

**FY2008**

**TWIN CITIES ARMY AMMUNITION PLANT**

**Installation Action Plan**

Printed 18 November 2008

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## Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year 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, with the costs and schedules required to conduct investigations and take the necessary remedial actions (RAs).

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), the Twin Cities Army Ammunition Plant (TCAAP), the Base Realignment and Closure Division (BRACD), executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules, and tentative 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.

## Acronyms

AEDB-R	Army Environmental Database - Restoration
AOC	Area of concern
ATK	Alliant Techsystems, Inc.
BRAC	Base Realignment and Closure
BRACD	Base Realignment and Closure Division
CA	Corrective Action
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
cy	cubic yards
DD	Decision Document
DOD	Department of Defense
DSMOA/CA	Defense and State Memorandum of Agreement/Cooperative Agreement
EE/CA	Engineering Evaluation / Cost Analysis
ESA	Environmental Site Assessment
ESD	Explanation of Significant Differences
FFA	Federal Facilities Agreement
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
FY	Fiscal Year
GAC	Granular Activated Carbon
IAP	Installation Action Plan
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LTM	Long-term Management
LTO	Long Term Operation
LUC	Land Use Controls
MPCA	Minnesota Pollution Control Agency
NBCGRS	New Brighton Contaminated Groundwater Recovery System
NFA	No Further Action
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
NRDA	Natural Resource Damage Assessment
OU	Operable Unit
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PGRS	Plume Groundwater Recovery System
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
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design

## Acronyms

REM	Removal Action
RI	Remedial Investigation
RI/FS	Remedial Investigation / Feasibility Study
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Inspection
SVE	Soil Vapor Extraction
TCAAP	Twin Cities Army Ammunition Plant
TGRS	TCAAP Groundwater Recovery System (formerly BGRS)
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
VOC	Volatile Organic Compound
WWII	World War II

## Site Alias List

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

<b>AEDB-R/AEDB-CC #</b>	<b>Alias</b>
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	SURF WATER
TCAAP-27	OU3 GW
TCAAP-28	535 PTA
TCAAP-30	BLDG 102

## Installation Information

### **Installation Locale**

**Installation Size (Acreage):** 2,370.00

**City:** Arden Hills

**County:** Ramsey

**State:** Minnesota

### **Other Locale Information**

The Twin Cities Army Ammunition Plant (TCAAP) occupied approximately four square miles, or 2,370 acres, in northwest Ramsey County, Minnesota, and is within the Minneapolis/St. Paul metropolitan area. Some of the property has been transferred from the Army to other parties, including the National Guard Bureau, Ramsey County, and the city of Arden Hills. In 2002, the remaining 774 acres of TCAAP were declared excess to the Department of Defense (DOD), and so the property is in various stages of being transferred, but for the purposes of this IAP, references to TCAAP are to the original area.

### **Installation Mission**

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

### **Lead Organization**

Base Realignment and Closure Division

### **Lead Executing Agencies for Installation**

Installation and US Army Corps of Engineers (USACE), Omaha District

### **Regulator Participation**

**Federal** 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:** 201009

### **Date for NPL Deletion**

**IR:** N/A

**MR:** To Be Determined

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

RAB established

### **Installation Program Summaries**

#### **IRP**

**Primary Contaminants of Concern:** Explosives, Metals, Polychlorinated Biphenyls, Polycyclic Aromatic Hydrocarbons, Semi-volatiles, Volatiles

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

# Cleanup Program Summary

## *Installation Historic Activity*

The construction of the TCAAP began on August 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 105mm 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 non-military, industrial-based activities. The TCAAP preliminary assessment (PA) details activities of the various tenants.

The TCAAP facility is managed through an installation support services contract. The facility had over 300 structures, including five major production buildings, numerous auxiliary buildings, and supporting utilities. In 2002 the remaining 774 acres were declared excess to the needs of the DOD. 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 National Priorities List (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 facility agreement (FFA) between the Army, the USEPA, and the MPCA was implemented. A two-party Defense and State Memorandum of Agreement/Cooperative Agreement (DSMOA/CA) between the Army and the MPCA became effective in June 1991. The regulatory driver for TCAAP is the inter-agency agreement/FFA associated with the NPL site. In September 1992 a record of decision (ROD) was completed for Operable Unit 3 (OU3), for OU1 in September 1993, and for OU2 in December 1997. Amendments to the OU1 and OU3 RODs were completed in 2006. An amendment to the OU2 ROD was completed in 2007. Fifteen sites are listed on the Resource Conservation and Recovery Act (RCRA) permit, but are currently addressed under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). Sites B, F, and J are closed.

## *Installation Program Cleanup Progress*

### *IRP*

- Prior Year Progress:** OU-1 and OU-3 began Long Term Operation Management (LTOM). A ROD Amendment was signed for OU-2 to resolve LUCs and complete closeout reports for A,C,D,E,G,H,129-3,129-5,129-15, Grenade Range, and Outdoor Firing Range. EE/CAs were completed for 535 PTA, Building 102 and Site K.
- Future Plan of Action:** LTOM will continue for OU-1 and OU-3. A Feasibility Study (FS) for aquatic sites will be completed for OU-2 and remedies implemented for 535 PTA, Bldg 102, and Site K.

## 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 MN Dept. 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:** OU3 LUC

**Site(s):** TCAAP-27

**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 MN Dept. 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

## Land Use Control (LUC) Summary

### **Summary of Parcel Prioritization and Transfer Strategy**

The transfer of highway right-of-way to the Minnesota Department of Transportation (MNDOT), and the railroad spur to the Ramsey County Regional Rail Authority are in progress. Findings Of Suitability To Transfer (FOSTs) have been signed and final transfer execution was completed in 2007.

Transfer of the remaining property to the city of Arden Hills is also in progress, but significant issues are unresolved. The strategy includes Early Transfer under CERCLA for a portion of the property. BRAC-D and the General Services Administration are in the lead for the federal government. The current estimate for transfer is late 2009.

