

**FFID:** MD321382135500  
**Size:** 72,516 acres  
**Mission:** Develop and test equipment and provide troop training  
**HRS Score:** 31.45 (Michaelsville Landfill); placed on NPL in October 1989  
 53.57 (Edgewood Area); placed on NPL in February 1990  
**IAG Status:** IAG signed in March 1990  
**Contaminants:** VOCs, SVOCs, metals, PCBs, explosives, petroleum products, pesticides, radiologicals, CWM and their degradation products, UXO, and potential biological warfare material  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$386.2 million  
**Estimated Cost to Completion (Completion Year):** \$650.1 million (FY2042)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2014



*Edgewood and Aberdeen, Maryland*

**Restoration Background**

Studies from 1976 to 1983 identified many areas of contamination at the installation, including chemical munitions and manufacturing waste sites. RCRA Facility Assessments identified 319 solid waste management units, which were combined into 13 study areas. There are 234 sites in the Edgewood Area (EA) and 20 sites in the Aberdeen Area. Remedial Investigations (RIs) identified high levels of organic contaminants in most study areas. Lower levels of contamination were detected in a few on-post tributaries of the Chesapeake Bay. Major actions before FY99 include 76 Removal Actions, 4 Remedial Actions (RAs), and 12 Records of Decision (RODs). Removal Actions included removal of soil contaminated with polychlorinated biphenyls (PCBs), petroleum hydrocarbons, trichloroethene, and DDT; removal of underground storage tanks (USTs); removal of unexploded ordnance (UXO) along the EA boundary; closure of Nike missile silos, an adamsite vault, and pilot plant sumps; and cleanup of open dump sites.

In FY93, the Army installed carbon adsorption units for a part of the Harford County Perryman water supply. In FY95, the installation converted its Technical Review Committee to a Restoration Advisory Board (RAB). In FY97, the Army completed a final report on natural attenuation (NA) at the West Branch of Canal Creek (CC).

In FY98, the installation received Nuclear Regulatory Commission release for two radiological Removal Action sites. In the Old O-Field Area, the Army finished installing a permeable infiltration unit at the landfill. At the Nike site, the installation capped a landfill. In the CC study area, Building 503 Burn Site soil remedy construction was completed. The installation completed the 5-year review for the White Phosphorus Underwater Munitions Burial Area, with no further work recommended. Focused Feasibility Studies (FFSs) were completed for

the CC East Branch Groundwater Operable Unit (OU) and the Bush River Area and initiated at the Lauderick Creek Area. The Army completed RIs at Carroll Island, Graces Quarters, and the J-Field study area. Feasibility Studies (FSs) began for the Westwood Area. The Army completed an Engineering Evaluation and Cost Analysis for the Lauderick Creek Area and chemical weapons and munitions (CWM) Removal Action. The Proposed Plan (PP) for the CC East Branch Groundwater OU and the Ecological and Human Health Risk Assessments for the J-Field study area also were completed.

**FY99 Restoration Progress**

The Army completed the design and construction began for the prototype detonation test and destruction facility. In the CC study area, the installation installed a cap on the Building 103 dump. At the Nike site, the installation completed design and construction of a groundwater treatment facility.

In the Western Boundary study area, the Army completed the FS. The ROD for the CC East Branch Groundwater OU was completed and forwarded for approval at Department of Army headquarters. The CC West Branch NA study and the FFS are ongoing. In the J-Field study area, the Army continued work on the FS for all OUs and installed shoreline erosion control. In the Lauderick Creek Area, the installation completed two RIs and began bench-scale Treatability Studies. In the Bush River Area, the Old Bush River Road dump ROD was signed and capping of the landfill began. At Carroll Island and Graces Quarters, the Army completed sitewide PPs. The New O-Field draft final FS was completed. In the Westwood Area, the RI, a risk assessment, and the FS continued.

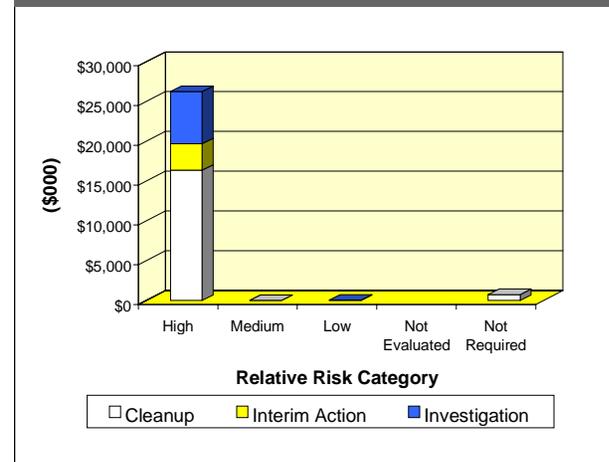
Regulatory issues delayed removal of USTs in the CC study area. A revision of the site safety submission delayed the Lauderick Creek

UXO removal. CWM encountered in soil delayed the RA for the J-Field Soil OU. The Carroll Island OU-A RA is 95 percent complete, but was delayed because of potential natural resources injury. The Carroll Island OU-B ROD was not completed, due to revisions to the FS.

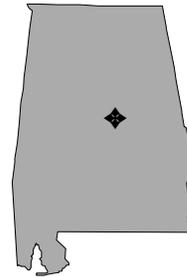
**Plan of Action**

- Begin Lauderick Creek subsurface UXO/CWM clearance and Removal Action in FY00
- Begin Removal Actions for USTs in the CC study area in FY00
- Complete one RA and two RODs in FY00

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** AL421382000800  
**Size:** 2,209 acres  
**Mission:** Manufactured explosives  
**HRS Score:** 36.83; placed on NPL in July 1987  
**IAG Status:** Federal Facility Agreement signed in December 1989  
**Contaminants:** Nitroaromatic compounds, heavy metals, and munitions-related wastes  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$60.3 million  
**Estimated Cost to Completion (Completion Year):** \$4.9 million (FY2002)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2002  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY1983



*Childersburg, Alabama*

## Restoration Background

Studies conducted at this installation since FY83 have identified various sites as potential sources of contaminants. Prominent site types include a former ammunition production and burning ground for explosives; industrial wastewater conveyance systems, ditches, and a red water storage basin; landfills; underground storage tanks; polychlorinated biphenyl (PCB)-containing transformers; and a former coke oven.

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY85. The installation was divided into five operable units (OUs): Area A OUs 1 and 2 and Area B OUs 1, 2, and 3. The RI confirmed that groundwater, surface water, sediment, and soil are contaminated with nitroaromatic compounds, heavy metals, and explosives waste.

In FY88, the Army excavated contaminated soil at the burning grounds at Area A and transported the soil to Area B to await a final decision on treatment or disposal. In FY90, the Army and regulators signed a Record of Decision (ROD) for Area B.

In FY94, the Army initiated an installationwide RI, installing monitoring wells and conducting soil borings; resampling existing monitoring wells; and collecting background samples, soil and sediment samples, surface water samples, and ecological samples. The Army also completed incineration of the Area B stockpiled contaminated soil, as prescribed in the ROD, and formed a BRAC cleanup team (BCT).

In FY95, the Army attempted to establish a Restoration Advisory Board (RAB) but received no applications for RAB membership. The Army and regulators approved the Area A RI/FS.

In FY96, the installation identified an additional OU for Area B (OU4), which includes all remaining lead- and explosives-contami-

nated soil at the plant. An interim ROD was initiated for OU4, calling for soil removal, incineration of explosives-contaminated soil, and solidification of lead-contaminated soil.

In FY97, the Army and regulators approved the final ROD for Area A and completed the Remedial Action (RA) for Areas 13 and 14. The BCT began delisting procedures for Area A. The Army incinerated explosives-contaminated soil at OU3 and OU4 and constructed an additional disposal cell for the remaining contaminated soil.

In FY98, the installation completed RAs for all lead- and explosives-contaminated soil. All equipment was decontaminated, dismantled, and removed from the site. The installation designed the engineered cap for Landfill 22 and obtained regulatory approval for the cap. The EPA and Alabama Department of Environmental Management approved the closeout report for Area A.

## FY99 Restoration Progress

Quarterly groundwater monitoring, surface water and sediment sampling, a dye trace study, and a pump test were completed in Area B. The installation issued a draft final RI/FS for soil, sediment, and surface water for Area B (which is awaiting comments from regulators); closed 35 groundwater monitoring wells; and installed an engineered cap for Area 22. EPA and the State of Alabama approved the closeout report for OU3 and OU4. The installation removed and disposed of PCB-contaminated soil at the transformer area, lead-contaminated soil at the lead hot spot area, and tar and contaminated sediment from the Aniline Sludge Pond. The installation also continued the use of electrical tomography to locate conduits through highly fractured and weathered bedrock.

The installation was unable to complete the land use control assurance and implementation plan because of a lack of information on the

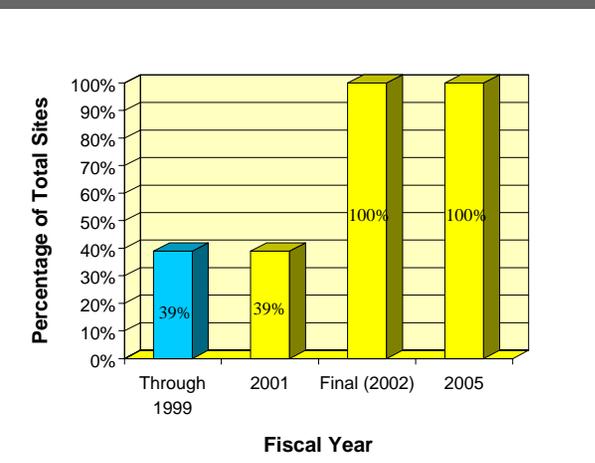
extent of groundwater contamination. The delisting for Area A was not completed due to regulatory delay.

The installation and its BCT participated in an Independent Technical Review of the risk and groundwater problems at the installation. The outgrowth of this review will help with the plan of action for the next 2 years.

