

# FY2011

## TWIN CITIES ARMY AMMUNITION PLANT

### Installation Action Plan

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## Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear cleanup program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, along with the costs and schedules associated with conducting investigations and taking the necessary remedial actions (RA).

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), Twin Cities Army Ammunition Plant (TCAAP), the executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules, and budgets for all major Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

AEDB-R	Army Environmental Database-Restoration
AOC	Area of Concern
ATK	Alliant Techsystems, Inc.
BGRS	Boundary Groundwater Recovery System
BRAC	Base Realignment and Closure
CA	Corrective Action
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CR	Compliance Restoration
CRA	Conestoga-Rovers Associates
cy	Cubic yards
DD	Decision Document
DERP	Defense Environmental Restoration Program
EBS	Environmental Baseline Survey
EE/CA	Engineering Evaluation/Cost Analysis
ESA	Environmental Site Assessment
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
FOST	Finding of Suitability to Transfer
FRA	Final Remedial Action
FS	Feasibility Study
FY	Fiscal Year
GAC	Granular Activated Carbon
GES	Global Environmental Solutions
HRL	Health Risk Limit
IAP	Installation Action Plan
ID	Identification
IR	Installation Restoration
IRA	Interim Remedial Action
IRP	Installation Restoration Program
K	thousand
LTM	Long-Term Management
LUC	Land Use Controls
mm	millimeter
MN	Minnesota
MNA	Monitored Natural Attenuation
MPCA	Minnesota Pollution Control Agency
N/A	Not Applicable
NBCGRS	New Brighton Contaminated Groundwater Recovery System
NFA	No Further Action
NPL	National Priorities List
NRDA	Natural Resource Damage Assessment
OFR	Outdoor Firing Range
OU	Operable Unit
P&T	Pump and Treat
PA	Preliminary Assessment

PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PGRS	Plume Groundwater Recovery System
PP	Proposed Plan
PRC	PRC Environmental Management, Inc.
PTA	Primer/Tracer Area
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RD	Remedial Design
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Investigation
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TCAAP	Twin Cities Army Ammunition Plant
TGRS	TCAAP Groundwater Recovery System (formerly BGRS)
TIES	Total Installation Environmental Support
TRC	Technical Review Committee
TVA	Tennessee Valley Authority
USACHPPM	US Army Center for Health Promotion & Preventive Medicine
USAEC	US Army Environmental Command
USAEHA	United States Army Environmental Hygiene Agency
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
VOC	Volatile Organic Chemical
WW II	World War II

### AEDB-R/AEDB-CC Site ID to Alias List

AEDB-R/AEDB-CC #	Alias
CCTCAAP-32	EBS AOCs
TCAAP-01	SITE A
TCAAP-05	SITE C
TCAAP-06	SITE D
TCAAP-07	SITE E
TCAAP-09	SITE G
TCAAP-10	SITE H
TCAAP-11	SITE 129-3
TCAAP-12	SITE 129-5
TCAAP-13	SITE129-15
TCAAP-15	SITE I
TCAAP-16	SITE K
TCAAP-17	OU1 GW
TCAAP-19	OU2 GW
TCAAP-20	GRENADE RN
TCAAP-21	OFR
TCAAP-23	135 PTA
TCAAP-25	OU2 SW
TCAAP-27	OU3 GW
TCAAP-28	535 PTA
TCAAP-30	BLDG 102
TCAAP-31	Round Lake

# Installation Information

## Installation Locale

Installation Size (Acreage): 2,370.00

City: Arden Hills

County: Ramsey

State: Minnesota

### Other Locale Information

When TCAAP was placed on the National Priorities List (NPL) in 1983, it occupied approximately 2,370 acres in northwest Ramsey County, Minnesota, within the Minneapolis/St. Paul metropolitan area. Since 1983, some of the property has been transferred outside of federal ownership to Ramsey County and the city of Arden Hills. Control of two other portions of the federally-owned property has been re-assigned to the National Guard Bureau and Army Reserves. The remaining acres of TCAAP are in various stages of being transferred. For the purposes of this IAP, references to TCAAP are to the areas retained by the installation since 1983, which is also referred to as operable unit (OU)2.

## Installation Mission

The TCAAP no longer has a production mission, and three parcels of property are in various stages of being transferred.

## Lead Organization

Base Realignment and Closure Division

## Lead Executing Agencies for Installation

Installation

## Regulator Participation

Federal US Environmental Protection Agency (USEPA), Region V

State Minnesota Pollution Control Agency (MPCA)

## National Priorities List (NPL) Status

A score of 59.6 was recorded on 01-SEP-83.

Final RA(C) Completion Date: 201509

Date for NPL Deletion: TBD

## Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status

RAB established 1996

## Installation Program Summaries

### IRP

Primary Contaminants of Concern: Explosives, Metals, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

### CR

Primary Contaminants of Concern: Metals

Affected Media of Concern: Soil

# Cleanup Program Summary

## Installation Historic Activity

The construction of the TCAAP began on Aug. 28, 1941, on a site that was primarily farmland. Field construction was completed in January 1943. The principal function of the facility was the manufacture of small caliber ammunition and related materials and 105 millimeter (mm) and 155mm projectile metal parts, the proof testing of small caliber ammunition, and the storage and handling of strategic and critical raw materials for other government agencies. The majority of ammunition manufacturing occurred during World War II (WWII), the Korean Conflict, and the Southeast Asia Conflict. Most of the many tenants performed nonmilitary, industrial-based activities. The TCAAP preliminary assessment (PA) details activities of the various tenants.

The facility had over 300 structures, including five major production buildings, numerous auxiliary buildings, and supporting utilities. Between the late-1950s and 2004, when operations were terminated, Alliant Techsystems, Inc. (ATK) (formerly part of Honeywell, Inc., which is potentially responsible for the site) manufactured fuses and selected ammunition at the facility. ATK is cooperating with the Army in the cleanup of past contamination.

In 1982 the 25-square-mile New Brighton/Arden Hills Superfund Site (which includes the entire four-square-mile TCAAP facility) was proposed for addition to the NPL. In September 1983 the Superfund Site made the final NPL with a hazard ranking index score of 59.6.

In December 1987 a three-party federal facilities agreement (FFA) between the Army, the USEPA, and the MPCA was implemented. A two-party Defense and State Memorandum of Agreement/Cooperative Agreement between the Army and the MPCA became effective in June 1991. The regulatory driver for TCAAP is the interagency agreement/FFA associated with the NPL site. In September 1992 a record of decision (ROD) was completed for OU3, for OU1 in September 1993, and for OU2 in December 1997. Amendments to the OU1 and OU3 RODs were completed in 2006. Amendments and explanations of significant differences (ESD) to the OU2 ROD were completed in 2007 and 2009.

## Installation Program Cleanup Progress

### IRP

Prior Year Progress: Remedial action operation (RA(O)) is continuing for groundwater sites. The OU2 land use control (LUC) remedial design (RD) document was approved in September 2010, which subsequently allowed for final approval of closeout reports for multiple sites. The feasibility study (FS) for Rice Creek, Sunfish Lake, Marsden Lake, and Pond G was approved in Jan 2011. The quality assurance/project plan for additional sediment testing in Round Lake was also approved in Jan 2011 and fieldwork is in progress.

Future Plan of Action: RA(O) for groundwater sites will continue. Additional soil remediation will be performed for TCAAP-01 and TCAAP-23. An amendment to the OU2 ROD will be signed selecting the remedy for Pond G and No Action for Rice Creek, Sunfish Lake, and Marsden Lake (TCAAP-25). The FS for Round Lake (TCAAP-31) should be approved and an accompanying ROD should be completed.

### CR

Prior Year Progress: TCAAP-32 was added as a compliance restoration (CR) site to address soil contamination discovered during environmental baseline survey work.

Future Plan of Action: The investigation of contaminated soil will be completed and a remedy selected.

## 5-Year / Periodic Review Summary

### 5-Year / Periodic Review Summary

Status	Begin Date	End Date	End FY
Complete	200401	200409	2004
Complete	200901	200909	2009
Complete	199901	199909	1999
Planned	201401	201409	2014

### Last Completed 5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
Grenade Range Action Memo	TCAAP-20
OU1 ROD	TCAAP-17
OU1 ROD Amendment	TCAAP-17
OU2 ROD	TCAAP-01, TCAAP-02, TCAAP-05, TCAAP-06, TCAAP-07, TCAAP-09, TCAAP-10, TCAAP-11, TCAAP-12, TCAAP-13, TCAAP-15, TCAAP-16, TCAAP-19
OU2 ROD Amendment #1	TCAAP-05
OU3 ROD	TCAAP-27
OU3 ROD Amendment	TCAAP-27
Outdoor Firing Range Action Memo	TCAAP-21

**Results** Remedies remain protective and are functioning as intended.

**Actions** Continue with implementation of the remedies at OU1 and OU3. Resolve land use controls at OU 2 (on-site soil and groundwater) so that remedy continues to be protective over the long-term.

**Plans** Sign two ROD amendments and two ESDs for OU 2; prepare, approve, and implement OU 2 Land Use Control Remedial Design.

#### Recommendations and Implementation Plans:

OU1: Continue with implementation of the remedy as intended in the OU1 ROD (as amended).

OU2: Finalize two OU2 ROD amendments and two ESDs by FY09. Prepare, approve, and implement OU2: LUC RD by fiscal year (FY)09 and finalize closeout reports as appropriate. Continue to implement interim LUCs at OU2 sites until the RODs and ESDs are final. When final, LUCs will be implemented in accordance with RODs (as amended). Evaluate vapor intrusion pathway if OU2 land use changes (prior to changing land use). Evaluate whether changes to HRLs require changes to cleanup levels (when a site nears closure). Ongoing evaluation of monitored natural attenuation (MNA) is being conducted to determine if MNA is adequately controlling plume migration and if a remedy modification to MNA can be justified.

OU3: Continue with implementation of the remedy.

## Land Use Control (LUC) Summary

LUC title: OU1 LUC

Site(s): TCAAP-17

ROD/DD title: OU1 ROD

Location of LUC

The area affected by the North Plume of off-TCAAP deep groundwater contamination as defined by the Minnesota Department of Health Special Well Construction Area.

Land Use Restriction: Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment

Types of Engineering Controls: None

Types of Institutional Controls: Restrictions on Groundwater Withdrawal

Date in Place: 199309

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: VOC

Additional Information

N/A

LUC title: OU2 LUCs

Site(s): TCAAP-06, TCAAP-07, TCAAP-09, TCAAP-10, TCAAP-13, TCAAP-20, TCAAP-21

ROD/DD title: OU2 ROD Amendment #3

Location of LUC

Site D, Site E, Site G, Site H, Site 129-15, Grenade Range, and Outdoor Firing Range.

Land Use Restriction: Landfill restriction - Prohibit activities that would impact the LF cap (or cover system) and drainage system, Landfill restriction - Restrict plantings that interfere LF cap or cover system (roots that penetrate the cap or cover system), Media specific restriction - Prohibit, or otherwise manage excavation, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Signs

Types of Institutional Controls: Restrictions on land use

Date in Place: 201009

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 201009

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: METALS, NITROAROMATICS, PAH, PCBs, VOC

Additional Information

The contaminants of concern and types of controls vary between the sites. See the OU2 Land Use Control Remedial Design (2010) for details.

## Land Use Control (LUC) Summary

LUC title: OU2 LUCs

Site(s): TCAAP-01, TCAAP-16, TCAAP-19

ROD/DD title: OU2 ROD ESD #1

Location of LUC

Site A, Site K, and OU2 Deep Groundwater

Land Use Restriction: Media specific restriction - Prohibit groundwater extraction that interferes with Remedial Action system, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation

Types of Engineering Controls: None

Types of Institutional Controls: Restrictions on Groundwater Withdrawal

Date in Place: 201009

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 201009

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: METALS, VOC

Additional Information

The contaminants of concern vary between the sites. See the OU2 Land Use Control Remedial Design (2010) for details.

LUC title: OU2 LUCs

Site(s): TCAAP-01, TCAAP-05, TCAAP-11, TCAAP-12

ROD/DD title: OU2 ROD ESD #2

Location of LUC

Site A, Site C-1, Site 129-3, and Site 129-5.

Land Use Restriction: Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: None

Types of Institutional Controls: Restrictions on land use

Date in Place: 201009

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 201009

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: METALS, NITROAROMATICS

Additional Information

The contaminants of concern vary between the sites. See the OU2 Land Use Control Remedial Design (2010) for details.

LUC title: OU3 LUC

Site(s): TCAAP-27

## Land Use Control (LUC) Summary

ROD/DD title: OU3 ROD Amendment

Location of LUC

The area affected by the South Plume of off-TCAAP deep groundwater contamination as defined by the Minnesota Department of Health Special Well Construction Area.

Land Use Restriction: Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment

Types of Engineering Controls: None

Types of Institutional Controls: Restrictions on Groundwater Withdrawal

Date in Place: 200608

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: VOC

Additional Information

N/A

LUC title: Site C-2 LUC

Site(s): TCAAP-05

ROD/DD title: OU2 ROD Amendment #1

Location of LUC

Site C-2

Land Use Restriction: Media specific restriction - Prohibit groundwater extraction that interferes with Remedial Action system, Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Restrict land use - Mitigation area(s) protection, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Signs

Types of Institutional Controls: Restrictions on Groundwater Withdrawal, Restrictions on land use

Date in Place: 201009

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 201009

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: METALS

Additional Information

See the OU2 Land Use Control Remedial Design (2010) for details.