#### **Parcel Name: Arden Hills Area**

**Parcel Size:** 585.00

**Associated Sites:** TCAAP-15, TCAAP-30, TCAAP-05, TCAAP-16, TCAAP-19, TCAAP-23

**Transfer Date:** 200909

**Current Land Use:** Industrial

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

**Encumbrances:** N/A

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

**Transfer Strategy:** Economic Development Conveyance (EDC)

**Recipient Organization:** City of Arden Hills, MN

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

#### **Parcel Name: MNDOT**

**Parcel Size:** 45.00

**Associated Sites:**

**Transfer Date:** 200709

**Current Land Use:** Other (Highway Right-of-Way)

**Future Land Use:** Other (Highway Right-of-Way)

**Encumbrances:** N/A

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

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

**Recipient Organization:** Minnesota Department of Transportation

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

#### **Parcel Name: Railroad Spur**

**Parcel Size:** 20.25

**Associated Sites:**

**Transfer Date:** 200806

**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:** Economic Development Conveyance (EDC)

**Recipient Organization:** Ramsey County Regional Rail Authority

**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/Response Complete (RC) Sites:** 26/6

**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)
- 1 Contaminated Sediments  
(TCAAP-25)
- 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, Polycyclic Aromatic Hydrocarbons, Semi-volatiles, Volatiles

**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	WASTE REMOVAL - SOILS	1985	TBD
TCAAP-06	Leach/Burn Pits (Site D)	IRA	CAPPING	1985	TBD
TCAAP-09	Dump (Site G)	IRA	CAPPING	1985	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-01	Burial/Burn Area (Site A)	FRA	GROUND WATER TREATMENT	1997	\$1,214.0 K
TCAAP-01	Burial/Burn Area (Site A)	IRA	GROUND WATER TREATMENT	1997	\$92.0 K
TCAAP-06	Leach/Burn Pits (Site D)	IRA	SOIL VAPOR EXTRACTION	1997	TBD
TCAAP-06	Leach/Burn Pits (Site D)	FRA	SOIL VAPOR EXTRACTION	1997	\$530.0 K
TCAAP-09	Dump (Site G)	IRA	SOIL VAPOR EXTRACTION	1997	TBD
TCAAP-09	Dump (Site G)	FRA	SOIL VAPOR EXTRACTION	1997	\$786.0 K
TCAAP-16	Bldg. 103 (Site K)	IRA	GROUND WATER TREATMENT	1997	\$10.0 K
TCAAP-19	OU2 Deep Groundwater	IRA	GROUND WATER TREATMENT	1997	\$2,133.0 K
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

## IRP Summary

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

Site ID	Site Name	Action	Remedy	FY	Cost
TCAAP-16	Bldg. 103 (Site K)	FRA	GROUND WATER TREATMENT	2001	\$10.0 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-19	OU2 Deep Groundwater	FRA	GROUND WATER TREATMENT	2003	\$1,969.0 K
TCAAP-27	OU3 Deep Groundwater	FRA	NATURAL ATTENUATION	2006	TBD
TCAAP-05	Open Burn/Disposal Area (Site C)	FRA	GROUND WATER TREATMENT	2007	TBD
TCAAP-05	Open Burn/Disposal Area (Site C)	IRA	GROUND WATER TREATMENT	2007	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-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	WASTE REMOVAL - SOILS	2008	TBD
TCAAP-21	Outdoor Firing Range	FRA	CAPPING	2008	TBD

### Duration of IRP

Year of IRP Inception: 197801

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201009/204009

Date of IRP completion including Long Term Management (LTM): 204009

# IRP Contamination Assessment

## **Contamination Assessment Overview**

In June 1981 the IRP began when the Army and state discovered chlorinated solvents [a type of volatile organic compound (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 semi-volatile organic compounds, including polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAH).

The TCAAP IRP activities include operable units 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/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 original boundary of TCAAP. Between 1986 and 1988 IRAs were initiated to pump and treat 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.

Sites on the New Brighton/Arden Hills NPL site being addressed as removal actions (REM) include TCAAP-20, TCAAP-21, TCAAP-22, TCAAP-23, TCAAP-24, TCAAP-25, TCAAP-28, and TCAAP-30.

## **Cleanup Exit Strategy**

There are 20 AEDB-R sites. Nine are planned for RC, once LUC issues and ROD amendments are resolved. The field work has been completed at these nine sites. Four sites are still in the investigation and/or study phase, so the decision documents (DDs) will be integral to the strategy for getting to RC. The remaining seven sites have groundwater contamination, with estimated RC dates ranging from 2013 to 2040, based on achieving site-specific cleanup standards.

## IRP Previous Studies

Year	Title	Author	Date
1978	Installation Assessment of Twin Cities Army Ammunition Plant, Report No. 129	USATHMA	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
1992	Operable Unit 3 Feasibility Study	CRA	JUL-1992
	Record of Decision, Groundwater Remediation Operable Unit 3		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		NOV-1992
1993	Feasibility Study, Final OU-1 FS	Montgomery Watson	JUL-1993
	Fiscal Year 1992 Annual Monitoring Report and Drawings	Wenck Associates, Inc	JUL-1993
	Record of Decision, Groundwater Remediation Operable Unit 1		SEP-1993
1994			

## IRP Previous Studies

Year	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 Drawings	Wenck Associates, Inc	AUG-1998

## IRP Previous Studies

Year	Title	Author	Date
1998	Cognis Terramet Lead Extraction Process, Innovative Technology Evaluation Report, SITE Superfund Innovative Technology Evaluation	EPA	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	EPA	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	EPA	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 Close Out 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
	Final Remedial Action Completion and Shallow Soil Sites Close Out Report plus Drawings, Volume I - Site A	Stone & Webster	DEC-2001