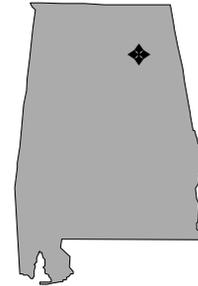
## Plan of Action

- Continue the groundwater investigation of Area B to determine the extent of contamination, especially in the area in the south and southeast of the installation, in FY00
- Complete National Priorities List (NPL) delisting for Area A in FY00
- Conduct a soil investigation in Area B to locate possible contamination source areas in FY00
- In FY00, identify and close groundwater monitoring wells that are no longer needed
- Develop land use control and implementation plan as required to support property transfer in FY00

## Sites Achieving RIP or RC Per Fiscal Year



**FFID:** AL421382002700  
**Size:** 600 acres  
**Mission:** Maintain combat vehicles  
**HRS Score:** 51.91; placed on NPL in March 1989  
**IAG Status:** IAG signed in June 1990  
**Contaminants:** VOCs, heavy metals, phenols, petroleum products, acids, and caustics  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$40.5 million  
**Estimated Cost to Completion (Completion Year):** \$70.8 million (FY2032)  
**Final Remedy in Place and Response Complete Date for All Sites:** FY2008



**Anniston, Alabama**

### Restoration Background

Since 1948, the Army has repaired, rebuilt, and modified combat vehicles and artillery equipment at the Anniston Army Depot Southeast Industrial Area (SIA). Painting, degreasing, and plating operations at the installation generate wastes containing volatile organic compounds (VOCs), phenols, heavy metals, and petroleum distillates. Studies revealed soil and groundwater contamination at 44 sites, most prominently with VOCs, metals, and phenols.

From FY79 to FY89, cleanup activities included pumping waste from an unlined lagoon into a lined lagoon, removing sludge and contaminated soil at RCRA corrective action sites, and installing groundwater interception and treatment systems that use air stripping and carbon adsorption to remove VOCs and phenols. In FY93, the installation removed sludge contaminated with VOCs, metals, and petroleum products from a former industrial wastewater treatment plant.

In FY95, the installation removed two underground storage tanks (USTs) and incorporated the associated contaminated groundwater into the Groundwater Operable Unit (OU). Under an interim Record of Decision (ROD), the installation began a pilot study to address problems with chemical fouling in the groundwater extraction system. The Army developed an Emergency Response Plan to identify further response actions at public water-supply sites and residential wells that might be affected by activities at the installation. The installation addressed community concerns by sampling residential groundwater wells.

In FY96, the Army completed a source delineation at Solid Waste Management Unit (SWMU) 12 and the fieldwork for Phase II of the Remedial Investigation and Feasibility Study (RI/FS).

In FY97, the installation completed dye-tracing work at OU3, the off-post OU. The monitoring well inventory also was completed. A Phase I RI began at the TNT Washout Facility and leaching beds in the Ammunition Storage Area (ASA). A partnership initiative began that involved all members of the restoration process, including federal and state regulators. The installation also held two Technical Review Committee meetings and a public availability meeting.

In FY98, the installation completed the SIA Phase II RI report and submitted the draft SIA Groundwater OU FS. The installation updated its Community Relations Plan. The report on the groundwater dye tracer test, the Building 504 groundwater recovery trench optimization report, and the closure plan for SWMU 2 also were completed. Fieldwork concluded on the ASA RI, the Off-Post Groundwater OU RI Ecological Risk Screening, and the geophysical study along the depot boundary. At SWMU 12, the Army completed soil cleanup using hydrogen peroxide injection for Blocks 1 and 2. Also in FY98, the installation formed a Restoration Advisory Board (RAB).

### FY99 Restoration Progress

The installation completed the SIA Groundwater and Soil OU FSs, the 5-year review of the interim ROD for the SIA Groundwater OU, and the Proposed Plan for the SIA Groundwater OU. Fieldwork began on the Off-Post Groundwater OU RI and the hot spot remediation of SWMU 12 groundwater. Fieldwork was completed for the dye tracer study. The Army sampled off-post private drinking water wells as a result of dye hits from the tracer test. The draft ASA RI/FS and the SIA Groundwater OU ROD were completed. The installation designed and implemented an environmental geographic information system. The Army completed 70 percent of the Remedial Design for the SIA

Groundwater OU treatment plant; the remainder of the design will be performed during conversion of the existing chromium treatment plant and construction of the facility.

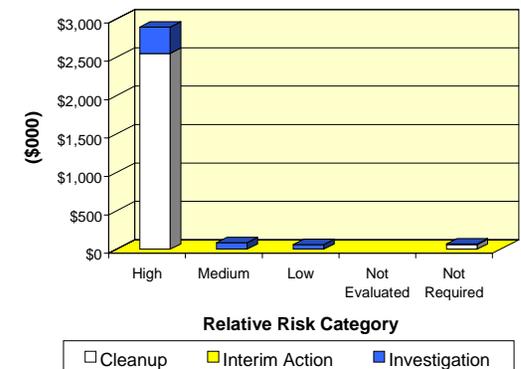
The Army did not complete the SWMU 12 Removal Action because elevated contaminant levels were found in 5 percent of the treated area. Alternative technologies are being evaluated for completing this action.

The RAB meets quarterly and has played an active role in reviewing and discussing installation cleanup activities. Bimonthly partnering meetings among regulators, contractors, and installation personnel have helped accelerate document and fieldwork schedules, resulting in reduced cost for ongoing projects.

### Plan of Action

- Complete Removal Action at SWMU 12 in FY00
- Complete the SIA groundwater and soil RODs and the ASA RI/FS in FY00
- Complete conversion of the chromium treatment plant to an SIA groundwater treatment system in FY00
- Complete the hot spot groundwater treatment at SWMU 12 in FY00
- Conduct an off-post private water well and spring inventory in FY00

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** NJ221382070400  
**Size:** 6,500 acres  
**Mission:** House the Army Armaments Research, Development, and Engineering Command  
**HRS Score:** 42.92; placed on NPL in February 1990  
**IAG Status:** IAG signed in July 1991  
**Contaminants:** VOCs, explosives, PCBs, and heavy metals  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$72.7 million  
**Estimated Cost to Completion (Completion Year):** \$61.5 million (FY2015)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2010



**Rockaway Township, New Jersey**

### Restoration Background

In 1880, Dover Powder Depot, now known as Picatinny Arsenal, was established to store the gunpowder needed to manufacture ammunition. From 1898 to the early 1970s, the installation manufactured explosives, propellants, and ammunition. It now houses the Army Research, Development, and Engineering Command.

In FY91, the installation identified 156 sites, including a burning ground, landfills, underground storage tanks (USTs), former production areas, and former testing sites. Releases of volatile organic compounds (VOCs), explosives, and heavy metals from these sites have contaminated groundwater, surface water, sediment, and soil.

A Remedial Investigation and Feasibility Study (RI/FS), beginning in FY91, divided the installation into 16 areas and organized the investigation in three phases. The installation conducted an additional RI for the burning ground in FY94. Interim Actions included removing USTs, installing a groundwater extraction and treatment system, and removing drums from a landfill.

In FY95, the installation conducted several Interim Actions, including cleanup of lead-contaminated soil, operation of a groundwater pump-and-treat system for an on-site trichloroethene plume, and installation of a drinking water line to 12 nearby residences. The FS for the burning ground was submitted to the regulatory agencies. In FY96, the commander converted the Technical Review Committee to a Restoration Advisory Board (RAB).

In FY97, the regulators approved the revised Phase I RI report. The Army completed RI fieldwork, the draft Phase II RI report, and relative risk scoring of all sites. The Phase II Ecological Risk

Assessment (ERA) work plan was approved by the regulators and implemented by U.S. Army Corps of Engineers contractors. The installation submitted a revised risk assessment for Site 20/24 to the regulators with no Removal Action recommended.

In FY98, the installation completed Relative Risk Site Evaluations at the two remaining sites and completed geological and hydrogeological studies at the Post Farm Landfill. The installation received approval for, and implemented, the Phase III Interim Remedial Action work plan. The Agency for Toxic Substances and Disease Registry provided a draft review of public health consultation based on the revised risk assessment for Site 20/24.

The installation procured a contract through the Technical Assistance for Public Participation (TAPP) program to provide technical support for the RAB in FY98. The TAPP project provided the community members of the RAB with an independent technical review of restoration documents and reports summarized in nontechnical terms so that all RAB members can readily understand the issues.

### FY99 Restoration Progress

The installation submitted Site Inspection work plans for Sites 3, 31, 192, and 199, which were approved by the State of New Jersey and EPA Region 2. The installation completed a work plan for the Site 20/24 Data Report. The Phase II ERA report and the FSs for Area D Groundwater, Green Pond Brook, and Bear Swamp Brook were completed and are under review by the Army. The Army completed fieldwork for the RI report for Area F and G groundwater, but the report was not completed as planned because of a lengthy review process. The installation began preparing

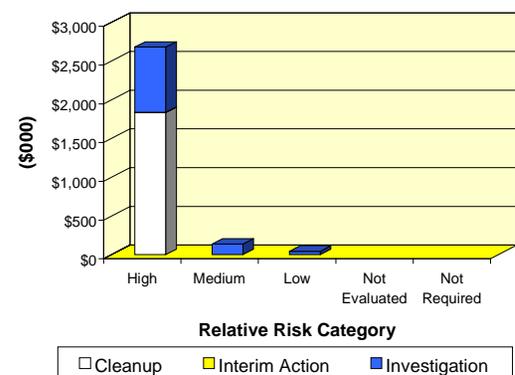
reports for the Area E Groundwater FS and the Phase III 1A RI. The installation submitted the Phase II RI report, an Engineering Evaluation and Cost Analysis (EE/CA) for polychlorinated biphenyl (PCB)-contaminated soil at Site 122, and the FS for Site 20/24 to EPA. The installation has not received regulatory approval for the No Further Action decisions on appropriate sites based on nonresidential cleanup standards.

A dispute between the Army and the State of New Jersey over determining levels of soil contamination was resolved when the parties agreed to a compromise. The Army will, on a case-by-case basis, initiate institutional and/or low-cost engineering controls for soil at sites where levels of contamination are above the state standards but where risk is acceptable per federal National Contingency Plan criteria.

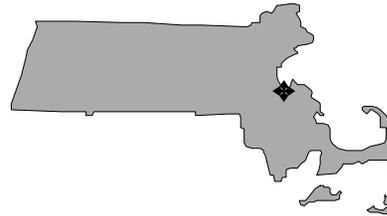
### Plan of Action

- Complete eight investigative reports in FY00
- Complete FSs for Post Farm Landfill, Area D Groundwater, Green Pond Brook, Area E, and the burning ground in FY00
- Complete decision documents for institutional controls for 14 sites in FY00
- Complete EE/CA for PCBs at Site 122 and conduct Removal Action in FY00
- Submit FS and Record of Decision for Site 20/24 in FY00
- Submit ecological reports for Phases I and II in FY00
- Complete Area B Groundwater FS in FY01

### FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** MA121382093900  
**Size:** 48 acres  
**Mission:** Conduct materials research and development  
**HRS Score:** 48.60; placed on NPL in May 1994  
**IAG Status:** Signed July 25, 1995  
**Contaminants:** Radionuclides, heavy metals, petroleum products, solvents, pesticides, and PCBs  
**Media Affected:** Soil and surface water  
**Funding to Date:** \$98.1 million  
**Estimated Cost to Completion (Completion Year):** \$1.2 million (FY2002)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2002



Watertown, Massachusetts

## Restoration Background

In December 1988, the BRAC Commission recommended closure of the Army Materials Technology Laboratory (Army Research Laboratory), Watertown. The Army has moved the installation's mission activity to a combined laboratory at Aberdeen Proving Ground, Maryland. The installation closed, as scheduled, on September 30, 1995.

