INSTALLATION ACTION PLAN

For

TWIN CITIES ARMY AMMUNITION PLANT

2001

INSTALLATION ACTION PLAN
for
TWIN CITIES
ARMY AMMUNITION PLANT

Fiscal Year 2001

PURPOSE

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year environmental restoration program for an installation. The plan will define Installation Restoration Program (IRP) requirements and propose a comprehensive approach and associated costs to conduct future investigations and remedial actions at each Operable Unit (OU) and Site at the installation and other areas of concern.

In an effort to coordinate planning information between the IRP manager, major army commands (MACOMs), installations, executing agencies, regulatory agencies, and the public, an IAP has been completed for the Twin Cities Army Ammunition Plant (TCAAP). The IAP is used to track requirements, schedules and tenative budgets for all major Army installation restoration programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is therefore subject to change during annual review of the document. Under current project funding, all remedies will be in place at TCAAP by the end of 2003.

CONTRIBUTORS TO THIS YEAR'S IAP

NAME	ORGANIZATION
Tom Barounis	U.S. Environmental Potection Agency, Region V
Ken Christenson	U.S. Army Corps of Engineers, Omaha District
Mary Jean Fischer	IRP Support, Engineering & Environment
Michael R. Fix	TCAAP, Commander's Representative
Martin R. McCleery	TCAAP, Remedial Project Manager
Robert Ramgren	RAB Community Co-Chair
Peter J. Rissell	U.S. Army Environmental Center (USAEC)
Dagmar Romano	Minnesota Pollution Control Agency
Dave Gosen	Alliant Techsystems Inc.
Keith Benker	Tecumseh/Wenck Installation Support Services
Lisa Haberman	Tecumseh/Wenck Installation Support Services

APPROVAL

TWIN CITIES ARMY AMMUNITION PLANT

MARTIN R. McCLEERY

Remedial Project Manager

Twin Cities Army Ammunition Plant

MICHAEL R. FIX

Commander's Representative

Twin Cities Army Ammunition Plant

CONCURRENCE

ARMY MATERIEL COMMAND

JEWEL SIMMONS
Environmental Restoration Program Manager
ARMY MATERIEL COMMAND

APPROVAL

OPERATIONS SUPPORT COMMAND

CYRIL ONEWOKAE

MSC Environmental Restoration
Program Manager, IOC

Tom Jackson

Environmental Counsel OSC

Billy Murphy

MSC Environmental Chief

ACRONYMS & ABBREVIATIONS

ACM	Asbestos Containing Materials
ALF	Abandoned Landfill
ADRA	Ammunition Demilitarization and Renovation Area
BRAC	Base Realignment and Closure Action
CERLA	Comprehensive Environmental Response, Compensation, and Liability Act
DERA	Defense Environmental Restoration Account
DRMO	Defense Reutilization and Marketing Office
DSERTS	Defense Site Environmental Restoration Tracking System
DSMOA	Defense, State Memorandum of Agreement
ER,A	Environmental Restoration, Army (formally called DERA)
FFSRA	Federal Facility Site Remediation Agreement
FS	Feasibility Study
FY	Fiscal Year
GAC	Granular Activated Carbon
IRA	Interim Remedial Action
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
MPCA	Minnesota Pollution Control Agency
NE	Not Evaluated
NFA	No Further Action
NOV	Notice Of Violation
Pb	Lead
PCB	polychlorinated biphenyl
POL	Petroleum, Oil & Lubricants
PRP	Potentially Responsible Party
RA	Remedial Action
RA(C)	Remedial Action - Construction
RA(O)	Remedial Action - Operation
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal Action
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Inspection
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbon
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (replaced by USACHPPM)
USATHAMA	United States Army Toxic and Hazardous Material Agency (replaced by USAEC)
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

SUMMARY

STATUS:

25-square mile National Priorities List (NPL) site with 1983 Hazard Ranking Index (HRI) score of 59.6 and Federal Facility Agreement between Army, EPA, & MPCA

NUMBER OF DSERTS SITES:

24 DSERTS sites (2 RC sites were deleted)
19 Active ER,A Eligible Sites
5 Response Complete ER,A Eligible (includes 2 RC sites deleted)

DIFFERENT DSERTS SITE TYPES (Of the sites in DSERTS):

3	Burial Areas	6	Contaminated Ground Water
1	Contaminated Sediments	2	Surface Disposal Areas
3	Chemical Disposal	2	Disposal Pit/ Dry Wells
2	Firing Ranges	2	Landfills
1	Small Arms Ranges	2	Unexploded Munitions/ Ordnance

CONTAMINANTS OF CONCERN:

Groundwater: Chlorinated Solvents (Trichloroethylene, 1,1-Dichloroethylene, 1,1,1-Trichloroethane, 1,2-Dichloroethylene)
Soils: Metals, Chlorinated Solvents

MEDIA OF CONCERN:

Groundwater, Surface Water, Soil, Sediment

COMPLETED REM/IRA/RA:

Tank Removal:

	• 26 UST/14 AST (1993) RC & Deleted from DSERTS	$284K
RA:	• 1 Site Closed (Site J)/NFA (1994) RC & deleted from DSERTS	$376K
	• 1 Site RIP (Water Tower)(1996) NFA/RC	
IRA/RA:	• Site A IRA (1988)	$ 48K
	• 1 PCB Burn (1990)	$500K
	• 1 GAC/GRS (1990)	$28,396K
	• OU-3 RA (1994) - Funded by Alliant Techsystems Inc.	
	• Site A RA (1994)	$216K
	• Site B RI (1999)	
	• Trap Range Site RI (1999)	

CURRENT IRP PHASES:

RI/FS 5 Sites	RD 6 Sites	RA 10 Sites	
RA(O) 3 Site	LTO 2 Sites	LTM 2 Sites	

PROJECTED IRP PHASES:

RD 1 Sites RA7 Sites LTO 2 Sites LTM 2 Sites

IDENTIFIED POSSIBLE REM/IRA/RA:

- SVE at TCAAP-01, 09
- Soil treatment at TCAAP-05, 11
- Site cover at TCAAP-13
- Pump and treat at TCAAP-19
- Sewer system removal at TCAAP-23
- Removal Action at TCAAP-05, -11

FUNDING:

PRIOR YEARS 1981/2000:	$170,270K
FY 2001:	$ 5,630K
FUTURE REQUIREMENTS:	$68,052K
TOTAL:	$243,952K

DURATION:

YEAR OF IRP INCEPTION:	1981
YEAR OF RA COMPLETION FOR ALL SITES (EXCLUDING LTM/O&M):	2003
REMOVAL FROM THE NPL:	2032
YEAR OF IRP COMPLETION INCLUDING LTM:	2040

INSTALLATION INFORMATION

LOCALE

The Twin Cities Army Ammunition Plant (TCAAP) occupies approximately four square miles, or 2,370 acres, in northwest Ramsey County, Minnesota and is within the Minneapolis/St. Paul metropolitan area.

COMMAND ORGANIZATION

MAJOR COMMAND: U.S. Army Materiel Command

MAJOR SUBORDINATE COMMAND: U.S. Army Operations Support Command

INSTALLATION: Twin Cities AAP

LEAD IRP EXECUTOR: Remedial Project Manager

INSTALLATION RESTORATION PROGRAM (IRP) EXECUTING AGENCY

REMEDIAL INVESTIGATION/FEASIBILITY STUDY: Installation and the U.S. Army Environmental Center

REMEDIAL DESIGN/REMEDIAL ACTION: Installation and U.S. Army Corps of Engineers, Omaha District

REGULATOR PARTICIPATION

FEDERAL: U.S. Environmental Protection Agency (EPA), Region V
U.S. Fish and Wildlife Service

STATE: Minnesota Pollution Control Agency (MPCA)
Minnesota Department of Health (MDH)
Minnesota Department of Natural Resources (MDNR)

REGULATORY STATUS

- National Priorities List (NPL), confirmed on- and off-post contamination
- Technical Review Committee (TRC) meetings on monthly basis
- Interagency Agreement, Federal Facility Agreement (FFA), December 1987
- 14 sites are listed on the RCRA Permit (Sites F and J are closed, 12 are currently addressed under CERCLA)

MAJOR CHANGES TO ACTION PLAN FROM PREVIOUS YEAR (FY00)

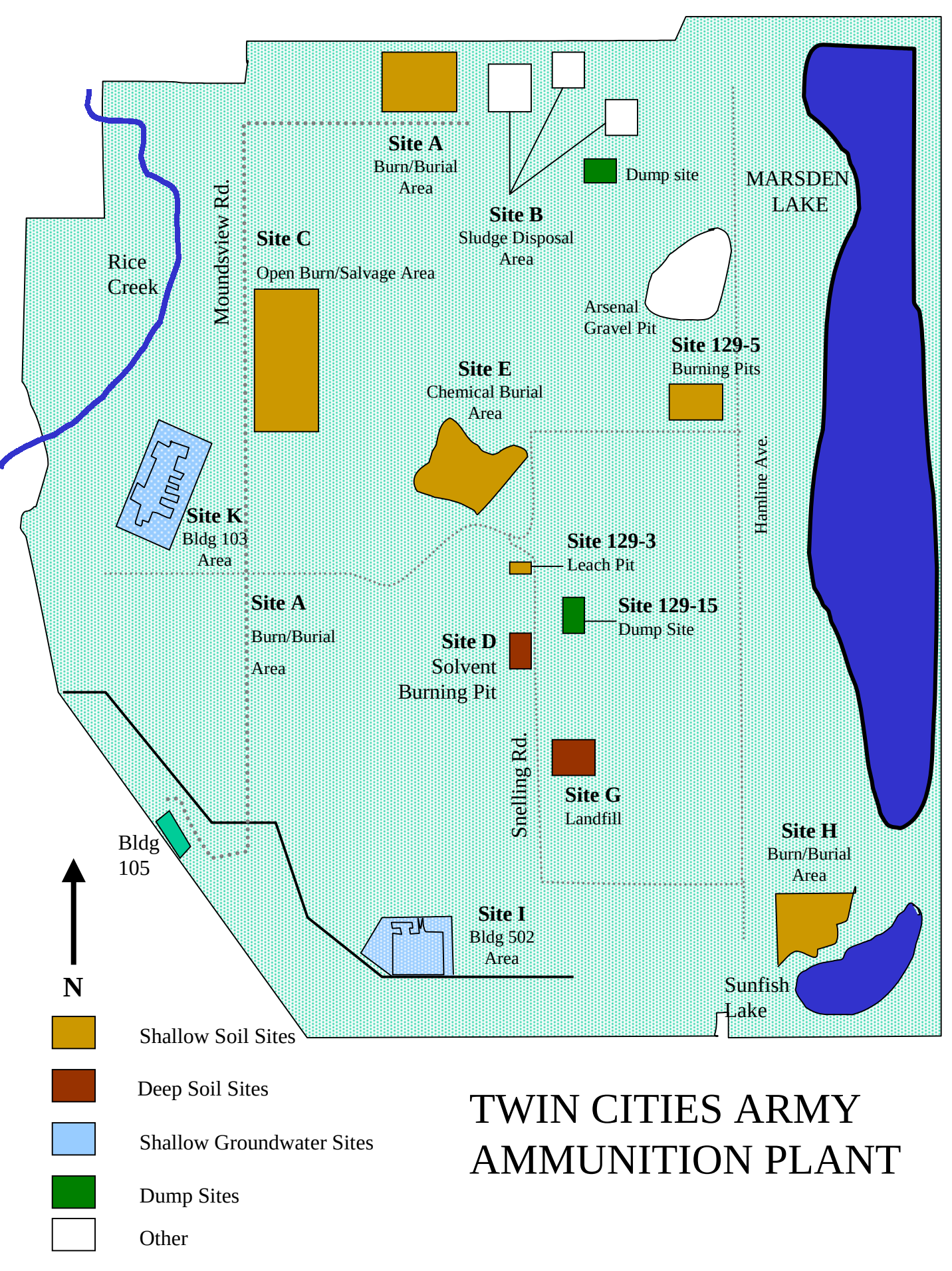
- OU-1 Completed RA construction & initiated LTM.
- OU-3 Reduced pumping rates.
- SiteA Completed RA construction os SVE/ASA.
- Sites I & K Initiated field testing of two innovative technologies.
- Sites C, E, H, 129-3, 129-15 Initiated RA shallow soil cleanup.

INSTALLATION DESCRIPTION

Current:
The TCAAP facility is managed through an installation support services contract. The TCAAP facility has 313 structures, including six major production buildings, numerous auxiliary buildings and supporting utilities, and a daytime population of approximately 370 people. The installation support services contractor is Tecumseh/Wenck Installation Support Services (TWISS). The TCAAP installation is in a modified caretaker status with one major manufacturing tenant - Alliant. Alliant [formerly part of Honeywell, Inc. which is a potentially responsible party (PRP) for the site] has been manufacturing fuzes and selected ammunition at the facility since the late 1950s. Alliant is cooperating with the Army in the cleanup of past contamination.

Historic:
The construction of TCAAP began on August 28, 1941, on a site that was primarily farmland. Field construction was completed in January 1943. The primary function of the facility was the manufacture of small caliber ammunition and related materials and 105mm & 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 WW II, the Korean Conflict, and the Southeast Asia Conflict. There were numerous tenants, most of which performed non-military activities, but were industrial based. The TCAAP Preliminary Assessment (PA) details activities of the various tenants.

Regulatory Status:
The 25-square mile New Brighton/Arden Hills Superfund Site (which includes the entire 4-square mile TCAAP facility) was proposed for addition to the National Priorities List (NPL) in 1982. The Superfund Site made the Final NPL in September 1983 with a score of 59.6. A three-party Federal Facility Agreement (FFA) between the Army, EPA, and MPCA was implemented in December 1987. A two-party DSMOA/Cooperative Agreement between the Army and MPCA became effective in June 1991. The regulatory driver for TCAAP is the Inter-Agency Agreement/Federal Facilities Agreement (IAG/FFA) associated with the NPL site. A ROD was completed for OU-3 in September 1992, OU-1 in September 1993, and OU-2 in December 1997.


Site A
Burn/Burial
Area
Site B
Sludge Disposal
Area
Dump site
MARSDEN
LAKE
Moundsview Rd.
Site C
Open Burn/Salvage Area
Rice
Creek
Arsenal
Gravel Pit
Site 129-5
Burning Pits
Site E
Chemical Burial
Area
Hamline Ave.
Site K
Bldg 103
Area
Site 129-3
Leach Pit
Site A
Burn/Burial
Area
Site 129-15
Dump Site
Site D
Solvent
Burning Pit
Snelling Rd.
Site G
Landfill
Site H
Burn/Burial
Area
Bldg
105
Site I
Bldg 502
Area
Sunfish
Lake
N
Shallow Soil Sites
Deep Soil Sites
Shallow Groundwater Sites
Dump Sites
Other
TWIN CITIES ARMY
AMMUNITION PLANT

CONTAMINATION ASSESSMENT

The IRP began in June 1981 when the Army and MPCA discovered chlorinated solvents or "VOCs" in TCAAP and New Brighton drinking water supplies, indicating that TCAAP may be the source of contamination. Residents were supplied with alternate water supplies as studies of TCAAP activities and groundwater were initiated.

TCAAP currently has a total of 24 active DSERTS sites, 21 that are of environmental concern. These sites consist of burn areas, contaminated sediments and groundwater, surface disposal areas, chemical disposal areas, disposal pits, firing ranges, landfills, a small arms range, and unexploded munitions/ordnance. After site characterization, the potential of encountering unexploded munitions/ordnance is low.

As a result of past TCAAP ammunition manufacturing operations, contamination has been detected in groundwater, soil, sediment, and surface water. The primary contaminants of concern in groundwater consist of chlorinated solvents (e.g., TCE) and metals. The primary contaminants of concern in soil consist of metals and chlorinated solvents. The primary contaminants of concern in surface water and sediments are metals.

The TCAAP IRP activities include three operable units - OU-1, OU-2, and OU-3. OU-3, which is the south TCAAP plume (TCAAP-27) located outside the fenced boundaries of TCAAP, was the first operable unit for which RA was initiated (pump and treat/containment system). The OU-3 Record of Decision (ROD) was signed in 1992. The RA consisted of construction of the Plume Groundwater Recovery System (PGRS) which started operation in 1994. Alliant Techsystems is completely responsible for funding this activity.