LUC title: Site I LUC

## Land Use Control (LUC) Summary

Site(s): TCAAP-15

ROD/DD title: OU2 ROD Amendment #2

Location of LUC

Site I, consisting of Building 502 and adjacent land.

Land Use Restriction: Media specific restriction - Prohibit groundwater extraction that interferes with Remedial Action system, Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: None

Types of Institutional Controls: Restrictions on Groundwater Withdrawal, Restrictions on land use

Date in Place: 201009

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 201009

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: METALS, PCBs, VOC

Additional Information

See the OU2 Land Use Control Remedial Design (2010) for details.

### Summary of Parcel Prioritization and Transfer Strategy

Transfer of the railroad spur is in progress. The finding of suitability to transfer (FOST) has been signed, and final transfer execution is planned for 2011.

Ramsey County is in the process of performing due diligence investigation work on the parcel it seeks to acquire via public benefit conveyance. The strategy is to have the County perform the necessary investigation and remediation work on the property under an access agreement prior to final transfer. It is likely that the final transfer will occur in 2012.

The strategy for the remaining 430 acres is to conduct a public sale, anticipated for 2011. The strategy includes the federal government retaining ownership on an interim basis of the portions of the property with requirements for cleanup to industrial use levels, until such time the purchaser completes the cleanup.

The Base Realignment and Closure (BRAC) Division and General Services Administration are directing the transfers.

**Parcel Name:** Public Benefit Conveyance, Ramsey County

**Parcel Size:** 108.00

**Associated Sites:** TCAAP-05, TCAAP-19, TCAAP-23

**Transfer Date:** 201209

**Current Land Use:** Industrial

**Future Land Use:** Recreational

**Encumbrances:** N/A

**Leases/Permits/Licenses:** N/A

**Transfer Strategy:** Public Benefit Conveyance (PBC)

**Recipient Organization:** Ramsey County, MN

**Other Issues Affecting Transfer:** N/A

**Parcel Name:** Public Sale Area

**Parcel Size:** 430.00

**Associated Sites:** TCAAP-15, TCAAP-30, TCAAP-16, TCAAP-19

**Transfer Date:** 201109

**Current Land Use:** Industrial

**Future Land Use:** Other (Mixed Use)

**Encumbrances:** N/A

**Leases/Permits/Licenses:** N/A

**Transfer Strategy:** Public Sale

**Recipient Organization:** N/A

**Other Issues Affecting Transfer:** N/A

## Parcel Summary

Parcel Name: Railroad Spur

Parcel Size: 20.25

Associated Sites:

Transfer Date: 201109

Current Land Use: Other (Railroad Right-of-Way)

Future Land Use: Other (Railroad Right-of-Way)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Public Sale

Recipient Organization: N/A

Other Issues Affecting Transfer: N/A

# TWIN CITIES ARMY AMMUNITION PLANT

## Non-BRAC Excess Installation Restoration Program

# IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 27/6

## Installation Site Types with Future and/or Underway Phases

- 3 Burn Area  
(TCAAP-05, TCAAP-10, TCAAP-12)
- 1 Chemical Disposal  
(TCAAP-06)
- 4 Contaminated Buildings  
(TCAAP-15, TCAAP-16, TCAAP-23, TCAAP-28)
- 4 Contaminated Ground Water  
(TCAAP-17, TCAAP-19, TCAAP-27, TCAAP-30)
- 2 Contaminated Sediments  
(TCAAP-25, TCAAP-31)
- 1 Disposal Pit/Dry Well  
(TCAAP-11)
- 2 Firing Range  
(TCAAP-20, TCAAP-21)
- 3 Landfill  
(TCAAP-07, TCAAP-09, TCAAP-13)
- 1 Surface Disposal Area  
(TCAAP-01)

## Most Widespread Contaminants of Concern

Explosives, Metals, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

## Media of Concern

Groundwater, Sediment, Soil, Surface Water

## Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
TCAAP-06	Leach/Burn Pits (Site D)	IRA	CAPPING	1986	TBD
TCAAP-09	Dump (Site G)	IRA	CAPPING	1986	TBD
TCAAP-15	Bldg. 502 and Area (Site I)	IRA	WASTE REMOVAL - SOILS	1986	TBD
TCAAP-06	Leach/Burn Pits (Site D)	IRA	INCINERATION	1989	TBD
TCAAP-01	Burial/Burn Area (Site A)	IRA	GROUND WATER TREATMENT	1994	TBD
TCAAP-27	OU3 Deep Groundwater	FRA	GROUND WATER TREATMENT	1994	TBD
TCAAP-22	Water Tower Area	FRA	WASTE REMOVAL - SOILS	1996	TBD
TCAAP-06	Leach/Burn Pits (Site D)	FRA	SOIL VAPOR EXTRACTION	1998	TBD
TCAAP-06	Leach/Burn Pits (Site D)	IRA	SOIL VAPOR EXTRACTION	1998	TBD
TCAAP-09	Dump (Site G)	FRA	SOIL VAPOR EXTRACTION	1998	TBD
TCAAP-09	Dump (Site G)	IRA	SOIL VAPOR EXTRACTION	1998	TBD
TCAAP-17	OU1 Deep Groundwater	IRA	GROUND WATER TREATMENT	1998	\$600.0 K
TCAAP-17	OU1 Deep Groundwater	FRA	GROUND WATER TREATMENT	1998	\$200.0 K
TCAAP-08	Open Burn/Burial Area (Site F)	FRA	SOIL WASHING	2000	TBD
TCAAP-17	OU1 Deep Groundwater	FRA	ALTERNATE WATER SUPPLY/WATER SUPPLY TREATMENT	2000	\$300.0 K
TCAAP-01	Burial/Burn Area (Site A)	FRA	SOIL VAPOR TREATMENT	2001	\$20.0 K
TCAAP-29	AEC Phytoremediation Demo Areas	IRA	GROUND WATER TREATMENT	2001	\$10.0 K
TCAAP-29	AEC Phytoremediation Demo Areas	FRA	GROUND WATER TREATMENT	2001	\$100.0 K
TCAAP-16	Bldg. 103 (Site K)	FRA	GROUND WATER TREATMENT	2002	TBD

## IRP Summary

### Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
TCAAP-19	OU2 Deep Groundwater	FRA	GROUND WATER TREATMENT	2003	\$1,969.0 K
TCAAP-27	OU3 Deep Groundwater	FRA	NATURAL ATTENUATION	2006	TBD
TCAAP-01	Burial/Burn Area (Site A)	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-05	Open Burn/Disposal Area (Site C)	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-05	Open Burn/Disposal Area (Site C)	IRA	GROUND WATER TREATMENT	2008	TBD
TCAAP-05	Open Burn/Disposal Area (Site C)	FRA	GROUND WATER TREATMENT	2008	TBD
TCAAP-06	Leach/Burn Pits (Site D)	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-07	Dump and Burning Area (Site E)	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-09	Dump (Site G)	FRA	CAPPING	2008	TBD
TCAAP-10	Burn/Burial Area (Site H)	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-11	Leaching Pits (Site 129-3)	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-12	Burn/Disposal Area (Site 129-5)	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-13	Dump (Site 129-15)	FRA	CAPPING	2008	TBD
TCAAP-15	Bldg. 502 and Area (Site I)	FRA	OTHER	2008	TBD
TCAAP-20	Grenade Range	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-21	Outdoor Firing Range	FRA	CAPPING	2008	TBD
TCAAP-21	Outdoor Firing Range	FRA	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-30	Bldg. 102 Degreasing Operations	FRA	NATURAL ATTENUATION	2009	\$42.7 K
TCAAP-16	Bldg. 103 (Site K)	FRA	WASTE REMOVAL - SOILS	2010	\$.1 K
TCAAP-28	Bldg. 535 Primer/Tracer Area	FRA	WASTE REMOVAL - SOILS	2010	\$198.6 K

### Duration of IRP

Year of IRP Inception: 197801

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201409/204109

Date of IRP completion including Long Term Management (LTM): 204109

# IRP Contamination Assessment

## Contamination Assessment Overview

In June 1981 the Installation Restoration Program (IRP) began when the Army and state discovered chlorinated solvents (a type of VOC) in TCAAP and New Brighton drinking water supplies, indicating that TCAAP may be the source of contamination. As studies of TCAAP activities and groundwater were initiated the residents were supplied with alternate water supplies.

As a result of past TCAAP ammunition and munitions manufacturing operations, contamination has been detected in groundwater, soil, sediment, and surface water. The contaminants of concern are VOCs, especially chlorinated solvents; explosives; metals, especially lead; and SVOCs, including PCBs and PAHs.

The TCAAP IRP activities include OU1, OU2, and OU3. OU3, which is the south TCAAP plume (TCAAP-27) located outside the fenced boundaries of TCAAP, was the first OU for which a ROD was signed in 1992.

OU1, which is the north TCAAP plume (TCAAP-17) located outside the fenced boundaries of TCAAP, was the second OU for which a ROD was signed in 1993. Prior to the RA being initiated, an interim remedial action (IRA) (pump-and-treat (P&T)/containment system) was constructed and began operation. The remedy includes the New Brighton contaminated groundwater recovery system (NBCGRS), a municipal water-line interconnection, alternative well water supplies, and well advisories.

OU2 includes all media of concern within the boundary of TCAAP in 1983, when placed on the NPL. Between 1986 and 1988 IRAs were initiated to P&T and contain the shallow and deep groundwater contamination, as well as to begin remediation of soil source areas. The OU2 ROD was signed in December 1997.

## Cleanup Exit Strategy

There are 22 active Army Environmental Database-Restoration (AEDB-R) sites. Ten are at response complete (RC), with LTM for LUCs and five-year reviews. Eight sites have groundwater contamination, with estimated RC dates ranging from 2015 to 2041, based on achieving site-specific cleanup levels. The strategy for TCAAP-23 (135 PTA) is to obligate the funding for remedial investigation (RI)/FS through remedial action (construction) (RA(C)) in FY2011, and achieve RC by 2014 through soil removal work to achieve site-specific cleanup levels. TCAAP-25 is nearing completion of the RI/FS phase with a decision document (DD) expected in FY2011. Funding for RD through RA(O) at Pond G is planned for obligation in FY2011, with RC expected in 2014 through demonstration of achieving state surface water quality standards. TCAAP-31 (Round Lake) is still in the RI/FS phase, which is expected to be completed in 2012, so the ROD will be integral to the cleanup strategy. Many of the individual sites fall within OU2, and "blanket" LUCs were implemented across most of OU2 to restrict activities. The cleanup strategy also includes working with the USEPA and MPCA to reduce the footprint of the LUCs through review of existing soil data, and perhaps additional testing efforts. Special emphasis is being placed on the portion of OU2 used by the Minnesota (MN) National Guard, to enable them to fully conduct their mission, including natural resource management and community outreach activities.

## IRP Previous Studies

	Title	Author	Date
1978	Installation Assessment of Twin Cities Army Ammunition Plant, Report No. 129	USATHAMA	OCT-1978
1988	Preliminary Assessment of the Twin Cities Army Ammunition Plant and Drawings and Maps,	Argonne National Lab	FEB-1988
	Supplement to the Preliminary Assessment of the Twin Cities Army Ammunition Plant	Argonne National Lab	FEB-1988
	Final Remedial Investigation Report for New Brighton/Arden Hills, TCAAP Force Main,	Camp Dresser & McKee	DEC-1988
1989	1988 Annual Monitoring Report, Volumes I, II, III, IV	Wenck Associates, Inc	SEP-1989
	Boundary Groundwater Recovery System (BGRS), IRA-BGRS 1988 Annual Monitoring Report and Monitoring Plan, Volume 1 - Text, Volume 2 - Appendices	CRA	OCT-1989
1990	Ecological Assessment (February 1990 - April 1991) - Volume I & Appendices	USAEHA	FEB-1990
	Fiscal Year 1990 Annual Monitoring Plan, Volumes 1 - 3	Wenck Associates, Inc	APR-1990
	1989 Annual Monitoring Report, Volumes 1-3	Wenck Associates, Inc	MAY-1990
	Characterization and Evaluation of Contaminated Soil and Sewer Sludge at Twin Cities Army Ammunition Plant	IT Corporation	MAY-1990
1991	Phase IA Multi-Point Source Groundwater Remedial Investigation - Volume 1 & 2, + Drawings	Camp Dresser & McKee	FEB-1991
	Remedial Investigation Report - Volumes 1, 2, 3, & 4	Argonne National Lab	APR-1991
	Human Health Risk Assessment New Brighton/Arden Hills Superfund Site - Volume I & II	PRC	APR-1991
	Groundwater Recovery System (TGRS), IRA-TGRS 1989 Annual Monitoring Report and Monitoring Plan, Volumes 1 - 2	CRA	JUN-1991
	Groundwater Recovery System (TGRS), IRA-TGRS, Site I and Site K 1990 Annual Monitoring Report, Volumes 1 -2,	CRA	JUL-1991
	Fiscal Year 1990 Annual Monitoring Report and Drawings	Wenck Associates, Inc	JUL-1991
	Operable Unit 3 Feasibility Study	CRA	JUL-1992
1992	Record of Decision, Groundwater Remediation Operable Unit 3	None on record	SEP-1992
	Fiscal Year 1991 Annual Monitoring Report and Drawings	Wenck Associates, Inc	OCT-1992
	CERCLA Administrative Record New Brighton/Arden Hills NPL Site, Master Record of Decision Index	None on record	NOV-1992
	Feasibility Study, Final OU-1 FS	Montgomery Watson	JUL-1993
1993	Fiscal Year 1992 Annual Monitoring Report and Drawings	Wenck Associates, Inc	JUL-1993
	Record of Decision, Groundwater Remediation Operable Unit 1	None on record	SEP-1993