Environmental studies at the installation concluded that most of the soil was contaminated with petroleum products, pesticides, and polychlorinated biphenyls (PCBs). Similar chemical and metal contaminants were present in a number of laboratories and machine shops. The installation divided its Remedial Investigation and Feasibility Study (RI/FS) activities into three areas (indoor, outdoor, and Charles River).

Interim Actions have included asbestos abatement, removal of all known aboveground and underground storage tanks, remediation of petroleum-contaminated soil, decommissioning of the central heavy-oil-fired power plant, retrofitting and disposal of PCB-containing transformers, closing of cooling water discharge sources, and reactor decommissioning.

The installation formed a BRAC cleanup team (BCT) and a Restoration Advisory Board (RAB) in FY94.

In FY96, the installation completed decommissioning of facilities contaminated with radioactive materials. The installation also completed removal and demolition of the tank farm. The Army and regulators signed a Record of Decision (ROD) for the Outdoor Soil and Groundwater Operable Unit (OU). The BCT expedited development of a second ROD for Building 131.

In FY97, the installation initiated soil and indoor remediation and completed cleanup for 11 contaminated soil areas that exceeded acceptable risk levels. The BCT separated the 11-acre River Park Parcel from the 37-acre installation parcel for future resolution, coordinated soil remediation, assessed indoor cleanup criteria, developed the Charles River RI/FS, and finished the Building 60/227 RI/FS.

In FY98, the installation completed remediating the Indoor OU and the soil areas within the 37-acre parcel. A Finding of Suitability to Transfer (FOST) and related transfer documents were signed. The Army implemented land use controls to prevent, through state prohibitions and oversight, future owners from digging in areas contaminated with polyaromatic hydrocarbons unless they dispose of, or remediate, the material properly. The installation accomplished and obtained approval of the Environmental Assessment for the River Park. At the Army's request, EPA began deleting the 37-acre parcel from the National Priorities List (NPL).

## FY99 Restoration Progress

The Army published in the *Federal Register* the notice of partial deletion of the 37 acres transferred to Watertown. EPA received no comments. EPA is putting the official notification into the *Federal Register*. The Yacht Club is developing a remediation plan to treat its 1979 oil spill and the related contaminated soil. The proposed new owner of the property (MDC) is working closely with the BCT to review cleanup options and land use controls. The possibility of combining the OUs was also evaluated. The installation designated a 10-foot-wide parcel along the river as the Riverbank; that parcel will be remediated as part of the River OU.

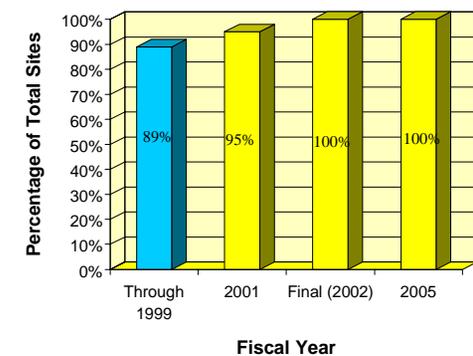
The Charles River RI/FS began and reevaluation of the soil contamination at the 11-acre River Park continued. Neither effort was completed, because the work is being negotiated with the regulators. Alternatives have been presented to the RAB and the River Trustees. Work will include a natural resource component that can be used to offset the installation's past impacts on the river ecology. The MDC draft master plan has been used as a guideline and is expected to become final later in the year.

The RAB continued to meet monthly. It reviewed all documents and provided suggestions and comments. The BCT continued to review land use control amendments and to evaluate the Charles River and River Park options.

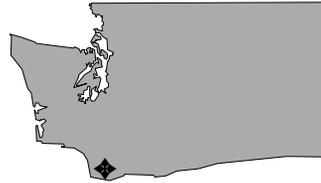
## Plan of Action

- Delete the 37-acre parcel from the NPL in FY00
- Complete soil remediation at River Park in FY00
- Complete the Charles River RI/FS in FY00, and the ROD and RA in FY01
- Complete the FOST for River Park in FY01
- Transfer and delete the 11-acre River Park parcel from the NPL in FY02
- Complete BRAC activities in FY02

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** WA021402011200  
**Size:** 3,020 acres  
**Mission:** Conducted training of active and reserve DoD personnel  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Petroleum/oil/lubricants, solvents, and UXO  
**Media Affected:** Soil  
**Funding to Date:** \$5.8 million  
**Estimated Cost to Completion (Completion Year):** \$43.2 million (FY2002)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2002



Vancouver, Washington

## Restoration Background

In July 1995, the BRAC Commission recommended closure of Camp Bonneville.

The Army identified 14 areas of concern (AOCs): a leaking underground storage tank (UST) site, three landfills, a burn site, a drum burial site, a paint and solvent burial site, two wash racks, a maintenance pit, grease pits, a pesticide storage facility, and an old sewage lagoon site. The Army initiated site investigation work at the leaking 500-gallon petroleum UST.

In FY96, the Army awarded a contract for the removal of petroleum-contaminated soil at the UST site and completed a survey for lead-based paint and metals in soil.

In FY97, the installation completed an Environmental Baseline Survey and a report on an unexploded ordnance (UXO) archive search. It also began an asbestos survey and characterization of metals in soil and submitted the reports for regulator approval. The installation's Restoration Advisory Board became involved in UXO issues. The latest version of the BRAC Cleanup Plan (BCP) was also completed.

In FY98, the installation completed fieldwork for the Site Inspection (SI) of 13 AOCs. The installation determined that Landfill 1, the gas chamber, and USTs require no further action. The Army discovered a second munitions demolition site (Demo 2) during ordnance and explosives field sampling. Concerns about explosive residue contamination may require hazardous and toxic waste (HTW) investigation.

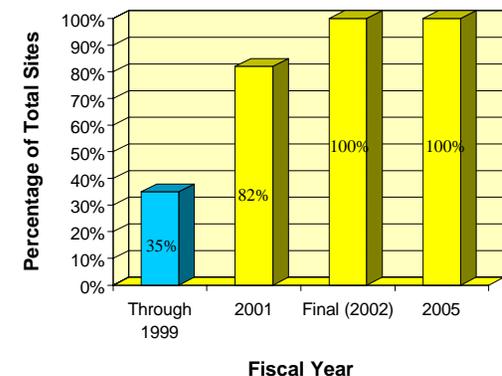
## FY99 Restoration Progress

The installation completed two Engineering Evaluations and Cost Analyses (EE/CAs) for UXO management. EPA did not concur with these documents, and the installation is working with regulators and the community to develop a UXO management plan. The installation conducted an independent technical review focusing on UXO issues and submitted responses to recommendations in the draft report. Remedial Action Plans are being developed for the HTW sites. Surface water sampling was completed for all water entering and leaving the property. The Army gathered data for the SI, but additional data will be needed to address explosives contamination in the impact area. The installation completed UXO clearance of 23 acres.

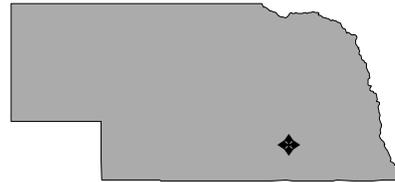
## Plan of Action

- Complete a Cultural Resources Survey in FY00
- Complete fieldwork for most HTW sites in FY00
- Update the BCP in FY00
- Continue to develop an EE/CA for UXO that all stakeholders can concur with in FY00
- Conduct investigations for explosives contamination in soil and groundwater in FY00

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** NE721382023400  
**Size:** 11,936 acres  
**Mission:** Manufactured ammunition  
**HRS Score:** 51.13; placed on NPL in July 1987  
**IAG Status:** IAG signed in 1990  
**Contaminants:** Explosives and heavy metals  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$44.9 million  
**Estimated Cost to Completion (Completion Year):** \$34.3 million (FY2028)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2001



Hall County, Nebraska

## Restoration Background

Cornhusker Army Ammunition Plant (CHAAP) is a former ammunition manufacturing facility. EPA placed the installation on the National Priorities List (NPL) because of explosive liquid waste contaminants released during the manufacturing process to sumps, cesspools, and leaching pits and disposal of solid waste in landfills and burning areas.

An Initial Assessment Study completed in FY80 identified 65 contaminant sources at the installation. In FY83, the Army identified an explosives-contaminated groundwater plume migrating off site. The off-site contamination affected more than 250 private residences in Grand Island. In FY86, the Army removed and incinerated 40,000 tons of explosives-contaminated soil from sumps and leaching pits. In FY86 and FY95, the Army extended the Grand Island municipal water distribution system to all affected residences. In FY89, the community formed a Local Redevelopment Authority (LRA). In FY94, the Army performed an Interim Remedial Action, removing 5,000 tons of explosives-contaminated soil. The Army also completed an interim Record of Decision (ROD) for remediation of groundwater contamination (Operable Unit [OU] 1).

A Remedial Investigation (RI) in FY96 designated six sites (OU2) as requiring no further action. A site investigation for former underground and aboveground storage tanks was submitted to the state.

In FY97, the U.S. Army Corps of Engineers completed changes in the design of the OU1 ROD phased treatment of on-site source

areas, proceeded in accordance with the Interagency Agreement (IAG). This change allows accelerated hot spot removals and moved the discharge location on site.

In FY98, the Army and regulators signed the Proposed Plan and the ROD for OU2. The OU2 ROD requires no action for protection of human health and the environment given future land use requirements. The final Feasibility Study (FS) for OU3 and OU4 was submitted for signature. Due to changes in EPA guidance, final signature by EPA was contingent on the restructuring of institutional controls. Actions at the OU3 and OU4 sites included excavation of explosive contaminants and metals (lead) in soil. Monitoring of the groundwater plume provided initial data on use of the natural attenuation process off site.

In FY96 and FY98, the installation sought to determine whether there was community interest in forming a Restoration Advisory Board (RAB). On both occasions, no interest was expressed.