OU-1 was the second operable unit for which RA was initiated. Prior to the RA being initiated, an IRA (pump and treat/containment system) was constructed and began operation. The OU-1 ROD was signed in 1993. The RA focuses on remediating deep groundwater contamination in the north TCAAP Plume (TCAAP-17), located off site. This remediation includes a modification of the New Brighton Permanent Granular Activated Carbon (PGAC) treatment system, construction of a municipal water-line interconnection, alternative well water supplies, additional production and monitoring wells and well advisories.

The third operable unit, OU-2, includes the 13 contaminated soil sites (TCAAP-01, 02, 05, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16) and deep groundwater (TCAAP-19) within the boundaries of TCAAP. An IRA was initiated in 1987 to pump and treat/contain the deep groundwater contamination. The OU-2 ROD was signed in December 1997 and included all the above-listed sites except TCAAP-08 (Site F) which has a regulator-approved RCRA Closure Plan.

Other sites on the New Brighton/Arden Hills NPL site being addressed as Removal Actions (REM) include TCAAP-20, 21, 22, 23, 24, 25, and 28.

In response to off-TCAAP groundwater contamination, the Army constructed the Boundary Groundwater Recovery System (BGRS) in 1987 to contain and treat the source area and contaminated groundwater plume emanating from the installation. The BGRS was later modified to become the TCAAP Groundwater Recovery System (TGRS). The Army also funded the construction of a permanent groundwater treatment facility (PGAC) for the City of New Brighton to contain and treat the contaminated groundwater within the "North Plume" of Operable Unit 1. The Interim PGAC became operational in 1990. During the same year, a groundwater treatment facility, funded by the EPA, was constructed for the City of St. Anthony. In 1994, the Final PGRS became operational to contain and treat the contaminated groundwater within the "South Plume".

Regulatory interest (state and federal) is very high since TCAAP is a NPL site and is Minnesota's largest environmental cleanup project. The Army continues a effective public involvement program with the community.

CONTAMINATION ASSESSMENT

MAJOR CHANGES TO ACTION PLAN FROM PREVIOUS YEAR (FY 00)

The Army initiated a RSI on two sites, completed RD for two sites, continued RD for 6 sites, initiated RA on one site, continued RA for 8 sites, and completed RA for one site. The Army continued implementation of the Alternate Water Supply Plan by completing the abandonment of one private well and continued the Well Construction Advisory. For OU-1, OU-2, and OU-3 deep groundwater, the Army continued containment, searched for more cost effective innovative technologies for OU-2 containment, completed the RA construction and initiated LTM of OU-1, and initiated reduced pumping rates at the OU-3 containment boundary and requested regulator concurrence to shut down the OU-3 containment system as a result of consistent non-detect levels of COCs in the groundwater.

At Sites A, I, and K, the Army continued the containment of shallow groundwater, completed the RA construction of Soil Vapor Extraction/Air Sparging System at Site A, and continued the RD and initiated field testing of two innovative technologies at Sites I and K. The Army also completed the RA closeout report for Site B and RI closeout report for the Trap Range, and completed RA shallow soils cleanup and initiated the RA closeout reports for Sites A, 129-5, Grenade Range, and the Outdoor Firing Range, and completed the Tier II ERA surface water and sediment field investigations and amphibian report. The Army also initiated the RA shallow soil cleanup at Sites C, E, H, 129-3, 129-15, the RA closeout of the SVE systems at Sites D and G, removal site investigations of the 135 PTA and 535 PTA, and decommissioning/demolition of the CAMU.

PREVIOUS STUDIES

Title	Author	Date
Sampling Work Plan, Performance Monitoring, Remedial Design/Remedial Action	CRA	1-Apr-99
Alternate Water Supply Construction Report for Period 1997 through 1998, Final, March 1999	Montgomery Watson	1-Mar-99
Inventory of Wells in the Vicinity of TCAAP, 1996/1997 Update	CRA	1-Mar-99
Site F Closure Certification Report - Final Report, February 1999	Alliant Techsystems Inc.	1-Feb-99
Site K Predesign Investigation Work Plan	CRA	1-Feb-99
Site I Predesign Investigation Work Plan	CRA	1-Jan-99
Final Comprehensive Work Plan, Remedial Design/Remedial Actoin Activities, Operable Unit 2, Units 3 & 4 Deep Groundwater	Stone & Webster	24-Sep-98
Final Addendum 1 to Work Plan, Sampling & Analysis Plan, Site Safety & Health Plan for Sites D & G Pilot Study - Site G Tar-Like Material Investigation	Stone & Webster	21-Sep-98
Final Work Plan, Final Sampling and Analysis Plan, SItes B and 129-15 Dump Characterization, Revision 2	Stone & Webster	21-Sep-98
Superfund Innovative Technology Evaluation (SITE): COGNIS TERRAMET Lead Extraction Process	EPA	1-Sep-98
Final Site A Engineering Evaluation/Cost Analysis (EE/CA)	Stone & Webster	3-Aug-98
Operable Unit 1 Off-Post Monitoring Well Construction Report - Final	Montgomery Watson	1-Aug-98
TCAAP Fiscal Year 1997 Annual Performance Report - Final	Wenck Associates, Inc.	1-Aug-98
Construction Documentation Report OU1 Modifications: Well 15 and Well 15 Wellhouse, City of New Brighton, Minnesota	Barr Engineering Company	1-Jul-98
Final Addendum 3 - Quality Assurance Project Plan, Remedial Design/Remedial Action Activities, Revision 1	Stone & Webster	26-Jun-98
Remedial Design/Remedial Action Quality Assurance Project Plan, Addendum 2	Montgomery Watson	1-Jun-98
Sediment Toxicity Evaluation of Round Lake - Final Report - Preliminary Study Tier II Ecological Risk Assessment	U.S.Army CHPPM	1-Jun-98
TCAAP Operable Unit 1 Aquifer Test Workplan	Montgomery Watson	1-May-98
Final Design Report, Site D Soil Vapor Extraction Pilot Study	Stone & Webster	9-Mar-98
Final Field Sampling Report, Sites D and G	Stone & Webster	9-Mar-98
Bioavailability of Sediment-Metals in Round and Sunfish Lakes	U.S.Army CHPPM	6-Mar-98
Grenade Range Engineering Evaluation/Cost Analysis (EE/CA), Final Report - Dec 97/Revised March 98	Alliant Techsystems Inc.	1-Mar-98
Outdoor Firing Range Engineering Evaluation/Cost Analysis (EE/CA), Final Report	Alliant Techsystems Inc.	1-Mar-98
Final Site A Investigation Report	Stone & Webster	12-Dec-97
Final Report, Tier I Screening Risk Assessment of Aquatic Ecosystems, TCAAP	U.S. Army CHPPM	27-Oct-97
TCAAP Fiscal Year 1996 Annual Monitoring Report, Final Report	CE/Wenck; Alliant Techsystems/CRA	1-Sep-97
Construction Documentation Report OU1 Modifications: Well 14 and Well 14 Wellhouse, City of New Brighton, Minnesota	Barr Engineering Company	1-Aug-97

Title	Author	Date
City of New Brighton, Improvement Number 93-09, OU1 Modifications, Well 15 Wellhouse (Bidding Documents & Drawings)	Barr Engineering Company	1-Jul-97
Comprehensive Unexploded Ordnance Compilation Report, Volumes I and II and "Road Map"	Wenck Associates, Inc.	1-Jun-97
Addendum 1 Remedial Design/Remedial Action Quality Assurance Project Plan	Stone & Webster	1-Apr-97
Final Work Plan, Final Sampling and Analysis Plan, Final Site Safety and Health Plan, Site A Investigation	Stone & Webster	1-Apr-97
Final Phase II - Investigation Report, Outdoor Firing Range	GES/Alliant	1-Mar-97
Inventory of Wells in the Vicinity of TCAAP, 1995 Update	CRA	1-Mar-97
Operable Unit 2 Feasibility Study - Final Report	Montgomery Watson	1-Mar-97
Community Relations Plan	Alliant/GES	1-Feb-97
Final Work Plan, Final Sampling & Analysis Plan, Final Site Safety & Health Plan, Sites D & G Pilot Study	Stone & Webster	1-Jan-97
Draft Design Report - OU-1 Modifications, Control System Integration and Drawings	Barr Engineering	1-Oct-96
Fiscal Year 1995 Annual Monitoring Report & Drawings - Final Report	Sverdrup/Wenck/Alliant/CRA	1-Oct-96
Pre-Final Design Report, Containment/Production Wells, Well 15 Construction, Well 7 Abandonment	Barr Engineering	1-Oct-96
Remedial Design/Remedial Action Quality Assurance Project Plan	Montgomery Watson	1-Sep-96
Remedial Design/Remedial Action Quality Assurance Project Plan: Laboratory Attachment A: Roy F. Weston, Inc.	Montgomery Watson	1-Sep-96
Remedial Design/Remedial Action Quality Assurance Project Plan: Laboratory Attachment B: Data Chem Laboratories	Montgomery Watson	1-Sep-96
Remedial Design/Remedial Action Quality Assurance Project Plan: Laboratory Attachment C: Compuchem Environmental Corporation	Montgomery Watson	1-Sep-96
Operable Unit 2 Feasibility Study Data Report - Final Report	Montgomery Watson	1-Jul-96
Assessment of Applicable or Relevant and Appropriate Requirements (ARARs) and To-Be-Considered (TBC) Guidance for Operable Unit 2	Oak Ridge National Laboratory	18-Jun-96
TCAAP Spill Prevention Control and Countermeasure Plan/Installation Spill Contingency Plan	TCAAP	1-May-96
Operable Unit 1 Modifications: PGACWTF Addition	Barr Engineering	1-Mar-96
Operable Unit 1 Off-Post Monitoring Well Conceptual Design Report	Montgomery Watson	1-Mar-96
Construction Documentation Report - PGAC Raw and Waste Water Pipelines - City of New Brighton	Barr Engineering	1-Jan-96
RMCS Soil Sampling Report	Alliant Techsystems	1-Jan-96
Final Summary Report Open Detonation of Grenades from CERCLA Site Characterization and UXO Removal Project Phase II - Sites B, C, E, 129-3, Trap Shooting Area	FCC	1-Oct-95
Operable Unit 1 Alternate Water Supply Plan - Final	Montgomery Watson	1-Oct-95
Operable Unit 1 Performance Monitoring Plan - Final	Montgomery Watson	1-Oct-95
TCAAP IRP Monitoring Well Ownership, Access, and Abandonment Plan	Montgomery Watson	1-Oct-95
Administrative Record File for New Brighton/Arden Hills NPL Site Operable Unit 2	Gray, Plant, Mooty	30-Sep-95
Interim Report: Administrative Record File for New Brighton/Arden Hills NPL Site Operable Unit 2	Gray, Plant, Mooty	29-Sep-95
Compilation of Information from Previous Studies of Round Lake and Valentine Lake	FCC	1-Sep-95
Fiscal Year 1994 Annual Monitoring Report & Drawings	Wenck/Alliant/CRA	1-Sep-95
Phase I Archaeological Investigations of Trap Shooting Area & CERCLA Site B	Loucks & Associates	1-Sep-95
Environmental Geophysics and Sequential Aerial Photo Study at Sunfish and Marsden Lakes	Argonne National Lab	1-Aug-95

Title	Author	Date
Production Well 3, 6, 7 & 8 Abandonment, Final Report	FCC/STS Consultants	1-Aug-95
Preliminary Assessment Report for Minnesota ARNG, New Brighton Facility, TCAAP	Env. Resources Mgmt	24-Jul-95
OU-2 FS: Determination of Background Concentrations for Metals in Soil and Groundwater	Montgomery Watson	1-Jul-95
OU-2 FS: Determination of Chemicals of Concern	Montgomery Watson	1-Jul-95
OU-2 FS: Determination of Health-Risk Based Preliminary Remediation Goals	Montgomery Watson	1-Jul-95
Performance Monitoring Plan for Operable Unit 1 - Final	Montgomery Watson	1-Jul-95
Historial Aerial Photography - Final Report	Malcolm Pirnie, Inc.	1-May-95
Pre-Final Design Report, Containment/Production Wells	Barr Engineering	1-May-95
Site Health and Safety Plan, Site F Closure Remedial Action	COGNIS, Inc.	7-Apr-95
Final Construction Document PGRS Water Treatment Facility - Volume I & II	Barr Engineering	1-Apr-95
Phase II Investigation Work Plan - Outdoor Firing Range - Final Report	Rust	1-Apr-95
Well 03U031 Preliminary Assessment - Final Report	Montgomery Watson	1-Apr-95
90-Day Operations Report for Site A (Removal Action) - Final Report	FCC/STS Consultants	1-Mar-95
Phase I - Investigation of Soils at the Outdoor Firing Range - Final Report	FCC	1-Mar-95
Final Conceptual Design Report, Containment/Production Wells	Barr Engineering	1-Feb-95
Interim Remedial Action Performance Evaluation Soil Vapor Extraction Systems at Sites D & G - Final Report	Wenck Associates, Inc.	1-Feb-95
Operable Unit 3 Remedial Action Report	CRA	31-Jan-95
Grenade Range Phase II Investigation Report - Final Report	FCC/Wenck Associates	1-Jan-95
Inventory of Water Supply Wells in the Vicinity of TCAAP, Phase III Report - Final Report	Wenck Associates	1-Jan-95
Range Cleanup of Solid Wastes - Final Project Report	FCC	1-Dec-94
RMCS Soil Sampling Plan	CRA	1-Dec-94
Operable Unit 3 90-Day Performance Assessment Report	CRA	1-Sep-94
Final Work Plan - Phase I - Investigation Work Plan of Soils at the Outdoor Firing Range	FCC	1-Aug-94
Remedial Design/Remedial Action Work Pan for Operable Unit 1 - Final	Montgomery Watson	1-Jul-94
Fiscal Year 1993 Annual Monitoring Report - Final Report	Wenck/Alliant/CRA	1-Jun-94
Health and Safety Plan, Environmental Field Activities	Rust	1-Jun-94
Inventory of Water Supply Wells in the Vicinity of TCAAP, 1993 Update Report	S.S. Papadopulos	1-Jun-94
Alternatives Study RMCS Wastes	CRA	1-May-94
Operable Unit 2 Feasibility Study, Sites I & K Field Investigation Data Report	CRA	1-May-94
Pre-Final Design Submittal OU-1 Modifications: PGAC Water Treatment Facility Modifications - Text & Drawings	Barr Engineering	1-May-94
Final Site J Closure Report	Montgomery Watson	1-Mar-94
Application of a Groundwater Model in Support of the Feasibility Study for Operable Unit 2 - Final Report	MW/ETA	1-Feb-94
Off-Post Well Installation Well Summary	Wenck Associates	1-Jan-94
Grenade Range Project Work Plan - Final	Wenck Associates, Inc.	1-Dec-93
Inventory of Water Supply Wells in the Vicinity of TCAAP, Phase II Report	S.S. Papadopulos	1-Dec-93
Wastewater Management Study: Toxicity Screening and Chronic Toxicity Tests Conducted Sept 25-Oct 2, 1993	AEHA	1-Dec-93
Public Health Assessment New Brighton/Arden Hills	U.S. Dept of Health	15-Nov-93