## IRP Previous Studies

2001	Title	Author	Date
	Activities, Volume II - Site 129-5 Activities, Revision 2,		
	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
2003	Site K Remedial Action Report	CRA	FEB-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
2004	Final Remedial Action Completion and Shallow Soil Sites Close Out Report, Volume VIII, Site A Former 1945 Trench Activities, Revision 2	Shaw Environmental, Inc	JAN-2004
	Final Remedial Action Completion and Shallow Soil Sites Close Out Report, Volume VII, Site D Activities, Revision 2	Shaw Environmental, Inc	FEB-2004
	Final Construction, Operation, and Close Out 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 Close Out Report, Revision 2	Shaw Environmental, Inc	DEC-2004
	Tier II Ecological Risk Assessment Report, Volumes I and II	US Army CHPPM	DEC-2004

## IRP Previous Studies

	Title	Author	Date
<b>2004</b>	Technical Memorandum, Statistical Evaluation Method for Operable Unit 1 Water Quality Data	OU1 Technical Group	DEC-2004
<b>2005</b>	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
	Method for Operable Unit 1 Water Quality Data		OCT-2005
	Proposed Plan for Groundwater Remediation for Operable Unit 3 at the New Brighton/Arden Hills Superfund Site	CRA	OCT-2005
<b>2006</b>	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
<b>2007</b>	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

# **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

**Media of Concern:** Groundwater, Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199712.....	199806
IRA.....	198809.....	199712
RA(C).....	199712.....	200809
RA(O).....	199712.....	201309

**RIP Date:** 200809

**RC Date:** 201309

## 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 shallow soil and shallow groundwater with VOCs and metals.

From 1988 to 1994 a groundwater IRA operated. It consisted of an extraction well near the source area, with granular activated carbon (GAC) treatment, and surface discharge. In 1994, after conducting an EE/CA, a new IRA was implemented to prevent off-site migration of VOCs into the shallow groundwater. The system consisted of eight extraction wells, with direct discharge to the Privately 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 further construction actually 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 groundwater cleanup levels are likely to be achieved, with RC in FY2013, after verification monitoring, system dismantlement, well sealing, and a closeout report. The ROD required that the groundwater remedy be reevaluated after 10 years; that activity will take place during 2008.

The OU2 ROD also specified stabilization, excavation, and off-site disposal of the shallow, metals-contaminated soil to site-specific industrial levels. In 1998-1999 approximately 16,226 cubic yards (cy) of contaminated soil were removed and disposed of to complete the field work. In 2001 a closeout report for shallow contaminated soils received partial approval from the regulators. Final approval is subject to resolution of LUC issues. Signing of an Explanation of Significant Differences addressing LUCs is anticipated in 2008, allowing final approval of the closeout report (assumed to be the RA(C) end date).

In 1997 additional site characterization was performed. A disposal trench was identified as the source of VOC contamination in the shallow soils. Following approval of an EE/CA, a removal action (REM) was conducted for these soils. Between 2000 and 2002 a soil vapor extraction (SVE)/air sparging system was operated. 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 were removed, which resulted in unrestricted use due to VOC levels in the soil. In 2003 the closeout report for this work received regulatory approval. LUCs and Five-Year Reviews for soil will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

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

## **CLEANUP/EXIT STRATEGY**

The groundwater remedy will be re-evaluated in 2008, per a requirement in the OU2 ROD. Assuming there are no changes to the remedy, RA(O) of the shallow groundwater containment system will continue until site-specific cleanup goals are met, with RC estimated to occur in 2013 (funded under TCAAP-19). LUC issues for groundwater will be resolved and an Explanation of Significant Differences (ESD) executed in 2008.

In 2008, on metals-contaminated soil, an Explanation of Significant Differences addressing LUCs will be executed, approval obtained for a LUC Remedial Design (RD) document, and a final approval obtained for the soil RA(C) closeout report.

LUC implementation (National Guard) and Five-Year Reviews (funded under TCAAP-19) will continue indefinitely, 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:** Arden Hills Area (585 acres)

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

**Contaminants of Concern:** Metals

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

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
IRA.....	200207.....	200710
RA(C).....	200001.....	200809
RA(O).....	199712.....	201606

**RIP Date:** 200809

**RC Date:** 201606

## SITE DESCRIPTION

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

The 1997 OU2 ROD required excavation, stabilization, and off-site disposal of the contaminated soil to site-specific industrial levels. Excavation work from 2000 to 2002 removed approximately 16,475 cy of contaminated soil. Work 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 whether 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 2003 approximately 2,443 cy were removed. 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 a ROD Amendment for Site C-2 was signed. The field work is expected to be completed in 2008. An Explanation of Significant Differences is expected to be completed in 2008 to address LUCs for Site C-1. Then, the closeout report for C-1 and C-2 is expected to be approved in 2008, which is assumed to be the RA(C) end date.

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. And in 2002 the Army began operating a groundwater pump-and-treat system as a 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 ROD Amendment, 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 2007 ROD Amendment made the existing IRA groundwater extraction system a final remedy with an effective date of October 2007. Estimated cleanup levels will be achieved in 2011, with RC in 2016, after verification monitoring, system dismantlement, well sealing, and a closeout report.

LUCs, cover maintenance, and Five-Year Reviews will continue indefinitely 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**

An ESD for LUCs at Site C-1 (2008) will be executed and approval for LUC RD documents (both C-1 and C-2) and the 2008 soil/sediment closeout report will be obtained.

RA(O) of the groundwater containment system will continue until site-specific cleanup levels are met. The estimated date for this is 2011 (funded under TCAAP-19).

LUC implementation, cover maintenance, and five-year reviews (all funded under TCAAP-19) will continue indefinitely, 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: Metals, Polychlorinated Biphenyls, Volatiles

Media of Concern: Groundwater, Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
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.....	203809

**RIP Date:** 200809

**RC Date:** 200809

## SITE DESCRIPTION

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

IRAs included excavation of approximately 1,470 cy of PCB-contaminated soil, with subsequent on-site incineration in 1989. Residual PCB contamination is overlain by a 1/2-acre soil cover.