## IRP Previous Studies

	Title	Author	Date
1994	Final Site J Closure Report	Montgomery Watson	MAR-1994
	TCAAP Operable Unit 2 Feasibility Study, Sites I & K Field Investigation Data Report	CRA	MAY-1994
	Fiscal Year 1993 Annual Monitoring Report and Drawings	Wenck Associates, Inc	JUN-1994
1995	Environmental Geophysics and Sequential Aerial Photo Study at Sunfish and Marsden Lakes	Argonne National Lab	AUG-1995
	Phase I Archeological Investigations of the Trap Shooting Area and CERCLA Site B	Loucks & Associates	SEP-1995
	Fiscal Year 1994 Annual Monitoring Report and Drawings	Wenck Associates, Inc	SEP-1995
1996	Construction Documentation Report, PGAC Raw and Waste Water Pipelines, City of New Brighton, Minnesota	Barr Engineering	JAN-1996
	Fiscal Year 1995 Annual Monitoring Report and Drawings	Wenck Associates, Inc	OCT-1996
1997	GES-Community Relations Plan	Alliant Techsystems Inc	FEB-1997
	Inventory of Wells in the Vicinity of TCAAP, 1995 Update	CRA	MAR-1997
	Operable Unit 2 Feasibility Study	Montgomery Watson	MAR-1997
	"Road Map" or Army Agency Approval of Ordnance and Explosives Clearance Work Completed at TCAAP	Wenck Associates, Inc	JUN-1997
	Comprehensive Unexploded Ordnance Compilation Report, Volume I and Volume II	Wenck Associates, Inc	JUN-1997
	Fiscal Year 1996 Annual Monitoring Report and Drawings	Wenck Associates, Inc	SEP-1997
	Construction Documentation Report, OU1 Modifications: Well 14 and Well 14 Wellhouse,	Barr Engineering	SEP-1997
	Tier I Screening Risk Assessment of Aquatic Ecosystems No. 39-EJ-1393-97 (October 1992 -July 1993),	US Army CHPPM	OCT-1997
	Operable Unit 2 Record of Decision	USAEC	OCT-1997
1998	Field Sampling Report, Sites D and G	Stone & Webster	MAR-1998
	Bioavailability of Sediment-Metals in Round and Sunfish Lakes, Preliminary Study Tier II Ecological Risk Assessment	US Army CHPPM	MAR-1998
	Grenade Range Engineering Evaluation/Cost Analysis (EE/CA), December 1997, Revised March 1998	Alliant Techsystems Inc	MAR-1998
	Outdoor Firing Range Engineering Evaluation/Cost Analysis (EE/CA)	Alliant Techsystems Inc	MAR-1998
	Sediment Toxicity Evaluation of Round Lake, Preliminary Study, Tier II Ecological Risk Assessment (10-15 July 1995),	US Army CHPPM	JUN-1998
	Construction Documentation Report, OU1 Modifications, Well 15 and Well 15 Wellhouse,	Barr Engineering	JUL-1998
	Final Site A Engineering Evaluation/Cost Analysis, Revision 0	Stone & Webster	AUG-1998
	Fiscal Year 1997 Annual Performance Report and	Wenck Associates, Inc	AUG-1998

## IRP Previous Studies

	Title	Author	Date
1998	Drawings		
	Cognis Terramet Lead Extraction Process, Innovative Technology Evaluation Report, SITE Superfund Innovative Technology Evaluation	USEPA	SEP-1998
1999	Inventory of Wells in the Vicinity of TCAAP, 1996/1997 Update	CRA	MAR-1999
	Alternate Water Supply Construction Report for Period 1997 through 1998	Montgomery Watson	MAR-1999
	Work Plan, Tier II Ecological Risk Assessment	US Army CHPPM	JUN-1999
	Site F Closure Certification Report, Volumes 1 - 3	Alliant Techsystems Inc.	JUL-1999
	Fiscal Year 1998 Annual Performance Report	Wenck Associates, Inc	JUL-1999
	Final Field Investigation Report, Site G Tar-Like Material, Revision 2,	Stone & Webster	AUG-1999
	Five-Year Review Report of the Final Remedy for the New Brighton/Arden Hills Superfund Site	Wenck Associates, Inc	SEP-1999
2000	Results of Sampling and Analysis of Soil Vapor Extraction (SVE) Vents at Sites D and G	Alliant Techsystems Inc	JAN-2000
	Removal Site Evaluation, Preliminary Assessment, Trap Range Site	Alliant Techsystems Inc	FEB-2000
	Evaluation of Natural Attenuation of Chlorinated Solvents in Groundwater at the Twin Cities Army Ammunition Plant - Site A	USEPA	JUN-2000
	Final Report on the Demonstration Results for the Phytoextraction of Lead-Contaminated Soil at the Twin Cities Army Ammunition Plant	TVA	JUL-2000
	OU-1 Remedial Action Report	Montgomery Watson	AUG-2000
	Evaluation of the Protocol for Natural Attenuation of Chlorinated Solvents: Case Study at the Twin Cities Army Ammunition Plant	USEPA	SEP-2000
	Plume History Evaluation, Operable Unit 3, Twin Cities Army Ammunition Plant, Technical Memorandum in Support of Alliant Techsystems Inc.'s Request to Shut Down the Plume Groundwater Recovery System (PGRS) in Operable Unit 3 of the New Brighton/Arden Hills Superfund Site	CRA	OCT-2000
	Soil Vapor Extraction System: A Post-Audit Modeling Study	Argonne National Lab	OCT-2000
	Fiscal Year 1999 Annual Performance Report	Wenck Associates, Inc	OCT-2000
2001	Final Site B Dump Investigation, Characterization, and Closeout Report, Revision 2	Stone & Webster	JAN-2001
	Dual Phase Vacuum Extraction Pilot Study, Predesign Investigation Report, Site I	CRA	MAR-2001
	Final Closeout Report, Grenade Range Soil Removal Action Completion of Soil Removal	Alliant Techsystems Inc	JUL-2001
	Final Startup Report, Site A Soil Vapor Extraction/Air Sparging System, Revision 2	Stone & Webster	SEP-2001
	Fiscal Year 2000 Annual Performance Report	Wenck Associates, Inc	NOV-2001

## IRP Previous Studies

Year	Title	Author	Date
2001	Final Remedial Action Completion and Shallow Soil Sites Close Out Report plus Drawings, Volume I - Site A Activities, Volume II - Site 129-5 Activities, Revision 2,	Stone & Webster	DEC-2001
	Final Closeout Report, Outdoor Firing Range and #150 Reservoir Site, Soil Removal Action Completion of Soil Removal, Revision 1	Alliant Techsystems Inc	DEC-2001
	Final Preliminary Assessment, 135 Primer/Tracer Area	Alliant Techsystems Inc	DEC-2001
	Final Preliminary Assessment, 535 Primer/Tracer Area	Alliant Techsystems Inc	DEC-2001
	Site K Predesign Investigation Report	CRA	DEC-2001
2002	Final Remedial Action Completion and Shallow Soil Sites Close Out Report, Volume III, Site H Activities, Revision 2	Stone & Webster	FEB-2002
	Summary Report for Grenade Range Groundwater Investigation at Marsden Lake, Revision 2	EnecoTech Midwest, Inc	MAY-2002
	Final Remedial Action Completion and Shallow Soil Sites Close Out Report, Volume IV, Site E Activities, Revision 2	Stone & Webster	JUN-2002
	Final Site D Shallow and Deep Soil Volatile Organic Compound Investigation and Close Out Report, Revision 2	Stone & Webster	AUG-2002
	Final Remedial Action Completion and Shallow Soil Sites Close Out Report, Volume V, Site 129-3 Activities, Revision 2	Stone & Webster	NOV-2002
	Final Site 129-15 Dump Investigation, Characterization, and Remedial Action Completion and Close Out Report, Revision 3	Stone & Webster	DEC-2002
	Fiscal Year 2001 Annual Performance Report	Wenck Associates, Inc	DEC-2002
	Site K Remedial Action Report	CRA	FEB-2003
2003	Phase II Sitewide Groundwater Monitoring Well Abandonment Completion Report	Stone & Webster	MAY-2003
	Fiscal Year 2002 Annual Performance Report	Wenck Associates, Inc	AUG-2003
	Site K Remedial Action Report	CRA	FEB-2003
2004	Final Remedial Action Completion and Shallow Soil Sites Closeout Report, Volume VIII, Site A Former 1945 Trench Activities, Revision 2	Shaw Environmental, Inc	JAN-2004
	Final Remedial Action Completion and Shallow Soil Sites Closeout Report, Volume VII, Site D Activities, Revision 2	Shaw Environmental, Inc	FEB-2004
	Final Construction, Operation, and Closeout Report, Corrective Action Management Unit, Volume IX, CAMU Activities, Revision 2	Shaw Environmental, Inc	MAR-2004
	Final TGRS Operating Strategy, Modifications 1 through 3	CRA	MAY-2004
	Fiscal Year 2003 Annual Performance Report	Tecumseh/Wenck	JUL-2004
	Five-Year Review Report of the Final Remedy for the New Brighton/Arden Hills Superfund Site	Tecumseh/Wenck	SEP-2004
	Final Site G Volatile Organic Compound Investigation and Dump Closeout Report, Revision 2	Shaw Environmental, Inc	DEC-2004
	Final Remedial Action Completion and Shallow Soil Sites Closeout Report, Volume VIII, Site A Former 1945 Trench Activities, Revision 2	Shaw Environmental, Inc	JAN-2004

## IRP Previous Studies

	Title	Author	Date
2004	Tier II Ecological Risk Assessment Report, Volumes I and II	US Army CHPPM	DEC-2004
	Technical Memorandum, Statistical Evaluation Method for Operable Unit 1 Water Quality Data	OU1 Technical Group	DEC-2004
2005	Summary Report for 535 Primer/Tracer Area Site Inspection Investigation	Tecumseh/Wenck	JAN-2005
	Off-TCAAP, Vapor Intrusion Pathway Analysis, Operable Unit 1, Operable Unit 3, and Operable Unit 2 (Site A)	Tecumseh/Wenck	MAY-2005
	Groundwater Statistical Evaluation, Operable Unit 3, Technical Memorandum in Support of Proposed Record of Decision (ROD) Amendment	CRA	MAY-2005
	Fiscal Year 2004 Annual Performance Report	Tecumseh/Wenck	SEP-2005
	Modification #1 To: Technical Memorandum, Statistical Evaluation Method for Operable Unit 1 Water Quality Data	OU1 Technical Group	OCT-2005
	Proposed Plan for Groundwater Remediation for Operable Unit 3 at the New Brighton/Arden Hills Superfund Site	CRA	OCT-2005
2006	Outdoor Firing Range 1900 Yard Range Cover Construction: An Addendum to the -Final Closeout Report, Outdoor Firing Range and #150 Reservoir Site Soil Removal- (Revision 1, December 2001)	Alliant Techsystems Inc. & Wenck Associates, Inc	FEB-2006
	Final Technical Memorandum, Site C-2 Alternatives Evaluation, Revision 1	Shaw Environmental, Inc	FEB-2006
	Groundwater Investigation Report for Building 102	Wenck Associates, Inc. & Keres Consulting, Inc	FEB-2006
	Proposed Plan for Groundwater Remediation For Operable Unit 1 at the New Brighton/Arden Hills Superfund Site	Wenck Associates, Inc	MAR-2006
	Record of Decision Amendment, Groundwater Remediation, Operable Unit 1 at New Brighton/Arden Hills Superfund Site	Army/USEPA/MPCA	MAY-2006
	Record of Decision Amendment for Operable Unit 3 of the New Brighton/Arden Hills Superfund Site	Army/USEPA/MPCA	JUL-2006
	Closeout Report: Removal of Contaminated Sediment at the 135 Primer/Tracer Area Stormwater Outfall	Wenck Associates, Inc.	JUL-2006
	Fiscal Year 2005 Annual Performance Report	Tecumseh/Wenck	DEC-2006
2007	Proposed Plan for Operable Unit 2, Site C-2	Shaw Environmental, Inc.	MAR-2007
	Record of Decision Amendment for Operable Unit 2, Site C-2	Army/USEPA/MPCA	JUL-2007
	Fiscal Year 2006 Annual Performance Report	Wenck Associates, Inc.	SEP-2007
2008			
	Site A Shallow Groundwater: 10-Year Evaluation Report	Wenck Associates, Inc.	JUL-2008
	Fiscal Year 2007 Annual Performance Report	Wenck Associates, Inc.	JUL-2008
	Building 102 Groundwater Engineering Evaluation/Cost Analysis	Wenck Associates, Inc.	JUL-2008
	Engineering Evaluation/Cost Analysis, Site K	CRA	JUL-2008