Title	Author	Date
Lowry Grove Trailer Park Water Service & Well Abandonment - Final Project Report	FCC	1-Nov-93
Restoration of the Water Tower Area - Final Project Report	FCC	1-Nov-93
Record of Decision Groundwater Remediation Operable Unit 1	EPA	1-Sep-93
Site A Removal Action, Specification No. 1053	FCC	1-Sep-93
Site Health & Safety Plan, Site F Closure Remedial Actions	COGIS	24-Aug-93
Operable Unit 1 Public Meeting Transcript		19-Aug-93
Engineering Evaluation/Cost Analysis for Site A - Final	IT Corporation	12-Jul-93
Feasibility Study - Final OU-1 FS	Montgomery Watson	1-Jul-93
Fiscal Year 1992 Annual Monitoring Report - Final Report	Wenck/Alliant/CRA	1-Jul-93
Site F Closure Plan - Text and Drawings - Final Report	Wenck Associates, Inc.	1-Jul-93
Addendum I - Feasibility Evaluation New Brighton-Fridley Water Supply System Interconnection - Final Report	Barr/Maier-Stewart	1-Jun-93
Operable Unit 3 Monitoring Plan	CRA	1-May-93
Operable Unit 3 PGRS Health & Safety Plan - Remedial Action and Construction	CRA	1-Mar-93
Site F Soil Washing Treatability Study Work Plan - Final Report	Wenck Associates, Inc.	1-Mar-93
Feasibility Evaluation New Brighton-Fridley Water Supply System Interconnection - Final Report	Barr/Maier-Stewart	1-Feb-93
CERCLA Administrative Record New Brighton/Arden Hills NPL Site, Master Record of Decision Index		23-Nov-92
PGRS Water Treatment Facility	Barr Engineering	1-Nov-92
Fiscal Year 1991 Annual Monitoring Report - Final Report	Wenck/Alliant/CRA	1-Oct-92
Aquifer Test - Site A		30-Sep-92
On-Plant & Off-Post Monitoring Wells, Final Report	Kemper & Associates, Inc.	30-Sep-92
On-Plant and Off-Post Monitoring Wells, Final Report	Kemper & Associates, Inc.	30-Sep-92
Inventory of Water Supply Wells in the Vicinity of TCAAP	S.S. Papadopulos	15-Sep-92
Record of Decision - Groundwater Remediation Operable Unit 3	EPA	1-Sep-92
Site F Soil Investigation Work Plan - Final Report	Wenck Associates, Inc.	1-Sep-92
Public Meeting Minutes - Operable Unit 3 Proposed Plan		18-Aug-92
Proposed Plan for Groundwater Remediation for Operable Unit 3	EPA	1-Aug-92
Operable Unit 3 Feasibility Study	CRA	1-Jul-92
Report on Caretaker Status Off TCAAP Sewer Re-Route Study	Howard Needles Tammen & Bergendoff	1-Jun-92
Feasibility Study - Final Work Plan	James M. Montgomery	1-Apr-92
PGRS Design Data Collection Study - Final	CRA/Barr Engineering	1-Mar-92
Task 4 - Develop a Groundwater Model in Support of the Feasiblity Study - Modeling Progress	ETA	4-Feb-92
Subsurface Exploration Services, IRP TCAAP Site Investigation	STS Consultants	17-Dec-91
Rice Creek Watershed District, Water Management Study, Phase II - Volume 1: Final Report; Volume 2: Appendices	James M. Montgomery	1-Dec-91
Public Meeting Transcript - Remedial Investigation Studies		14-Nov-91
Fiscal Year 1990 Annual Monitoring Report - Volumes 1, 2 & 3 + Drawings - Final Report	Wenck Associates	1-Jul-91
Groundwater Recharge Model for Evaluation of Groundwater Recharge Alternatives, Water Management Study Phase II	James M. Montgomery	1-Jul-91
IRA-TGRS, Site I and Site K, 1990 Annual Monitoring Report - Volume I & II - Final	Alliant/CRA	1-Jul-91
Investigation Report of the Water Tower Area - Final	FCC	1-Jun-91

Title	Author	Date
IRA-TGRS 1989 Annual Monitoring Report and Monitoring Plan - Volume I & II - Final Report	Honeywell/CRA	1-Jun-91
Community Relations Plan		1-May-91
Ecological Assessment (February 1990 - April 1991) - Volume I & II - Final Report	AEHA	1-Apr-91
Human Health Risk Assessment New Brighton/Arden Hills Superfund Site - Volume I & II	PRC	1-Apr-91
Remedial Investigation Report - Volumes 1, 2, 3, & 4 - Final Report	Argonne National Lab	1-Apr-91
Modeling Groundwater Flow for the TCAAP Site and Vicinity - Draft Report	Ag	1-Mar-91
Summary Report for the Catch Basin Cleanup - Volumes I and II	IT Corporation	1-Mar-91
IRA-TGRS 1990 Annual Monitoring Report - Volume 1 & 2	Alliant/CRA	14-Feb-91
Phase IA Multi-Point Source Groundwater Remedial Investigation - Volume I & II, + Drawings - Final	Camp Dresser & McKee	1-Feb-91
Final Engineering Report - BGRS	CRA	1-Jan-91
Recharge Test - Site G	CRA	1-Jan-91
TGRS Operations & Maintenance Manual - Volume I & IV, Volume II, Volume III & V - Final Report	CRA	1-Sep-90
1989 Annual Monitoring Report - Volumes 1, 2 & 3 - Final Report	Wenck Associates, Inc.	1-May-90
Site D Final Remediation Report - Text and Appendices	Wenck Associates	1-May-90
1990 Annual Monitoring Plan- Volumes 1, 2 & 3 - Final Report	Wenck/CRA	1-Apr-90
Quality Assurance Program	USATHAMA	1-Jan-90
Proposed Arden Hills Army Reserve Site Environmental Investigation	Short Elliott Hendrickson	1-Dec-89
Off-TCAAP Study, Phase III: Aquifer Characterization Supplement	CRA	1-Nov-89
IRA-BGRS 1988 Annual Monitoring Report & Monitoring Plan - Volumes 1 & 2	Wenck Associates	23-Oct-89
BGRS - Volume 1 - Text; Volume 2- Appendices - Final Report	CRA	1-Oct-89
1988 Annual Monitoring Report, Volumes I, II, III, IV	Wenck Associates, Inc.	1-Sep-89
Closed Circuit Television Inspection for TCAAP, Plus Videos	Visu-Sewer Clean & Seal, Inc.	1-Sep-89
Off-Post Well Installations - 1988	STS Consultants	1-Jul-89
Public Meeting Transcript - PCB-Contaminated Soils, Interim Remedial Action Plan		15-Jun-89
Focused Feasibility Study TCAAP Plume Groundwater Recovery System	CRA	1-Jun-89
Record of Decision on Removal Action for PCB-Contaminated Soils Near Site D		1-Jun-89
Rice Creek Watershed District, Potable Water Management Study, Phase I - Final Report	James M. Montgomery	1-Jun-89
Site A Interim Response Action, 90-Day Performance Report	FCC	27-Apr-89
Endangerment Assessment of PCB-Contaminated Soils at Subsite D, Final Report	PRC Environmental Mgmt	1-Apr-89
Contract Documents for Improvement Number 88-29 to Permanent GAC Water Treatment Facility	Barr Engineering	1-Feb-89
Transcript of Proceedings, City Council Meeting	City of New Brighton	13-Dec-88
Final Remedial Investigation Report, TCAAP Force Main (Round Lake)	Camp, Dresser & McKee	1-Dec-88
Proposed Amendment to U.S. EPA ROD of June 30, 1986	EPA	28-Nov-88
Solvent Recovery Feasibility Study for In-Plant Process Evaluation & Treatment Alternatives for Minimization	IT Corporation	1-Nov-88
Chemical Grouting Report	Visu-Sewer Clean & Seal, Inc.	1-Oct-88
Project QC Plan	Interpoll Laboratories, Inc.	1-Sep-88
Record of Decision on Removal Action Shoreview/Site A Groundwater Removal & Treatment		29-Jul-88
Quality Assurance Project Plan (QAPP) for the Remedial Investigation/Feasibility Study - Final	Argonne National Lab	23-Jun-88
Shoreview/Site A Summary Report	FCC	20-Jun-88
Field Sampling Quality Assurance Guide	STS Consultants	1-Jun-88

Title	Author	Date
Record of Decision on Removal Action City of New Brighton Granular Activated Carbon System - Final		10-May-88
IRA-BGRS Performance Assessment Report - Final	CRA	1-May-88
Site A Interim Response Action, Technical Plan - Draft Final	FCC	19-Apr-88
Addendum - Health & Safety and Security Plan, Off-Site Activities	IT Corporation	13-Apr-88
Contaminant Sources Remedial Investigation, Shallow Soil Gas Exploration - Final Report	STS Consultants	1-Apr-88
Remedial Investigation Work Plan - Final	Argonne National Lab	1-Apr-88
TCAAP Sand & Gravel Pit Surface Water Characterization, Final Report	Pace Laboratories	1-Mar-88
Volatile Organic Compound Air Quality Study - Draft Final Report	Roy F. Weston	1-Mar-88
Phase 1A Piezometer Report, Multi-Point Source Remedial Investigation	Camp, Dresser & McKee	29-Feb-88
IRA-BGRS Monitoring Plan - Final Report	CRA	1-Feb-88
IRA-BGRS: Water Balance - Final Report	CRA	1-Feb-88
Preliminary Assessment and Oversize Drawings & Maps - Final	Argonne National Lab	1-Feb-88
Process Water Conservation Measures and Wastewater Pretreatment Alternatives for Bldg. 101, 135 & 503	Eugene A. Hickok	1-Feb-88
Supplement to the Preliminary Assessment - Final	Argonne National Lab	1-Feb-88
Contaminant Sources Remedial Investigation (Field Work), Soil Trenching - Final Data Report	IT Corporation	1-Jan-88
Remedial Action, Decision Document Volatile Organics Contamination Sites D, F & G	USATHAMA	1-Jan-88
Federal Facility Agreement	Army/EPA/MPCA	31-Dec-87
Contaminant Sources Remedial Investigation (Field Work) - Final Report	STS Consultants	1-Dec-87
Site D - PCB Contaminated Soil Feasibility Study, Final Report	FCC	6-Nov-87
Chemical Grouting Report	Visu-Sewer Clean & Seal, Inc.	1-Nov-87
Contamination Sources Remedial Investigation - Geotechnical Data	STS Consultants	1-Nov-87
VOC Remedial Investigation Addendum, Kendall Degreaser Investigation, Bldg 502	CRA	1-Nov-87
Record of Decision for Gradient Control System	EPA	25-Sep-87
On-Site Incineration Testing of TCAAP Site, Final Report	Shirco Infrared Systems	24-Sep-87
Letter Report, Trichloroethylene Permeability Study, Twin Cities Till Project	IT Corporation	2-Sep-87
Off-TCAAP Study, Phase III, Plume Definition Report, Volumes 1, 2, Hanging Drawings	CRA	1-Aug-87
Interim Guidance on ARARs	EPA	9-Jul-87
Public Involvement and Response Plan (PIRP)	AMCCOM	1-Jul-87
Start-up, Operation & Maintenance Manual for BGRS, Volumes I & II, Programmable Control Manual	CRA	1-Jul-87
Record of Decision on Operable Unit Groundwater Remediation Program Phase I: BGRS - Final		18-Jun-87
Environmental Impact Hearing - BGRS - Highview Junior High School		20-May-87
Health & Safety and Security Plan for Conducting Remedial Activities at TCAAP	IT Corporation	1-May-87
Evaluation of Interim Response Action for TCAAP Production Wells	IT Corporation	20-Apr-87
Off-TCAAP Study, Phase III: Aquifer Characterization Scope of Work	CRA	1-Apr-87
Performance Assessment Report, VOC Remediation, Bldg 103	CRA	1-Apr-87
Remedial Monitoring Plan, Bldgs 103 and 502	CRA	1-Apr-87
Feasibility Study Carbon Treatment, City of New Brighton Wells	Wenck Associates	20-Mar-87
Minnesota Part B RCRA Permit Application Completeness Review Comments & Supplemental Information, Honeywell New Brighton Operations	Honeywell	5-Mar-87
Report of Storage Tanks at TCAAP	FCC	4-Mar-87

Title	Author	Date
BGRS Extraction Well Pumping Test Report	Honeywell/CRA	1-Mar-87
Final Engineering Report - Sewer Cleaning Program	CRA	1-Mar-87
Final Engineering Report, PCB Remediation, Bldg 502	CRA	1-Mar-87
Final Engineering Report, Sewer Cleaning Program	CRA	1-Mar-87
Geotechnical Requirements for Drilling, Monitor Wells, Data Acquisition & Reports	USATHAMA	1-Mar-87
Electromagnetic Inductance and Ground Probing Radar Surveys at Site F	STS Consultants	18-Feb-87
Farmstead Well Inventory & Assessment, Final Report	FCC	12-Feb-87
Findings of the Petrex Soil Gas Survey at Site F - Final Report	Petrex	1-Feb-87
Off-TCAAP Study, Phase I: 96-10-8 Triangle Supplement Report	CRA	1-Feb-87
Off-TCAAP Study, Phase II: Herbst Landfill, Data Report	CRA	1-Feb-87
Off-TCAAP Study, Phase II: Old Miller Dump Site, Data Report	CRA	1-Feb-87
Off-TCAAP Study, Phase II: Old Northwest Refinery Site, Data Report	CRA	1-Feb-87
Well 4, 5, 9 & 10 Investigation	Eugene A. Hickok	30-Dec-86
AMC Pollution Abatement & Installation Research & Development Program Activities FY86	Haz. Materials Technical Center	1-Dec-86
Bedrock Valley/Monitor Well Installation Survey, Final Report, Volumes I, II, III, & IV	STS Consultants	1-Dec-86
Site A Field Work and Supplementary Report	STS Consultants	1-Dec-86
Quality Assurance Project Plan (QAPP) Off-TCAAP Study	CRA	1-Nov-86
Multi-Point Source Remedial Investigation, Phase I Final Report & Appendix	Camp, Dresser & McKee	20-Oct-86
Support Services - Task V, Column Leaching Tests, Final Report	Roy W. Weston, Inc.	1-Oct-86
Off-Post Remedial Investigation and Feasibility Study - Scope of Work	FCC	1-Sep-86
BGRS Contract Documents & Specifications - Groundwater Extraction, Monitoring & Return Wells	Honeywell/CRA	1-Aug-86
BGRS Contract Documents & Specifications - Groundwater Treatment System	Honeywell/CRA	1-Aug-86
BGRS Contract Documents & Specifications - Pumphouses and Force Main System	Honeywell/CRA	1-Aug-86
Outside Building Sumps Cleaning and Inspection - Volume I, Volume II, Drawing - Final Report	Professional Services Group, Inc.	1-Jul-86
Phase II: Sewer System Remedial Action - Volume I, Volume II, Volume II Addendum, Drawings - Final Report	Professional Services Group, Inc.	1-Jul-86
Groundwater Remediation Program - Area Investigation - Off-TCAAP	Honeywell/CRA	1-Jun-86
Groundwater Remediation Program Plan	Honeywell/CRA	1-Jun-86
In-Situ Volatilization Air Emissions Study - Final Report	Roy F. Weston	1-Jun-86
Groundwater Remediation Program - Phase I: Appendix II	Honeywell	3-Apr-86
Plan of Investigation - Site F Closure	Wenck Associates, Inc.	1-Apr-86
Comprehensive Summary Report - Potential Groundwater Contamination Sources, Volume I	Bionetics Corp.	01-Feb-86
Comprehensive Summary Report - Potential Groundwater Contamination Sources, Volume II - Photo Survey	Bionetics Corp.	01-Feb-86
Extraction Well Pumping Test Report, Bldg 502	CRA	1-Feb-86
Groundwater Remedial Action Alternatives Analysis - Draft-Final Report	STS Consultants	01-Feb-86
Groundwater Remediation Program - Phase I - Proposal	Honeywell/CRA	1-Feb-86
VOC Source Control, Feasibility Study, Bldg 502	CRA	1-Feb-86
Postaction Report on PCB Removal Site D	Wenck Associates	31-Jan-86
Feasibility of Community-Wide Epidemiologic Studies of Drinking Water and Health: St. Louis Park & New Brighton, Final Report	MN Dept of Health	31-Dec-85