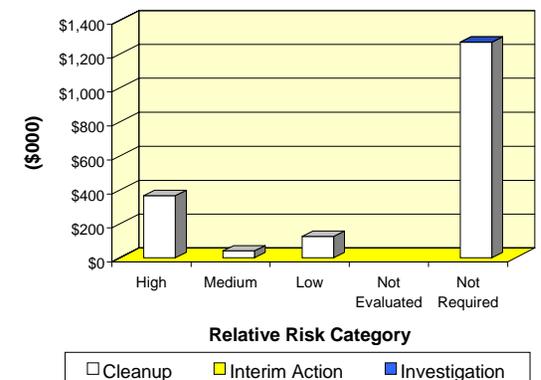
## FY99 Restoration Progress

The Army submitted final RODs for OU3 and OU4 to EPA for approval. The groundwater treatment plant (OU1) completed a full year of operation. The Army completed public sales of the southern tier of CHAAP and a farm residence. The Army did not begin Remedial Actions (RAs) for contaminated soil in OU3 and OU4 because of EPA's delay in signing the ROD. The installation began the pump-and-treat operations at the water treatment plant. It also began the RI/FS for remediation of the open burning and open detonation area (OU5).

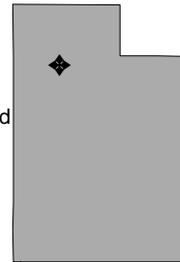
## Plan of Action

- Sign OU3 and OU4 RODs in FY00
- Begin RA for contaminated soil in OU3 and OU4 in FY00
- Continue pump-and-treat operations for OU1 and add one extraction well at the CHAAP boundary to contain the plume in FY00
- Initiate monitoring of a solvent-contaminated groundwater plume for natural attenuation in FY00
- Continue to remove unexploded ordnance from the OU5 burning grounds in FY00
- Continue long-term monitoring of the contaminated groundwater plume (OU1) to FY01

## FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** UT897154985500  
**Size:** 1,129 acres  
**Mission:** Store and distribute DoD commodities, including electronic equipment and textiles; package petroleum and industrial and commercial chemicals  
**HRS Score:** 45.10; placed on NPL in July 1987  
**IAG Status:** Federal Facility Agreement signed in November 1989  
**Contaminants:** Solvents, paint and paint residues, petroleum/oil/lubricants, insecticides, chemical warfare agents, methyl bromide, metal-plating wastes and sludge, PCB-contaminated transformer oils, degreasers, acids and bases, and sand-blast residues  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$57.0 million  
**Estimated Cost to Completion (Completion Year):** \$10.4 million (FY2015)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003



**Ogden, Utah**

### Restoration Background

In September 1995, the BRAC Commission recommended closure of Defense Distribution Depot Ogden (DDOU) except for minimal essential land and facilities for a Reserve Component area. The depot closed in September 1997.

A Preliminary Assessment in FY80 identified 44 potentially contaminated sites at the installation; 22 sites required further action. Site types include oil-burning pits, disposal pits, a french drain system, and burial sites, which have contaminated groundwater and soil.

In FY90, a Federal Facility Agreement divided the sites into four operable units (OUs). From FY92 through FY95, the installation conducted Remedial Actions at all OUs, including excavating and disposing of contaminated soil and debris and installing wells and piping for groundwater extraction and treatment systems. More than 130 groundwater monitoring wells and more than 100 extraction or injection wells have been installed. The use of advanced technology helped the installation identify the contents of glass bottles excavated at OU3 and remove white phosphorus from the soil at OU4.

In FY95, groundwater treatment facilities began operating at OUs 1, 2, and 4; a RCRA Facility Investigation (RFI) began; and low-level contamination screening sites and leaking aboveground storage tanks (ASTs) were investigated. The installation established a BRAC cleanup team, and the Technical Review Committee was converted to a Restoration Advisory Board (RAB). During FY96, a Local Redevelopment Authority (LRA) was established, and an installationwide Environmental Baseline Survey and a BRAC Cleanup Plan (BCP) were completed.

In FY97, the installation implemented corrective measures for ASTs and received agreement from regulatory agencies concerning the designation of 779 acres as CERFA-uncontaminated. The BCP and Land Reuse Plan was updated, and Phase I of the RFI was completed. Six sites were approved for no further action (NFA), leaving six sites for evaluation and cleanup.

In FY98, DDOU completed investigation and cleanup of polychlorinated biphenyl (PCB) contamination at 135 transformer sites. Phase II of the AST and underground storage tank investigation, Phase II of the RFI, and investigation of the gasoline release at Building 321 also were completed. The installation prepared a Corrective Action Plan (CAP) for Building 321. The Cooperative Agreement with Ogden LRA for depot management was extended to September 1999, and the DDOU RAB received Technical Assistance for Public Participation training. The installation finished an Environmental Assessment for disposal of excess property and completed investigation of identified BRAC sites. Leases were approved for 16 tenants, leasing 1.6 million square feet of building space and creating 663 new jobs.

### FY99 Restoration Progress

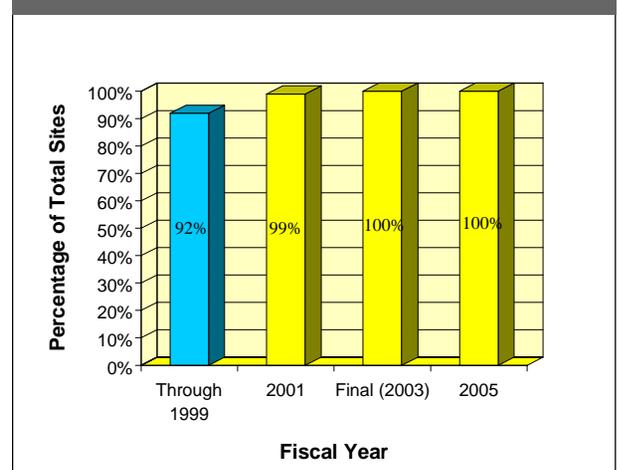
The cleanup of three BRAC sites, Plain City Canal, Building 246, and Building 339R was completed. Phase III of the RFI was completed. Two solid waste management units (SWMUs) were eliminated from further work. The remediation of SWMU 11 was completed. An interim corrective measure, consisting of soil removal, was implemented at SWMU 1. The source area at OU4 was remediated and a second pump-and-treat system for groundwater was installed. Cleanup was completed at Building 321. The investigation of the former skeet range also was

completed, and the range was granted NFA status by the State and EPA. The CAP was implemented for Tank 19 and Site 5C/6D. Version 3 of the BCP was completed. The second source of contamination for OU2 was delineated, and a study was conducted for enhanced natural attenuation. Two Findings of Suitability to Transfer (FOSTs) were completed for 544 acres of property. An asbestos operation and maintenance program was developed as part of the Cooperative Agreement. A Lease in Furtherance of Conveyance was signed. A Memorandum of Agreement with the Utah State Historical Preservation Office and the Advisory Council on Historic Preservation was completed.

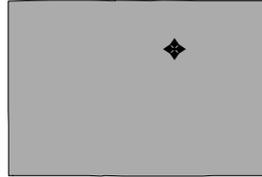
### Plan of Action

- Complete the remediation of SWMUs 1 and 13 in FY00
- Implement cleanup at the Western Boundary and the Pistol Range in FY00
- Complete the implementation of CAP for Building 358 in FY00
- Complete soil cleanup at the Parade Ground Area source for OU2 in FY00
- Implement monitored natural attenuation at BRAC Site 51 in FY00
- Complete one FOST in FY00
- Complete version 4 of the BCP in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** CO821162033300  
**Size:** 577 acres  
**Mission:** Provided medical services, training, and research  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Petroleum hydrocarbons, asbestos, lead-based paint, and radioactive waste  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$15.4 million  
**Estimated Cost to Completion (Completion Year):** \$12.6 million (FY2002)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2002



**Aurora, Colorado**

## Restoration Background

In July 1995, the BRAC Commission recommended closure of all facilities at Fitzsimons Army Medical Center except for the Edgar J. McWhethy Army Reserve Center. Tenants will be relocated to other installations. The Army will transfer ownership of excess property to public and private entities by FY03.

Environmental studies at the installation identified several sites posing environmental concerns. Sites include aboveground storage tanks (ASTs), underground storage tanks (USTs), landfills, clinical areas, pesticide and herbicide facilities, a wastewater treatment plant, and maintenance areas.

A BRAC cleanup team (BCT) was formed to investigate and ensure cleanup of all areas of concern to facilitate property transfer to the Fitzsimons Redevelopment Authority (FRA). The BCT meets biweekly. Alternate meetings include the FRA as well as local agencies involved in the redevelopment of Fitzsimons. EPA and the state regulatory agency reviewed the scope of work for the Environmental Baseline Survey and the BRAC Cleanup Plan in FY95.

Community awareness measures are extensive. The commander formed a Restoration Advisory Board (RAB) in FY96. The installation also completed a Community Relations Plan. Before beginning excavation at a low-level radioactive waste landfill (Landfill 5), the installation held a media day to address community concerns. No radioactivity was detected.

The installation removed tanks and associated contaminated soil from the UST area for the former heating plant and received formal approval of closure documents from the Colorado Department of Public Health and Environment.

In FY97, the installation initiated groundwater and Site Inspection (SI) studies for all sites. Accelerated fieldwork techniques (hydropunch, geoprobe, and cone penetrometer) were employed. In addition, a Total Environmental Restoration Contract was used at the installation.

In FY98, the installation completed studies at four landfills that had been closed before 1972: the golf course, pesticide and herbicide facilities, the optical fabrication laboratory, and clinical and maintenance facilities. Nuclear Regulatory Commission (NRC) decommissioning was completed, and a license termination request was forwarded to the NRC. Remediation began at the Army and Air Force Exchange Service (AAFES) service station and at other AST and UST locations. The BCT reviewed and approved four Findings of Suitability to Transfer (FOSTs) and four Findings of Suitability to Lease (FOSLs).

## FY99 Restoration Progress

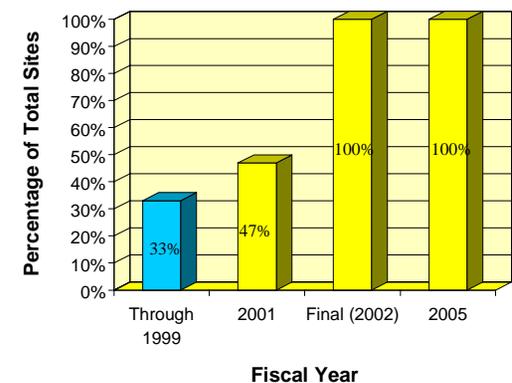
The installation completed final SI reports for the Directorate of Public Works and Directorate of Logistics (DPW/DOL) maintenance areas and the Directorate of Clinical Investigations (DCI) clinical areas. The Army completed investigation of the maintenance areas and the Optical Fabrication Laboratory, but the state required additional data. An independent technical review concurred with the approach used by Fitzsimons for the salvage yard, the wastewater treatment plant (WWTP), and the landfills. The installation and the state negotiated landfill closure requirements. The Local Redevelopment Authority requested that the installation provide a cost analysis for additional landfill closure options, which delayed the Remedial Design. The NRC did not require the planned confirmatory survey for the NRC license termination; therefore, it was not performed. The Army drafted a

risk assessment for the golf course/pesticide/herbicide storage facilities, but additional data are required for some sites to complete the final risk assessment. The installation completed a draft work plan for the closure of the WWTP. A historical/operational review of the Perinatal Research Center is in preparation. The Army completed cleanup of the salvage yard and an interim Removal Action at the former AAFES service station.