## IRP Previous Studies

	Title	Author	Date
2008	Action Memorandum: Building 102 Groundwater	Army	OCT-2008
	Action Memorandum: Site K Soils	Army	OCT-2008
	Site C Groundwater Extraction System Evaluation Report	Wenck Associates, Inc.	NOV-2008
2009	Engineering Evaluation/Cost Analysis, 535 Primer/Tracer Area	Wenck Associates, Inc.	JAN-2009
	Action Memorandum: 535 Primer/Tracer Area Soil Removal	Army	MAR-2009
	Remedial Action Completion and Shallow Soil Sites Close Out Report, Site C Activities	Shaw Environmental, Inc.	MAY-2009
	OU2 ROD Amendment #2, Site I Groundwater	Army, USEPA, MPCA	MAY-2009
	OU2 ROD Amendment #3	Army, USEPA, MPCA	MAY-2009
	OU2 ROD Explanation of Significant Differences #1, Changes for Groundwater Sites	Army, USEPA, MPCA	MAY-2009
	OU2 ROD Explanation of Significant Differences #2, Changes for Soil Sites	Army, USEPA, MPCA	MAY-2009
	Fiscal Year 2008 Annual Performance Report	Wenck Associates, Inc.	JUN-2009
	Five-Year Review Report, New Brighton/Arden Hills Superfund Site	Wenck Associates, Inc.	AUG-2009
	Removal Action Completion Report, Site K	CRA	AUG-2009
2010	Closeout Report for Soil Removal Action at the 535 Primer/Tracer Area	Wenck Associates, Inc.	JAN-2010
	Fiscal Year 2009 Annual Performance Report	Wenck Associates, Inc.	MAY-2010
	Operable Unit 2 Land Use Control Remedial Design	Wenck Associates, Inc.	SEP-2010
	Feasibility Study for Rice Creek, Sunfish Lake, Marsden Lake, and Pond G	Wenck Associates, Inc.	DEC-2010

# TWIN CITIES ARMY AMMUNITION PLANT

Non-BRAC Excess

Installation Restoration Program

Site Descriptions

Site ID: TCAAP-01  
 Site Name: Burial/Burn Area (Site A)  
 Alias: SITE A

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Metals, Volatiles (VOC)  
 Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199712.....	199806
IRA.....	198809.....	199712
RA(C).....	199712.....	200809
RA(O).....	199712.....	201509
RIP Date:	200809	
RC Date:	201509	

**SITE DESCRIPTION**

Site A, approximately 12.3 acres, was used between the early-1940s and 1966 for burial and/or burning of various wastes, such as sewage sludge, solvents, explosive-containing wastes, and mercury crack cases. These activities resulted in the contamination of the soil and shallow groundwater with VOCs and metals. The site is on property now controlled by the MN Army National Guard.

From 1988 to 1994 a groundwater IRA operated consisting of an extraction well near the source area, with granular activated carbon treatment, and surface discharge. In 1994, after conducting an engineering evaluation (EE)/cost analysis (CA), a new IRA was implemented to prevent off-site migration of VOCs in groundwater. The system consisted of eight extraction wells, with direct discharge to the publicly-owned treatment works. The 1997 OU2 ROD made this system part of the final RA. The RA(C) start and end dates for the final groundwater RA are shown as the date of the ROD, since no construction took place. The RA(O) start date is also the ROD date as this triggered these activities for the final RA. In 2000 four of the extraction wells were turned off as the plume had reduced in size. The ROD required that the groundwater remedy be reevaluated after 10 years. An evaluation report was approved in 2008, whereby operation of the extraction system was suspended pending further evaluation of MNA. The plan is to evaluate MNA thru 2011 before making a decision whether to rely upon MNA to achieve cleanup levels or restart the extraction system. Assuming MNA is effective, a ROD amendment will be executed in 2012. Until the MNA evaluation is completed, it is assumed the groundwater cleanup levels will be achieved, with RC in FY15, after verification monitoring, system dismantlement, well sealing, and a closeout report. In 2009, the OU2 ROD was modified by ESD no. 1 to clarify LUC requirements for groundwater.

In 1997, site characterization was performed with respect to the source area for VOC-contaminated groundwater. A disposal trench was identified as the source of VOC contamination. Following approval of an EE/CA, a removal action was conducted. Between 2000 and 2002 a soil vapor extraction (SVE)/air sparging system was operated resulting in removal of 536 pounds of VOCs. Soil sampling in 2002 suggested that the SVE system would not achieve the cleanup levels. The regulators then approved a work plan for excavation and off-site disposal of the VOC-contaminated soil, and the SVE system was dismantled. In November 2002 approximately 688 cy was removed, which resulted in unrestricted use. In 2003 the closeout report for this work received regulatory approval. In 2009, ESD no. 1 documented this work as part of the final remedy for Site A.

The OU2 ROD also specified excavation, stabilization, and off-site disposal of the metals-contaminated soil to site-specific industrial levels. In 1998 and 1999 approximately 16,226 cubic yards (cy) of contaminated soil were removed. In 2001 a closeout report for metals-contaminated soils received partial approval from the regulators pending resolution of LUC issues. In 2009, ESD no. 2 added LUC requirements for the metals-contaminated soil. [Note: the RA(C) end date and remedy-in-place (RIP) date represent when the Army signed the ESD). In 2010 the OU2 LUC RD was approved and the closeout report received final consistency approval.

Site ID: TCAAP-01  
Site Name: Burial/Burn Area (Site A)  
Alias: SITE A

Environmental baseline survey work in that year discovered metals contamination in soil just south of previous excavation work. Funding to address this area is expected to be obligated in FY2011. Investigation and remediation (conducted under the RA(O) phase) is expected to be completed in FY2014.

The LUCs and five-year reviews for soil will continue beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

## CLEANUP/EXIT STRATEGY

The MNA will be evaluated through 2011 and then a decision will be made whether or not to execute a ROD amendment to replace the requirement for groundwater extraction with MNA. The MNA [and/or RA(O) of the shallow groundwater containment system] will continue until site-specific cleanup goals are met, with RC estimated to occur in 2015 (funded under TCAAP-19).

The LUC implementation (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered RA(O) until RC and then will be considered LTM.

Site ID: TCAAP-05  
 Site Name: Open Burn/Disposal Area (Site C)  
 Alias: SITE C

**STATUS**

Parcel: Public Benefit Conveyance, Ramsey County (108 acres)  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Metals  
 Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
IRA.....	200207.....	200710
RA(C).....	200001.....	200809
RA(O).....	199712.....	201806
RIP Date:	200809	
RC Date:	201806	

**SITE DESCRIPTION**

Site C is approximately 6.4 acres. From 1947 through 1957 it was used for burning scrap wooden boxes, solvents, oils, and production materials. It was also used for land disposal and open storage.

In 1997, the USAEC sponsored a field demonstration project to phytoremediate lead-contaminated soil at Site C. The project had the unintended consequence of contaminating groundwater and surface water with lead. In 2000, the state took enforcement action. In 2002 the Army began operating a groundwater P&T system as an IRA (under a separate site designation, TCAAP-29). In 2004 a stipulation agreement was signed, thereby resolving the enforcement action and directing that response actions be conducted under the authority of the FFA. With this development, the alternatives analysis and OU2 ROD amendment no. 1, discussed above in regard to soil and sediment, were expanded to include groundwater and surface water. With this change, TCAAP-29 has been closed out, and the activities have been incorporated into TCAAP-05.

The 1997 OU2 ROD required excavation, stabilization, and off-site disposal of the contaminated soil to site-specific industrial levels at two sub-areas designated Sites C-1 and C-2. Excavation work proceeded from 2000 to 2002 and then stopped in July 2002 due to an issue raised by the regulators involving unanticipated site conditions. The issue involved whether excavation to groundwater was adequate (at this site, typically two to five feet below ground), or a revised remedy was needed. In November 2002 additional characterization work was completed to assess the amount of contamination which may be left in place below the water table. During review of the results and an alternatives analysis, the regulators requested additional sampling of sediments in ditches at the site; this was performed in 2003. The regulators also gave approval for excavation work to continue at the south end of the site, where contamination was less than two feet deep. In 2006 an alternatives analysis was approved, which recommended a combination of excavation and/or placement of fill to provide a four-foot soil cover to serve as a protective barrier between the ground surface and any contamination remaining in place. In 2007, OU2 ROD Amendment No. 1 documented this change for Site C-2, and added LUC requirements for the soil and cover. The fieldwork was completed in 2008, which represents the RA(C) end date and RIP date. A total of 21,450 cy of soil was removed from Sites C-1 and C-2. In 2009, OU2 ESD No. 2 clarified that LUCs are also required for soil at Site C-1. The closeout report for Sites C-1 and C2 was approved in 2009.

The 2007 OU2 ROD amendment no. 1 made the existing IRA groundwater extraction system a final remedy, with an effective date of October 2007, and added LUCs for groundwater. With declining contaminant concentrations, an evaluation report was approved in 2008, whereby operation of the extraction system was suspended. It is estimated that cleanup levels will be achieved in 2013, with RC in 2018, after verification monitoring, system dismantlement, well sealing, and a closeout report.

The LUCs, cover maintenance and five-year reviews will continue beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

Site ID: TCAAP-05  
Site Name: Open Burn/Disposal Area (Site C)  
Alias: SITE C

## CLEANUP/EXIT STRATEGY

The RA(O) groundwater monitoring will continue to verify that the containment system can remain off, until site-specific cleanup levels are met. The estimated date for this is 2013 (funded under TCAAP-19).

The LUC implementation, cover maintenance, and five-year reviews (all funded under TCAAP-19) will continue and are considered RA(O) until RC and then will be considered LTM.

Site ID: TCAAP-06  
 Site Name: Leach/Burn Pits (Site D)  
 Alias: SITE D

## STATUS

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Explosives, Metals, Polychlorinated Biphenyls (PCB), Volatiles (VOC)  
 Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199602.....	200210
IRA.....	198510.....	199712
RA(C).....	199712.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

## SITE DESCRIPTION

Site D is approximately 1.8 acres. From 1949 or 1950 to 1968, in addition to receiving neutralized cyanide wastes, the pits at this site were used to burn sump wastes, scrap propellants, solvents, paint thinners, oils, rags and chemicals.

IRAs included excavation of approximately 1,400 cy of PCB-contaminated soil in 1985, with subsequent on-site incineration in 1989. Residual PCB contamination is overlain by a half-acre soil cover that was documented as part of the final remedy, along with LUCs, by OU2 ROD Amendment No. 3 in 2009.

An 18-inch-thick clay cover was installed at the site in 1985. In 1986 an SVE system was implemented as an IRA to address VOC-contaminated soil. The SVE system was declared part of the final RA in the 1997 OU2 ROD. The RA(C) start and end dates for the SVE RA are shown as the date of the ROD, since no further construction took place. The RA(O) start date was also triggered by the ROD. From 1986-1998 the SVE system removed 116,199 pounds of chlorinated solvents. It was then shut down and later dismantled. In 2002 a closeout report for VOC-contaminated soil received partial approval from the regulators pending resolution of LUC issues (see below).

In 2001, based on a separate ROD requirement, additional shallow soils characterization was performed (shown as an RD activity) to assess metals and explosives contamination remaining at the site. In 2002, the regulators approved a work plan for soil excavation, stabilization, and disposal off-site. In November that year approximately 1,381 cy were removed, which cleaned up the soil to site-specific industrial levels. In 2004 the closeout report for this work received partial approval from the regulators, pending resolution of LUC issues. In 2009, OU2 ROD Amendment No. 3 documented the soil removal as part of the final remedy and added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the amendment]. In 2010, the OU2 LUC RD was approved and the two closeout reports received final consistency approval.

Groundwater monitoring related to VOCs is addressed as part of "OU2 Deep Groundwater" Site TCAAP-19. The OU2 ROD also required five years of groundwater monitoring (which have been completed) to verify that there have been no impacts from metals and nitroglycerine.

The LUCs, cover maintenance and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

Site ID: TCAAP-06

Site Name: Leach/Burn Pits (Site D)

Alias: SITE D

## CLEANUP/EXIT STRATEGY

The LUC implementation and cover maintenance (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-07  
 Site Name: Dump and Burning Area (Site E)  
 Alias: SITE E

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Metals  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

**SITE DESCRIPTION**

Site E is approximately 8.8 acres. Use of the site began in the early-1940s as a dump for both construction debris and trash, and as a burning ground for ammunition boxes and other materials, including large quantities of unknown chemicals. Both the dump and the burning area were closed in 1949.

The 1997 OU2 ROD required excavation, stabilization, and off-site disposal of the contaminated soil. The site was cleaned up to site-specific industrial levels. From 1999 to 2001 approximately 21,097 cy of contaminated soil were removed. Also, a soil cover was constructed over approximately 1.6 acres of the site, where asbestos-containing material remains in place. In 2002 a closeout report received partial approval from the regulators pending resolution of LUC issues. In 2009, OU2 ROD Amendment No. 3 documented the soil cover as part of the final remedy and added LUCs [note: the RA(C) end date and RC date represent when the Army signed the Amendment]. In 2010, the OU2 LUC RD was approved and the closeout report received final consistency approval. The OU2 ROD also required five years of groundwater monitoring (which have been completed) to verify that there have been no impacts from metals.