Title	Author	Date
VOC Source Control, Remedial Action Plan, Bldg 502	CRA	1-Nov-85
Contract Documents & Specifications, Remedial Construction, Bldg. 502 & Vicinity	CRA	1-Oct-85
Final Engineering Report, Installation of Groundwater Collection Drain, Bldg 103	CRA	1-Oct-85
Response Action Plan, PCB Remediation, Bldg. 502 - Final	CRA	1-Oct-85
Task II In-Situ Air Stripping of Soils Pilot Study, Final Report & Appendices	Roy W. Weston, Inc.	1-Oct-85
Well 6 Investigation and Rehabilitation	Eugene A. Hickok	20-Sep-85
Evaluation of the MPCA Groundwater Flow and Contaminant Transport Model	Schreuder & Associates	1-Sep-85
Off-TCAAP Study, Phase I: 96-10-8 Triangle	CRA	1-Sep-85
Project Documentation - In-Situ Volatilization Sites D & G	Wenck Associates, Inc.	1-Sep-85
Radiation Protection Survey	AEHA	8-Aug-85
Well 5, 6 and Nursery Well Investigation	Eugene A. Hickok	7-Aug-85
Evaluation of the MPCA Groundwater Flow and Contaminant Transport Model	Schreuder & Associates	1-Aug-85
Evaluation of Critical Parameters Affecting Contaminant Migration Through Soils, Final Report	Env. Science & Engineering, Inc.	1-Jul-85
Geophysical Investigation - Site G	Bison Instruments, Inc.	1-Jul-85
Production Well Alternatives	Eugene A. Hickok	1-Jul-85
Bedrock Valley Survey, Volumes I, II & III, Draft Final	STS Consultants	7-Jun-85
Storm Sewer Evaluation and Sediment Testing, Final	Eugene A. Hickok	1-Jun-85
Contract Documents & Specifications, Installation of Groundwater Collection Drain, Bldg 103	CRA	1-May-85
Final Engineering Report, Sewer Cleaning Program, Bldg 502 - Appendices E, F, G	CRA	1-Mar-85
Final Engineering Report, Sewer Cleaning Program, Bldg 502 - Text & Appendices A, B, C, D	CRA	1-Mar-85
Final Engineering Report, Sewer Grouting Program, Bldg 103	CRA	1-Mar-85
Response Action Plan, PCB Remediation, Bldg 502	CRA	1-Mar-85
TCAAP Air Quality VOC Survey	FCC	1-Mar-85
VOC Remedial Investigation, Bldg 502 & Vicinity	CRA	1-Mar-85
Preliminary Survey of Industrial Waste Disposal Practices	Ecology & Environment, Inc.	1-Feb-85
Addendum to Supplemental Remedial Investigation/Feasibility Study, Bldg 103	CRA	11-Jan-85
Addendum Report to Source Assessment, Volume I, Phase II (Draft)	STS Consultants	9-Jan-85
An Archeological Overview and Management Plan for TCAAP - Final Report No. 30	Woodward-Clyde Consult	31-Dec-84
Potable Water Source Study	Eugene A. Hickok	1-Dec-84
Sewer System Evaluation Survey - Interim Report	Professional Services Group, Inc.	1-Dec-84
Supplemental Remedial Investigation/Feasibility Study, Bldg 103	CRA	1-Dec-84
Bldg 502 Baseline Study, Assessment of Sewer Water & Sediment Quality	CRA	1-Oct-84
Remedial Feasibility Study, Bldg 502 Sewers	CRA	1-Oct-84
Bldg 502 Baseline Study, Sewer Integrity Television Inspection Survey	Donohue & Associates	1-Sep-84
Evaluation of Reactive Waste Thermal Treatment Facilities and Needs	Eugene A. Hickok	1-Sep-84
Interim Status Documentation for Burning Grounds, Area 326	Eugene A. Hickok	1-Sep-84
Historic Properties Report - Final Report	MacDonald & Mack	1-Aug-84
Remedial Feasibility Study, Bldg 103 Storm Sewer Discharge	CRA	1-Aug-84
Remedial Investigation, Bldg 103 Storm Sewer Discharge	CRA	1-Aug-84
Environmental Contamination Survey, Volumes I, II, II, IV, & V, Final Report	STS Consultants	30-Jun-84
Engineering Analysis of Alternative Remedial Measures, Phase III Report, Volumes I & II	Roy W. Weston, Inc.	4-Jun-84

Title	Author	Date
Remedial PCB Investigation Feasibility Study Bldg 502 & Vicinity - Final Report	CRA	1-Jun-84
Movement of Trichloroethylene Solution Through Soil (Master of Science Thesis)	University of Arizona	20-Apr-84
Definition of Volatile Organics in Soil, Bldg 502, A Study Plan	CRA	18-Apr-84
Sewer Cleaning, Testing and Inspection Plan	Professional Services Group, Inc.	1-Apr-84
Regional Remedial Investigation - Environmental Investigation	CRA	14-Mar-84
Geophysical Survey of Southwest Boundary at TCAAP, Final Report	Technos, Inc.	1-Mar-84
Honeywell, Inc. New Brighton Operations RCRA Part B Permit Application	Eugene A. Hickok	1-Mar-84
1984 Project Schedule - Groundwater Investigation	CRA	1-Feb-84
Preliminary Feasibility Evaluation for On-Site Waste Disposal	Roy W. Weston, Inc.	1-Jan-84
Phase II - Sampling Program Bldg 502 & Vicinity	CRA	24-Nov-83
Final Report on Pressure Tests of 18-inch & 24-inch Diameter Sanitary Sewer Force Mains	Professional Services Group, Inc.	1-Nov-83
Technical Report - Detonator & Primer Waste Assessment Sources and Treatment Alternatives	U.S. Army Research & Dev Center	1-Nov-83
Final Report on Exfiltration Tests of Selected Gravity Sanitary Sewers for TCAAP	Professional Services Group, Inc.	1-Oct-83
Phase I Sampling Program, Bldg 103 Storm Sewer Discharge - Final Report	CRA	1-Oct-83
Water Quality Engineering Consultation - Wastewater Pretreatment Evaluation	AEHA	19-Sep-83
Feasibility Study for Pretreatment of Metal Finishing Dept - Bldg. 502, Honeywell	Environmental Process, Inc.	15-Sep-83
Phase I - PCB Sampling Program, Bldg 502 & Vicinity, Final Report	CRA	1-Sep-83
Summary of PCB Testing Program Conducted on Equipment at TCAAP	Env. Science & Engineering, Inc.	1-Sep-83
Comprehensive Stormwater Management Plan for Ramsey County Ditch No. 1 Watershed	Eugene A. Hickok	1-Jul-83
Phase I Sampling Program, Bldg 103 Storm Sewer Discharge	CRA	1-Jul-83
Wastewater Pretreatment Evaluation, Final Report	Eugene A. Hickok	19-Jun-83
Bldg 502 PCB Study	Pace Laboratories, Inc.	17-May-83
Environmental Contamination Survey, Phase I Report - Volumes I, II, & III	STS Consultants	16-May-83
Phase I - Sampling Program, Bldg 502 & Vicinity	CRA	1-May-83
Safety & Health Plan, Interim Surface Containment Program, Sprinkler Pit & Scrap Dock Area, Bldg 502	CRA	1-May-83
Water Meter Replacement Program	Donohue & Associates	27-Apr-83
Sewer Line and Manhole Inspection Report	Professional Services Group, Inc.	1-Mar-83
Study of Trichloroethylene (TCE) in Sewers near Bldg 502 - Honeywell, Inc.	Eugene A. Hickok	1-Mar-83
Summary of PCB Testing Program Conducted on Equipment at TCAAP	Env. Science & Engineering, Inc.	1-Mar-83
Testing Equipment for PCBs, Task 4, Transformer Evaluation	Env. Science & Engineering, Inc.	7-Feb-83
Potable Water Source Alternatives - Final Submittal and Appendix	Sanders & Thomas, Inc.	1-Dec-82
Water Audit/Leak Detection Survey	Donohue & Associates	1-Dec-82
Evaluation of Wastewater Constituents	Eugene A. Hickok	1-Nov-82
Field Investigations of Uncontrolled Hazardous Waste Sites, FIT Project, Results of Surface Water Sampling Survey	Ecology & Environment, Inc.	1-Nov-82
Potential Groundwater Contamination Sources - Photo Survey	Bionetics Corp.	1-Nov-82
Potential Groundwater Contamination Sources - Photo Survey	Bionetics Corp.	1-Aug-82
Round Lake Unit - Report on Chemical Analyses of Round Lake Samples	U.S. Dept of Interior - Fish & Wildlife Service	27-Jan-82
Review of Geologic and Hydrogeologic Data and Reports, Honeywell Defense Systems	STS Consultants	5-Nov-81
Subsurface Exploration for Soil & Groundwater Contamination - Bldg. 502, Honeywell	Soil Exploration Co.	30-Sep-81
Study of Subsurface Contamination	Soil Exploration Co.	25-Sep-81

Title	Author	Date
Water Decontamination Study	Sanders & Thomas, Inc.	1-Sep-81
Installation Assessment - Photo Survey	Bionetics Corp.	1-May-81
Report on Monitoring of Wastewater Flows	Professional Services Group, Inc.	1-Oct-80
Potable/Recreational Water Quality Survey and Waste Water Engineering Survey	AEHA	9-Nov-78
Installation Assessment of TCAAP, Report No. 129	USATHAMA	1-Oct-78

ER, A ELIGIBLE OPEN DSERTS SITES

TCAAP-01, OU-2
EARLY BURN/BURIAL AREA (SITE A)

SITE DESCRIPTION

Prior to 1940, Site A, approximately 12.3 acres, consisted of agricultural fields and farmsteads. Until 1966, portions of the site were used for burial and/or burning of various wastes, such as sewage sludge, solvents, explosive-containing wastes, and mercury crack cases resulting in the contamination of the shallow soil and shallow groundwater with VOCs and metals.

An Engineering Evaluation/Cost Analysis (EE/CA) was conducted which resulted in a Removal Action (REM) to prevent off-site migration of VOCs in the shallow aquifer. The EE/CA included an assessment of groundwater extraction/containment, treatment and disposal options for contaminated groundwater at the site. Eight extraction wells were installed to capture contaminated groundwater at the site. Extracted water is discharged to the sanitary sewer. The OU-2 ROD designated the existing system continuation with enhancement as the final RA. The system has been operational since June 1994. After evaluating the system, four of the wells were shut down in FY2000 to maintain performance and reduce operating costs.

The OU-2 ROD also specified stabilization and off-site disposal of the shallow, metal-contaminated soil as the remedy. Approximately 16,300 cubic yards of contaminated soil were remediated and disposed of in FY98 and FY99.

Additional site characterization was performed in 1997 that identified a source of VOC contamination in the shallow soils. An EE/CA has received consistency approval from the regulators. A REM has been conducted for these soils. A pilot SVE/air sparging system was installed in FY2000 and designed to operate for 18 months to remediate these soils.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
VOCs, Metals

MEDIA OF CONCERN:
Groundwater, Soil

COMPLETED IRP PHASE:
PA/SI, RI, IRA, FS, EE/CA, REM

CURRENT IRP PHASE:
RA(O) (GW and removal of shallow soils)

FUTURE IRP PHASE:
RA(O), LTM (funded under TCAAP-19)

PROPOSED PLAN

Continue to operate the shallow groundwater containment system with the reduced number of wells. Evaluate the pilot SVE/air sparging system operation, adjust as needed and run as the final system for 18 months. Prepare a closeout report for the shallow contaminated soils. Continue LTM. Operations of SVE and LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)	39	10					
RA(O)							670
LTM							
LTO							

PROJECTED TOTAL: $719,000

TCAAP-05, OU-2
OPEN BURN AREA/SALVAGE AREA (SITE C)

SITE DESCRIPTION

Site C, approximately 6.4 acres, was used for burning scrap wooden boxes, solvents, oils, and production materials from 1947 through 1957. It was also used for land disposal and open storage. Much of the burning and storage occurred in the northern portion of the site.

The ROD was signed in December 1997 requiring excavation, stabilization and off-site disposal of the contaminated soil. The estimated volume of soil to be excavated is 5,000 cy. A grid system was established at the site in FY2000 and excavation was initiated. Excavation, stabilization and off-site disposal will be completed in FY2001.

A two-year phytoremediation demonstration project (started in FY98) delayed site cleanup under CERCLA and was conducted at this site and at Site 129-3 as part of a DA/AEC effort to demonstrate the feasibility of plant remediation of metal-contaminated soil. The third year of the study (FY2000) was terminated when compounds used in the study were found to mobilize the lead further into the soil and shallow groundwater at the site. The MPCA has issued a Notice of Violation (NOV) to Army for this release. The Army initiated cleanup of the contaminated soil and groundwater as a non time critical REM. MPCA informed Army that this was a NOV Corrective Action which takes precedence over the REM. Army has received funds to investigate and carry out a containment corrective action. Approximately 6,600 CY of contaminated soil has been removed from the site as part of the RA. Characterization of phytoremediation demonstration area as a corrective action is underway.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Metals

MEDIA OF CONCERN:
Soil, Groundwater (REM portion only)

COMPLETED IRP PHASE:
PA, SI, RI, FS, RD

CURRENT IRP PHASE:
RA, REM

FUTURE IRP PHASE:
LTM (5 years) (funded under TCAAP-19)

PROPOSED PLAN

Conduct Corrective Action for phytoremediation demonstration area. For RA, continue excavation, on-site stabilization, and off-site disposal of contaminated soil based on ROD requirements.

LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)		4562					80
RA(O)							575
LTM							
LTO							

PROJECTED TOTAL: $5,217,000

TCAAP-06, OU-2
LEACH PITS/SOLVENT BURN (SITE D)

SITE DESCRIPTION

The pits on Site D, approximately 1.8 acres, were used for burning of sump wastes, scrap propellants, solvents, paint thinners, oils, rags and chemicals, in addition to the dumping of neutralized cyanide wastes from approximately 1949/1950 to 1968.

In 1989, an interim remedial action was undertaken in which 1,470 cubic yards of PCB-contaminated soil were incinerated. An SVE system removed 116,119 lbs of chlorinated solvents from shallow soil from 1986-2000. The contamination in shallow soil is below clean up levels and the SVE system was shut down in FY2000 with regulatory approval. Additional soil characterization will be required to assess potential metal contamination remaining at the site, based on a separate ROD requirement.

Additional site characterization (RI) was performed in 1997 to evaluate the need for a deeper SVE system. A deep vent SVE pilot study was completed in FY98. The deep vent SVE pilot study indicated that the deep soil contamination is below cleanup goals. The regulators and the Army negotiated a final investigation work plan to gather data to close out the site. The closeout data has been collected and the closeout report has been forwarded to the regulators.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents, Metals

MEDIA OF CONCERN:
Groundwater, Shallow and Deep Soil

COMPLETED IRP PHASE:
PA, SI, RI, IRA, FS

CURRENT IRP PHASE:
RD

FUTURE IRP PHASE:
RA, LTM (LTM will be funded under TCAAP-19 if needed)

PROPOSED PLAN

Close out SVE system at the Site - Studies have determined that the site has been cleaned to levels below the cleanup goals. Perform RD assessment of metal contamination in the soil. Perform RA if soils contain metal contamination above cleanup levels. LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD	335						
RA(C)		830	50				
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $1,215,000

TCAAP-07, OU-2
CHEMICAL BURN AREA (SITE E)

SITE DESCRIPTION

In the early 1940s, Site E, approximately 8.8 acres, was used as both a construction material and trash landfill 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 ROD was signed in December 1997 requiring excavation, stabilization and off-site disposal of the contaminated soil. Excavation began in FY99. Completion of the cleanup is scheduled for FY2001 and has been delayed because of lack of funding as a result of a large increase in the amount of soil to be removed and the presence of asbestos-containing materials (ACM).

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Metals,ACM

MEDIA OF CONCERN:
Soil

COMPLETED IRP PHASE:
PA, SI. RI, FS, RD

CURRENT IRP PHASE:
RA

FUTURE IRP PHASE:
LTM (5 years) (funded under TCAAP-19)

PROPOSED PLAN

Complete excavation of the contaminated soils, perform on-site stabilization, and transport the soil off site for disposal. The closeout report will be completed in FY2002.

LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)	1364						
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $1,364,000

TCAAP-09, OU-2
LANDFILL (SITE G)

SITE DESCRIPTION

Site G, approximately 4.6 acres, contained an irregularly-shaped landfill area. This site was used as a general dump area for the disposal of rubble, asphalt pavement, barrels, oil filters, and other types of materials including rocket propellant research materials, floor-absorbent sweepings, metal dusts and grindings, burning operation ashes, and scrap roofing debris. Operations appear to have begun during WW II and continued through 1976. An 18-inch-thick clay cap was installed at the site in 1985.

An SVE system removed 104,418 lbs of chlorinated solvents from shallow soil from 1986-2000. The contamination in shallow soil is below cleanup levels and the SVE system was shut down in FY2000 with regulatory approval.

Additional soil characterization (RI) was performed in 1997 to evaluate the potential need for a deeper SVE system. The soil characterization indicated that the remaining contamination is below cleanup levels.

The interim investigation of tar-like substances found in the landfill during site characterization activities was completed in FY98. There is no deep soil contamination but recalcitrant tar-like VOC-contaminated material has been identified in the shallow soils. The Army proposal to focus the existing SVE system on that area is under regulatory review. If accepted, portions of the system will be turned back on.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents

MEDIA OF CONCERN:
Shallow and Deep Soil, Groundwater

COMPLETED IRP PHASE:
PA, SI, RI, IRA, FS

CURRENT IRP PHASE:
RD

FUTURE IRP PHASE:
RA, LTM (LTM will be funded under TCAAP-19 if needed)

PROPOSED PLAN

Studies have determined that the site has been cleaned to levels below the cleanup goals except for the tar-like layer in the shallow soils. Army proposes to turn the SVE system back on for three months. Anticipated plan is to remove VOC-contaminated material or finalize the cap for the site.
LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD	5	50					
RA(C)		89					30
RA(O)							138
LTM							
LTO							

PROJECTED TOTAL: $312,000

TCAAP-10, OU-2
BURNING AREA/FILL SITE (SITE H)

SITE DESCRIPTION

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 from the early 1940s until the late 1960s. In addition to waste burning, portions of the site may have been used for burial and dumping of industrial sludge, paint residue, incineration ash, and solvents.