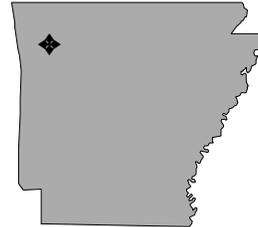
## Plan of Action

- Complete the additional fieldwork and risk assessment for the golf course/pesticide/herbicide storage facilities in FY00
- Determine and perform required additional work for the DPW/DOL maintenance and DCI clinical facilities and the Optical Fabrication Laboratory in FY00
- Complete work plan and remedial work for closure of the WWTP in FY00
- Operate remedial systems for Buildings 821 (Reserve Center) and 135 (AAFES service station) in FY00
- Close out remaining UST and AST sites in FY00
- Complete site closeout for the Perinatal Research Facility in FY00
- Complete closure options analysis and begin landfill design in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** AR621372018700  
**Size:** 71,359 acres  
**Mission:** Light infantry and mobilization  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Petroleum/oil/lubricants, DDT, and solvents  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$25.3 million  
**Estimated Cost to Completion (Completion Year):** \$17.2 million (FY2000)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2000



Fort Chaffee, Arkansas

**Restoration Background**

In July 1995, the BRAC Commission recommended closure of Fort Chaffee, except for the minimum essential buildings and ranges for a Reserve Component training enclave. The BRAC parcel available for transfer is approximately 7,012 acres. The installation closed at the end of FY97.

Primary site types include underground storage tanks (USTs), a fire training area, landfills, and hazardous waste and hazardous material storage areas. Primary contaminants of concern include petroleum/oil/lubricants in groundwater and soil, solvents in groundwater, and pesticides in soil. Interim Removal Actions at the installation have included removal of USTs and soil remediation at all abandoned UST locations.

The community formed a Local Redevelopment Authority in FY95. In FY96, the installation formed a BRAC cleanup team (BCT) and a Restoration Advisory Board. The installation also completed a RCRA Facility Investigation initiated in FY95. The draft final Environmental Baseline Survey report was submitted to the regulatory agencies. The Army began investigations at the North POW Landfill.

In FY97, the installation removed USTs from the BRAC parcel. The BCT completed and implemented the open burning and open detonation unit-closure work plan. It also completed work plans for closing the Hazardous Waste Storage Facility and the Air National Guard Burn Pit. Phase I of the Site Inspection began, as did work on removing postwide USTs, oil-water separators, wash racks, and fuel fill stands. Version 2 of the BRAC Cleanup Plan (BCP) was completed in late 1997.

In FY98, the installation conducted Removal Actions at Building 5830 and Buildings 402/403 UST sites. The installation also removed all USTs and oil-water separators, and the west area fuel fill stands and transmission lines. It completed Relative Risk Site Evaluations for all sites except Sites 2 and 45. The installation completed an unexploded ordnance (UXO) archive search and a site visit for BRAC property. It also completed the RCRA closure evaluation of the Hazardous Waste Storage Facility.

**FY99 Restoration Progress**

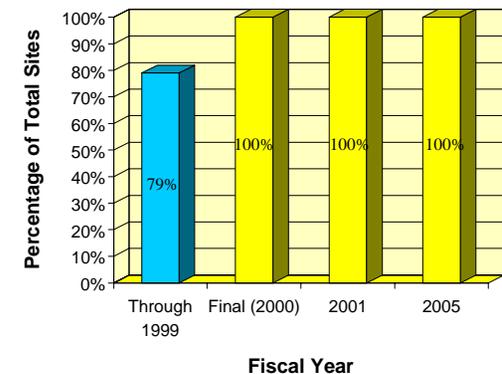
The installation completed all previously funded work on the enclave site, passing full responsibility for the sites to the National Guard. The BCT agreed to prioritize all environmental sites and address them in five No Further Action (NFA) Records of Decision (RODs). RODs I, II, and III were completed, clearing 37 sites from the enclave and BRAC excess property. The Army completed a Finding of Suitability of Transfer (FOST) for 4,617 acres of CERFA-uncontaminated acreage, which EPA and the state are reviewing. The Engineering Evaluation and Cost Analysis (EE/CA) for Site 32 was completed and is awaiting regulatory comments. The installation removed all fuel fill stands and completed the initial investigation at Site 45.

The EE/CA for Site 1 was not completed as planned because of scheduling conflicts and a lengthy regulatory review process. The initial investigation of Site 2 was delayed because of scheduling and resource conflicts.

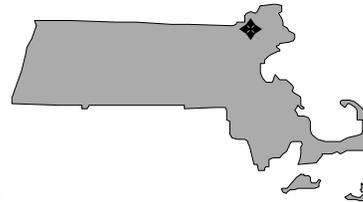
**Plan of Action**

- Complete EE/CA for landfill Sites 1 and 32 and begin remedial fieldwork in FY00
- Complete ROD IV and FOSTs II and III, including Sites 22 and 46 in FY00
- Implement remediation at the Site 1 and 32 landfills in FY00, with completion in FY01
- Close out all sites and propose final NFA round in FY01, with final FOST at end of FY01

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** MA121402027000  
**Size:** 9,219 acres  
**Mission:** Support Reserve Component training  
**HRS Score:** 42.24; placed on NPL in November 1989  
**IAG Status:** IAG signed in November 1991  
**Contaminants:** VOCs, heavy metals, petroleum products, PCBs, pesticides, herbicides, and explosive compounds  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$89.1 million  
**Estimated Cost to Completion (Completion Year):** \$33.6 million (FY2004)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003



Fort Devens, Massachusetts

**Restoration Background**

In July 1991, the BRAC Commission recommended that Fort Devens close and establish a reserve enclave. In FY96, the Army closed Fort Devens, replacing it with the Devens Reserve Forces Training Area, which assumed the remaining Army mission.

Environmental investigations since FY89 identified 84 sites with 324 BRAC areas of concern (AOCs), including landfills, vehicle and equipment maintenance and storage yards, the Defense Reutilization and Marketing Office (DRMO) scrap yard, motor pools, and underground storage tanks (USTs). Investigations revealed soil and groundwater contamination.

In FY94, the commander formed a Restoration Advisory Board (RAB) and a BRAC cleanup team. In FY95, the installation began several Interim Actions, including removal of USTs and installation of a soil vapor extraction system. The installation also completed two Records of Decision (RODs) for the Shepley’s Hill Landfill Operable Unit (OU) and the Barnum Road Maintenance Yards OU. An Environmental Impact Study was completed, and an enhanced Preliminary Assessment identified 10 areas requiring evaluation.

In FY96, the Army and regulators signed a ROD for the South Post Impact Area. The installation completed radiological surveys for 98 percent of affected buildings on the property and began a Feasibility Study (FS) for landfill consolidation.

In FY97, the Army and EPA approved a No Further Action (NFA) ROD for AOC 63AX. The installation completed the Remedial Investigation (RI) and FS and the Proposed Plan (PP) for AOCs 32 and 43A. It also completed the explosive ordnance survey.

In FY98, the installation issued a PP addressing landfill consolidation and remediation at seven sites. The Army and EPA approved a ROD for AOCs 32 and 43A. Supplemental RIs began at AOC 50 and AOC 57. The installation completed an Interim Removal Action at AOC 69W.

**FY99 Restoration Progress**

The installation signed two RODs for eight sites. The Army transferred an 836-acre parcel to the U.S. Fish and Wildlife Service and issued a revised PP for AOC 69W. The Army also conducted Removal Actions at AOCs 32, 43A, and 57 and installed microwells for long-term monitoring at Shepley’s Hill Landfill. An NFA decision document was signed for the former maintenance shop.

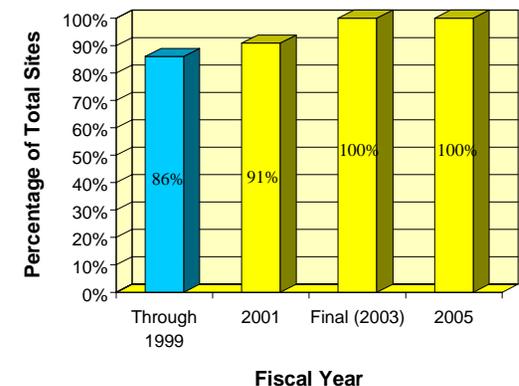
Final RI/FSs for AOCs 50 and 57 were initiated, but completion was impeded by regulatory delays. The Army was unable to complete the planned Remedial Actions (RAs) for landfill consolidation and remediation at seven sites because of a disagreement regarding on-site or off-site disposal.

The RAB met regularly. The installation continued partnering efforts with regulators to resolve institutional controls issues.

**Plan of Action**

- Complete RI/FSs for AOCs 50 and 57 in FY00
- Complete a 5-year review for all ROD sites in FY00
- Initiate RAs for the landfill consolidation and remediation project in FY00–FY01

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** NJ221042027500  
**Size:** 30,997 acres  
**Mission:** Provide training and reserve support  
**HRS Score:** 37.40; placed on NPL in July 1987  
**IAG Status:** Federal Facility Agreement signed in September 1991  
**Contaminants:** Heavy metals, petroleum/oil/lubricants, chlorinated solvents, and PCBs  
**Media Affected:** Groundwater, surface water, sediment, and surface and subsurface soil  
**Funding to Date:** \$6.3 million  
**Estimated Cost to Completion (Completion Year):** \$95.6 million (FY2039)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2013



Pemberton Township, New Jersey

**Restoration Background**

Remedial Investigation (RI) of the Fort Dix Sanitary Landfill began in FY79, leading to the installation of groundwater monitoring wells around the perimeter. EPA placed the landfill on the National Priorities List (NPL) in FY87. The Army and regulators signed a Record of Decision (ROD) for the landfill in FY91. The Remedial Design was developed in FY92. In FY93, the installation performed site characterization and field screening at 16 other sites, including storage areas, underground storage tanks (USTs), landfills, lagoons, impact areas, and an incinerator with suspected heavy metals, petroleum/oil/lubricants, and chlorinated solvents. USTs and associated contaminated soil were removed from seven sites.

In FY94 and FY95, the installation built a multilayer cap over the sanitary landfill and began long-term monitoring (LTM) of groundwater, surface water, and sediment. In FY95, the BRAC Commission recommended realignment of Fort Dix, allowing it to retain ranges, facilities, and training areas for Reserve Component training. In FY96, the Fort Dix Commander formed a Restoration Advisory Board to replace the Technical Review Committee.