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 actually took place. The RA(O) start date was also triggered by the ROD.) From 1986-1998 the SVE system removed 116,119 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. Final approval is subject to resolution of LUC issues. Groundwater monitoring related to VOCs is addressed as part of "Deep Groundwater" under TCAAP-19.

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. Final approval is subject to resolution of LUC issues. A ROD Amendment addressing LUCs is expected to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date). The ROD also required five-years of groundwater monitoring (which has been completed) to verify that there have been no impacts for metals and nitroglycerin.

LUCs, cover maintenance, and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

## CLEANUP/EXIT STRATEGY

For contaminated soil, a ROD amendment to document the soil removal and the 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 soil RA(C) closeout reports will be obtained.

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

LUC implementation and cover maintenance (National Guard) and five-year reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be 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

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	203809

**RIP Date:** 200809

**RC Date:** 200809

## SITE DESCRIPTION

Use of Site E, approximately 8.8 acres, began in the early 1940s as 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 from the site; this completed the field work. 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 for shallow contaminated soils received partial approval from the regulators. Final approval is subject to resolution of LUC issues. A ROD Amendment addressing LUCs is likely to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date). The ROD also required five-years of groundwater monitoring (which has been completed) to verify that there have been no impacts for metals.

LUCs, cover maintenance, and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

## CLEANUP/EXIT STRATEGY

For contaminated soil, a ROD Amendment to document the soil removal and the 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 soil RA(C) closeout reports will be obtained.

LUC implementation and cover maintenance (National Guard) and Five-Year Reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be considered LTM.

**Site ID: TCAAP-09**  
**Site Name: Dump (Site G)**  
**Alias: SITE G**

**STATUS**

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

<u>Phases</u>	<u>Start</u>	<u>End</u>
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.....	203809
<b>RIP Date:</b>	200809	
<b>RC Date:</b>	200809	

**SITE DESCRIPTION**

Operations at Site G, approximately 4.6 acres, appear to have begun during WWII 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 a 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 actually 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 "Deep Groundwater" under 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. Final approval is subject to resolution of LUC issues. It is anticipated that a ROD Amendment addressing LUCs will be signed in 2008, allowing final approval of the closeout report in 2008 (assumed to be the RC date).

LUCs, cover maintenance, and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

For the dump, a ROD amendment to document the revised cleanup level, the cover, and 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 RA(C) closeout report will be obtained.

LUC implementation and cover maintenance (National Guard) and five-year reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be 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

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	203809

**RIP Date:** 200809

**RC Date:** 200809

## SITE DESCRIPTION

From the early 1940s until the late 1960s Site H, approximately 11.7 acres, 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 from the site; this completed the field work. 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 for shallow contaminated soils received partial approval from the regulators. Final approval is subject to resolution of LUC issues. A ROD Amendment addressing LUCs is likely to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date). The ROD also required five-years of groundwater monitoring (which has been completed) to verify that there have been no impacts for metals.

LUCs, cover maintenance, and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

## CLEANUP/EXIT STRATEGY

For contaminated soil, a ROD amendment to document the soil removal and the 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 soil RA(C) closeout reports will be obtained.

LUC implementation and cover maintenance (National Guard) and five-year reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be 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:** Metals, Volatiles

**Media of Concern:** Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	203809

**RIP Date:** 200809

**RC Date:** 200809

## SITE DESCRIPTION

Site 129-3, approximately 2 acres, 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 from the site; this completed the field work. In 2002 a closeout report for shallow contaminated soils received partial approval from the regulators. Final approval is subject to resolution of LUC issues. An Explanation of Significant Differences addressing LUCs is likely to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date). The ROD also required five-years of groundwater monitoring (which has been completed) to verify that there have been no impacts for metals.

LUCs and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

## CLEANUP/EXIT STRATEGY

For contaminated soil, a ROD amendment to document the soil removal and the 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 soil RA(C) closeout reports will be obtained.

LUC implementation (National Guard) and five-year reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be 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

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199708.....	199804
RA(C).....	199810.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	203809

**RIP Date:** 200809  
**RC Date:** 200809

**SITE DESCRIPTION**

From about 1945 or 1946 through the late 1950s Site 129-5, approximately 7.2 acres, 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 from the site in 1999; this completed the field work. In 2001 a closeout report for shallow contaminated soils received partial approval from the regulators. Final approval is subject to resolution of LUC issues. An Explanation of Significant Differences addressing LUCs is likely to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date). The ROD also required five-years of groundwater monitoring (which has been completed) to verify that there have been no impacts for metals.

LUCs and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

For contaminated soil, a ROD amendment to document the soil removal and the 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 soil RA(C) closeout reports will be obtained.

LUC implementation (National Guard) and five-year reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be 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

Media of Concern: Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199806.....	200108
RA(C).....	200108.....	200809
RA(O).....	199712.....	200809
LTM.....	200809.....	203809

**RIP Date:** 200809

**RC Date:** 200809

## SITE DESCRIPTION

From 1970 through 1978, Site 129-15, approximately 2 acres, was used as a landfill for construction debris. In 1994 PAHs were discovered during preliminary characterization of the dumped material.

The 1997 OU2 ROD required characterization to determine the appropriate course of action for the dump. This action was performed in the fall of 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 cleaned up to site-specific industrial levels. In 2002 a closeout report received partial approval from the regulators. Final approval is subject to resolution of LUC issues. Aa ROD Amendment addressing LUCs is likely to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date). No groundwater monitoring was required.

## CLEANUP/EXIT STRATEGY

For the dump, a ROD amendment to document the revised cleanup level, the cover, and 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 RA(C) closeout report will be obtained.