The ROD was signed in December 1997 requiring excavation, stabilization and off-site disposal of the contaminated soil. Excavation began in FY99, and completed in FY2001. The site was cleaned up to industrial use standards. Approximately 8,600cy of contamianted soil was removed from the site. A final site closeout report is being prepared.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Metals, ACM

MEDIA OF CONCERN:
Soil, (Surface water and sediment TBA by CHPPM)

COMPLETED IRP PHASE:
PA, SI, RI, FS, RD

CURRENT IRP PHASE:
RA

FUTURE IRP PHASE:
LTM (5years) (funded under TCAAP-19)

PROPOSED PLAN

Complete the closeout report in FY 2001.
LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)	84						
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $84,000

TCAAP-11, OU-2
LEACHING PITS (SITE 129-3)

SITE DESCRIPTION

Three leaching pits are located at Site 129-3, approximately 2 acres, which were used for disposal and flashing of contaminated wastewater, primarily 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 the burning of scrap powder and lead styphnate wastes and waste waters. The ROD was signed in December 1997 requiring excavation, stabilization and off-site disposal of the contaminated soil. The site will be cleaned up to industrial use standards. Approximately 620cy of contaminated soil was removed from the site in CY2000. Site cleanup is expected to be complete in CY2001.

A two-year phytoremediation demonstration project (started in FY98) was conducted at this site and at Site C as part of a DA/AEC effort to demonstrate the feasibility of plant remediation of metal-contaminated soil. The third year of the study was terminated when compounds used in the study mobilized the lead further into the soil and impacted the shallow groundwater at Site C. An NOV Corrective Action is underway to clean up contamination caused by the demonstration project.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents, Metals, Nitroglycerin

MEDIA OF CONCERN:
Soil

COMPLETED IRP PHASE:
PA, SI, RI, FS, RD

CURRENT IRP PHASE:
RA

FUTURE IRP PHASE:
LTM (5 Years) (funded under TCAAP-19)

PROPOSED PLAN

Assess impact from phytoremediation project and perform REM if necessary. For RA, characterize and if necessary excavate, perform on-site stabilization, and off site-disposal of contaminated soil based on ROD requirements in FY2001. Complete closeout report in FY2002.

LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)	1066	50					
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $1,116,000

TCAAP-12, OU-2
BURN AREA W. OF HAMLINE AVE. (SITE 129-5)

SITE DESCRIPTION

Prior to 1940, Site 129-5, approximately 7.2 acres, was occupied by farmsteads and agricultural fields. Past operations at the site appear to be limited to open burning of scrap explosives, bullets, spent solvents and disposal of primer/tracer sludge from about 1945/46 through the late 1950s. Areas of this site with observed surface debris were fenced in 1995.

The ROD was signed in December 1997 requiring excavation, stabilization and off-site disposal of the contaminated soil. Excavation was completed in FY99 with the removal of 100 cy of contaminated soil. The site was cleaned up to industrial use standards. The draft site closeout report, completed in FY2000, recommended no further action at the site. The closeout report is currently under review by the regulators.

IRP STATUS

RRSE RATING: Medium Risk (2A)

CONTAMINANTS OF CONCERN:
Metals

MEDIA OF CONCERN:
Soil

COMPLETED IRP PHASE:
PA, SI, RI, FS, RD

CURRENT IRP PHASE:
RA

FUTURE IRP PHASE:
LTM (5 years) (funded under TCAAP-19)

PROPOSED PLAN

Continue LTM.
LTM will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)	1						
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $1,000

TCAAP-13, OU-2
LANDFILL (129-15)

SITE DESCRIPTION

Past operations at Site 129-15, approximately 2 acres, appear to be the dumping and burial of construction wastes. The site was used for landfilling from 1970 through 1978.

Polynuclear aromatic hydrocarbons (PAHs) were discovered during preliminary characterization of the dumped material in 1994.

Characterization of this area was performed in Fall 1998 and PAHs were the only COCs identified. A cover design plan is currently under review by the regulators.

IRP STATUS

RRSE RATING: Low Risk (3A)

CONTAMINANTS OF CONCERN:
PAH

MEDIA OF CONCERN:
Soil

COMPLETED IRP PHASE:
PA, SI, RI, FS

CURRENT IRP PHASE:
RD

FUTURE IRP PHASE:
RA (cover and institutional controls)

PROPOSED PLAN

Complete site closeout report and site cover within FY 2001.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD	10						
RA(C)	10						
RA(O)							170
LTM							
LTO							

PROJECTED TOTAL: $190,000

TCAAP-15, OU-2
INDUSTRIAL OPS. BLDG 502 & AREA (SITE I)

SITE DESCRIPTION

Site I, approximately 43 acres, consists of Bldg 502 and its associated structures and facilities. Building 502 was constructed in 1942 and was initially used for the production of .30-caliber ammunition. In 1944, the facility was converted to the production of 105-millimeter projectiles. When projectile production ended in 1945, a portion of the building was converted to storage, repair, and maintenance of ordnance processing machinery. During the early 1950s, the building was rehabilitated for the manufacture, storage, and shipment of artillery ammunition components. In 1958, Honeywell Defense Systems (now Alliant Techsystems Inc. [Alliant]) assumed responsibility for general manufacturing activities in Bldg 502. In the late 1980s, Alliant excavated and disposed of a few thousand cubic yards of PCB-contaminated soil from around the building. Other sections continue to be used to temporarily store liquid wastes prior to off-site removal by waste contractors. Alliant continues to use the building as a manufacturing facility.

A pump and treat system (IRA), started in 1985, is currently operating at the site to remove chlorinated solvents from the groundwater. The RI was completed in March 1987. Remedial design for final RA is currently being performed by the PRP, Alliant.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents

MEDIA OF CONCERN:
Groundwater, Soil

COMPLETED IRP PHASE:
PA, SI, RI, IRA, FS

CURRENT IRP PHASE:
RD, LTM

FUTURE IRP PHASE:
RA, LTM

PROPOSED PLAN

Continue operating the IRA (the TCAAP Groundwater Recovery System or TGRS). The RD, RA and LTM are being funded by Alliant.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD	5						
RA(C)		5					4
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $14,000

TCAAP-16, OU-2
INDUSTRIAL OPS. BLDG 103 & AREA (SITE K)

SITE DESCRIPTION

Site K, approximately 21 acres, consists primarily of Bldg 103, a two-story structure built in 1943. The building comprises more than 410,000 square feet and was used for munitions manufacturing and assembly operations during WW II. During the early 1950s, the building was reactivated for the production of small caliber ammunition, using various solvents to clean machines, parts, and floors. In 1952, for example, solvents were used at a rate of 1,000 gallons weekly. In 1961, the operations were again reactivated for the production of fuzes, mines, and weapon systems by Honeywell and subsequently Alliant.

A containment pump and treat system (IRA), started in 1985, is currently operating at the site to remove chlorinated solvents from the shallow groundwater. Approximately 166 pounds of VOC have been removed through September 2000. The ROD was signed in December 1997 and included this system as part of the final RA. Additional activities for the final RA are currently being performed by the PRP, Alliant. Two innovative in-situ technologies are being pilot-tested at the site and the results will be available in FY2001. If the pilot test is successful, one or both of the technologies may be implemented to clean up the soil under Building 103.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents

MEDIA OF CONCERN:
Groundwater, Soil

COMPLETED IRP PHASE:
PA, SI, RI, IRA, FS

CURRENT IRP PHASE:
RD, LTM

FUTURE IRP PHASE:
RA, LTM

PROPOSED PLAN

Continue to operate the RA (a groundwater pump and treat system) and perform additional soil characterization. The RD, RA and LTM are being funded by Alliant.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD	5						
RA(C)		10					4
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $19,000

TCAAP-17, OU-1
DEEP GROUNDWATER

SITE DESCRIPTION

OU-1 addresses the north plume of groundwater contaminated with chlorinated solvents that has migrating off TCAAP. A permanent GAC treatment facility with a capacity of 3,900 gallons per minute was installed in New Brighton in June 1990. This system supplies drinking water to area residents and aids in the remediation of the off-TCAAP contaminated groundwater plume. Additional production wells to accomplish containment of the plume were installed for this system in 1996 and 1997.

The ROD was signed in September 1993.

Construction of the RA required by the ROD was completed in 1998. LTM started in August 1998. Approximately 18,800 pounds of VOCs have been removed through September 2000.

Evaluation of ROD requirements and containment are being reviewed by both the Army and the regulators as part of the Annual Performance Review.

IRP STATUS

RRSE RATING: High Risk(1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents

MEDIA OF CONCERN:
Groundwater

COMPLETED IRP PHASE:
PA, SI, RI, FS, RD, RA

CURRENT IRP PHASE:
RA, LTM, LTO

FUTURE IRP PHASE:
LTM, LTO

PROPOSED PLAN

Operation of the groundwater treatment system and LTM and LTO is expected to run through 2040.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)							25
RA(O)	10						600
LTM	25	25	25	25	25	25	9485
LTO							

PROJECTED TOTAL: $10,270,000

TCAAP-19, OU-2
DEEP GROUNDWATER

SITE DESCRIPTION

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

A containment pump and treat system (IRA) was completed in June 1987. The IRA 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 at the TCAAP Groundwater Recovery System treatment plant and treated water is recharged via the TCAAP gravel pit. A fraction of the treated water is used by the occupants of TCAAP. Approximately 175,700 pounds of VOCs has been removed through September 2000.

The ROD was signed in December 1997.

RD for evaluation of potentially more cost-efficient source control and mass removal was initiated in FY98. A reconfiguration plan is currently being evaluated.

Funding for TCAAP-19 includes Annual Performance Monitoring and Report, Well Abandonment, TGRS Optimization Study and Design.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents

MEDIA OF CONCERN:
Groundwater

COMPLETED IRP PHASE:
PA, SI, RI, IRA, FS

CURRENT IRP PHASE:
RD, RA, LTM, LTO

FUTURE IRP PHASE:
RA, LTM, LTO

PROPOSED PLAN

A reconfiguration plan is currently being evaluated. Operation of the groundwater treatment system and LTM is expected to run through 2040.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD	10						
RA(C)	10	550					600
RA(O)	2648	1987	2011	1905	1875	1075	37363
LTM							1060
LTO							

PROJECTED TOTAL: $51,094,000

TCAAP-23
BLDG 135 PRIMER/TRACER AREA

SITE DESCRIPTION

This area, approximately 118 acres, consists of all structures and utilities dedicated to the manufacture of small caliber ammunition primers and tracer mixtures. The manufacturing period included all of TCAAP production. The area is enclosed by an internal security fence due to potential explosion hazards associated with manufacturing facilities still in the 3X condition (all visible evidence of explosives have been removed). In addition to reactive hazards, there is potential contamination of structures, 11,500 feet of sewers and area soils from production materials.

A site-wide preliminary assessment was performed for TCAAP in 1988. The primer/tracer areas were part of an Army mobilization mission at that time so they were not investigated during the site-wide remedial investigation completed in 1991.

Limited soil sampling was performed in 1996. Residual explosives may be present in buildings and sewers. The only way to get it to 5X condition (where anyone can use it) is by burning. Therefore, the buildings must be burned to decontaminate.

Site–specific PA is currently underway.

IRP STATUS

RRSE RATING: Low Risk (3A)

CONTAMINANTS OF CONCERN:
Explosives, Metals, Primer compounds

MEDIA OF CONCERN:
Groundwater, soil

COMPLETED IRP PHASE:
PA, SI

CURRENT IRP PHASE:
RI (EE/CA)

FUTURE IRP PHASE:
RD, RA, LTM (LTM funded under TCAAP-19)

PROPOSED PLAN

RI to delineate explosive contamination in soil and sewer system. With the current information, RD, RA and LTM will be expected. If LTM is needed it will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD			180				
RA(C)				1880			
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $2,060,000

TCAAP-25
ROUND, SUNFISH, & MARSDEN LAKES

SITE DESCRIPTION

Potential contaminated runoff from TCAAP operations into on-site lakes (Sunfish and Marsden) and off-site lake (Round) have resulted in possible metals contamination. All public activity at Round Lake is restricted by the U.S. Fish and Wildlife Service. There is no public access to Sunfish and Marsden Lakes, which are located within the fenced TCAAP boundary.

USACHPPM has performed a phased investigation and an ecological risk assessment for the surface water and sediments in these lakes. The Final Tier I Ecological Risk Assessment received consistency in November 1997. The Tier II Ecological Risk Assessment Work Plan received consistency in June 1999. Currently the Tier II Ecological Risk Assessment is underway.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Metals

MEDIA OF CONCERN:
Sediments, Surface Water

COMPLETED IRP PHASE:
PA

CURRENT IRP PHASE:
RI (Tier II Ecological Risk Assessment)

FUTURE IRP PHASE:
RC

PROPOSED PLAN

Complete Tier II Ecological Risk Assessment by the end of FY2001. With current information NFA is expected.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS	1						
IRA							
RD							
RA(C)							
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $1,000

TCAAP-27, OU-3
DEEP GROUNDWATER

SITE DESCRIPTION

This site is 100% funded by Alliant Techsystems Inc.

Past industrial activities at TCAAP have resulted in VOC contamination of deep aquifers (Units 3 and 4). Off post the VOC plumes diverge into what are termed the north plume (TCAAP-17) and south plume. Operable Unit 3 focuses on off-TCAAP groundwater contamination in Units 3 and 4 in the south plume. The south plume has a much smaller geographical extent than the north plume.

The RI was completed in July 1992.

An extraction well (RA) has been placed and operates to arrest the spread of and hydraulically contain the south plume. The water is treated by GAC in a facility operated by the City of New Brighton and is discharged to the New Brighton municipal water system. A Record of Decision (ROD) was signed in September 1992 for this operable unit and a remedy is in place.

The LTM started in 1994.

Levels of contamination have reached non-detect at the containment boundary. Pumping rates and containment boundary are being reduced and Alliant and Army are working with the regulators to establish monitoring requirements.

IRP STATUS

RRSE RATING: High Risk (1A)

CONTAMINANTS OF CONCERN:
Chlorinated Solvents

MEDIA OF CONCERN:
Groundwater

COMPLETED IRP PHASE:
PA, SI, RI, FS, RD

CURRENT IRP PHASE:
RA, LTM (no army funds are required)

FUTURE IRP PHASE:
RA, LTM (no army funds are required)

PROPOSED PLAN

Long-term operation & maintenance will continue through 2005. Long-term monitoring will continue through 2010.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)	1	1	1	1	1		
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $5,000

TCAAP-28
BLDG 535 PRIMER/TRACER AREA

SITE DESCRIPTION

This site refers to an array of production building foundations and grounds used for the production of primer, tracer, and incendiary mixtures from 1941 through the early 1960s. Bldg. 535 is the largest structure remaining in the 60-acre fenced site located at the southern end of TCAAP. The area is enclosed by an internal security fence due to potential exposure hazards associated with manufacturing facilities in the 3X condition (all visible evidence of explosives have been removed). Approximately fifty of the structures were burned down during the 1960s; however, sewers (10,500 feet) were not tested, decontaminated, or removed.

Limited soil sampling was done in November 1996.

Site–specific PA is currently underway.

IRP STATUS

RRSE RATING: Medium Risk (2A)

CONTAMINANTS OF CONCERN:
Explosives, Metals, Primer Coumpounds

MEDIA OF CONCERN:
Groundwater, Soil, Sediment

COMPLETED IRP PHASE:
PA, SI

CURRENT IRP PHASE:
RI/FS (EE/CA)

FUTURE IRP PHASE:
RD

PROPOSED PLAN

RI to delineate explosive contamination in soil and sewer system. With the current information, RD, RA and LTM will be expected. If LTM is needed it will be funded under TCAAP-19.