The LUCs, cover maintenance and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The LUC implementation and cover maintenance (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue , and are considered LTM.

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Volatiles (VOC)  
 Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199602.....	200312
IRA.....	198509.....	199712
RA(C).....	199712.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

**SITE DESCRIPTION**

Site G is approximately 4.6 acres. Operations at the site appear to have begun during WW II and continued through 1976. It was used as a general dump area for the disposal of rubble, asphalt pavement, barrels, oil filters, rocket propellant research materials, floor-absorbent sweepings, metal dusts and grindings, burning operation ashes, and scrap roofing debris.

In 1985 an 18-inch-thick clay cover was installed at the site. In 1986 an SVE system was implemented as an IRA to address VOC-contaminated soil. The SVE system was declared part of the final RA in the 1997 OU2 ROD. The RA(C) start and end dates for the SVE RA are shown as the date of the ROD, since no further construction took place. The RA(O) start date was also triggered by the ROD. From 1986-1998 the SVE system removed 104,418 pounds of chlorinated solvents, at which time it was shut down and later dismantled. In 2002, the regulators approved revised remediation goals based on the existing cover minimizing the potential for leaching to groundwater. Beyond maintenance of the cover, no further action (NFA) is required for VOC-contaminated soil. Groundwater monitoring related to VOCs is addressed as part of "OU2 Deep Groundwater" Site TCAAP-19.

The OU2 ROD also required additional characterization to determine the appropriate course of action for the general dump. In 2003, the regulators approved a report discussing these matters, along with a work plan for improving the cover system. In 2003 construction of the approximately 4.4-acre cover was also completed. The remedy meets industrial solid waste rules. In 2004 the closeout report for the VOC-contaminated soil and dump received partial approval from the regulators, pending resolution of LUC issues. In 2009, OU2 ROD Amendment No. 3 documented the revised cleanup level and the soil cover as part of the final remedy, and added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the amendment]. In 2010, the OU2 LUC RD was approved and the closeout report received final consistency approval.

The LUCs, cover maintenance, and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The LUC implementation and cover maintenance (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-10  
 Site Name: Burn/Burial Area (Site H)  
 Alias: SITE H

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Metals  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

**SITE DESCRIPTION**

Site H is approximately 11.7 acres. From the early-1940s until the late-1960s it was a burning site with a burning cage located in the center. Burning (primarily wood, paper, cardboard, and combustible trash) took place here. In addition to waste burning, portions of the site may have been used to bury and dump industrial sludge, paint residue, incineration ash, and solvents.

The 1997 OU2 ROD required excavation, stabilization and off-site disposal of the contaminated soil. The site was cleaned up to site-specific industrial levels. From 1999 to 2001 approximately 8,615 cy of contaminated soil was removed. Also, a soil cover was constructed over approximately 2.9 acres of the site, where asbestos-containing material remains in place. In 2002 a closeout report received partial approval from the regulators pending resolution of LUC issues. In 2009, OU2 ROD Amendment No. 3 documented the soil cover as part of the final remedy and added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the amendment]. In 2010, the OU2 LUC RD was approved and the closeout report received final consistency approval. The OU2 ROD also required five years of groundwater monitoring (which have been completed) to verify that there have been no impacts from metals.

The LUCs, cover maintenance and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The LUC implementation and cover maintenance (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-11  
 Site Name: Leaching Pits (Site 129-3)  
 Alias: SITE 129-3

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Explosives, Metals, Volatiles (VOC)  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

**SITE DESCRIPTION**

Site 129-3 is approximately two acres. The site had three leaching pits which were used for the disposal and flashing of contaminated wastewater, which primarily came from the lead styphnate primer mix facility that began operation in 1971 and ended about 1972. Disposal activity at the site may also have included burning scrap powder and lead styphnate wastes.

The 1997 OU2 ROD required excavation, stabilization, and off-site disposal of the contaminated soil. The site was cleaned up to site-specific industrial levels. From 2000 to 2001 approximately 3,460 cy of contaminated soil was removed. In 2002 a closeout report received partial approval from the regulators pending resolution of LUC issues. In 2009, OU2 ESD No. 2 added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the ESD]. In 2010, the OU2 LUC RD was approved and the closeout report received final consistency approval. The ROD also required five years of groundwater monitoring (which have been completed) to verify that there have been no impacts from metals.

The LUCs and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The LUC implementation (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-12  
 Site Name: Burn/Disposal Area (Site 129-5)  
 Alias: SITE 129-5

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: MEDIUM  
 Contaminants of Concern: Metals  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

**SITE DESCRIPTION**

Site 129-5 is approximately 7.2 acres. From about 1945 or 1946 through the late-1950s it was used for the open burning of scrap explosives, bullets, spent solvents, and disposal of primer/tracer sludge. In 1995 areas of this site with observed surface debris were fenced.

The 1997 OU2 ROD required excavation, stabilization, and off-site disposal of the contaminated soil. The site was cleaned up to site-specific industrial levels. Approximately 100 cy of contaminated soil was removed in 1999. In 2001, a closeout report received partial approval from the regulators pending resolution of LUC issues. In 2009, OU2 ESD No. 2 added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the ESD]. In 2010, the OU2 LUC RD was approved and the closeout report received final consistency approval. The ROD also required five years of groundwater monitoring (which have been completed) to verify that there have been no impacts for metals.

The LUCs and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The LUC implementation (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-13  
 Site Name: Dump (Site 129-15)  
 Alias: SITE129-15

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: LOW  
 Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199806.....	200108
RA(C).....	200108.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

**SITE DESCRIPTION**

Site 129-15 is approximately two acres. From 1970 through 1978 it was used as a landfill for construction debris. In 1994 PAHs were discovered during preliminary characterization of the dump material.

The 1997 OU2 ROD required characterization to determine the appropriate course of action for the dump. This action was performed in 1998, and lead was also identified as a contaminant of concern. The regulators approved a soil cover as the remedy for the dump. Construction of the approximately 1.6-acre cover was completed in 2001 and the site was remediated to site-specific industrial levels. In 2002, a closeout report received partial approval from the regulators pending resolution of LUC issues. In 2009, OU2 ROD Amendment No. 3 documented the soil cover as part of the final remedy and added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the amendment]. In 2010, the OU2 LUC RD was approved and the closeout report received final consistency approval. No groundwater monitoring was required.

The LUCs, cover maintenance and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The LUC implementation and cover maintenance (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-15  
 Site Name: Bldg. 502 and Area (Site I)  
 Alias: SITE I

**STATUS**

Parcel: Public Sale Area (430 acres)

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Polychlorinated Biphenyls (PCB),  
 Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199707.....	200103
IRA.....	198508.....	198608
RA(C).....	200103.....	200809
RA(O).....	199712.....	204109

RIP Date: 200809

RC Date: 204109

**SITE DESCRIPTION**

Site I is approximately 43 acres. It consists of Building 502 and its associated structures and facilities. Building 502 was constructed in 1942 and was used until 2004 for the production of various ammunition, projectiles and artillery ammunition components. In 1958, Honeywell Defense Systems (now ATK) assumed responsibility for general manufacturing activities in the building. TCAAP-15 is funded by ATK with oversight by the Army.

As an IRA in the mid-1980s, ATK excavated approximately 5,619 cy of PCB-contaminated soil and concrete from around the building; it was stored on-site with regulatory agency concurrence and in 1998 it was disposed of at an off-site facility.

The 1997 OU2 ROD required additional characterization of Unit 1 and Unit 2 soil and groundwater. This work was completed in 1999 and helped define the geologic conditions and extent of contamination for the purpose of designing a remedy pilot study. An engineering study, completed in 2001, indicated that the ROD requirement for extraction of shallow groundwater is not feasible at this site, due to the low permeability soils. In 2009, OU2 ROD Amendment No. 3 deleted the groundwater extraction requirement and added LUCs. For the purposes of AEDB-R, the amended final remedy is called "other". (The RA(C) end date and RIP date represent when the Army signed the amendment.)

Groundwater monitoring, LUCs, and five-year reviews are considered RA(O) until the groundwater cleanup levels have been met, which is assumed to be in 30 years, concurrent with the estimate for cleanup of deep groundwater at TCAAP (the RC date). The RA(O) start date reflects the 1997 ROD date, which triggered these activities. Ultimately, when the remediation goals have been achieved, the wells will be sealed and a closeout report will be prepared.

With respect to shallow soils, ATK took the position that soil remediation was not feasible, because the soils were beneath an occupied manufacturing facility (Building 502); hence, shallow soil remediation was not a requirement of the 1997 OU2 ROD. ATK has discontinued operations in the building, but will be responsible for the shallow soil remediation, so there are no Army costs included in AEDB-R.

**CLEANUP/EXIT STRATEGY**

The RA(O) of the shallow groundwater remedy (monitoring) will continue until site-specific cleanup levels have been met; this is estimated to occur in 30 years (funded by ATK).

Site ID: TCAAP-15  
Site Name: Bldg. 502 and Area (Site I)  
Alias: SITE I

Contaminated soils under Building 502 will be addressed when the building is removed.

The LUC implementation and five-year reviews (funded under TCAAP-19) will continue and are considered RA(O) until RC and then will be considered LTM.

Site ID: TCAAP-16  
 Site Name: Bldg. 103 (Site K)  
 Alias: SITE K

**STATUS**

Parcel: Public Sale Area (430 acres)  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Volatiles (VOC)  
 Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	200810
RD.....	199707.....	200904
IRA.....	198508.....	199712
RA(C).....	199712.....	200911
RA(O).....	199712.....	204109
RIP Date:	200911	
RC Date:	204109	

**SITE DESCRIPTION**

Site K is approximately 21 acres. It consists primarily of former Building 103, a two-story structure built in 1943. The building was used for munitions manufacturing and assembly operations, and various solvents were used to clean machines, parts, and floors. In 1961, the operations were reactivated for the production of fuses, mines, and weapon systems by Honeywell (subsequently ATK). In 2006 Building 103 was demolished; however, the concrete slab remains in place. TCAAP-16 is funded by ATK with oversight by the Army.

In 1985 a containment P&T system was initiated as an IRA to remove chlorinated solvents from the shallow groundwater. The 1997 OU2 ROD designated this system as part of the final RA. The start date of the RA(C) and RA(O) for the final RA are shown as the date of the ROD, since no further construction actually took place. The groundwater system most likely will operate for 30 years, concurrent with the best estimate for cleanup of the deep groundwater at TCAAP. RA(O) will be followed by verification monitoring, system dismantlement, well sealing, and a closeout report. In 2009, OU2 ESD No. 1 added LUCs related to groundwater.

The ROD also required further investigation of the shallow soils, which act as the source for groundwater contamination. The investigation was completed in 2000, and the report of findings was finalized in 2001. ATK took the position that soil remediation was not feasible, because the soils were beneath an existing building (103); hence, soil remediation was not a requirement of the 1997 OU2 ROD. The building was removed in 2006. In 2008, an EE/CA was approved and an action memorandum was signed for removal of contaminated soil beneath the floor slab. For purposes of AEDB-R, the EE/CA was considered in the remedial investigation / feasibility study (RI/FS) phase (end date of 2008), followed by RD (completed in 2009), and the removal of approximately 69 tons of contaminated soil and rubble. The soil closeout report was approved in 2009, which is the RA(C) end date and RIP date. The soil removal achieved unrestricted use levels, so there are no LUC requirements for soil.

**CLEANUP/EXIT STRATEGY**

The RA(O) of the groundwater pump-and-treat system will continue until site-specific levels are met; this is estimated to occur in 30 years (funded by ATK).

The OU2 ROD is planned to be amended in 2011 to document the previous soil removal action and select NFA as the final remedy for soil.

Site ID: TCAAP-16  
Site Name: Bldg. 103 (Site K)  
Alias: SITE K

The LUC implementation and five-year reviews (funded under TCAAP-19) will continue and are considered RA(O) until RC and then become LTM.

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Volatiles (VOC)  
 Media of Concern: Groundwater

Phases	Start	End
PA.....	198702.....	199006
SI.....	198702.....	199006
RI/FS.....	198702.....	199307
RD.....	199002.....	199705
IRA.....	199309.....	199803
RA(C).....	199309.....	200005
RA(O).....	199803.....	203609
LTM.....	203609.....	203609
RIP Date:	200005	
RC Date:	203609	

**SITE DESCRIPTION**

Past industrial activities at TCAAP have resulted in VOC contamination of deep aquifers (Units 3 and 4). Off-post, the VOC plumes diverge into two plumes termed the north plume (TCAAP-17) and south plume (TCAAP-27). OU1 addresses the north plume. OU3 addresses the south plume.

In June 1990 a permanent granular activated carbon (GAC) treatment facility, with a capacity of 3,900 gallons per minute, was installed in New Brighton to treat contaminated municipal wells. As an integral part of New Brighton's municipal water supply system, the treatment plant supplies drinking water to area residents and aids in the remediation of the TCAAP-related contaminated groundwater plume.

The 1993 OU1 ROD required additional extraction wells for containment of the plume. Construction was completed in 1998. RA(O) is executed by New Brighton, with reimbursement from a settlement agreement operating fund established by the Army in 1992. The settlement agreement is due to be extended in 2012, including the Army contributing additional funding to the operating fund. In 2009, New Brighton estimated that the additional funds needed in 2012, for a 20-year operating period, total \$44,000,000. While the agreement extension has not been finalized, Army legal counsel is advising to assume that the additional funding will be provided when the existing funds are nearing depletion, and that future funding will be on an every other year basis. It is estimated that the existing account will be sufficient through 2015, so it is assumed that the first supplemental installment will be in 2016, with \$4,400,000 contributed every other year for 20 years. Thus, the RA(O) end date is shown as 2036.