In FY97, the installation completed an RI at the MAG-1 Area. In FY98, the installation completed an Environmental Investigation and an Alternatives Analysis of 19 sites and began RI activities at nine other Environmental Restoration sites. Interim Remedial Actions (IRAs) were completed at three sites. The installation completed a groundwater flow model. The Army completed an RI and Feasibility Study (FS) and a natural attenuation addendum for golf course sites, and the FS for the MAG-1 site. The installation removed 80 abandoned USTs and began evaluations of the

contaminated sites. It also started an RI/FS for the New Egypt Armory Site.

**FY99 Restoration Progress**

The Army completed statistical analyses of the Fort Dix Sanitary Landfill monitoring data, which showed decreasing levels of contaminants in groundwater and surface water. It negotiated a reduction in the number of monitoring wells from 39 to 31, saving \$30,000 in monitoring costs. The cost of long-term maintenance was reduced by \$37,000 from FY98 levels and will continue to decline. An RI/FS began for the Range Landfill, the ANC-2 Landfill, and leaking UST sites with residual contamination. The installation reached the Proposed Plan (PP) stage at eight investigation sites. The Army Environmental Center conducted an Independent Technical Review of five Environmental Restoration sites. The review resulted in improved technical investigations of these sites. EPA Region 2 approved adding the Fort Dix Sanitary Landfill to the EPA Construction Complete List and completed the Preliminary Remedial Action Closeout report and the 5-Year Review report for the landfill.

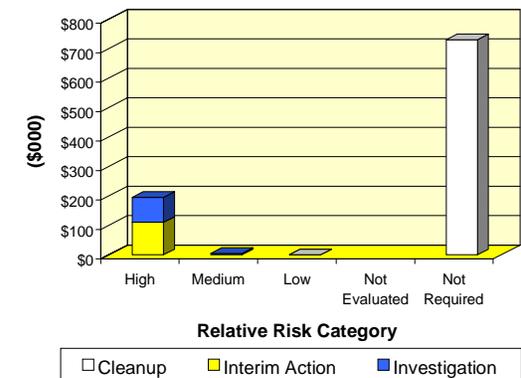
The Army conducted a pilot test of a chemical oxidation remediation technology on a trichloroethene plume in the 4400 Area, and evaluated monitored natural attenuation for another plume in this area. The installation continued removing abandoned USTs and incorporated the groundwater flow model into the Installation Restoration Program investigations.

The RI/FS for the Boiler Blowdown site was delayed by regulatory requirements, but the RI/FS for Landfill ANC-9 was completed. The installation delayed the PPs for MAG-1, golf course sites, and 19 other sites to change the approved remedy.

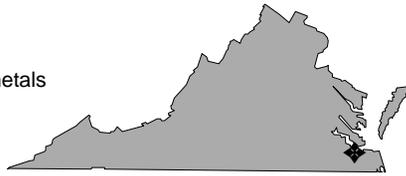
**Plan of Action**

- Continue removing abandoned USTs and investigating UST sites with residual contamination through FY00
- Continue LTM and long-term maintenance of the Fort Dix Sanitary Landfill, request reductions in the monitoring program, and continue to press for removal from the NPL in FY00
- Continue the RI/FS for the Boiler Blowdown, Fire Training Tank, Armament Research and Development Center, New Egypt Armory, Barnes Building, Range Landfill, and ANC-2 Landfill sites in FY00
- Complete the PP and the ROD for ANC-9 Landfill, Golf Course Pesticide Area, EPIC-8 Landfill, Bivouac 5 Washrack, Hazardous Waste Storage Area, Paint Shop, Range Impact Area, and MAG-1 and MAG-2 Area in FY00

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** VA321372032100  
**Size:** 8,228 acres  
**Mission:** House the Army Transportation Training Center; provide training in rail, marine, and all other modes of transportation involved in amphibious operations  
**HRS Score:** 50.00; placed on NPL in December 1994  
**IAG Status:** Federal Facility Agreement under negotiation  
**Contaminants:** Petroleum products, PCBs, VOCs, pesticides, and heavy metals  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$43.8 million  
**Estimated Cost to Completion (Completion Year):** \$5.0 million (FY2013)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2004



Newport News, Virginia

**Restoration Background**

Fort Eustis is home to the Army Transportation Center, where officers and enlisted soldiers receive education and training in all modes of transportation, aviation maintenance, logistics and deployment doctrine, and research.

Investigations have identified 27 sites at the installation, including landfills, underground storage tanks (USTs), pesticide storage areas, range and impact areas, and surface impoundments. The migration of contaminants from some sites to creeks and estuaries and the potential migration through surface water and the upper water table to the James River are of greatest concern at the installation. Analysis of samples indicated the presence of polychlorinated biphenyls (PCBs), pesticides, polyaromatic hydrocarbons, and lead in surface water and sediment.

In FY90, a Remedial Investigation (RI) began for four sites near estuaries at the installation. In FY92, the Army completed a Preliminary Assessment and a Site Inspection at eight more sites where suspected soil contaminants included fuel and oils, pesticides, and volatile organic compounds (VOCs).

In FY94, the installation completed Interim Remedial Actions (IRAs) for removal of contaminated soil at the Felker Airfield Tank Farm and a waste-oil storage tank site. It also completed cleanup at the two landfills. In the following year, the state approved a Corrective Action Plan (CAP) involving installation of pneumatic pumps and passive skimmers to recover petroleum products from groundwater at the Helicopter Maintenance Area UST site.

In FY96, the installation established an administrative record and set up information repositories at three local libraries. The state

regulatory agency approved another CAP for installation of a free-product recovery system at the Gas Station UST site. The Agency for Toxic Substances and Disease Registry published a final Public Health Assessment that indicated that the Fort Eustis National Priorities List (NPL) site poses no apparent risk to public health. In FY97, a draft Feasibility Study (FS) and an Engineering Evaluation and Cost Analysis for two areas of contaminated sediment were submitted to the regulators for review. Fort Eustis capped a pesticide storage yard with asphalt, limiting exposure to contaminated soil.

In FY98, the Army constructed a methane soil vapor extraction system at one closed landfill and installed a methane collection trench at another closed landfill. EPA reviewed three RI reports for four estuary sites, a fire training area, a buried sludge site, and a pesticide storage area. The installation completed investigation and field efforts at Eustis Lake and the pesticide storage area and submitted the reports to EPA and the state.

**FY99 Restoration Progress**

The installation continued operating free-product recovery systems at two UST sites. It also continued long-term monitoring (LTM) at a closed landfill and operation of a methane vapor extraction system at another closed landfill. The installation completed the capping of contaminated sediment at the 3-acre lake, which was restocked with bass, catfish, and blue gill. Two aerators were installed in the lake to enhance the water quality by increasing dissolved oxygen levels. The installation awarded an IRA contract for the removal of PCB-contaminated sediment in Bailey Creek and awarded another contract for updating the Community Relations Plan (CRP).

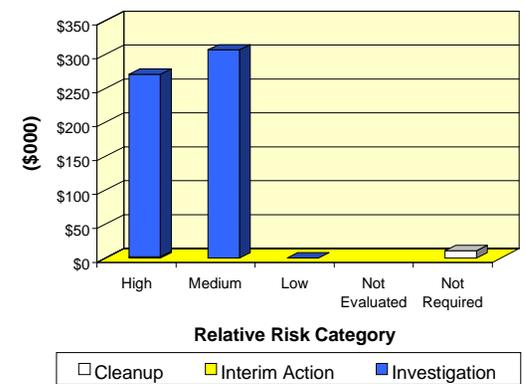
The installation met with the regulatory community to resolve comments on RI reports and is still addressing the regulator comments. The installation concluded that FS reports would be necessary at several sites.

In March 1999, the installation placed advertisements in two local newspapers to determine interest in the formation of a Restoration Advisory Board (RAB). Very limited interest was generated and the installation determined that a RAB was not necessary.

**Plan of Action**

- Continue operating the free-product recovery system at two UST sites in FY00
- Continue LTM of groundwater and surface water at one closed landfill and operation of a methane vapor extraction system at another closed landfill in FY00
- Complete the IRA for removal of PCB-contaminated sediment in Bailey Creek in FY00
- Complete update of the CRP by performing interviews with local residents, government officials, and potential stakeholders in FY00
- Begin developing work plans for additional sampling and monitoring for the FSs at the fire training area and Bailey Creek in FY00

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** MD321022056700  
**Size:** 13,680 acres  
**Mission:** Serve as administrative post to various DoD tenants  
**HRS Score:** 52.0; placed on NPL in July 1998  
**IAG Status:** Federal Facility Agreement under negotiation  
**Contaminants:** Heavy metals, petroleum hydrocarbons, VOCs, and UXO  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$62.1 million  
**Estimated Cost to Completion (Completion Year):** \$7.1 million (FY2004)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2000  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY2004



**Fort Meade, Maryland**

## Restoration Background

In December 1988, the BRAC Commission recommended closing the Fort Meade range and training areas and realigning Fort Meade from an active Army post to an administrative center. The National Security Agency is now the primary tenant. In July 1995, the commission recommended additional realignment, reducing Kimbrough Army Community Hospital to a clinic.

In November 1980, Fort Meade began investigating its sanitary landfill. In 1996, the Army officially closed the landfill; the remaining cells were capped.

Investigations beginning in FY88 identified several areas of concern, including landfills, petroleum and hazardous waste storage areas, aboveground storage tanks (ASTs) and underground storage tanks, asbestos-containing material in structures, and unexploded ordnance (UXO).

In FY90, the installation removed contaminated soil and determined the extent of groundwater contamination at the former post laundry. In FY91, Fort Meade removed a leaking AST and established a pump-and-treat system. The Army shut down the system in 1997.

In FY92, groundwater contamination from a leaching acid neutralization pit at a former battery shop was discovered. The installation removed the building and pit and has monitored groundwater since the removals. In FY94, approximately 120 drums containing petroleum products were removed from a former storage and salvage yard.

The installation conducted UXO surveys in FY94 and FY95 and completed a risk assessment for UXO. The installation formed a

BRAC cleanup team in FY94 and a Restoration Advisory Board in FY95.

In FY96, a Preliminary Assessment led to the discovery of groundwater contaminated by fuel oil and substances from former spill areas. The Army transferred the 100-acre site to the Architect of the Capitol. Fort Meade also began an installationwide Ecological Risk Assessment (ERA).

In FY97, the installation removed and disposed of soil from the neutralization pit and the fire training area and completed a UXO project at Tipton Airfield. It also completed an Environmental Baseline Survey, a Finding of Suitability to Lease, and cleanup at the medical waste site.