CONSTRAINED COST TO COMPLETE

PHASE	2001	2002	2003	2004	2005	2006	2007+
RI/FS							
IRA							
RD							
RA(C)	1						
RA(O)							
LTM							
LTO							

PROJECTED TOTAL: $1,000

ER, A ELIGIBLE RESPONSE COMPLETE DSERTS SITES

TCAAP-02, OU-2
SEWAGE SLUDGE BURIAL (SITE B)

SITE DESCRIPTION

Prior to 1940, Site B, approximately 9.5 acres, was occupied by farmsteads. Detailed information on the history of waste activities at Site B is not available, but it is believed that sewage sludge may have been disposed at the site prior to 1966. Site B includes wetlands that provide potential habitat for the Blanding's turtle (on the MN threatened species list). A potential dump area is located in the southern portion of the site, this area extends beyond the designated site boundary. Evidence of this dump was not found during trenching.

The RI was completed in March 1997. Characterization of the dump was performed in Fall 1998 and no COCs were identified. No contamination was found. The site closeout report recommended NFA and received regulatory approval in FY2000.

IRP STATUS

RRSE RATING: Medium Risk (2A)

CONTAMINANTS OF CONCERN:

None

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI, RI/FFS, RD

CURRENT IRP PHASE:

RC

FUTURE IRP PHASE:

RC

TCAAP-08, OU-2
CHEMICAL BURN/BURIAL AREA (SITE F)

SITE DESCRIPTION

In 1951, Site F, approximately 10 acres, was used as a burning area. During the 1950s, waste munitions manufacturing by-products were burned, using propellant powder or oil to initiate burning. Cyanide pots and containers as well as waste explosives were also buried on the site. Burning continued from the 1950s through the early 1980s.

Closure of Site F is required under the Federal Facility Agreement for TCAAP, dated December 1987 and by the TCAAP installation RCRA permit. The Remedial Investigation was completed in March 1992. The Closure Plan called for on-site treatment of 12,000 tons of soil using separation, soil washing, and acid leaching methods. During excavation, the discovery of additional disposal areas increased the quantity of soil evaluated and treated to 24,748 tons.

As of October 1995, all excavation and on-site treatment activities were complete. Final closure activities were initiated in 1996 and all contaminated soil was removed from the site in 1997. The site was cleaned up to unrestricted use. The final Closure Report was submitted and approved by the regulators in FY1999.

IRP STATUS

RRSE RATING: High Risk (1A)
CONTAMINANTS OF CONCERN:
Metals
MEDIA OF CONCERN:
Soil
COMPLETED IRP PHASE:
PA, SI, RI, FS, RD, RA
CURRENT IRP PHASE:
Response Complete
FUTURE IRP PHASE:
Response Complete

TCAAP-14, OU-2
SITE J

SITE DESCRIPTION

RESPONCE COMPLETE- DELETED FROM DSERTS DATA-BASE BY AEC

Site J was a portion of the sewer system for TCAAP. The Site J portion of the sewer system serviced production buildings 501, 502, 503, 535, and 576. Site J includes most of the sanitary and process waste lines, along with some segments of the storm drainage system in this area. Site J sewer lines were used for disposal of process wastes, oil and grease, heavy metals, solvents, explosives, lacquers, paint thinners, metal shavings, acids, and low level radioactive wastes.

The Site J portions of the sewer system have since been cleaned; the surrounding soils and groundwater along the pipeline have been subsequently investigated. No contamination was found.

The Site J Closure Report recommended no further action and was approved by the regulators in December 1993.

IRP STATUS

RRSE RATING: NA
CONTAMINANTS OF CONCERN:
PCBs, Solvents, Metals, Radionuclides
MEDIA OF CONCERN:
Groundwater, Soil
COMPLETED IRP PHASE:
PA, SI, RI, FA, RA
CURRENT IRP PHASE:
Response Complete
FUTURE IRP PHASE:
RC, deleted from DSERTS database

TCAAP-20
GRENADE TESTING AREA

SITE DESCRIPTION

The M550 Grenade Range, approximately 19 acres, located in the northeast portion of TCAAP, consisted of two launching structures and three landing pads. The range was operated by Honeywell Defense Systems Division, now Alliant Techsystems, from March 1967 until July 1975.

A preliminary investigation using primarily X-ray fluorescence was conducted in the summer of 1993 to determine if metals contamination exists. Phase II of the investigation was completed in 1994, as well as Phase III [an Engineering Evaluation/Cost Analysis (EE/CA)]. The EE/CA final report received consistency approval from the regulators in February 1999. The Action Memo was signed in January 1999.

The removal action (REM) was completed in FY99 and removed approximately 2,200 cubic yards of contaminated soil. The site was cleaned up to industrial use standards. LTM started in FY2000 and is expected to last 3 years.

IRP STATUS

RRSE RATING: High Risk (1A)
CONTAMINANTS OF CONCERN: Metals
MEDIA OF CONCERN: Soil
COMPLETED IRP PHASE: RI, EE/CA, REM
CURRENT IRP PHASE: LTM
FUTURE IRP PHASE: LTM (funded under TCAAP-19)

PROPOSED PLAN

Submit closeout report in FY2001 and complete in FY2002. Continue LTM, which is funded under TCAAP-19.

TCAAP-21
OUTDOOR FIRING RANGE TEST AREA

SITE DESCRIPTION

The Outdoor Firing Range, approximately 150 acres, consists of three bullet catchers that were used for the testing of ammunition from the 1950s through the 1970s.

The Phase II RI was completed in 1995, it identified part of the extent and magnitude of metal contaminated soils. The Phase III RI work encompassing final site characterization was completed in 1996. An Engineering Evaluation/Cost Analysis (EE/CA) has been prepared and received consistency from the regulators in February 1999. The Action Memo was signed in January 1999.

The removal action (REM) was completed in FY99. Approximately 950 cubic yards of metal-contaminated soil was removed. The site was cleaned up to industrial use standards.

IRP STATUS

RRSE RATING: High Risk (1A)
CONTAMINANTS OF CONCERN: Metals
MEDIA OF CONCERN: Soil
COMPLETED IRP PHASE: RI, EE/CA, REM
CURRENT IRP PHASE: LTM
FUTURE IRP PHASE: LTM (funded under TCAAP-19)

PROPOSED PLAN

Submit closeout report in FY2001 and complete in FY2002. LTM will start in FY2000, and is expected to last for 3 years.
LTM is funded under TCAAP-19.

TCAAP-22
WATER TOWER AREA

SITE DESCRIPTION

The Water Tower Area, approximately 2.4 acres, was a site used for the surface disposal of brass and shell casings.

Based on analyses performed in 1990 on the materials, the top two feet of the soil/metal mixture was excavated and hauled off site and disposed of as solid waste in 1993. Clean fill material was hauled in and graded on the site. A report was submitted and approved by regulatory agencies in 1993.

Confirmatory samples were not taken after the soil removal because original sampling data indicated that the material was not hazardous.

IRP STATUS

RRSE RATING: Low Risk (3A)
CONTAMINANTS OF CONCERN:
Metals
MEDIA OF CONCERN:
Soil
COMPLETED IRP PHASE:
PA, RI, RD, RA
CURRENT IRP PHASE:
Response Complete
FUTURE IRP PHASE:
Response Complete

TCAAP-24
RECREATIONAL TRAP SHOOTING AREA

SITE DESCRIPTION

The Trap Range refers to a recreational trap-shooting range located east of the former residential housing area in the northwest corner of TCAAP. Historical newspapers refer to plant workers forming trap-shooting leagues at the "recreational area" of TCAAP. Dates of activity are unknown.
Limited field sampling was performed in 1996. RI in 1999, found no evidence of contamination. NFA was recommended and approved by the regulators.

IRP STATUS

RRSE RATING: Low Risk (3A)
CONTAMINANTS OF CONCERN:
Metals
MEDIA OF CONCERN:
Soild
COMPLETED IRP PHASE:
RI
CURRENT IRP PHASE:
Response Complete
FUTURE IRP PHASE:
Response Complete

TCAAP-26
ALL UNCHARACTERIZED SITES

SITE DESCRIPTION

This site refers to the remaining area within TCAAP that has a completed Feasibility Study level of investigation that resulted in no additional contamination being identified.

IRP STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS OF CONCERN:

None Identified

MEDIA OF CONCERN:

None Identified

COMPLETED IRP PHASE:

FS

CURRENT IRP PHASE:

Response Complete

FUTURE IRP PHASE:

Response Complete

SCHEDULE

PAST MILESTONES

1978: "Installation Assessment of Twin Cities Army Ammunition Plant Report No. 129" comprised of site visit, records search, and employee interview information detailing waste management practices. **(October)**

1981: Army and MPCA discovered chlorinated solvents or "VOCs" in TCAAP and City of New Brighton drinking water supplies, indicating that TCAAP may be the source of contamination. **(June)**

1983: Army began supplying bottled water to residents outside the southwest TCAAP boundary and conducted a public meeting to discuss temporary granular activated carbon (GAC) treatment for New Brighton. In addition, the Army completed the TCAAP Environmental Survey Report (Phase I), to evaluate the extent and sources of VOC contamination. **(May)**

Temporary GAC treatment facility for the City of New Brighton became operational. **(June)**

TCAAP/New Brighton/Arden Hills Proposed NPL site HRI evaluation was completed and changed to final status with a score of 59.6. **(September)**

1984: Army completed the TCAAP Environmental Survey Report (Phase II), to evaluate the extent and sources of VOC contamination and to determine localized and regional impacts on VOCs in groundwater. Engineering Analysis of Alternative Remedial Measures (Phase III) was completed and indicated that implementation of a remedial action was essential at TCAAP Sites D and G. **(June)**

1986: Soil Vapor Extraction (SVE) system, or "soil-vacuuming" technique for removing VOCs from the soil, became operational at TCAAP Site D. **(January)**

SVE system for removing VOCs from the soil became operational at TCAAP Site G. **(February)**

Air stripping units to remove VOCs from groundwater at TCAAP Sites I and K, managed by Honeywell, became operational.

1987: Preliminary Assessment (PA) report documenting and evaluating past TCAAP environmental data was completed. **(February)**

1987: TCAAP Groundwater Remediation Phase I: Boundary Groundwater Recovery System (BGRS), designed to capture contaminated groundwater from migrating beyond the southwest TCAAP boundary, became operational. **(October)**

Three-party Army/EPA/MPCA Federal Facility Agreement (FFA) became effective. **(December)**

1988: Litigation Settlement Agreement (LitSAG) between the City of New Brighton and Army for permanent safe drinking water supply for the New Brighton municipal water system became effective. **(August)**

Groundwater Recovery System (GRS) to remove VOCs from shallow groundwater and to reduce contamination migration from TCAAP Site A became operational. **(September)**

1989: TCAAP Groundwater Remediation Phase II: TCAAP Groundwater Recovery System (TGRS), an expansion of the BGRS, designed to limit source contamination from entering the groundwater and to enhance the capture of contaminated groundwater from migrating beyond the southwest TCAAP boundary, became operational. **(January)**

SCHEDULE

PAST MILESTONES

1989: Litigation Settlement Agreement (LitSAG) between the City of St. Anthony and Army for permanent safe drinking water supply for St. Anthony municipal water system became effective. **(February)**

Thermal treatment, by incineration, of 1400 cubic yards of soil contaminated with polychlorinated biphenyls (PCBs) was completed. **(September)**

1990: Permanent groundwater GAC treatment facility for the City of New Brighton became operational. **(June)**

Permanent groundwater GAC treatment facility for the City of St. Anthony became operational. **(December)**

1991: MPCA completed the Off-TCAAP Remedial Investigation (RI) report documenting the extent of environmental contamination outside the installation boundary. **(March)**

EPA completed the Human Health Risk Assessment (HHRA) report describing TCAAP contamination exposure pathways and cancer risks on the population. **(May)**

Army completed the On-TCAAP RI report documenting the extent of environmental contamination on installation property. **(July)**

Army completed the Draft Tier I Ecological Risk Assessment (ERA) report describing the effects of environmental contamination on the wildlife habitat. A public meeting was conducted to present results from the On-TCAAP RI, the Off-TCAAP RI, HHRA, and ERA reports and to emphasize transition of the project to the Feasibility Study (FS) phase. **(November)**

1992: Werlein (citizen) lawsuit settlement with 99 plaintiffs completed out of court. **(April)**

OU-3 FS completed, recommending groundwater extraction for south plume containment using treated groundwater for municipal water supply. **(July)**

OU-3 ROD signed. Well Inventory, Phase I completed. **(September)**

Lowry Grove Trailer Park connected to safe municipal drinking water supply after contamination was discovered in the private well supplying the trailer park. **(December)**

1993: Agreements defining responsibility and interactions between Alliant/New Brighton, Army/New Brighton, Army/Alliant, and New Brighton/Fridley became effective.

New Brighton/Fridley Interconnection FS completed. OU-3 PGRS RD completed. **(March)**

OU-3 PGRS RA construction start. An Engineering Evaluation/Cost Analysis (EE/CA) for Site A was completed for containment of contaminants along the north boundary of TCAAP. **(May)**

New Brighton/Fridley Interconnection RD completed. **(June)**

New Brighton/Fridley Interconnection construction started. **(July)**

OU-1 FS and ROD completed. **(September)**

Site A Removal Action Design completed. Grenade Range History (Preliminary Assessment) completed. **(October)**

Construction started on Site A Removal Action. **(November)**

Well Inventory, Phase II completed. **(December)**

SCHEDULE

PAST MILESTONES

1994: Site J Closure Report completed. OU-3 RA Construction completed.OU-3 RA Operation Start-Up. **(April)**

Site A Removal Action Start-Up. **(June)**

1993 Annual Monitoring Report completed. **(June)**

Draft-Final OU-2 Feasibility Study completed. **(June)**

New Brighton/Fridley Interconnection completed. **(July)**

Grenade Range Treatability Study completed. **(October)**

1995: Well Inventory, Phase III completed. **(January)**

Grenade Range Phase II investigation completed. **(January)**

Regulatory Investigation of Downgradient Surface Water Body (Valentine Lake) completed**. (July)**

Site A, Bldg. 308 removal completed. **(September)**

UXO Search TCAAP CERCLA Sites completed. **(September)**

CAMU Conceptual Design completed. **(September)**

OU-3 Control System Integration Final Design completed. **(September)**

Completed construction of OU-1 Raw Water Pipeline & PGAC modifications. **(September)**

Installation Support Services Contract awarded to Alliant. **(October)**

OU-1 FS Performance Monitoring Plan completed. **(October)**

Arden Manor Trailer Park municipal water hook-up completed. **(October)**

TCAAP Restoration Advisory Board (RAB) formed. **(December)**

1996 Received consistency for Water Tower Site Closure Report. **(August)**

1997 Completed OU-2 Feasibility Study. **(March)**

Initiated OU-1 Well 15 construction. **(April)**

Defined private wells for abandonment and alternate water supply. **(May)**

Completed soil characterization for Sites A, D & G remedial design. **(June)**

Field work for Final Site F Closure completed (with the exception of final cleaning of two soil storage/handling pad areas). **(October)**

Final Report, Tier I Screening Risk Assessment of Aquatic Ecosystems received consistency. **(November)**

OU-2 ROD signed. **(December)**

1998 - Final Site A Investigation Report received consistency. **(January)**

Completed Grenade Range EE/CA. **(March)**

Completed Outdoor Firing Range EE/CA. **(March)**

OU-2 Groundbreaking Event for Remedial Action after the ROD was signed for the final operable unit. **(May)**

SCHEDULE

PAST MILESTONES

1998 - Completed OU-2 RD/RA QAPP. **(June)**

Completed CAMU construction for OU-2 soils.**(June)**

Completed RA Construction at OU-1. **(June)**

Initiated Site A Shallow Soil RA. **(July)**

Initiated Pilot Study of SVE for Deep Soils at Site D. **(July)**

Completed Site A EE/CA for VOC-contaminated soils and began REM. **(August)**

Initiated Outdoor Firing Range Removal Action (REM). **(August)**

Initiated Sites B and 129-15 Dump Characterization. **(September)**

Initiated shutdown evaluation of current shallow SVE systems at Sites D & G. **(September)**

Initiated REM for Tar-Like Substances at Site G. **(October)**

1999 – Received the Department of the Army Environmental Security Award – Environmental Cleanup Installation. **(January)**