LUCs, cover maintenance (National Guard), and five-year reviews will continue indefinitely beyond RC (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be considered LTM.

Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**Site ID: TCAAP-15**

**Site Name: Bldg. 502 and Area (Site I)**

**Alias: SITE I**

## STATUS

**Parcel:** Arden Hills Area (585 acres)

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

**Contaminants of Concern:** Polychlorinated Biphenyls, Volatiles

**Media of Concern:** Groundwater, Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199707.....	200103
IRA.....	198508.....	198608
RA(C).....	200103.....	200809
RA(O).....	199712.....	204009

**RIP Date:** 200809

**RC Date:** 204009

## SITE DESCRIPTION

Site I, approximately 43 acres, 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 Alliant Techsystems Inc. (ATK)] assumed responsibility for general manufacturing activities in the building. TCAAP-15 is funded by ATK with oversight by the Army.

As a IRA in the mid 1980s, ATK excavated a few thousand cy of PCB-contaminated soil 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. A ROD Amendment was initiated, but has been on hold pending resolution of land use control issues. The ROD Amendment is likely to be finalized in 2008. For the purposes of AEDB-R, the final remedy is called "Other" to represent the ROD Amendment, and the end date is the Amendment date.

Groundwater monitoring, LUCs, and Five-Year Reviews are considered RA(O) until the groundwater cleanup levels have been met (the RC date). (The RA(O) start date reflects the 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. This is likely to occur in 2040, concurrent with the best estimate for cleanup of deep groundwater at TCAAP.

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

For groundwater, a ROD amendment will be executed in 2008 to discontinue the ROD requirement for pumping and treatment and LUCs will be imposed. RA(O) of the shallow groundwater remedy (monitoring) will continue until site-specific levels have been met; this is estimated to occur in 2040 (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.

LUC implementation and five-year reviews (funded under TCAAP-19) will continue indefinitely, 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:** Arden Hills Area (585 acres)

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

**Contaminants of Concern:** Volatiles

**Media of Concern:** Groundwater, Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	200809
RD.....	199707.....	200903
IRA.....	198508.....	199712
RA(C).....	199712.....	201006
RA(O).....	199712.....	204009

**RIP Date:** 201006

**RC Date:** 204009

## SITE DESCRIPTION

Site K, approximately 21 acres, 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 pump and treat system was initiated, as a 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 end date of RA(C) is shown as 2001 because AEDB-R does not allow phase dates to run concurrently for separate actions and, as described below, the RD phase went into 2001.) The groundwater system most likely will operate through 2040, 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 2003, the Remedial Action Completion Report (remedy in place and properly working) for shallow groundwater was approved by the regulators.

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 December 2001. ATK took the position that shallow soil remediation was not feasible, because the soils were beneath an existing building (103); hence, shallow soil remediation was not a requirement of the 1997 OU2 ROD. The building has now been removed, so in 2008, ATK plans to complete an Engineering Evaluation/Cost Analysis (EE/CA) to support the selection of a remedy for contaminated soil beneath the floor slab. For purposes of AEDB-R, the EE/CA is considered in the RI/FS phase, which is followed by a remedial design to be completed in 2009, as well as the remedial action. The soil closeout report is likely to be approved in late 2009, which is the RA(C) end date. ATK will be responsible for the shallow soil remediation, so there are no Army costs included in AEDB-R.

In 2008 an Explanation of Significant Differences is expected to be completed; it will address LUCs for groundwater and soil.

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

## **CLEANUP/EXIT STRATEGY**

RA(O) of the groundwater pump and treat system will continue until site-specific levels are met; this is estimated to occur in 2040 (funded by ATK).

For soil, an EE/CA and action memorandum to select a remedy will be complete in 2008 and the remedy and closeout report completed in 2009.

LUC issues will be resolved and an ESD executed in 2008. LUC implementation and five-year reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then become LTM.

**Site ID: TCAAP-17**

**Site Name: OU1 Deep Groundwater**

**Alias: OU1 GW**

## STATUS

**Parcel:** NONE

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

**Contaminants of Concern:** Volatiles

**Media of Concern:** Groundwater

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	198702.....	199006
SI.....	198702.....	199006
RI/FS.....	198702.....	199307
RD.....	199002.....	199705
IRA.....	199309.....	199803
RA(C).....	199309.....	200005
RA(O).....	199803.....	204009
LTM.....	204009.....	204009

**RIP Date:** 200005

**RC Date:** 204009

## 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 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 off-TCAAP 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, using funding established by a settlement agreement with the Army in 1992.

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 for this is 2040 until the groundwater remediation goals are met.

Once the cleanup levels have been achieved, the treatment system will be dismantled, well sealing monitored, a closeout report, issued and delisting (LTM).

## CLEANUP/EXIT STRATEGY

Operation of the groundwater treatment system is expected to continue through 2040 until site-specific levels are met, at which time delisting of OU1 will occur (shown as LTM phase).

**Site ID: TCAAP-19**

**Site Name: OU2 Deep Groundwater**

**Alias: OU2 GW**

## STATUS

**Parcel:** Arden Hills Area (585 acres)

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

Contaminants of Concern: Volatiles

Media of Concern: Groundwater

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	199703
RD.....	199712.....	200306
IRA.....	198606.....	199712
RA(C).....	199712.....	200306
RA(O).....	199712.....	204009
LTM.....	204009.....	204009

**RIP Date:** 200306

**RC Date:** 204009

## SITE DESCRIPTION

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

In 1986 the TCAAP Groundwater Recovery System (TGRS) 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 the TCAAP gravel pit. A fraction of the treated water is treated further with GAC, and used by the occupants of TCAAP. 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% share of the costs.

The 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 through 2040. Once the remediation goals have been achieved, the groundwater monitoring will be verified, the system dismantled, the well sealed, a closeout report issued, and the site delisted (LTM).