Other ROD requirements include alternate water supply/well abandonment, well advisory, monitoring, and reporting, which are funded under TCAAP-19.

In May 2006 a ROD amendment was executed which replaces the requirement for containment with a requirement to demonstrate aquifer restoration, through statistical evaluation of monitoring results. The current best estimate is that groundwater remediation goals will be met in 2032.

Once the cleanup levels have been achieved, the treatment system will be dismantled, monitoring wells will be sealed, a closeout report issued, and the site delisted (one-time LTM activity).

Site ID: TCAAP-17

Site Name: OU1 Deep Groundwater

Alias: OU1 GW

## CLEANUP/EXIT STRATEGY

Operation of the groundwater treatment system is expected to continue through 2036 until site-specific levels are met, at which time delisting of OU1 will occur (shown as a one-time LTM activity).

Site ID: TCAAP-19  
 Site Name: OU2 Deep Groundwater  
 Alias: OU2 GW

**STATUS**

Parcel: Public Benefit Conveyance, Ramsey County (108 acres), Public Sale Area (430 acres)  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Volatiles (VOC)  
 Media of Concern: Groundwater

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199712.....	200306
IRA.....	198606.....	199712
RA(C).....	199712.....	200306
RA(O).....	199712.....	204109
LTM.....	204109.....	204109
RIP Date:	200306	
RC Date:	204109	

**SITE DESCRIPTION**

This site addresses deep groundwater contamination in lithological Units 3 and 4 within the original TCAAP boundary.

In 1986 the TCAAP groundwater recovery system (TGRS) (formerly BGRS) began operation as an IRA. It included 12 extraction wells along the southwest boundary to capture contamination migrating off-post and five source control wells near known contamination sources. Discharge water from the wells is treated through air strippers and recharged via a gravel pit. The 1997 OU2 ROD made the TGRS part of the final RA. The RA(C) start date for the final remedy is shown as the date of the ROD, even though no further construction actually took place. The RA(O) start date was also triggered by the ROD.

The RA(O), including operation and maintenance, monitoring, reporting, and five-year reviews, is executed by ATK under a cost-sharing apportionment agreement with the Army. Funding requested reflects the Army's 80 percent share of the costs.

The OU2 ROD also required a reconfiguration analysis to optimize mass removal. In 2003 the resulting TGRS operating strategy was approved by the regulators (and subsequent modifications adjusting flow rates have also been approved). Further construction was not required, so the RA(C) completion date is the same date.

The current best estimate is that the TGRS will operate for 30 years. Once the remediation goals have been achieved, the groundwater monitoring will be verified, the system dismantled, the wells sealed, a closeout report issued, and the site delisted (one-time LTM activity).

In 2009, the OU2 ROD was modified by ESD No. 1 to clarify LUC requirements for groundwater.

Funding for TCAAP-19 also includes annual performance monitoring and reporting, five-year reviews (the next review is scheduled for 2014), well abandonment, administrative record management, and RA(O) activities conducted through the Total Installation Environmental Support contract for TCAAP sites.

**CLEANUP/EXIT STRATEGY**

The RA(O) of the TGRS will continue; it is expected to run until site-specific levels are met (an estimated 30 years), at which time delisting of OU2 will occur (shown as a one-time LTM activity).

Site ID: TCAAP-19  
Site Name: OU2 Deep Groundwater  
Alias: OU2 GW

The LUC implementation and five-year reviews will continue until cleanup levels are met and are considered RA(O) until RC.

The RA(O) and LTM activities will continue to be implemented for other TCAAP sites (TCAAP-01, TCAAP-05 through TCAAP-07, TCAAP-09 through TCAAP-13, TCAAP-17, TCAAP-20, TCAAP-21, TCAAP-27, TCAAP-28, and TCAAP-30 through TCAAP-32) that are being executed through the Total Installation Environmental Support contract, which is funded under TCAAP-19.

Site ID: TCAAP-20  
 Site Name: Grenade Range  
 Alias: GRENADE RN

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Metals  
 Media of Concern: Soil

Phases	Start	End
PA.....	199307.....	199310
SI.....	199310.....	199501
RI/FS.....	199411.....	199803
RD.....	199901.....	199903
RA(C).....	199903.....	200809
RA(O).....	200010.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

**SITE DESCRIPTION**

The M550 Grenade Range is approximately 19 acres. From March 1967 until July 1975 the range consisted of two launching structures and three landing pads. The range was operated by ATK.

Based on a 1999 EE/CA and action memorandum, a removal action was implemented, consisting of excavation, stabilization, and off-site disposal of contaminated soil. The site was cleaned up to site-specific industrial levels. In 1999 approximately 2,179 cy of contaminated soil were removed. In 2002, a closeout report received partial approval from the regulators pending resolution of LUC issues. In 2009, OU2 ROD Amendment No. 3 documented the soil removal as the final remedy and added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the amendment]. In 2010, the OU2 LUC RD was approved and the closeout report received final consistency approval. Per the action memorandum, four years of groundwater monitoring were conducted to verify that there were no impacts from metals.

The LUCs and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The LUC implementation (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-21  
 Site Name: Outdoor Firing Range  
 Alias: OFR

## STATUS

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)  
 Media of Concern: Soil

Phases	Start	End
PA.....	199310.....	199408
SI.....	199404.....	199612
RI/FS.....	199608.....	199803
RD.....	199806.....	199903
RA(C).....	199904.....	200809
RA(O).....	200209.....	200809
LTM.....	200809.....	201909
RIP Date:	200809	
RC Date:	200809	

## SITE DESCRIPTION

The Outdoor Firing Range is approximately 150 acres. From the 1950s through the 1970s it consisted of three bullet catchers that were used to test ammunition.

Based on a 1999 EE/CA and action memorandum, a removal was implemented, consisting of excavation, stabilization, and off-site disposal of contaminated soil. The site was cleaned up to site-specific industrial levels. In 1999 approximately 990 cy of contaminated soil were removed. In 2001, a closeout report received partial approval from the regulators pending resolution of LUC issues.

Near one of the range backstops (the 1900-yard range) soil was found to be contaminated with PAHs. In 2003, the regulators approved a work plan for placing a soil cover over roughly a one-half acre area. The cover was initially constructed in 2003, with additional cover material placed in 2004. In 2006 an addendum to the closeout report received partial approval, pending resolution of LUC issues.

In 2009, OU2 ROD Amendment No. 3 documented the soil removal and soil cover as the final remedy, and added LUCs [Note: the RA(C) end date and RC date represent when the Army signed the Amendment]. In 2010, the OU2 LUC RD was approved and the closeout report and addendum received final consistency approval.

The LUCs, cover maintenance and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

## CLEANUP/EXIT STRATEGY

The LUC implementation and cover maintenance (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and are considered LTM.

Site ID: TCAAP-23  
 Site Name: Bldg. 135 Primer/Tracer Area  
 Alias: 135 PTA

**STATUS**

Parcel: Public Benefit Conveyance, Ramsey County (108 acres)  
 Regulatory Driver: CERCLA  
 RRSE: LOW  
 Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	199509.....	199609
RI/FS.....	200001.....	201209
RD.....	201103.....	201309
RA(C).....	201103.....	201406
RIP Date:	N/A	
RC Date:	201406	

**SITE DESCRIPTION**

This area is approximately 65 acres. It consists of Building 135 and associated structures and utilities dedicated to the manufacture of small caliber ammunition primer and tracer mixtures. The manufacturing period included all of TCAAP production.

In 1988 a site-wide PA was performed for TCAAP; however, the primer/tracer areas (PTAs) were part of an Army mobilization mission at that time, so they were not investigated. Likewise, this area was not included during the site-wide RI completed in 1991. Limited soil sampling was performed in 1996 to obtain a Relative Risk Site Evaluation (RRSE) score, which was considered the site inspection (SI) phase.

In 2001, a PA was approved which recommended that an SI be performed (both were considered to be under the RI/FS phase). In 2002, the fieldwork was completed and the report was approved in 2005. The SI report recommended that an EE/CA be performed to better delineate the extent and magnitude of contamination and to evaluate the appropriate response action.

A storm water outfall from the PTA resulted in contamination of ditch sediments with PAHs. This contamination was on a parcel of land (Rice Creek Area) that was transferred to Ramsey County, and action at this area was expedited to facilitate the transfer. In 2005, approximately 1,256 tons of contaminated sediments were excavated and landfilled off-site, achieving unrestricted use cleanup levels. In 2006, the closeout report was approved. In 2009, OU2 ROD Amendment No. 3 documented the sediment removal as a final remedy with NFA required.

The Building 135 PTA is on the parcel of property being transferred out of federal ownership. Beginning in 2007, the transfer strategy was to have the purchaser be responsible for completing studies and any RA, so the RC date was assumed to be the estimated date of property transfer. In 2010, the transfer strategy changed. A portion of the 135 PTA is now anticipated to be transferred to Ramsey County as a no-cost public conveyance. Accountability for the remaining portion is expected to be transferred to the National Guard Bureau, who will in turn license use of the property to the MN Army National Guard as part of the Arden Hills Army Training Site. The current strategy is to have contamination identified on the Ramsey County portion be investigated and remediated (if necessary) by the county; however, execution of work on the remaining portion now reverts back to the Army. Accordingly, the RI/FS phase was changed from completed to underway to reflect work on the portion of property being retained by the Army. Funding for the investigation and remediation work is expected to be obligated in FY2011, with response complete in 2014.

**CLEANUP/EXIT STRATEGY**

Site ID: TCAAP-23  
Site Name: Bldg. 135 Primer/Tracer Area  
Alias: 135 PTA

Oversight will be provided to Ramsey County during the investigation and remediation work on the parcel it intends to acquire. The investigation and remediation work on the portion of the 135 PTA to be retained by the Army (planned for 2014) will be completed.

Site ID: TCAAP-25  
 Site Name: OU2 Waterbodies  
 Alias: OU2 SW

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: LOW  
 Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB)  
 Media of Concern: Sediment, Surface Water

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	201109
RD.....	201103.....	201203
RA(C).....	201103.....	201206
RA(O).....	201103.....	201409
RIP Date:	201206	
RC Date:	201409	

**SITE DESCRIPTION**

TCAAP-25 consists of Rice Creek, Sunfish Lake, Marsden Lake, and Pond G, all of which received runoff from previous TCAAP operations. All four water bodies are located within OU2. Rice Creek is now on property that has been transferred to Ramsey County. There is no public access to Sunfish and Marsden Lakes and Pond G, which are located within fenced property now under the control of the National Guard. (Note: TCAAP-25 originally also included Round Lake. In 2010 the Army and regulators agreed to separate Round Lake because it is located outside of OU2, additional investigation work was needed, and the risk management decision is more complicated. Round Lake became TCAAP-31.)

Limited investigations of these water bodies began in the early-1980s. The first relatively extensive investigation of surface water and sediment was conducted in 1992. Using this data as the foundation, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) performed additional phased investigation work in support of an ecological risk assessment. The Tier I Screening Risk Assessment was approved in 1997. The Tier II ecological risk assessment work plan was approved in 1999. The Tier II Ecological Risk Assessment Report was approved in 2004.

In September 2003, the Army and regulators agreed to conduct an FS to help evaluate risk management alternatives. A draft FS was initially prepared in 2005, revised in 2009, revised again in 2010, and received regulatory approval in 2011.

With the FS approved, it will be necessary to public notice a proposed plan (PP) and execute an amendment to the OU2 ROD. This activity is assumed to occur under the RI/FS phase. The FS recommends No Action for Rice Creek, Sunfish Lake, and Marsden Lake. For Pond G, the FS recommends adjusting the pH of the pond through application of lime, with monitoring to verify compliance with State water quality standards. RD will consist of preparing and obtaining regulatory approval for a quality assurance project plan (QAPP). RA(C) will be application of the lime. The RA(O) monitoring is to be conducted until the next TCAAP five-year review in 2014, and assuming favorable results, the site will be closed (RC). The funding for the RD through RA(O) phases is expected to be obligated in FY2011.

**CLEANUP/EXIT STRATEGY**

Public participation on the recommended remedies will be conducted through a PP and the remedies selected through an amendment to the OU2 ROD in 2011. No Action is expected to be selected for Rice Creek, Sunfish Lake, and Marsden Lake, with pH adjustment selected for Pond G. The Pond G remedy will be implemented in late-2011 or early-2012 and RA(O) monitoring conducted through the next five-year review in 2014. Assuming the remedy is shown to be effective, it will be considered RC with NFA required.

Site ID: TCAAP-27  
 Site Name: OU3 Deep Groundwater  
 Alias: OU3 GW

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: HIGH  
 Contaminants of Concern: Volatiles (VOC)  
 Media of Concern: Groundwater

Phases	Start	End
PA.....	198712.....	198804
SI.....	198712.....	198804
RI/FS.....	198804.....	199207
RD.....	199207.....	199305
RA(C).....	199305.....	200608
RA(O).....	199404.....	204109
LTM.....	204109.....	204109
RIP Date:	200608	
RC Date:	204109	

**SITE DESCRIPTION**

Past industrial activities at TCAAP resulted in VOC contamination of deep aquifers (Units 3 and 4). Off-post, the VOC plumes diverge into two plumes termed the north plume (TCAAP-17) and south plume (TCAAP-27). OU3 addresses the south plume. OU1 addresses the north plume.