Completed Site I Preliminary Design Investigation Work Plan. **(January)**

Completed Site K Preliminary Design Investigation Work Plan. **(February)**

Completed Construction Report (1997-1998 Wells). **(March)**

Completed 1996 Off-Post Well Inventory Update. **(March)**

Completed Well 14 & 15 Test Report. **(June)**

Completed Tier 2 Ecological Risk Assessment Work Plan. **(June)**

Completed 1998 Monitoring Report/2000 Plan. **(July)**

Completed Site F Closure Report. **(August)**

Completed Site G Shallow Soils EE/CA. **(September)**

Completed Outdoor Firing Range Work Plan. **(September)**

Completed Five Year Review Report - OU1, OU2, OU3. **(October)**

Completed Numerical Flow Model Report. **(November)**

Completed Grenade Range Work Plan. **(November)**

Completed Site D & G Close-Out Investigation Work Plan. **(December)**

SCHEDULE

PAST MILESTONES

2000 – Completed Site D & G Operations Modification Report. **(March)**

Completed Trap Range Removal Preliminary Assessment. **(March)**

Completed Site B Closure Report. **(April)**

Completed Operable Unit 1 RA 72 Hour Pump Test Report. **(May)**

Completed Operable Unit 1 RA Construction Report. **(August)**

Completed 1999 Monitoring Report/2001 Plan. **(September)**

SCHEDULE

NO FURTHER ACTION SITES

TCAAP-02 Site B

TCAAP-08 Chemical Burn/Burial Area (Site F)

TCAAP-14 Site J (Not in DSERTS)

TCAAP-20 Grenade Testing Area

TCAAP-21 Outdoor Firing Range Test Area

TCAAP-22 Water Tower Area

TCAAP-24 Recreational Trap Shooting Area

TCAAP-26 All Uncharacterized Sites

Twin Cities Army Ammo Plant IRP Schedule

(Based on Cost to Complete current funding constraints)

CURRENT PHASE | FUTURE PHASE

DSERTS #	SITE NAME	PHASE	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007+
TCAAP-01	Early Burn/Burial (Site A)	RA							
		RAO							
TCAAP-02	Sewage Sludge Burial (Site B)	RD							
TCAAP-05	Open Burn Area/Salvage Area (Site C)	RD							
		RA							
		RAO							
TCAAP-06	Leach Pits/Solvent Burn (Site D)	RD							
		RA							
TCAAP-07	Chemical Burn Area (Site E)	RA							
TCAAP-09	Landfill (Site G)	RD							
		RA							
		RAO							
TCAAP-10	Burning Area/Fill Site (Site H)	RA							
TCAAP-11	Leaching Pits (Site 129-3)	RA							
TCAAP-12	Burn Area W. of Hamline Ave (Site 129-5)	RA							
TCAAP-13	Landfill (129-15)	RD							
		RA							
		RAO							
TCAAP-15	Industrial Ops. Bldg 502 & Area (Site I)	RD							
		RA							
TCAAP-16	Industrial Ops. Bldg 103 & Area (Site I)	RD							
		RA							
TCAAP-17	Deep Groundwater, OU-1	RA							
		LTO							
		LTM							
TCAAP-19	Deep Groundwater, OU-2	RD							
		RA							
		RAO							
		LTM							
TCAAP-23	Bldg 135 Primer/Tracer Area	RI/FS							
		RD							
		RA							
TCAAP-24	Receational Trap Shooting Area	RI/FS							
TCAAP-25	Round, Sunfish & Marden Lakes	RI/FS							
TCAAP-27	Deep Groundwater, OU-3	RA(O)							
TCAAP-28	Bldg 535 Primer/Tracer Area	RI/FS							
		RA							

DEFENSE SITE ENVIRONMENTAL RESTORATION TRACKING SYSTEM

Site, 4. Installation Phase Summary Report 1/19/01

Installation: TWIN CITIES AAP

Programs: BRAC I, BRAC II, BRAC III, BRAC IV, IRP

Subprograms: Compliance, Restoration, UXO

Installation count for Programs: 1

NPL Options: Delisted, No, Proposed, Yes

Installations count for Programs and NPL: 1

Site count for Programs and NPL: 24

Phase / Status / Sites

PA

C	U	F	RC
24	0	0	0

SI

C	U	F	RC
24	0	0	1

RI / FS

C	U	F	RC
20	3	0	2

RD

C	U	F
11	7	1

RA(C)

C	U	F	RC
4	9	6	3

RA(O)

C	U	F	RC
0	2	4	0

LTM

C	U	F	N
0	0	3	20

Remedy / Status / Sites (Actions)

IRA

C	U	F
7 (11)	3 (3)	0 (0)

FRA

C	U	F
5 (6)	9 (10)	7 (7)

RIP Total: 1

RC Total: 6

Reporting Period End Date: 03/31/2001

DEFENSE SITE ENVIRONMENTAL RESTORATION TRACKING SYSTEM

Site, 9. RISK INSTALLATION ACTION PLAN REPORT 01/19/2001

Installation: TWIN CITIES AAP
Major Command: AMC

SubCommand: OSC
Program Options: IRP, BRAC I, BRAC II, BRAC III, BRAC IV

Subprogram Options: Compliance, Restoration, UXO

Site	RRSE	Media Evaluated	Phase (s) Completed	Phase (s) Underway	Phase (s) Future	#IRA Completed	#IRA Underway	#IRA Future	LTM Status	RIP Date	RC Date
TCAAP-01	1A	GW SL	PA RD RI SI	RAC		1			N		200509
TCAAP-02	2A	GW SH	PA RI SI						N		200009
TCAAP-05	1A	GW SL	PA RI SI	RAC RD	RAO				F	200309	200309
TCAAP-06	1A	GW	PA RI SI	RD	RAC	3			N		200209
TCAAP-07	1A	GW SL	PA RD RI SI	RAC					N		200209
TCAAP-08	1A	GW SL	PA RAC RD RI SI						N		200009
TCAAP-09	1A	GW	PA RI SI	RD	RAC RAO	2			N	200209	200309

Site	RRSE	Media Evaluated	Phase (s) Completed	Phase (s) Underway	Phase (s) Future	#IRA Completed	#IRA Underway	#IRA Future	LTM Status	RIP Date	RC Date
TCAAP-10	1A	SH	PA	RAC					N		200112
		SL	RD								
			RI								
			SI								
TCAAP-11	1A	SL	PA	RAC					N		200309
			RI	RD							
			SI								
TCAAP-12	2A	GW	PA	RAC					N		200109
		SL	RD								
			RI								
			SI								
TCAAP-13	3A	GW	PA	RAC					N		200112
		SH	RD								
		SL	RI								
			SI								
TCAAP-15	1A	GW	PA	RD	RAC	2	1		N	200209	204009
			RI		RAO						
			SI								
TCAAP-16	1A	GW	PA	RD	RAC	1	1		N	200209	204009
			RI		RAO						
			SI								
TCAAP-17	1A	GW	PA	RAO		1			F	200009	204009
			RAC								
			RD								
			RI								
			SI								
TCAAP-19	1A	GW	PA	RAO	RAC	1	1		F	200309	204009
			RI	RD							
			SI								
TCAAP-20	1A	GW	PA	RAC					N		200112
		SL	RD								
			RI								
			SI								
TCAAP-21	1A	SL	PA	RAC					N		200112
			RD								
			RI								
			SI								

Site	RRSE	Media Evaluated	Phase (s) Completed	Phase (s) Underway	Phase (s) Future	#IRA Completed	#IRA Underway	#IRA Future	LTM Status	RIP Date	RC Date
TCAAP-22	3A	SL	PA						N		199608
			RAC								
			RD								
			RI								
			SI								
TCAAP-23	3A	GW	PA	RI	RAC				N		200309
		SL	SI		RD						
TCAAP-24	3A	SL	PA						N		200009
			RI								
			SI								
TCAAP-25	1A	SEM	PA	RI					N		200209
		WEF	SI								
TCAAP-26	NE		PA						N		199604
			SI								
TCAAP-27	1A	GW	PA								199404
			RAC								
			RD								
			RI								
			SI								
TCAAP-28	2A	GW	PA	RI					N		200205
		SL	SI								

RRSE - Relative Risk Site Evaluation; Risk Category - 1=High, 2=Medium, 3=Low;

Legal Agreement - A = with agreement, B = without agreement; C = Complete, U = Underway, F = Future, N = Not Applicable

Reporting Period End Date: 03/31/2001

REM/IRA/RA ASSESSMENT

PAST REM/IRA/RA

TCAAP-01, Interim Groundwater Treatment System at Site A, constructed Sep 88, $240K

TCAAP-06, PCB Soil Incineration at Site D, completed Apr 90, $500K

Interim Soil Venting System at Site D, constructed Feb 86, $400K

TCAAP-09, Interim Soil Venting System at Site G, constructed Feb 86, $600K

TCAAP-14, Interim Industrial Sewer Lines Cleanup at Site J, material removed Oct 86, $376K

TCAAP-15, Interim Groundwater Treatment System at Site I, constructed Feb 86 - ATK*

TCAAP-16, Interim Groundwater Treatment System at Site K, constructed Oct 86 - ATK*

TCAAP-17, New Brighton PGAC Treatment System (OU1 Deep Groundwater), constructed Jun 90, $28,396K

TCAAP-18, UST/AST Removal, installation-wide, completed Oct 93, $284K

TCAAP-19, TCAAP Groundwater Treatment System (OU2 Deep Groundwater), constructed Oct 87, $6,400K (Army/ATK)

TCAAP-22, Water Tower Area Removal Action, Final report completed August 1996.

TCAAP-27, Plume Groundwater Recovery System (PGRS), OU3 Deep Groundwater, constructed Apr 94 - ATK*

* ATK - PRP Costs

CURRENT REM/IRA/RA

TCAAP-01, IRA Shallow Groundwater Treatment System at Site A RA Operation, Maintenance & Long-term Monitoring. Completion field work for the RA for shallow soils (metals) and completion of constructign the REM for shallow soils (volatile organic compounds) have been initiated.

TCAAP-06, IRA Soil Vapor Extraction (SVE) System at Site D continues along with Operation, Maintenance & Long-term Monitoring. With the signing of the OU-2 ROD (12/11/97) the final RD/RA has begun. The pilot study for the RA has been completed. Initiated evaluation of current SVE system.

TCAAP-09, IRA Soil Vapor Extraction (SVE) System at Site G continues, along with Operation, Maintenance & Long-term Monitoring. With the signing of the OU-2 ROD (12/11/97) the RD/RA for the final selected remedy continues. Initiated evaluation of current SVE system and initiated REM for tar-like substances.

TCAAP-15, IRA Groundwater Treatment System at Site I continues Operation, Maintenance & Long-term Monitoring - ATK* An RD Work Plan for the final remedy is being developed.

TCAAP-16, IRA Groundwater Treatment System at Site K, Operation, Maintenance & Long-term Monitoring - ATK* An RD Work Plan for the final remedy is being developed.

TCAAP-17, New Brighton Groundwater Treatment System (OU-1 Deep Groundwater), $3,000K Final well construction was completed in FY98.

TCAAP-19, TCAAP Groundwater Treatment System (OU-2 Deep Groundwater), $800K RD for source area containment will continue and the final RA implemented.

OU-2 Shallow Soil Sites - With the signing of the OU-2 ROD, 12/11/97, RD has begun. A remedial design work plan has been prepared for the shallow soil sites and the CAMU was constructed. Excavation began at Siat Sites A, E, H, and 129-5. Characterization was completed at the dumps at Sites B and 129-15.

REM/IRA/RA ASSESSMENT

CURRENT REM/IRA/RA

TCAAP-20, Grenade Range - The EE/CA has received consistency approval from the regulators and the REM will be completed in FY2001. The groundwater monitoring portion of the REM will be completed in FY2002.

TCAAP-21, Outdoor Firing Range - The EE/CA has received consistency approval from the regulators and the REM was initiated in 1998. The shallow soils cleanup was completed in FY 99. The closeout report for the shallow soil REM will be completed in FY2001

TCAAP-25, Round, Sunfish & Marsden Lakes - A Tier II Ecological Risk Assessment of these surface waters and associated sediments is ongoing.

* ATK - PRP Costs

FUTURE REM/IRA/RA

- SVE at TCAAP-01, 06, 09
- Soil treatment at TCAAP-05, 11
- Site cover at TCAAP-13
- Pump and treat at TCAAP-19
- Sewer system removal at TCAAP-23

PRIOR YEAR FUNDING

FY81

RI	$	687,000
PA	$	53,000
Total	**$**	**740,000**

FY82

RI	$	16,000
PA	$	11,000
Total	**$**	**27,000**

FY83

RI	$	459,000
FS	$	72,000
Total	**$**	**531,000**

FY84

Monitoring	$	91,000
RI	$	811,000
FS	$	199,000
Total	**$**	**1,101,000**

FY85

Monitoring	$	166,000
RI	$	599,000
FS	$	366,000
PA	$	34,000
IRA	$	318,000
IRD	$	89,000
Total	**$**	**1,572,000**

FY86

Monitoring	$	111,000
Installation Support	$	189,000
RI	$	376,000
FS	$	188,000
PA	$	144,000
IRA	$	3,693,000
IRD	$	212,000
Total	**$**	**4,913,000**

PRIOR YEAR FUNDING

FY87

Monitoring	$	189,000
Installation Support	$	422,000
RI	$	1,641,000
PA	$	136,000
IRA	$	1,540,000
IRD	$	22,000
Total	**$**	**3,950,000**

FY88

IRA (ISO/GRS O&M)	$	94,000
Monitoring	$	510,000
Installation Support	$	165,000
RI	$	640,000
EPA/State Oversight	$	54,000
IRA	$	3,758,000
Total	**$**	**5,221,000**

FY89

Monitorong	$	86,000
Installation Support	$	415,000
RI	$	571,000
EPA/State Oversight	$	123,000
RA (New Brighton WTP)	$	3,681,000
PA	$	183,000
IRA	$	373,000
Total	**$**	**5,432,000**

FY90

IRA (ISV/GRS O&M)	$	704,000
Monitoring	$	112,000
Installation Support	$	289,000
RI	$	654,000
GW Model	$	208,000
RA (New Brighton WTP)	$	2,169,000
RA	$	278,000
Total	**$**	**4,414,000**

PRIOR YEAR FUNDING

FY91

IRA (ISV/GRS O&M)	$	924,000
Monitoring	$	454,000
Installation Support	$	346,000
Program Support	$	45,000
RI	$	20,000
FS	$	2,482,000
RD/RA (Site F/Other)	$	74,000
Administrative Record	$	70,000
EPA/State Oversight	$	734,000
GW Model	$	94,000
RA (New Brighton WTP)	$	1,406,000
REM (Off-Plant WDE)	$	850,000
Total	**$**	**7,499,000**

FY92

IRA (ISO/GRS O&M)	$	1,809,000
Monitoring	$	490,000
Installation Support	$	510,000
Program Support	$	50,000
RI	$	160,000
FS	$	1,000,000
RD/RA (Site F/Other)	$	2,100,000
Administrative Record	$	70,000
EPA/State Oversight	$	935,000
GW Model	$	200,00
RA (New Brighton WTP)	$	1,400,000
RA (St Anthony WTP)	$	6,000,000
REM (Off-Plant WDE)	$	1,010,000
Total	**$**	**15,734,000**

FY93

IRA (ISO/GRS O&M)	$	1,881,000
Monitoring	$	510,000
Installation Support	$	530,000
Program Support	$	52,000
FS	$	400,000
RD/RA (Site F/Other)	$	8,500,000
Administrative Record	$	73,000
EPA/State Oversight	$	250,000
GW Model	$	208,00
RA (New Brighton WTP)	$	1,456,000
RA (St Anthony WTP)	$	500,000
Total	**$**	**14,360,000**

PRIOR YEAR FUNDING

FY94

IRA (ISV/GRS O&M)	$	1,957,000
Monitoring	$	530,000
Installation Support	$	552,000
Program Support	$	54,000
FS	$	100,000
RD/RA (Site F/Other)	$	7,200,000
Administrative Record	$	76,000
EPA/State Oversight	$	260,000
GW Model	$	216,000
RA (New Brighton WTP)	$	1,514,000
RA (St Anthony WTP)	$	520,000
Total	**$**	**12,979,000**

FY95

IRA (ISO/GRS O&M)	$	2,035,000
Monitoring	$	551,000
Installation Support	$	574,000
Program Support	$	56,000
RD/RA (Site F/Other)	$	1,250,000
Administrative Record	$	79,000
EPA/State Oversight	$	270,000
GW Model	$	50,00
RA (New Brighton WTP)	$	1,575,000
RA (St Anthony WTP)	$	541,000
Total	**$**	**6,981,000**

FY96

IRA (ISO/GRS O&M)	$	2,116,000
Monitoring	$	573,000
Installation Support	$	597,000
Program Support	$	58,000
RD/RA (Site F/Other)	$	42,000,000
Administrative Record	$	82,000
EPA/State Oversight	$	281,000
GW Model	$	52,00
RA (New Brighton WTP)	$	1,638,000
RA (St Anthony WTP)	$	562,000
Total	**$**	**47,960,000**