An Explanation of Significant Differences is likely to be completed in 2008 addressing LUCs for groundwater.

Funding for TCAAP-19 also includes Annual Performance Monitoring and Reporting, Five-Year Reviews (the next review is scheduled for 2009), Well Abandonment, Administrative Record management, and RA(O) activities conducted by the Installation Support Services Contractor for TCAAP sites.

## CLEANUP/EXIT STRATEGY

RA(O) of the TGRS will continue; it is expected to run until site-specific levels are met (through 2040), at which time delisting of

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

OU2 will occur (shown as LTM phase).

LUC issues will be resolved and an ESD executed in 2008. LUC implementation and five-year reviews will continue indefinitely, and are considered RA(O) until RC, and then become LTM.

RA(O) activities will continue to be completed for other TCAAP sites (TCAAP-01, TCAAP-05 through TCAAP-13, TCAAP-15 through TCAAP-17 and TCAAP-20 TCAAP-21, TCAAP-23, TCAAP-25, TCAAP-27, TCAAP-28, and TCAAP-30) that are being executed through the Installation Support Services 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

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	199307.....	199310
SI.....	199310.....	199501
RI/FS.....	199411.....	199803
RD.....	199901.....	199903
RA(C).....	199903.....	200809
RA(O).....	200010.....	200809
LTM.....	200809.....	203809
<b>RIP Date:</b>	200809	
<b>RC Date:</b>	200809	

**SITE DESCRIPTION**

From March 1967 until July 1975 the M550 Grenade Range, approximately 19 acres, 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 REM 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; this completed the field work. In 2002 a closeout report received partial approval from the regulators. Final approval is subject to resolution of LUC issues. A ROD Amendment addressing LUCs is likely to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date). Per the Action Memorandum, four-years of groundwater monitoring was conducted to verify that there were no impacts for metals.

LUCs and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

**CLEANUP/EXIT STRATEGY**

For contaminated soil, a ROD amendment to document the soil removal and the 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 soil RA(C) closeout reports will be obtained.

LUC implementation (National Guard) and five-year reviews (funded under TCAAP-19) will continue indefinitely, and are considered RA(O) until RC, and then will be 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

Media of Concern: Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	199310.....	199408
SI.....	199404.....	199612
RI/FS.....	199608.....	199803
RD.....	199806.....	199903
RA(C).....	199904.....	200809
RA(O).....	200209.....	200809
LTM.....	200809.....	203809

**RIP Date:** 200809

**RC Date:** 200809

## SITE DESCRIPTION

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

Based on a 1999 EE/CA and Action Memorandum, a REM 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; this completed the field work. In 2001 a closeout report received partial approval from the regulators. Final approval is subject to resolution of LUC issues. A ROD Amendment addressing LUCs is likely to be signed in 2008, allowing final approval of the closeout report in that year (assumed to be the RC date).

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.

LUCs, cover maintenance, and Five-Year Reviews will continue indefinitely beyond RC. Because these activities are common to many sites installation-wide, they are funded under a single site (TCAAP-19).

## CLEANUP/EXIT STRATEGY

For contaminated soil, a ROD amendment to document the soil removal and the 2008 LUCs will be executed, approval for a 2008 LUC RD document and final approval for the 2008 soil RA(C) closeout reports will be obtained.

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

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

**STATUS**

**Parcel:** Arden Hills Area (585 acres)

**Regulatory Driver:** CERCLA

**RRSE:** LOW

Contaminants of Concern: Polychlorinated Biphenyls, Semi-volatiles, Volatiles

Media of Concern: Sediment, Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	199509.....	199609
RI/FS.....	200001.....	201009

**RIP Date:** N/A

**RC Date:** 201009

**SITE DESCRIPTION**

This area, approximately 65 acres, 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 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 remedial investigation (RI) completed in 1991. Limited soil sampling was performed in 1996 to obtain a Relative Risk Site Evaluation (RRSE) score, which was considered the SI phase.

In FY 2002 a PA was approved which recommended that a site investigation (SI) be performed (both were considered to be under the remedial investigation/feasibility study (RI/FS) phase). In 2002 the SI field work 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 stormwater 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.

The 135 PTA is on the parcel of property being transferred to the city of Arden Hills and its development team. The developer most likely will be responsible for completing studies and any RAs, so the RC date is assumed to be the date of property transfer.

**CLEANUP/EXIT STRATEGY**

The strategy is to transfer the property in its current condition, with LUCs, and make an adjustment in the purchase price to account for the estimated costs of further investigation and cleanup.

**Site ID: TCAAP-25**  
**Site Name: Aquatic Sites**  
**Alias: SURF WATER**

**STATUS**

**Parcel:** NONE

**Regulatory Driver:** CERCLA

**RRSE:** LOW

Contaminants of Concern: Metals, Polychlorinated Biphenyls

Media of Concern: Sediment, Surface Water

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	197801.....	198802
RI/FS.....	198702.....	201009
LTM.....	201009.....	204009
<b>RIP Date:</b>	N/A	
<b>RC Date:</b>	201009	

**SITE DESCRIPTION**

Sunfish, Marsden, and Round Lakes received runoff from TCAAP operations. Also, included in this site are Pond G and Rice Creek. All public activity at Round Lake is prohibited by the US Fish and Wildlife Service (USFWS). There is no public access to Sunfish and Marsden Lakes, and Pond G, which are located within the fenced TCAAP/National Guard boundary.

The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) performed a phased investigation and an ecological risk assessment for the surface water and sediments in these lakes. In November 1997 the Final Tier I Ecological Risk Assessment was approved by the regulators. In June 1999 the Tier II Ecological Risk Assessment Work Plan was approved by the regulators.

The final Tier II Ecological Risk Assessment Report, approved in 2004, concluded that the risks are low for all of the water bodies, except Round Lake.