In FY98, a Site Inspection led to discovery of a former incinerator site. The installation completed a cap for Cell 2 of the sanitary landfill. Fort Meade was placed on the National Priorities List (NPL) in July 1998. The installation issued a final Remedial Investigation (RI) report for four sites and a draft RI for two sites.

## FY99 Restoration Progress

Fort Meade began a quarterly monitoring program at the post laundry and awarded a contract for additional RI work. The troop boiler plant Remedial Action (RA) continued. The RI and Feasibility Study (FS) at the Defense Reutilization and Marketing Office (DRMO) drum site continued. The installation completed capping of the active sanitary landfill and plans to conduct long-term monitoring. Fort Meade also completed RI/FSs at the trap and skeet range and at the incinerator site. No further action (NFA) is planned at the incinerator site. The installation awarded contracts for RI/FS activities at the Architect of the Capitol site,

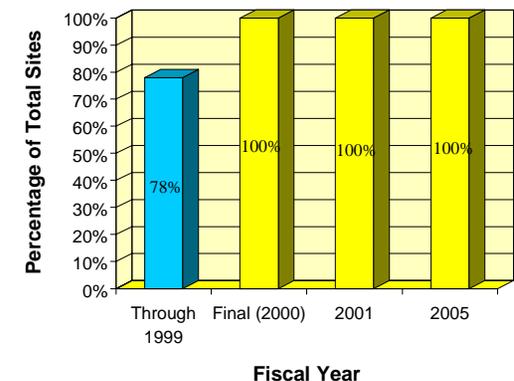
the battery shop, the post laundry, the Granite Nike Control Site, the Phoenix Nike Control Site, and other solid waste management units (SWMUs). The installation completed the Proposed Plan (PP), a final RI report for two sites, and two NFA Records of Decision for Tipton Airfield.

The installation did not complete the planned ERA work at the clean fill dump or RI work at the ordnance demolition area because regulators required additional sampling.

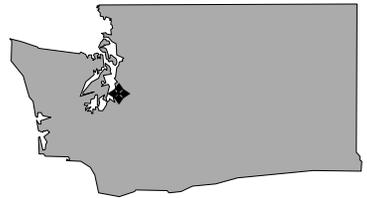
## Plan of Action

- Continue RI/FS work at post laundry, battery shop, Architect of the Capitol site, and DRMO in FY00
- Continue RA at the troop boiler plant and examine RA alternatives for the trap and skeet range in FY00
- Continue RI/FS work at the Granite Nike Control Site, the Phoenix Nike Control Site, and other SWMUs in FY00
- Delete the Tipton Airfield parcel from the NPL in FY00
- Complete PP and decision document for the clean fill dump in FY00
- Complete RI/FS, PP, and decision document for the ordnance demolition area in FY00
- Continue partnering efforts with EPA in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



<b>FFID:</b>	WA021402050600
<b>Size:</b>	86,176 acres
<b>Mission:</b>	House I Corps Headquarters; plan and execute Pacific, NATO, or other contingency missions; provide troop training, airfield, medical center, and logistics
<b>HRS Score:</b>	42.78 (Landfill No. 5); placed on NPL in July 1987; deleted from NPL in May 1995 35.48 (Logistics Center); placed on NPL in November 1989
<b>IAG Status:</b>	IAG signed in January 1990
<b>Contaminants:</b>	VOCs, PCBs, heavy metals, waste oils and fuels, coal liquification wastes, PAHs, solvents, and battery electrolytes
<b>Media Affected:</b>	Groundwater and soil
<b>Funding to Date:</b>	\$45.2 million
<b>Estimated Cost to Completion (Completion Year):</b>	\$59.0 million (FY2036)
<b>Final Remedy in Place or Response Complete Date for All Sites:</b>	FY2007



Fort Lewis, Washington

**Plan of Action**

- Continue groundwater sampling at Landfill No. 1 through FY00
- Complete Landfill No. 2 source investigation in FY00
- Continue Logistics Center trichloroethene (TCE) upper aquifer groundwater treatment in FY00
- Continue innovative technology development for the Logistics Center in FY00
- Complete RAB solicitation in FY00
- Investigate Logistics Center lower aquifer for TCE contamination in FY00–FY01

**Restoration Background**

Two Fort Lewis sites, Landfill No. 5 and the Logistics Center, were placed on the National Priorities List (NPL) after investigations revealed soil and groundwater contamination. Additional sites include landfills, disposal pits, contaminated buildings, and spill sites. Primary contaminants include organic solvents, heavy metals, and fuels.

The Army and regulators signed a Record of Decision (ROD) for the Logistics Center in FY90. The final remedy, a groundwater extraction and treatment system, became operational in FY95.

In FY92, the Army and regulators signed a ROD specifying No Further Action and long-term monitoring for Landfill No. 5. In FY94, a ROD was signed for Landfill No. 4 and the Solvent Refined Coal Plant. Fort Lewis completed the Remedial Design for contaminated soil at the Solvent Refined Coal Plant in FY95. EPA removed Landfill No. 5 from the NPL in FY95. This was the first federal site, and the first DoD site, to be removed from the NPL.

In FY97, the installation completed the Remedial Action (RA) at the Solvent Refined Coal Plant. RA work began at Landfill No. 4 using air sparging and soil vapor extraction (SVE). Fort Lewis established an Installation Restoration Program Technical Working Group (TWG) to accelerate cleanups. In FY98, EPA approved the use of innovative technologies at the Logistics Center to accelerate cleanups and reduce program life-cycle costs. The installation determined that Landfill No. 1 required additional sampling.

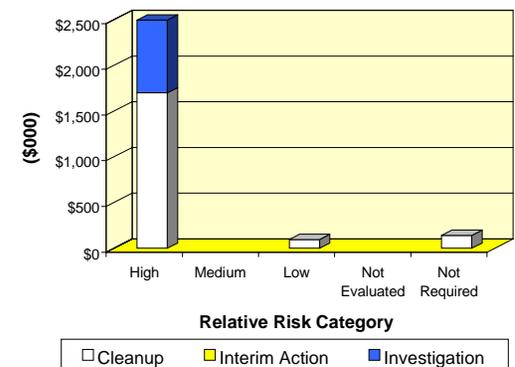
**FY99 Restoration Progress**

The Army completed the first in a series of tests to evaluate the use of in situ redox manipulation and phytoremediation and began field testing a reductive anaerobic biological in situ treatment technology. Planning began on a treatability test of Six Phase Soil Heating at Landfill No. 2. Groundwater treatment plants continue to operate as designed, removing contaminants from the Logistics Center groundwater. The clay cap at the polychlorinated biphenyl (PCB) dump site was inspected and found serviceable, and a new fence was installed around the area. The installation's contractor completed the old Explosives Ordnance Disposal (EOD) site field investigation and is writing its report. Additional groundwater sampling was conducted at Landfill No. 1. The TWG completed the Logistics Center NPL site master remediation plan and now updates it as needed.

The Army completed site closeout at Vancouver Barracks. The installation is awaiting EPA No Further Action designations for the old fire fighting training pit, the stormwater outfalls, the Logistics Center battery acid pit, and the pesticide rinse area. An initial phytoremediation field test was completed and is awaiting issuance of a final investigative report. The Landfill No. 2 source investigation is in progress. The installation is evaluating the comparative merits of monitored natural attenuation and air sparging with SVE as treatment choices for Landfill No. 4.

The newsletter containing solicitation for a Restoration Advisory Board (RAB) is in progress.

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** NJ221382059700  
**Size:** 727 acres  
**Mission:** House the Headquarters of the Army Communications and Electronics Command  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Petroleum hydrocarbons, VOCs, SVOCs, PCBs, heavy metals, radionuclides, asbestos, and lead paint  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$16.0 million  
**Estimated Cost to Completion (Completion Year):** \$7.4 million (FY2006)  
**Final Remedy in Place and Response Complete Date for BRAC Sites:** FY2000  
**Final Remedy in Place and Response Complete Date for Non-BRAC Sites:** FY2003



**Monmouth County, New Jersey**

### Restoration Background

In July 1993, the BRAC Commission recommended realignment and partial closure of Fort Monmouth, involving closure of the Evans Area, transfer of part of the Charles Wood Area to the Navy, and relocation of personnel from the Evans Area and Vint Hill Farms Station to the Main Post and Charles Wood Area. To speed transfer, Fort Monmouth BRAC property was divided into three parcels: the Charles Wood Housing Area and two parcels at the Evans Area.

Studies identified 37 sites in three areas. In FY94, an enhanced Preliminary Assessment (PA) of the BRAC parcels identified 32 sites at the Evans Area and 8 sites at the Olmstead Housing Area. Prominent sites are landfills, underground storage tanks (USTs), hazardous waste storage areas, polychlorinated biphenyl (PCB) spill areas, asbestos areas, and radiological storage and spill areas. Contaminants in groundwater and soil include chlorinated solvents, volatile organic compounds (VOCs), and heavy metals.

In FY94, the installation formed a BRAC cleanup team and completed version 1 of the BRAC Cleanup Plan. In FY95, the Army determined that one site at the Evans Area and two sites at the Olmstead Housing Area required no further action.

In FY96, the installation completed Site Inspections (SIs), the final SI report for all sites, and a radiological site characterization work plan. The installation's Land Reuse Plan and the survey for asbestos-containing material were also completed. The installation formed a Restoration Advisory Board.

In FY97, the Army developed remediation plans for nine sites. Radiological decommissioning fieldwork continued in the vacant parcels. A draft Finding of Suitability to Transfer (FOST) and a

draft updated Environmental Baseline Survey (EBS) report were prepared for the early conveyance of land north of Laurel Gully Brook.

In FY98, the Army prepared a draft second supplemental Environmental Assessment (EA) and a finding of no significant impact (FNSI). A Supplemental Site Inspection report was completed. Removal Actions began at the PCB spill sites, the metal plating facility, and 36 USTs. The installation completed soil sample analysis at the antenna field in Parcel E and prepared updated draft EBS reports for Parcels A and B.

### FY99 Restoration Progress

The installation completed cleanup of the sewage treatment plant site and removed underground neutralization tanks. All USTs have been removed, but petroleum soil contamination was identified during radiation remediation and the metal plating facility project. Construction of a new facility to replace the "Shield" is in progress.

The Army began reviewing the EBS and the draft FOST for Parcel E. The State Historic Preservation Office required an additional archaeological field investigation for Parcels A, B, and D. This investigation has uncovered some human remains, which are believed to be Native American in origin. Initial contact has been made with the federally recognized tribes in accordance with the Native American Graves Protection and Repatriation Act.