PRIOR YEAR FUNDING

FY97

IRA (ISV/GRS O&M)	$	2,201,000
Monitoring	$	596,000
Installation Support	$	620,000
Program Support	$	61,000
RD/RA (Site F/Other)	$	10,000,000
Administrative Record	$	85,000
EPA/State Oversight	$	292,000
GW Model	$	54,000
RA (New Brighton WTP)	$	1,703,000
RA (St Anthony WTP)	$	585,000
Total	**$**	**16,198,000**

FY98

IRA (ISO/GRS O&M)	$	2,289,000
Monitoring	$	620,000
Installation Support	$	645,000
Program Support	$	63,000
Administrative Record	$	89,000
EPA/State Oversight	$	304,000
GW Model	$	56,00
RA (New Brighton WTP)	$	1,771,000
RA (St Anthony WTP)	$	608,000
Total	**$**	**6,446,000**

FY99

IRA (ISO/GRS O&M)	$	2,381,000
Monitoring	$	645,000
Installation Support	$	671,000
Program Support	$	58,000
Administrative Record	$	92,000
EPA/State Oversight	$	316,000
GW Model	$	58,00
RA (New Brighton WTP)	$	1,842,000
RA (St Anthony WTP)	$	633,000
Total	**$**	**6,638,000**

FY00

RI/FS TCAAP-23, -28	$	1,000,000
Closure Reports TCAAP-02,-07,10,-12,-13,-17,-24,-25,-27	$	124,000
Confirmatory Sampling TCAAP-06,-09	$	325,000
SVE Modifications TCAAP-01	$	2,492,00
RA TCAAP-11, -05	$	340,000
Well Abandonment	$	3,063,000
LTM	$	200,000
S&R for reports by Alliant	$	30,000
Total	**$**	**7,574,000**

Total FY81-00 **$ 170,270,000**

CONSTRAINED COST TO COMPLETE
TWIN CITIES ARMY AMMUNITION PLANT

SITE	DESCRIPTION	RISK	PHASE	2001	2002	2003	2004	2005	2006	2007+	Total	SITE TOTAL	
TCAAP-01	EARLY BURN/BURIAL AREA (SITE A)												
	EARLY BURN/BURIAL AREA (SITE A) METALS	HIGH	RA	29	0	0	0	0	0		29		
	EARLY BURN/BURIAL AREA (SITE A) SVE	HIGH	RA	10	10	0	0	0	0		20		S&A/S&R for SVE RA and closeout report(SVEwell removal funded in TCAAP-19 *(ISS)
	EARLY BURN/BURIAL AREA (SITE A) SVE-2yr	HIGH	RAO*	*70	*78						0		*SVE/AS RAO to be funded in TCAAP-19 as part of ISS contract ($60K/yr for 2 years)
	EARLY BURN/BURIAL AREA (SITE A) gw-10 yr	HIGH	RAO*	*134	*134	*134	*134	*134	*134	670	670		*GW Containment RAO funded in TCAAP-19 (part of the ISS contract -–$134K/yr for 10 yrs)
	Delisting from NPL (soil in 2003, GW in 2041)	HIGH				*4					0		Soil Site(2003) & Groundwater(2040) delisting to be funded in TCAAP-19as part of ISS contract
	SITE A-GW WELL AND PUMP HOUSE REMOVAL										0		GW Containment removal(2011) as part of ISS contract
											0	719	
TCAAP-02	SEWAGE SLUDGE BURIAL (SITE B)	HIGH	RD	0	0	0	0	0	0		0		Placeholder- site is closed (Remedy in Place))
	Delisting from NPL with other soil sites		RAO*			*4					0		Delisting to be funded in TCAAP-19as part of ISS contract
											0	0	
TCAAP-05	OPEN BURN AREA/SALVAGE AREA (SITE C)	HIGH	RA	0	4,562	0	0	0	0		4,562		Prior Year S&R+additional costs for RA due to increase in excavated soil volumes
	Demonstration Removal Action - Soil	HIGH	RD	*4							0		Prior year S&A/S&R
	Demonstration Removal Action - Soil	HIGH	RA	0	0						0		<50% chance RA funding will be required
	Demonstration Removal Action - GW	HIGH	RD	*91							0		$51k for S&R $40k for EDTA analysis
	Demonstration Removal Action - GW		RA	*940	0						0		$870k contract 7 $70k S&A/S&R
	Demonstration Removal Action - GW		RAO	*540	*2080	*2080	115*	115*	115*	575	575		10 yr RAO (@$2080 first yrs & $115K/yr years) for GW funded as part of ISSC in TCAAP-19
	Demonstration Removal Action - GW		RA							80	80		Removal of GW system
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003) delisting to be funded in TCAAP-19as part of ISS contract
												5,217	
TCAAP-06	LEACH PITS/SOLVENT BURN (SITE D) - SVE	HIGH	RD	5	0	0	0	0	0		5		S&A Prior year contract
	SITE D-metals -	HIGH	RD	330							330		$310k contract & $20k S&R
TCAAP-06	SITE D-metals -assume >50% chance RA required	HIGH	RA	0	830	50	0	0	0		880		SITE D-metals -assume >50% chance RA required
	SITE D - SVE SYSTEM AND BLOWER HOUSE REMOVAL	HIGH	RA	*30							0		To be funded in TCAAP-19 as part of ISS contract
TCAAP-06	LEACH PITS/SOLVENT BURN (SITE D)-SVE	HIGH	RAO	0	0	0	0	0	0		0		*SVE is shut down and no RAO (RAO is funded in TCAAP-19 (part of ISS contract))
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003) delisting to be funded in TCAAP-19as part of ISS contract
											0	1,215	
TCAAP-07	CHEMICAL BURIAL AREA (SITE E)	HIGH	RA	1,364	0	0	0	0	0		1,364		$1185k for add soil removal+$179k for SA/SR
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003) & Groundwater(2040) delisting to be funded in TCAAP-19as part of ISS contract
											0	1,364	
TCAAP-09	LANDFILL (SITE G)-existing contract	HIGH	RD	5	0	0	0	0	0		5		S&A for prior year contracts
	FOCUS VENTS ON RECALCITRANT SHALLOW SOILS	HIGH	RD	0	30						30		Final RD to close out the site
	MODIFY VENTS & O&M SYSTEM	HIGH	RA	0	30						30		Final RA to close out the site
	DESIGN FINAL COVER	HIGH	RD		20						20		Final cover design
	REMOVE VENTING SYSTEM	HIGH	RA							30	30		To be funded in TCAAP-19 as part of ISS contract
	CONSTRUCT FINAL COVER	HIGH	RA		59						59		Construction of final cover for LTM
	Site G cover maintenance		RAO	0	0	*1	*1	*1	*1	138	138		*=RAO (cover maintenance until 2040) is funded in TCAAP-19 (part of ISS contract)
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003) delisting to be funded in TCAAP-19as part of ISS contract
											0	312	
TCAAP-10	BURNING AREA/FILL SITE (SITE H)	HIGH	RA	84	0	0	0	0	0		84		S&A/S&R prior year contract
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003) delisting to be funded in TCAAP-19as part of ISS contract
											0	84	
TCAAP-11	129-3 LEACHING PITS-Soil Remdial Action	HIGH	RA	31	0	0	0	0	0		31		S&A/S&R for prior yer contract
	129-3 LEACHING PITS-Soil Remdial Action	HIGH	RA	1,030							1,030		Added soil removal costs to complete RA
	129-3 Demonstration Removal Action	HIGH	RA	5	50						55		S&A/S&R for prior yer contract
	129-3 Demonstration Removal Action	HIGH	RA	0							0		<50% chance an RA will be required
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003)delisting to be funded in TCAAP-19as part of ISS contract
											0	1,116	
TCAAP-12	129-5 BURN AREA W OF HAMLINE AVE	HIGH	RA	1	0	0	0	0	0		1		Placeholder- site is closed pending report
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003)delisting to be funded in TCAAP-19as part of ISS contract
											0	1	
TCAAP-13	129-15 LANDFILL	HIGH	RD	10	0	0	0	0	0		10		S&A/S&R for prior yer contract
	129-15 LANDFILL		RA	10	0	0	0	0	0		10		soil cover over site
	129-15- Cover Maintenance		RAO*	0	*5	*5	*5	*5	*5	170	170		*=RAO (cover maintenance until 2040) is funded in TCAAP-19 (part of ISS contract)
	Delisting from NPL with other soil sites		RAO*			*4					0		Soil Site(2003) delisting to be funded in TCAAP-19as part of ISS contract
											0	190	
TCAAP-15	INDUSTRIAL OPERATIONS BLDG 502 (SITE I)	HIGH	RD	5		0	0	0	0		5		Army review of Alliant Techsystems plans and work
	INDUSTRIAL OPERATIONS BLDG 502 (SITE I)		RA		5	0	0	0	0		5		Army review of Alliant Techsystems close out report
	Delisting fron NPL in 2041					*4				4	4		Soil Site(2003) & Groundwater(2040) delisting to be funded in TCAAP-19as part of ISS contract
											0	14	

CONSTRAINED COST TO COMPLETE
TWIN CITIES ARMY AMMUNITION PLANT

SITE	DESCRIPTION	RISK	PHASE	2001	2002	2003	2004	2005	2006	2007+	Total	SITE TOTAL	
TCAAP-16	HONEYWELL PROD AREA BLDG 103 (SITE K)	HIGH	RD	5		0	0	0	0		5		Army review of Alliant Techsystems plans and work
	HONEYWELL PROD AREA BLDG 103 (SITE K)		RA		10	0	0	0	0		10		Army review of Alliant Techsystems plans and work
	Delisting fron NPL in 2041					*4				4	4		Groundwater(2040) delisting to be funded in TCAAP-19as part of ISS contract
											0	19	
TCAAP-17	OU1 DEEP GROUNDWATER	HIGH	RA	0	0	0	0	0	0		0		Final Construction Report Completed
	OU1 DEEP GROUNDWATER-APMR+5-YEAR REVIEW		LTM	*50	*75	*75	*105	*75	*75	660	660		Includes APMR(Included in ISSC), GIS Dev(50kfirst year)/O&M (25k) and eight 5-year reviews @ $30k funded under ISSC
	OU1 DEEP GROUNDWATER-Alt Water Supply		LTM	25	25	25	25	25	25	8,825	8,975		assumes that sinking fund will be maintained by interest for the life of the project; includes alternate water supply (2 wells per year), plus 2 major repair/replacement @ $4M each=Total $8M
	OU1 DEEP GROUNDWATER (WELL ABAND)		RAO	10	0	0	0	0	0	600	610		Includes $600K for wells to be abandoned after RA complete
	OU1 -delisting from NPL in 2041		RA							25	25		Groundwater(2040) delisting to be funded in TCAAP-19as part of ISS contract
											0	10,270	
TCAAP-19	OU2 DEEP GROUNDWATER-source area reconfiguration	HIGH	RD	10	0	0	0	0	0		10		Prior year S&A/S&R
	OU2 DEEP GROUNDWATER-source area reconfiguration		RA	0	550	0	0	0	0		550		Estimated reconfigeration cost based on available information
	OU2 DEEP GROUNDWATER -APMR+5-YEAR REVIEW		LTM	*50	*25	*25	*105	*25	*25	1,060	1,060		Includes GIS Delv. & O&M(25k) and eight 5-year reviews @ $30k funded under ISSC
	OU2 -ISS Contract**		RAO**	1,883	825	881	855	825	275	10,130	15,674		ISSC at $800K***/yr for FY2001 to FY2005, and $250K/yr from FY2006 to FY2041 which includes Annual Performance Report & Monitoring. Includes O&M (RAO) for Site A (soil SVE - ~$60K per year for 2 years plus $8K for well removal and $10K for report, GW-
	OU2- Building and grounds maintenance		RAO	120	200	200	200	200	200	6,800	7,920		Building and grounds maintenance @$200K/yr until 2040
	OU2- TGRS O&M (Army 80%) and Utilities (electric)		RAO	645	712	680	600	600	600	20,400	24,237		TGRS O&M @ $450K/yr and TGRS utilities (electric) @ $150K/yr+ 80% of Mr Mtn well B2 $100k(2001), well B6 $140k(2002), well B7 $100k(2003)
	OU2 DEEP GROUNDWATER (WELL ABAND)		RA	10	0	0	0	0	0	600	610		Includes $600K for wells to be abandoned after RA complete
	OU2 DEEP GROUNDWATER-EPA Reimbursement***		RAO***	*250	250	250	250	250			1,000		***FFA notes EPA can recover expenses from Army(est250k/yr) Recovery under review. No cost shown
	OU2 Delisting from NPL (Shallow and deep soils in 2003, then groundwater in 2041)		RAO			*56				33	33		As part of ISSC, funds for delisting include soil sites ($48K in FY2003plus 8K, shallow groundwater ($8k) and deep groundwater ($33K) in FY2041.
											0	51,094	
TCAAP-24	Trap Range	Low	RI/FS	0							0		PA COMPLETE WITH REGULATORY APPROVAL-NO FURHTER ACTION/NO CONTAMINATION FOUND
											0	0	
TCAAP-25	ROUND , SUNFISH AND MARSDEN LAKES	LOW	RI/FS	1	0	0	0	0	0		1		Placeholder- Assume less than 50 % chance that RD/RA will be required
											0	1	
TCAAP-23	BUILDING 135 PRIMER/TRACER AREA	LOW	RI/FS	0	0	0	0	0	0		0		No further funding needed at this time
			RD	0	0	180		0	0		180		Assume >50%chance that RD/RA will be required
			RA	0	0		1880		0		1,880		Assume >50%chance that RD/RA will be required
											0	2,060	
TCAAP-27	OU3-DEEP GROUNDWATER	High	RA	1	1	1	1	1			5		OU3 is 100% funded by Alliant Techsystems.Place holder funds for Army review of ATK reports
											0	5	
TCAAP-28	BLDG. 535 PRIMER\TRACER AREA	MEDIUM	RI/FS	0	0	0	0	0	0		0		No funding needed at this time
			RA	1	0	0	0	0	0		1		Placeholder- Assume less than 50 % chance that RD/RA will be required
			RD	0	0	0	0	0	0		0	1	Assume < 50% chance that RD/RA will be required
	TOTAL CCTC			5,630	8,169	2,267	3,811	1,901	1,100	50,804	73,682	73,682	TCTC does not include cost of AEC Phytoremediation Corrective Action. The increase in cost due to increase on volume of soils to remediate at Site C and Site 129-3.
	TWIN CITIES POM			5,535	5,200	2,151	2,111	2,051	1,175	50,960	69,183		
	DIFFERENCE			-95	-2,969	-116	-1,700	150	75	156	-4,499		

COMMUNITY INVOLVEMENT

The TCAAP Restoration Advisory Board (RAB) was established in 1996. The RAB has established a Mission Statement, Operating Proceedues and Policies.

Currently, the RAB consists of 11 community members and 4 non-community members. RAB meets are held monthly and members have inspected sites annually. Community RAB members participate in the Army/Regulatory Agency's Technical Review Committee monthly meetings. Several of the community members participated in the Region and National RAB Workshop and the IAP Workshop.

The RAB includes a Technical Committee, a Communcation Committee and a Membership Committee. The Technical Committee reviews and comments on technical documents. The RAB was awarded a TAPP Grant in 1999 for technical assistance.

The RAB received an award of appreciation from the State of Minnesota in 1999.

DEFENSE SITE ENVIRONMENTAL RESTORATION TRACKING SYSTEM

Installation, 7. RAB REPORT

01/19/2001

Command: AMC **SubCommand:** OSC
Installation: TWIN CITIES AAP

RAB Established Date: 199601 **Reason RAB Not Establish:**
RAB Adjourned Date: **Reason RAB Adjourned:**

TRC Date: 198712

RAB Community Members: **Total RAB Community Members:** 12
Business Community
RAB Government Members: **Total RAB Government Members:** 3
Environmental Protection Agency
RAB Activities:
Advice On Scope/Sch Studies/Cleanup
RAB Advice
Future Land Use
TAPP Application Approval Date: 199808
TAPP Project Title: TCAAP Technical Assistance 03/31/2001
TAPP Project Description: Assess Technologies, Interpret Technical Documents, Training, Understand health Implications
Scope Of Studies

Award Number	**Purchase Order**	**Award Date**	**Completion Date**
1		199908	200008

Work Plan Priorities