The 1992 OU3 ROD required construction of an extraction well to hydraulically contain the south plume. The water was treated by GAC in a facility operated by the city of New Brighton, and was discharged to the New Brighton municipal water system. The system was known as the plume groundwater recovery system (PGRS). The RA(O) started in 1994 (original RIP date) and was executed by New Brighton, with reimbursement of costs by ATK. Levels of contamination were below action levels, beginning in late-1998, at the containment boundary; however, there are still areas above site-specific levels upgradient. In 2001 TCAAP received regulatory approval to temporarily stop pumping for remediation purposes. The regulators required the system to remain in standby until December 2004. In FY06 a ROD amendment was signed documenting that the PGRS is no longer needed and replacing this RA with MNA and adding LUCs. This changed the RIP date to 2006, reflecting implementation of the amended remedy.

Groundwater monitoring, groundwater use restrictions, and five-year reviews, considered RA(O), will be required until the remediation goals have been met, estimated to be in 30 years (the RC date). Once the cleanup levels have been achieved, the monitoring wells will be sealed, a closeout report issued, and the site delisted (one-time LTM activity).

**CLEANUP/EXIT STRATEGY**

Groundwater monitoring RA(O) will continue until site-specific cleanup levels are achieved, which is estimated in 30 years, with this activity funded by ATK. Five-year reviews (funded under TCAAP-19) will likewise continue until cleanup levels are achieved, at which time the OU will be delisted (shown as a one-time LTM activity).

Site ID: TCAAP-28  
 Site Name: Bldg. 535 Primer/Tracer Area  
 Alias: 535 PTA

**STATUS**

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: MEDIUM  
 Contaminants of Concern: Metals, Semi-volatiles (SVOC)  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	199610.....	199610
RI/FS.....	200001.....	200904
RD.....	200812.....	200905
RA(C).....	200903.....	201001
LTM.....	201001.....	201909
RIP Date:	N/A	
RC Date:	201001	

**SITE DESCRIPTION**

This area is approximately 75 acres. It refers to Building 535 and an array of associated production building foundations and grounds used for the production of primer, tracer, and incendiary mixtures from 1941 through the early-1960s. Approximately 50 of the structures were burned down during the 1960s. The site is now on property controlled by the National Guard; however, restoration program activities are being conducted by TCAAP. In 1988 a site-wide PA was performed for TCAAP; however, the PTAs were not investigated and this area was not included during the site-wide RI completed in 1991. In 1996 limited soil sampling was performed to obtain an RRSE score for this site; this was considered the SI phase.

In FY02 a PA was approved which recommended that an SI be performed; both were conducted under the RI/FS phase. In 2003 the SI fieldwork was completed and in 2005 the report was approved. The SI report recommended that an EE/CA be performed to better delineate the extent and magnitude of contamination and to evaluate the appropriate response action.

In 2009 an EE/CA was approved (also in the RI/FS phase), an action memorandum was signed, the work plan was approved (RD phase), and approximately 882 tons of contaminated soil was removed. The closeout report was approved in 2010, which represents the RA(C) end date and RC date. The cleanup was to state industrial use levels, so the action memorandum also made LUCs part of the remedy. In 2010, the OU2 LUC RD was approved.

The LUCs and five-year reviews will continue beyond RC (shown in LTM through 2019, which is through two five-year review cycles to be consistent with cost estimate guidance). Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

The OU2 ROD is planned to be amended in 2011 to document the previous soil removal action and select NFA as the final remedy for soil.

The LUC implementation (by the National Guard) and five-year reviews (funded under TCAAP-19) will continue and will be considered LTM.

Site ID: TCAAP-30  
 Site Name: Bldg. 102 Degreasing Operations  
 Alias: BLDG 102

**STATUS**

Parcel: Public Sale Area (430 acres)  
 Regulatory Driver: CERCLA  
 RRSE: LOW  
 Contaminants of Concern: Volatiles (VOC)  
 Media of Concern: Groundwater

Phases	Start	End
PA.....	200203.....	200301
SI.....	200301.....	200601
RI/FS.....	200601.....	200810
RD.....	200810.....	200812
RA(C).....	200812.....	200812
RA(O).....	200812.....	204109
RIP Date:	200812	
RC Date:	204109	

**SITE DESCRIPTION**

Building 102 was constructed in 1942 and used periodically until the mid-1970s for the production of small caliber ammunition and various other munitions components. Historical records indicate that portable degreasing machines were used in Building 102 during the early-1950s to reactivate production equipment for the Korean crisis.

Contamination was discovered emanating from beneath Building 102 during the phase I and phase II environmental site assessment (ESA) which was conducted between March 2002 and February 2004 in support of land transfer. Additional groundwater investigation work, including the installation of monitoring wells, was performed and documented in a January 2006 groundwater investigation report. The ESA-related work served as the PA and SI phases.

The RI began in January 2006, when the groundwater investigation report recommended that an EE/CA be performed to better delineate the extent and magnitude of contamination and to evaluate the appropriate response action.

The EE/CA was approved in July 2008 and the action memorandum was signed in October 2008 selecting MNA as the remedy (end of the RI/FS phase). RD consisted of preparing the quality assurance project plan for MNA, which was approved in December 2008. This same date was used as the RA(C) start and end date since there was no construction for MNA.

The current best estimate is that RA(O) for MNA will continue for 30 years. Once the remediation goals have been achieved, there will be well sealing and a closeout report. The MNA activities are performed through the Total Installation Environmental Support (TIES) contract, so the costs for RA(O) are included in TCAAP-19.

**CLEANUP/EXIT STRATEGY**

The OU2 ROD is planned to be amended in 2011 to document MNA as the final remedy for groundwater.

For groundwater, RA(O) for MNA will continue until site-specific cleanup goals are achieved. The estimated date for this is 30 years (funded under TCAAP-19).

The LUC implementation and five-year reviews (funded under TCAAP-19) will continue until groundwater cleanup levels are met.

Since the building and land are going to be transferred and redeveloped, the regulators have agreed to defer any soil or vapor issues to the developer.

Site ID: TCAAP-31  
 Site Name: Round Lake  
 Alias: Round Lake

## STATUS

Parcel: NONE  
 Regulatory Driver: CERCLA  
 RRSE: MEDIUM  
 Contaminants of Concern: Metals  
 Media of Concern: Soil

Phases	Start	End
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	201212
RA(C).....	201212.....	201409
LTM.....	201409.....	202409
RIP Date:	N/A	
RC Date:	201409	

## SITE DESCRIPTION

Round Lake is located southwest of TCAAP. The lake and surrounding shoreline were controlled by the Army from the early-1940s until 1974, when control was transferred to the US Fish and Wildlife Service (USFWS). As part of its watershed, the lake accepts storm water runoff from a portion of TCAAP. There was also periodic discharge of industrial waste from TCAAP until circa 1969. Round Lake is currently designated a Unit of the Minnesota Valley National Wildlife Refuge. The USFWS does not allow any public activity on Round Lake.

Limited investigations of contamination began in the early-1980s. The first relatively extensive investigation of surface water and sediment was conducted in 1992. Using this data as the foundation, the USACHPPM performed additional phased investigation work in support of an ecological risk assessment. The Tier I Screening Risk Assessment was approved in 1997. The Tier II ecological risk assessment work plan was approved in 1999. The Tier II Ecological Risk Assessment Report was approved in 2004. Metals in sediment were identified as the primary risk concern.

In September 2003, the Army, regulators, and USFWS agreed to conduct an FS for Round Lake. Draft versions of the FS have undergone regulatory and USFWS review in 2005, 2009, and 2010. There has been disagreement between the parties regarding ecological risk, human health risk, and an appropriate RA decision. The situation was further complicated when the State initiated a Natural Resource Damage Assessment (NRDA) in 2004 that requires coordination with the FS. In 2010, the USEPA and MPCA requested that additional sediment testing be performed in support of the FS. (Note: at that time, the Army decided to separate Round Lake from four other waterbodies that were part of the ecological risk assessment and FS. Accordingly, Round Lake was separated from TCAAP-25 and TCAAP-31 was created.)

The Quality Assurance Project Plan for the additional sediment testing was approved in 2011 and the fieldwork is underway. Work on the FS will resume when the results have been reviewed and accepted by the regulators. It is not clear what the preferred remedy will be, with the Army leaning towards No Action (with monitoring) and the regulators leaning towards a sediment removal alternative. For the purposes of AEDB-R at this point in time, the minimum cost alternative has been inputted as a place-holder.

## CLEANUP/EXIT STRATEGY

The additional sediment investigation and FS will be completed. Then public participation for the remedy selection will be conducted through a PP, and the selected remedy documented through a new ROD for OU 4. (All will be conducted in the RI/FS phase.)

Site ID: TCAAP-31  
Site Name: Round Lake  
Alias: Round Lake

It is not clear what the selected remedy will be; however, at a minimum, it will entail some monitoring and five-year reviews. It is assumed that the OU will eventually be delisted, which is considered a one-time activity in the LTM phase.

## IRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
TCAAP-02	Sewage Sludge Disposal (Site B)	200104	2001 Site B Dump Investigation, Characterization, and Closeout Report and 2009 OU2 ROD Explanation of Significant Differences #2.
TCAAP-08	Open Burn/Burial Area (Site F)	200009	Site F Closure Certification Report
TCAAP-22	Water Tower Area	199608	1996 Investigation Report of the Water Tower Area (Final) and 2009 OU2 ROD Amendment #3.
TCAAP-24	Recreational Trap-Shooting Range	200009	2000 Removal Site Evaluation, Preliminary Assessment, Trap Range Site, and 2009 OU2 ROD Amendment #3.
TCAAP-26	All Uncharacterized Areas	199604	The PA/SI found no contamination requiring further action.
TCAAP-29	AEC Phytoremediation Demo Areas	200410	TCAAP-29 was considered Response Complete in AEDB-R, with future actions and costs moved to TCAAP-05.

# IRP Schedule

Date of IRP Inception: 197801

## Past Phase Completion Milestones

1986	
IRA	(TCAAP-15 - Bldg. 502 and Area (Site I))
1988	
SI	(TCAAP-16 - Bldg. 103 (Site K), TCAAP-19 - OU2 Deep Groundwater, TCAAP-25 - OU2 Waterbodies, TCAAP-27 - OU3 Deep Groundwater, TCAAP-31 - Round Lake, TCAAP-01 - Burial/Burn Area (Site A), TCAAP-02 - Sewage Sludge Disposal (Site B), TCAAP-05 - Open Burn/Disposal Area (Site C), TCAAP-06 - Leach/Burn Pits (Site D), TCAAP-07 - Dump and Burning Area (Site E), TCAAP-08 - Open Burn/Burial Area (Site F), TCAAP-09 - Dump (Site G), TCAAP-10 - Burn/Burial Area (Site H), TCAAP-11 - Leaching Pits (Site 129-3), TCAAP-12 - Burn/Disposal Area (Site 129-5), TCAAP-13 - Dump (Site 129-15), TCAAP-15 - Bldg. 502 and Area (Site I))
PA	(TCAAP-19 - OU2 Deep Groundwater, TCAAP-23 - Bldg. 135 Primer/Tracer Area, TCAAP-24 - Recreational Trap-Shooting Range, TCAAP-25 - OU2 Waterbodies, TCAAP-26 - All Uncharacterized Areas, TCAAP-27 - OU3 Deep Groundwater, TCAAP-28 - Bldg. 535 Primer/Tracer Area, TCAAP-31 - Round Lake, TCAAP-01 - Burial/Burn Area (Site A), TCAAP-02 - Sewage Sludge Disposal (Site B), TCAAP-05 - Open Burn/Disposal Area (Site C), TCAAP-06 - Leach/Burn Pits (Site D), TCAAP-07 - Dump and Burning Area (Site E), TCAAP-08 - Open Burn/Burial Area (Site F), TCAAP-09 - Dump (Site G), TCAAP-10 - Burn/Burial Area (Site H), TCAAP-11 - Leaching Pits (Site 129-3), TCAAP-12 - Burn/Disposal Area (Site 129-5), TCAAP-13 - Dump (Site 129-15), TCAAP-15 - Bldg. 502 and Area (Site I), TCAAP-16 - Bldg. 103 (Site K))
1990	
SI	(TCAAP-17 - OU1 Deep Groundwater)
PA	(TCAAP-17 - OU1 Deep Groundwater)
1991	
SI	(TCAAP-22 - Water Tower Area)
PA	(TCAAP-22 - Water Tower Area)
1992	
RI/FS	(TCAAP-27 - OU3 Deep Groundwater, TCAAP-08 - Open Burn/Burial Area (Site F))
1993	
RI/FS	(TCAAP-17 - OU1 Deep Groundwater)
RD	(TCAAP-27 - OU3 Deep Groundwater, TCAAP-08 - Open Burn/Burial Area (Site F))
1994	
PA	(TCAAP-20 - Grenade Range, TCAAP-21 - Outdoor Firing Range)
1995	
RI/FS	(TCAAP-22 - Water Tower Area)
RD	(TCAAP-22 - Water Tower Area)
SI	(TCAAP-20 - Grenade Range)
1996	
SI	(TCAAP-23 - Bldg. 135 Primer/Tracer Area, TCAAP-26 - All Uncharacterized Areas)
RA(C)	(TCAAP-22 - Water Tower Area)
1997	
SI	(TCAAP-21 - Outdoor Firing Range, TCAAP-24 - Recreational Trap-Shooting Range, TCAAP-28 - Bldg. 535 Primer/Tracer Area)
RD	(TCAAP-17 - OU1 Deep Groundwater)