In September 2003, the regulators and the USFWS agreed to conduct a FS to help determine the appropriate remedy or NFA for each of the aquatic sites. A draft FS has been reviewed by the stakeholders. The MPCA is requiring additional sampling at Marsden Lake and Pond G in order to determine if a remedy is needed for these two bodies of water. For Round Lake, which is owned by the USFWS, there is disagreement regarding the appropriate remedy, resulting in delays. The situation has been further complicated because the State has initiated a Natural Resource Damage Assessment (NRDA) that will need to be coordinated with the FS process. The FS is likely to be completed in FY2009 and a new OU is likely to be created for the aquatic sites, and a ROD will be executed at the end of FY2009 (under the RI/FS phase).

This OU is likely to be delisted in 2040, at the same time as the other OUs.

**CLEANUP/EXIT STRATEGY**

Additional sampling in Marsden Lake and Pond G to assess water quality will be completed to determine if further action is required in these bodies of water.

The FS will be completed (in coordination with the NRDA process) and the remedy documented through a DD. For program planning purposes, NFA is likely to be selected for five of the aquatic sites (Rice Creek, Sunfish Lake, Marsden Lake North, Marsden Lake South, and Pond G). It is unclear what, if any, remedy will be needed for Round Lake, so no RA(C) funding has been programmed at this time.

**Site ID: TCAAP-27**

**Site Name: OU3 Deep Groundwater**

**Alias: OU3 GW**

## STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Volatiles

Media of Concern: Groundwater

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	198712.....	198804
SI.....	198712.....	198804
RI/FS.....	198804.....	199207
RD.....	199207.....	199305
RA(C).....	199305.....	200608
RA(O).....	199404.....	204009
LTM.....	204009.....	204009

**RIP Date:** 200608

**RC Date:** 204009

## 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). 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 FY2006 a ROD Amendment was signed documenting that the PGRS is no longer needed, and replacing this RA with monitored natural attenuation 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. Once the cleanup levels have been achieved, the monitoring well will be sealed, a closeout report issued, and the site delisted (LTM). The best estimate for achievement of the goals is 2040, which is assumed to be the RC date.

## CLEANUP/EXIT STRATEGY

Groundwater monitoring RA(O) will continue until site-specific cleanup levels are achieved, which is estimated at 2040, 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.

**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

Media of Concern: Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	197801.....	198802
SI.....	199610.....	199610
RI/FS.....	200001.....	200812
RA(C).....	200812.....	201009
LTM.....	201009.....	204009
<b>RIP Date:</b>	N/A	
<b>RC Date:</b>	201009	

**SITE DESCRIPTION**

This area, approximately 75 acres, 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 a RRSE score for this site; this was considered the SI phase.

In FY 2002 a PA was approved which recommended that an SI be performed; both were conducted under the RI/FS phase. In 2003 the SI field work 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 2007 a EE/CA was initiated (also in the RI/FS phase). The REM is likely to be funded in FY2009, with the closeout report approved in FY2010, which is the RA(C) end date and RC date.

LUCs and Five-Year Reviews are likely to be required beginning at RC and these activities are likely to be considered LTM. While these two activities theoretically go on forever, for cost estimating purposes, they are assumed to end in 2040, the estimated date for TCAAP delisting.

**CLEANUP/EXIT STRATEGY**

An EE/CA will be prepared and the selected action documented through an action memorandum. Based on the SI report, a REM is expected to be required for soils. For program planning purposes, the REM is assumed to be excavation and landfilling of contaminated soils to industrial use levels, with LUCs. No action is expected for groundwater. LUCs are likely to be funded under TCAAP-19.

**Site ID: TCAAP-30**

**Site Name: Bldg. 102 Degreasing Operations**

**Alias: BLDG 102**

## STATUS

**Parcel:** Arden Hills Area (585 acres)

**Regulatory Driver:** CERCLA

**RRSE:** LOW

Contaminants of Concern: Volatiles

Media of Concern: Groundwater

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	200203.....	200301
SI.....	200301.....	200601
RI/FS.....	200601.....	200809
RD.....	200810.....	200903
RA(C).....	200904.....	200907
RA(O).....	200907.....	202907
LTM.....	202907.....	204009

**RIP Date:** 200907

**RC Date:** 202907

## 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 is likely to be approved in July 2008 and the Action Memo signed in September (end of the RI/FS phase). Furthermore, the final RA is likely to be in place by July 2009 and will operate for 20 years, to achieve groundwater cleanup levels (followed by 5 years of verification monitoring).

## CLEANUP/EXIT STRATEGY

An EE/CA will be prepared and the selected groundwater action documented through an action memorandum. For program planning purposes, the REM is assumed to be groundwater extraction and discharge to the sanitary sewer, with LUCs, until site-specific cleanup goals are achieved. 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.

## IRP No Further Action Sites Summary

Site ID	Site Name	NFA Date	Documentation
TCAAP-02	Sewage Sludge Disposal (Site B)	200104	Site B Dump Investigation, Characterization, and Close Out Report.
TCAAP-08	Open Burn/Burial Area (Site F)	200009	Site F Closure Certification Report
TCAAP-22	Water Tower Area	199608	Investigation Report of the Water Tower Area (Final)
TCAAP-24	Recreational Trap-Shooting Range	200009	Removal Site Evaluation, Preliminary Assessment, Trap Range Site
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**

PA (TCAAP-26 - All Uncharacterized Areas, TCAAP-27 - OU3 Deep Groundwater, TCAAP-28 - Bldg. 535 Primer/Tracer Area, 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), TCAAP-19 - OU2 Deep Groundwater, TCAAP-23 - Bldg. 135 Primer/Tracer Area, TCAAP-24 - Recreational Trap-Shooting Range, TCAAP-25 - Aquatic Sites)

SI (TCAAP-27 - OU3 Deep Groundwater, 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), TCAAP-19 - OU2 Deep Groundwater, TCAAP-25 - Aquatic Sites)

