Site 46 (HQ of 7.8). Although the thallium HQ for shrews remained above 1 (6.8) after making adjustments to the diet, thallium was detected infrequently (2 of 20 samples). Wildlife exposure to thallium would be limited spatially. HQs from the remaining ecoCOPCs with TRVs and the PBT chemical mercury were below 1. No avian and mammalian TRVs were available for sodium, bromide, and nitrite; however, these ecoCOPCs are not likely to be a concern for wildlife as they are essential nutrients (sodium), were detected in samples collected from under the concrete floor of the pits (bromide), or were detected infrequently (nitrite).</td>
</tr>
<tr>
<td>Site 71 – Function Test Area Burn Pits</td>
<td>6.1</td>
<td>Yes Yes None None</td>
<td>One PBT chemical (mercury) as well as five inorganic and two organic ecoCOPCs were identified for evaluation. HQs ranged from 1.1 to 19.3. However, five of the seven HQs were slightly above 1 (below 3 with the conservative assumptions of the SERA) and are not likely to have an adverse effect on terrestrial plants or wildlife. The lead HQ for robins (19.3) and the thallium HQ for shrews (16.9) were the only HQs above 10. Lead was detected above the ESV (85 mg/kg) in 1 of 13 surface soil samples from 11 locations at a maximum concentration of 205 mg/kg. A duplicate sample collected from the same location (26.8 mg/kg) was below the ESV. Thallium was detected above the ESV (1.0 mg/kg) in 1 of 13 surface soil samples from 11 locations at a maximum concentration of 1.2 mg/kg. A duplicate sample collected from the same location (0.88 mg/kg) was below the ESV. Wildlife exposures to elevated concentrations of lead and thallium appear to be limited spatially.</td>
</tr>
</tbody>
</table>
### Appendix B. Ecological Risk Summary

<table>
<thead>
<tr>
<th>Site</th>
<th>Area (acres)</th>
<th>Range of Hazard Quotients</th>
<th>Rationale for Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 82OC – I-Gate Cafeteria Outdoor Oil Changing Area</td>
<td>0.9</td>
<td>None</td>
<td>The ecological risk analysis identified two inorganics (calcium and magnesium) as ecoCOPCs. As these ecoCOPCs are essential nutrients and pose minimal risk to terrestrial plants and wildlife, no further risk evaluation was conducted.</td>
</tr>
</tbody>
</table>
| Site 82SS – I-Gate Cafeteria Septic System          | 1.4          | None                       | Although HQs for antimony were above 1 for plants and shrews, antimony was detected infrequently (in only one of eight samples from seven locations in the shallow subsurface soil). Wildlife exposure to this ecoCOPC would be limited spatially. In addition, uncertainty associated with ecoCOPCs without TRVs is limited. Although chloromethane has no available TRVs and TCE has no available avian and terrestrial plant TRVs, these ecoCOPCs were detected infrequently (1 of 10 surface soil samples and 1 of 8 shallow subsurface samples, respectively).  
No subsurface samples were collected at a depth interval in which burrows are most likely to occur (0.5 to 2 feet BLS). However, as noted above, the VOC TCE was infrequently detected in shallow subsurface soils (one of eight samples at 8 feet BLS). As a result, the subsurface inhalation pathway is not expected to be an issue at the site. |
| Site 101 – K Road Trench Site                   | 1.0          | None                       | No PBT chemicals or ecoCOPCs were identified. No VOCs were detected from the sample collected from the depth interval at which burrows are most likely to occur (0.5 to 2 feet BLS). The VOC toluene was infrequently detected in deeper shallow subsurface soils (one of five samples at 12 feet BLS). As a result, the subsurface inhalation pathway is not expected to be an issue at this site.                                                                                                                 |
| Site 122 – CL Plant Northern Septic System       | 2.0          | None                       | The PBT chemical Aroclor 1260 was identified in the shallow subsurface soil. Selenium was the only ecoCOPC identified in the surface soil. All HQs for the PBT chemical and ecoCOPC were below 1. Although the VOC acetone was detected in the shallow subsurface soils, the subsurface inhalation pathway is not an issue at the site due to a predicted burrow concentration below the inhalation ESV. As a result, the subsurface inhalation pathway is not expected to be an issue at this site.                                                                 |
| Site 193 – West Road Sludge Application Area     | 71.1         | Yes                        | 2,4-D and MCPA present a potential risk to ecological receptors at Site 193 because wildlife HQs were above 1. HQs between 1 and 38 were estimated for both ecoCOPCs. After making adjustments for the conservative nature of the SERA (i.e., arithmetic mean concentrations instead of the maximum detected concentrations as the exposure point concentration), HQs for these constituents were below 1 except for robins (MCPA). Because of the analytical challenge posed by MCPA and the rapid degradation of the compound under conditions similar to those at Site 193, the actual presence of MCPA is highly uncertain. In addition, many of the ecoCOPCs without TRVs were detected infrequently and terrestrial plant or wildlife exposure to these ecoCOPCs would be limited. |
### Appendix B. Ecological Risk Summary