1997	
RI/FS	(TCAAP-19 - OU2 Deep Groundwater, TCAAP-01 - Burial/Burn Area (Site A), TCAAP-05 - Open Burn/Disposal Area (Site C), TCAAP-06 - Leach/Burn Pits (Site D), TCAAP-07 - Dump and Burning Area (Site E), TCAAP-09 - Dump (Site G), TCAAP-10 - Burn/Burial Area (Site H), TCAAP-11 - Leaching Pits (Site 129-3), TCAAP-12 - Burn/Disposal Area (Site 129-5), TCAAP-13 - Dump (Site 129-15), TCAAP-15 - Bldg. 502 and Area (Site I))
1998	
RI/FS	(TCAAP-20 - Grenade Range, TCAAP-21 - Outdoor Firing Range)
IRA	(TCAAP-17 - OU1 Deep Groundwater, TCAAP-19 - OU2 Deep Groundwater, TCAAP-01 - Burial/Burn Area (Site A), TCAAP-06 - Leach/Burn Pits (Site D), TCAAP-09 - Dump (Site G), TCAAP-16 - Bldg. 103 (Site K))
RD	(TCAAP-01 - Burial/Burn Area (Site A), TCAAP-05 - Open Burn/Disposal Area (Site C), TCAAP-07 - Dump and Burning Area (Site E), TCAAP-10 - Burn/Burial Area (Site H), TCAAP-11 - Leaching Pits (Site 129-3), TCAAP-12 - Burn/Disposal Area (Site 129-5))
1999	
RD	(TCAAP-20 - Grenade Range, TCAAP-21 - Outdoor Firing Range)
2000	
RA(C)	(TCAAP-17 - OU1 Deep Groundwater, TCAAP-08 - Open Burn/Burial Area (Site F))
PA	(TCAAP-29 - AEC Phytoremediation Demo Areas)
RI/FS	(TCAAP-24 - Recreational Trap-Shooting Range)
2001	
RA(C)	(TCAAP-29 - AEC Phytoremediation Demo Areas)
RD	(TCAAP-29 - AEC Phytoremediation Demo Areas, TCAAP-13 - Dump (Site 129-15), TCAAP-15 - Bldg. 502 and Area (Site I))
RI/FS	(TCAAP-29 - AEC Phytoremediation Demo Areas, TCAAP-02 - Sewage Sludge Disposal (Site B))
IRA	(TCAAP-29 - AEC Phytoremediation Demo Areas)
2003	
PA	(TCAAP-30 - Bldg. 102 Degreasing Operations)
RA(C)	(TCAAP-19 - OU2 Deep Groundwater)
RD	(TCAAP-19 - OU2 Deep Groundwater, TCAAP-06 - Leach/Burn Pits (Site D))
2004	
RD	(TCAAP-09 - Dump (Site G))
2005	
RA(O)	(TCAAP-29 - AEC Phytoremediation Demo Areas)
2006	
RA(C)	(TCAAP-27 - OU3 Deep Groundwater)
SI	(TCAAP-30 - Bldg. 102 Degreasing Operations)
2008	
RA(C)	(TCAAP-20 - Grenade Range, TCAAP-21 - Outdoor Firing Range, TCAAP-01 - Burial/Burn Area (Site A), TCAAP-05 - Open Burn/Disposal Area (Site C), TCAAP-06 - Leach/Burn Pits (Site D), TCAAP-07 - Dump and Burning Area (Site E), TCAAP-09 - Dump (Site G), TCAAP-10 - Burn/Burial Area (Site H), TCAAP-11 - Leaching Pits (Site 129-3), TCAAP-12 - Burn/Disposal Area (Site 129-5), TCAAP-13 - Dump (Site 129-15), TCAAP-15 - Bldg. 502 and Area (Site I))

2008  
 RA(O) (TCAAP-20 - Grenade Range, TCAAP-21 - Outdoor Firing Range, TCAAP-06 - Leach/Burn Pits (Site D), TCAAP-07 - Dump and Burning Area (Site E), TCAAP-09 - Dump (Site G), TCAAP-10 - Burn/Burial Area (Site H), TCAAP-11 - Leaching Pits (Site 129-3), TCAAP-12 - Burn/Disposal Area (Site 129-5), TCAAP-13 - Dump (Site 129-15))  
 IRA (TCAAP-05 - Open Burn/Disposal Area (Site C))

2009  
 RA(C) (TCAAP-30 - Bldg. 102 Degreasing Operations)  
 RI/FS (TCAAP-16 - Bldg. 103 (Site K), TCAAP-28 - Bldg. 535 Primer/Tracer Area, TCAAP-30 - Bldg. 102 Degreasing Operations)  
 RD (TCAAP-28 - Bldg. 535 Primer/Tracer Area, TCAAP-30 - Bldg. 102 Degreasing Operations, TCAAP-16 - Bldg. 103 (Site K))

2010  
 RA(C) (TCAAP-28 - Bldg. 535 Primer/Tracer Area, TCAAP-16 - Bldg. 103 (Site K))

**Projected Phase Completion Milestones**

See attached schedule

**Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates**

Site ID	Site Name	ROD/DD Title	ROD/DD Date
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Final RA(C) Completion Date: 201409

Schedule for Next Five-Year Review: 2014

Estimated Completion Date of IRP at Installation (including LTM phase): 204109

## TWIN CITIES ARMY AMMUNITION PLANT IRP Schedule

█ = phase underway

SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-01	Burial/Burn Area (Site A)	RA(O)	█	█	█	█		
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-05	Open Burn/Disposal Area (Site C)	RA(O)	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-06	Leach/Burn Pits (Site D)	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-07	Dump and Burning Area (Site E)	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-09	Dump (Site G)	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-10	Burn/Burial Area (Site H)	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-11	Leaching Pits (Site 129-3)	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-12	Burn/Disposal Area (Site 129-5)	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-13	Dump (Site 129-15)	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-15	Bldg. 502 and Area (Site I)	RA(O)	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-16	Bldg. 103 (Site K)	RA(O)	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-17	OU1 Deep Groundwater	RA(O)	█	█	█	█	█	█
		LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-19	OU2 Deep Groundwater	RA(O)	█	█	█	█	█	█
		LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-20	Grenade Range	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-21	Outdoor Firing Range	LTM	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-23	Bldg. 135 Primer/Tracer Area	RI/FS	█					
		RD	█	█				
		RA(C)	█	█	█			
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-25	OU2 Waterbodies	RD	█					
		RA(C)	█					
		RA(O)	█	█	█			
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-27	OU3 Deep Groundwater	RA(O)	█	█	█	█	█	█
		LTM	█	█	█	█	█	
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-28	Bldg. 535 Primer/Tracer Area	LTM	█	█	█	█	█	█

## TWIN CITIES ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-30	Bldg. 102 Degreasing Operations	RA(O)						
SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
TCAAP-31	Round Lake	RI/FS						
		RA(C)						
		LTM						

# TWIN CITIES ARMY AMMUNITION PLANT

## Non-BRAC Excess Compliance Restoration

## CR Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 1/0

### Installation Site Types with Future and/or Underway Phases

1 Contaminated Fill  
(CCTCAAP-32)

### Most Widespread Contaminants of Concern

Metals

### Media of Concern

Soil

### Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
N/A					

### Duration of CR

Year of CR Inception: 199606

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201509/201509

Date of CR completion including Long Term Management (LTM): 201509

## CR Contamination Assessment

### Contamination Assessment Overview

Environmental Baseline Survey (EBS) work performed between 1996 and 2005 identified two AOCs. Soil sampling indicates contamination by metals at both AOCs. CCTCAAP-32 was established in 2011 to address both AOCs. This newly eligible site is considered to be an installation restoration (IR) site; however, it is being coded as CR in AEDB-R to distinguish it from the original IR sites and IR metrics. The site was coded this way because on Dec. 29, 2008, the Office of the Deputy Under Secretary of Defense for Installations and Environment [ODUSD (I&E)] issued an interim policy for Defense Environmental Restoration Program (DERP) eligibility that rescinded the 1986 eligibility date for the IRP.

### Cleanup Exit Strategy

There is one active AEDB-R site. The strategy for CCTCAAP-32 (EBS AOCs) is to obligate the funding for RI/FS through RA(C) in FY2011, and achieve RC by 2015 through soil removal work to achieve site-specific cleanup levels.

## CR Previous Studies

1999	Title	Author	Date
	Final Training Area F Addendum, Phase II Environmental Baseline Survey	Montgomery Watson	DEC-1999

# TWIN CITIES ARMY AMMUNITION PLANT

Non-BRAC Excess  
Compliance Restoration  
Site Descriptions

Site ID: CCTCAAP-32

Site Name: Environmental Baseline Survey AOCs

Alias: EBS AOCs

## STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
PA.....	199606.....	200912
SI.....	199606.....	200912
RI/FS.....	201103.....	201309
RD.....	201103.....	201406
RA(C).....	201103.....	201509

RIP Date: N/A

RC Date: 201509

## SITE DESCRIPTION

Environmental Baseline Survey (EBS) work performed between 1996 and 2005 identified two AOCs. Soil sampling indicates contamination by metals at both AOCs.

The EBS work is considered the PA and SI phases. The RI/FS, RD, and RA(C) phases are expected to be funded in FY2011. Based on similarity to other contaminated soil sites at TCAAP, it is anticipated that the RA(C) will consist of excavation and landfill disposal. No LTM has been added at this time pending a determination of the need for long-term LUCs.

## CLEANUP/EXIT STRATEGY

Investigation and remediation work will be completed to site-specific cleanup levels (planned for 2015).

## CR Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
There are no NFA sites			

## CR Schedule

Date of CR Inception: 199606

### Past Phase Completion Milestones

2010

SI (CCTCAAP-32 - Environmental Baseline Survey AOCs)

PA (CCTCAAP-32 - Environmental Baseline Survey AOCs)

### Projected Phase Completion Milestones

See attached schedule

### Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

To Be Determined

Final RA(C) Completion Date: 201509

Schedule for Next Five-Year Review: 2014

Estimated Completion Date of CR at Installation (including LTM phase): 201509

## TWIN CITIES ARMY AMMUNITION PLANT CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY12	FY13	FY14	FY15	FY16	FY17+
CCTCAAP-32	Environmental Baseline Survey AOCs	RI/FS						
		RD						
		RA(C)						

## Community Involvement

Technical Review Committee (TRC): 198712  
Community Involvement Plan (Date Published): 199701  
Restoration Advisory Board (RAB): RAB established 1996  
RAB Adjournment Date:  
RAB Adjournment Reason:

### Additional Community Involvement Information

The TCAAP RAB, established in 1996, identified a mission statement and operating procedures. The current RAB consists of seven community members and four non-community members. A representative of the RAB has participated in every IAP workshop. Community RAB members have the opportunity to participate in the Army/regulatory agency's TRC meetings. Some community members have participated in regional and national RAB workshops. The RAB has two active committees: a technical committee and a communication/membership committee.

The TRC reviews and comments on technical documents. The RAB provided input on the FS for aquatic sites, and the OU2 LUC RD. The RAB is expected to be involved in future remedy evaluation and/or selection for the aquatic sites (TCAAP25 and TCAAP31) and groundwater sites. In 1999 the RAB was awarded a TAPP grant, which was used to provide support from the University of Minnesota. The RAB also received an award of appreciation from the state of Minnesota in 1999.

The communication/membership committee helps recruit RAB members and keeps the community informed, and the RAB has a website (TCAAPRAB.ORG). RAB members helped to communicate restoration activities to interested stakeholders in the early land transfer process through review of technical documents and participation in stakeholder meetings. The RAB has input to land use and institutional controls which will have impact on TCAAP, and the board prepared a document to explain these to the public. This document was posted on the TCAAP RAB website.

A community relations plan is in place and was updated in 1997. The installation plans to update the community relations plan in FY11-12. TCAAP distributes a periodic newsletter to update the public on important restoration activities and milestones.

The FY11 Draft IAP was sent to the following agencies for review and comment: USEPA Region V (Tom Barounif), MN Pollution Control Agency (Deepa delAlwif), RAB Co-chair (Lyle Falmela), Alliant Techsystems (Karie Blomquist), MN Army National Guard (Mary Lee).

### Administrative Record is located at

Twin Cities Army Ammunition Plant Office  
470 West Highway 96, Suite 100  
Shoreview, MN 56126  
(651) 294-4930

### Information Repository is located at

Twin Cities Army Ammunition Plant Office (off post)  
470 West Highway 96, Suite 100  
Shoreview, MN 56126  
(651) 294-4930

An index of the IR is also available at the Ramsey County Library.

Current Technical Assistance for Public Participation (TAPP): 199808  
TAPP Title: TCAAP Technical Assistance

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## Community Involvement

Potential TAPP: N/A