### **1990**

PA (TCAAP-17 - OU1 Deep Groundwater)

SI (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**

SI (TCAAP-20 - Grenade Range)

RI/FS (TCAAP-22 - Water Tower Area)

RD (TCAAP-22 - Water Tower Area)

### **1996**

RA(C) (TCAAP-22 - Water Tower Area)

SI (TCAAP-26 - All Uncharacterized Areas, TCAAP-23 - Bldg. 135 Primer/Tracer Area)

### **1997**

RI/FS (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), TCAAP-19 - OU2 Deep Groundwater)

# IRP Schedule

## 1997

SI (TCAAP-28 - Bldg. 535 Primer/Tracer Area, TCAAP-21 - Outdoor Firing Range, TCAAP-24 - Recreational Trap-Shooting Range)  
 RD (TCAAP-17 - OU1 Deep Groundwater)

## 1998

RI/FS (TCAAP-20 - Grenade Range, TCAAP-21 - Outdoor Firing Range)  
 IRA (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), TCAAP-17 - OU1 Deep Groundwater, TCAAP-19 - OU2 Deep Groundwater)  
 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

RI/FS (TCAAP-24 - Recreational Trap-Shooting Range)  
 RA(C) (TCAAP-08 - Open Burn/Burial Area (Site F), TCAAP-17 - OU1 Deep Groundwater)  
 PA (TCAAP-29 - AEC Phytoremediation Demo Areas)

## 2001

IRA (TCAAP-29 - AEC Phytoremediation Demo Areas)  
 RI/FS (TCAAP-29 - AEC Phytoremediation Demo Areas, TCAAP-02 - Sewage Sludge Disposal (Site B))  
 RD (TCAAP-29 - AEC Phytoremediation Demo Areas, TCAAP-13 - Dump (Site 129-15), TCAAP-15 - Bldg. 502 and Area (Site I))  
 RA(C) (TCAAP-29 - AEC Phytoremediation Demo Areas)

## 2003

PA (TCAAP-30 - Bldg. 102 Degreasing Operations)  
 RA(C) (TCAAP-19 - OU2 Deep Groundwater)  
 RD (TCAAP-06 - Leach/Burn Pits (Site D), TCAAP-19 - OU2 Deep Groundwater)

## 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)

### **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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## IRP Schedule

**Final RA(C) Completion Date:** 201009

**NPL Deletion Date:** N/A

**Schedule for Next Five-Year Review:** 2009

**Estimated Completion Date of IRP at Installation (including LTM phase):** 204009

## TWIN CITIES ARMY AMMUNITION PLANT IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-01	Burial/Burn Area (Site A)	PA						
		SI						
		RI/FS						
		RD						
		IRA						
		RA(C)						
		RA(O)						
TCAAP-05	Open Burn/Disposal Area (Site C)	PA						
		SI						
		RI/FS						
		RD						
		IRA						
		RA(C)						
		RA(O)						
TCAAP-06	Leach/Burn Pits (Site D)	PA						
		SI						
		RI/FS						
		RD						
		IRA						
		RA(C)						
		RA(O)						
		LTM						
TCAAP-07	Dump and Burning Area (Site E)	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		RA(O)						
		LTM						
TCAAP-09	Dump (Site G)	PA						
		SI						
		RI/FS						
		RD						
		IRA						
		RA(C)						
		RA(O)						
LTM								

## TWIN CITIES ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-10	Burn/Burial Area (Site H)	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		RA(O)						
		LTM						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-11	Leaching Pits (Site 129-3)	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		RA(O)						
		LTM						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-12	Burn/Disposal Area (Site 129-5)	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		RA(O)						
		LTM						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-13	Dump (Site 129-15)	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		RA(O)						
		LTM						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-15	Bldg. 502 and Area (Site I)	PA						
		SI						
		RI/FS						
		RD						
		IRA						
		RA(C)						
		RA(O)						



## TWIN CITIES ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-23	Bldg. 135 Primer/Tracer Area	PA						
		SI						
		RI/FS						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-25	Aquatic Sites	PA						
		SI						
		RI/FS						
		LTM						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-27	OU3 Deep Groundwater	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		RA(O)						
		LTM						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-28	Bldg. 535 Primer/Tracer Area	PA						
		SI						
		RI/FS						
		RA(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
TCAAP-30	Bldg. 102 Degreasing Operations	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		RA(O)						
		LTM						

## Community Involvement

**Technical Review Committee (TRC):** 198712

**Restoration Advisory Board (RAB):** RAB established

**RAB Adjournment Date:**

**RAB Adjournment Reason:**

**Community Involvement Plan (Date Published):**199701

### **Additional Community Involvement Information**

The TCAAP RAB, established in 1996, identified a mission statement and operating procedures. The current RAB consists of eight community members and four non-community members. Meetings are held quarterly. 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 Technical Review Committee 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 Technical Committee reviews and comments on technical documents. During the past year, the RAB provided input on IRP decisions such as evaluating alternatives for soil and sediment remediation at Site C and LUCs. The RAB is expected to be involved in future remedy evaluation and/or selection for the aquatic sites (TCAAP-25), Building 535 PTA (TCAAP-28), and Building 102 (TCAAP-30), as well as LUCs for various soil and groundwater sites. In 1999 the RAB was awarded a Technical Assistance for Public Participation (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. TCAAP distributes a periodic newsletter to update the public on important restoration activities and milestones.

### **Administrative Record is located at**

Twin Cities Army Ammunition Plant Office  
470 West Highway 96, Suite 100  
Shoreview, MN 56126

### **Information Repository is located at**

Twin Cities Army Ammunition Plant Office  
470 West Highway 96, Suite 100  
Shoreview, MN 56126

**Current Technical Assistance for Public Participation (TAPP):** 199808

**TAPP Title:** TCAAP Technical Assistance

**Potential TAPP:** N/A