<table>
<thead>
<tr>
<th>Site</th>
<th>Area (acres)</th>
<th>Range of Hazard Quotients</th>
<th>Rationale for Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 194 – Classification</td>
<td>101.7</td>
<td>Yes</td>
<td>2,4-D and MCPA present a</td>
</tr>
<tr>
<td>Yard Sludge</td>
<td></td>
<td>10-100</td>
<td>potential risk to ecological</td>
</tr>
<tr>
<td>Application Area</td>
<td></td>
<td>&gt;100</td>
<td>receptors at Site 194 because</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>wildlife HQs were above</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1. HQs between 1 and 17 were</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>estimated for both ecoCOPCs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>However, the limited</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>frequency of detection for</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MCPA suggests that</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>exposure to ecological</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>receptors would be limited.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Because of the analytical</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>challenge posed by MCPA and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the rapid degradation of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the compound under</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>conditions similar to those</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>at Site 194, the actual</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>presence of MCPA is highly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>uncertain. Given that risks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>from 2,4-D to shrews are</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>overestimated by the use of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the maximum detected</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>concentration as the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>exposure point concentration,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,4-D is not likely to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a concern for shrews. As a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>result, 2,4-D and MCPA are</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>not a concern at Site 194.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>In addition, many of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ecoCOPCs without TRVs were</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>infrequently detected.</td>
</tr>
</tbody>
</table>
July 20, 2011

Mr. John Clarke,  
BRAC Environmental Coordinator  
Savanna Army Depot Activity  
18935 B Street  
Savanna, IL 61074

Dear John,

Without having a public hearing on July 28 and not hearing when there will be one rescheduled, I see the comment period is expiring on Friday, Aug. 12, so I will try to put my comments in this letter.

First, I want to reiterate the position of the RAB board which objects to the Army selling of any land to the LRA, or anyone else, until it has been cleaned up. This is especially our position whenever any Land Use Restrictions must be placed upon the deed for any land that is planned to be transferred.

Second, I want to reiterate my standing objection to the decision of the BRAC team to use only four possible ecological receptors; shrews, robins, hawks and eagles, for possible contamination of the environment in the food-chain modeling. There are many other birds, animals and plants, some of which are endangered, that may be affected by the contaminations depending upon the site location and contamination, and these organisms should definitely be considered as to whether the contamination at that site may affect them. With no studies done as to which species live on a particular site we do not know exactly what they are and whether or not they would be affected by the contamination.

Now that I have that off my chest I will try to discuss the problems of each site as listed in the two books, first the Fourteen Sites:

Site 6—I can’t understand how it could be determined that the mercury is below background concentrations. I can understand how a level could be determined that is greater than background concentrations, but wouldn’t the background make it impossible to have a reading below it?

Site 10—With lead in the groundwater exceeding the IEPA Groundwater Quality Standard and TACO screening criteria, I would definitely object to this site ever being used for residential and would suggest that this Land Use Restriction be placed on the deed before transfer, even if it is to go to the Fish & Wildlife.
Site 11—I am concerned about the cyclo-1,3,5-trimethylenee-2,3,4-trinitramine (RDX) that was detected in the surface soil being found in the subsurface soil at some later date. Thus I again recommend a LUC for this site in case F&W should ever decide to sell it at a later date.

Site 12—I am curious as to what happened to the contaminants that were found in 1982, but not found in the sediment and surface water by Dames and Moore in 1994. I cannot believe they would all just evaporate or be washed out to the river.

Site 46—I believe that the small quantities of residual manganese ore in one of the pits and on the ground surface adjacent to the pits should be removed before anything can be done with this property. Why is the hydro punch used as a measuring tool if the results are unreliable? We need to know for a certainty that the results are unreliable and we should be able to determine how unreliable the results are. Maybe we need a couple of monitoring wells in Site 46 to know exactly what is in the groundwater instead of using the results of a nearby site. I believe the thallium should be studied much more before any attempt is made to transfer this land.

Site 71—Perhaps there should be more studies done to see what is the point source for the one site that had lead and thallium at such high levels. Perhaps we should try to remove that point source before any land is transferred.

Site 82OC—This could probably be transferred.

Site 82SS—Again as with site 71 I believe we should study the one sample which had high quantities of Antimony to determine the point source and get it removed before the land is transferred.

Site 89—I feel that the chemical B2EHP should be examined further and the lab should make sure they are not messing up the results of the test. I would not pay the lab until they did a good test for this chemical.

Site 101—Again the hydro punch was used and this time it even found chemicals that were not “site related”. If they were found there, isn’t that site related? Perhaps another tool could be used.

Site 122—This land must definitely have a Restricted Use clause in the deed that prohibits it from ever being used for residential.

Site 180—When was the size of the pond measured, during the spring or late summer when all ponds have shrunk in size? The size and depth of the pond will definitely affect what species use it. In the deed there should be some restriction on use, just in case the BCT was wrong in their assumption of how big the Long Range Impact Area really is.

Site 193—Who makes the determination that the concentrations of these constituents are not likely impacting the groundwater underlying the site? I would urge that studies be conducted to determine if they are impacting the groundwater and not just take someone’s word. Because this is to be used by wildlife I feel that the high concentration points MCPA and 2,4-D, wherever they are located, should be cleaned up so the wildlife will not be affected before it is turned over to the F&W Service.
Page 3, Letter to Clark, 8-12-2011

Site 194—What is the point source for the 4 pesticides detected by the Hydropunch? Who has determined that the two metals and three pesticides are not likely impacting the groundwater? I would rather know it is not rather than take someone’s word for it.

Book of 33 Sites: I don’t have time to go site by site through this book, but will try to hit a few high lights. Again the RAB has recommended that all sites be cleaned up before transfer so they would not need a LUC.

Site 4—It is such a small area, perhaps we should try to clean it up before it is transferred.

Site 60PS—Who determined that the metals in the groundwater were overestimated and not likely site related? I could make that easy determination here sitting in my home. I would like to have more facts and not just someone’s opinion. With the high HQs for cadmium, lead, manganese, and zinc from 3.3 to 140, I would urge this area be cleaned up before being transferred. It definitely needs a LUC forever if it is not cleaned up.

Site 60SE—I would like to know what kind of adjusting is done for the shrew foraging territory and realistic dietary assumptions can be made.

Site 117—Without children being there how can the statement be made that “Blood levels for the resident child exceed the target blood lead level”? Where are the facts?

Site 76GS—It all depends on what wildlife you are looking at as to whether 0.15 acres would support wildlife receptors. During nesting a pair of robins could use such an area, if it had adequate food. I definitely have them in my yard.

Site 76RH & 81—Carbon monoxide is a normal part of our environment but when it becomes too concentrated it is dangerous to organisms. The same may be true of essential nutrients (sodium) if they become too concentrated.

Site 88DB & 136—Both lead and zinc are accumulative in the tissues of animals. If their levels are high the site should be cleaned up before transfer for the animals don’t care who owns the land. If there is food there they will come in to utilize it. With no study done how can the statement be made that “the site possesses little habitat quality, and possesses no important ecological resources that require protection”? Who is qualified to look at a site to determine if it is quality habitat for all species? There may some important insects that use it as home.

Site 92—If it is such a small size why not clean it up to protect any species that do feed on it?

Site 93—There are many insects that burrow under such an area and may bring those chemicals out into the food chain. It should be cleaned up before it is transferred!

Site 95—These chemicals, lead and zinc, are accumulative and should be cleaned up.

Site 102TF—The chemicals may be limited spatially but they have the potential to bioaccumulate so they should be cleaned up.
Sites 128—130—133—135—183—189—190A—190B and SEW:
They all have the same problem. The sites should be cleaned up before being transferred as all of the sites have chemicals which may bioaccumulate and are above the HQ of 1 for the wildlife.

To get this in the mail today I do not have time to give you a better statement. But I do not appreciate the Army trying to give these areas away to someone without having them clean.

I urge that my comments be considered before any final action is taken.

Yours Truly,
for a Better Environment

Terrence N. Ingram, President