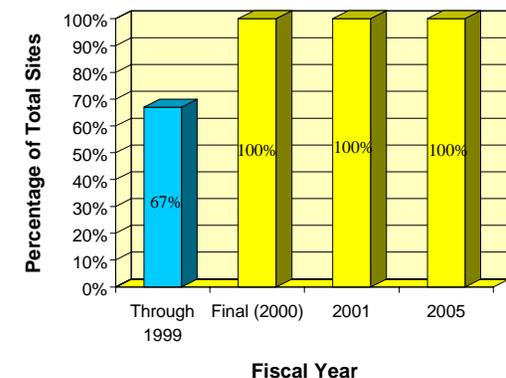
Completion of the second phase of the radiological surveys was delayed because of the discovery of additional radiation and mercury contamination in Area 4A. The area is being remediated. The final supplemental EA, a FNSI, and a Removal Action for soil at the metal plating facility and the PCB spill sites were

delayed because of an increase in the work needed to complete radiation and UST remediation. The installation did not complete the final updated EBS and FOST for Parcels A and B or transfer the property because of mercury contamination in the sanitary system.

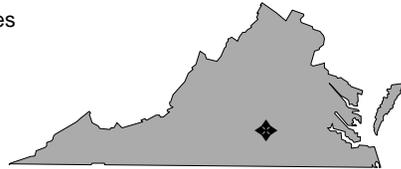
### Plan of Action

- Complete second phase of radiological surveys and remediation and disposal actions in FY00
- Complete Removal Action for soil at metal plating facility and PCB spill sites in FY00
- Complete cleanup activities at all UST sites in FY00
- Complete mercury remediation activities for the sewer system and Buildings 9045 and 9401 in FY00
- Complete the final updated EBS and FOST for Parcels E, A, and B and transfer property in FY00
- Complete Feasibility Study for the groundwater in Parcel C in FY00
- Complete the updated EBS and FOST for Parcels C and D and transfer property in FY01

### SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** VA321402070500  
**Size:** 45,160 acres  
**Mission:** Provide training support for Active and Reserve Component Units of all Services  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Petroleum hydrocarbons, metals, propellants, and explosives  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$6.7 million  
**Estimated Cost to Completion (Completion Year):** \$6.2 million (FY2002)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2002



**Blackstone, Virginia**

## Restoration Background

In July 1995, the BRAC Commission recommended closure of Fort Pickett except for essential training areas and facilities used for Reserve Components. The installation closed on September 30, 1997. Training and maneuver areas and part of the cantonment area were transferred to the National Guard (41,744 acres). The remaining area (3,416 acres) has been designated as excess BRAC property.

Site types include underground storage tanks (USTs), petroleum spills, old salvage yards, and firefighter training areas. Petroleum hydrocarbons are the primary contaminants affecting groundwater, surface water, sediment, and soil. Interim Actions at the installation include UST upgrades, asbestos surveys, and removal of polychlorinated biphenyl (PCB)-containing transformers.

During FY95, the installation formed a Local Reuse Authority. In FY96, the Army formed a BRAC cleanup team and a Restoration Advisory Board (RAB). The Local Reuse Authority developed a Local Reuse Plan. The installation performed an Environmental Baseline Survey (EBS).

Also in FY96, the Army performed an Environmental Assessment (EA) and a Remedial Investigation (RI) of the 5-mile gasoline pipeline. The installation began a survey of all radioactive materials stored on the installation to support closeout of the license and conducted an archive search for unexploded ordnance (UXO) on the property.

In FY97, the installation completed an asbestos survey for buildings in the excess area and the removal, replacement, and disposal of PCB-containing transformers. It also completed the UXO Archive Search Report. Fort Pickett initiated a multisite

Preliminary Assessment and Site Inspection (PA/SI) for the BRAC excess property.

In FY98, the installation completed a draft version of the Zone 1 PA/SI and an RI for the gasoline pipeline. The installation also initiated an RI and a Feasibility Study (FS) at the former firefighter training area, an RI/FS at the former service station, a Time-Critical Removal Action (TCRA) at the former salvage yard site, and a project to drain residual fuel from the underground gasoline pipeline. The Army completed Findings of Suitability to Lease for Blackstone Army Airfield and support facilities and for eight buildings and the surrounding property. Abatement of friable asbestos was completed in all buildings in the excess area.

## FY99 Restoration Progress

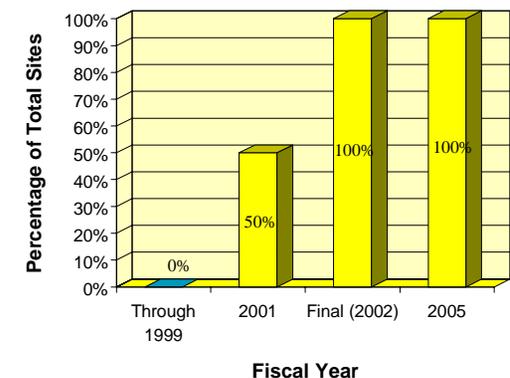
The Zone 1 and Zone 2 PA/SI documents are in draft form and near completion. A change in the sampling protocol for the PA/SIs, which was required by regulators, delayed the completion of these documents. However, the changes will provide more definitive data for decision-making purposes. The BRAC environmental office finished draining the underground gasoline pipeline and the TCRA at the former salvage yard. More than 8,000 expended shell casings were removed from the salvage yard site. No live rounds were found on site. The Army conducted seven small Removal Actions for CERCLA-regulated wastes, effectively serving as final Remedial Actions at these locations. RIs are under way at the firefighter training area and the former service station. The Army awarded RI contracts and initiated field activities at the former salvage yard (EBS-13) and the storage compound (EBS-79).

The RAB remains active in the restoration process and is discussing a project for Technical Assistance for Public Participation funding.

## Plan of Action

- Complete Finding of Suitability to Transfer and EBS for excess parcel in FY00
- Complete RI for firefighter training area and former service station in FY00
- Award RI contract and begin field activities at the motor pools (EBS-115 and EBS-124) in FY00
- Obtain closure letter from Virginia Department of Environmental Quality for the underground gasoline pipeline in FY00
- Complete Site Assessment Reports for identified petroleum release sites adjacent to pipeline in FY00
- Complete RI for former salvage yard and storage compound in FY01
- Complete BRAC cleanup work in FY02

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** AK021452215700  
**Size:** 64,470 acres  
**Mission:** Support and sustain forces assigned to U.S. Army Alaska  
**HRS Score:** 50.00; placed on NPL in May 1994  
**IAG Status:** Federal Facility Agreement signed in December 1994  
**Contaminants:** White phosphorus, PCBs, heavy metals, petroleum/oil/lubricants, solvents, dioxins, chemical agents, UXO, explosives, and pesticides  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$64.6 million  
**Estimated Cost to Completion (Completion Year):** \$23.7 million (FY2020)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2009



**Anchorage, Alaska**

## Restoration Background

Since World War II, Fort Richardson has supported combat unit training and operations. These activities contaminated soil, surface water, sediment, and groundwater with petroleum/oil/lubricants (POL), solvents, and polychlorinated biphenyls (PCBs). Parts of a 2,500-acre wetland serving as an ordnance impact area are contaminated with white phosphorus.

Preliminary Assessments and Site Inspections completed in FY83 identified 38 contaminated sites. Removal Actions have addressed PCB contamination in soil, underground storage tank sites, two drum burial sites, and more than 4,000 cubic yards of soil contaminated with volatile organic compounds and chemical agents. The Army treated 20,000 cubic yards of POL-contaminated soil by thermal desorption.

In FY95, the installation conducted Remedial Investigations (RIs) for Operable Unit (OU) A, to address three potential source areas, and for OU B, a former disposal site for chemical agent identification sets and other small munitions. The Army installed groundwater monitoring wells in the disposal area after a geophysical survey identified potential subsurface anomalies. The installation conducted a focused Treatability Study (TS) for dredging white phosphorus contamination at OU C, the Eagle River Flats Area, and completed a preliminary source evaluation in OU D at nine potential source areas.

During FY96, the Army completed groundwater sampling at OU B and OU A and submitted draft RIs and Feasibility Studies (FSs) to EPA. The installation initiated a pond draining and pumping TS for OU C. Evaluations of petroleum sites were completed. More than 20 sites required no further action with negotiated alternate cleanup levels.

In FY97, the installation completed a TS for heat-enhanced soil vapor extraction (SVE) at OU B. It completed the RI/FS for OU C and the RI for OU D. Records of Decision (RODs) were signed for OUs A and B.

In FY98, the installation completed a postwide risk assessment and incorporated the results into the OU D RI/FS report. It also drained six ponds at Eagle River Flats, thereby reducing white phosphorus levels. The installation signed a ROD for OU C. A six-phase soil heating (SPSH) system was used to remove chlorinated solvents from soil at the Poleline Road Disposal Area. The Army remediated two stockpiles of solvent-contaminated soil excavated from the same area in 1993 and 1994 using heat-enhanced SVE. The installation installed SVE systems to remove POL contamination at Ruff Road and the Building 986 POL Laboratory dry well.

The installation established a Restoration Advisory Board (RAB) in FY98.

## FY99 Restoration Progress

A design verification study for OU B was completed. This study revealed that SPSH coupled with high-vacuum extraction (HVE) remediated soil and groundwater at the site more effectively than HVE alone. Six ponds at OU C were drained, allowing continued remediation of white phosphorus in pond sediment at the OU. The installation completed remediation at the two former OU A sites undergoing SVE treatment of POL-contaminated soil. Confirmation sampling was conducted at the Building 986 SVE system. The test results revealed that the site would benefit from an additional year of passive bioventing. SVE operations at Ruff Road were also completed.

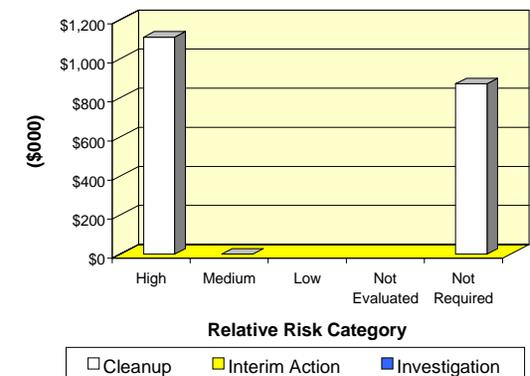
The Army Environmental Center raised significant concerns with the OU D ROD. Therefore, the installation was unable to complete and sign the ROD. The installation was delayed in designing and installing of the OU B dual-phase vacuum extraction system because system evaluation and the design verification study resulted in modifications of the six-phase soil dual-phase extraction system.

Quarterly RAB meetings occurred, including a tour of Fort Richardson's contaminated sites.

## Plan of Action

- Complete and sign the OU D ROD in FY00
- Complete final design for, and install, OU B remediation system in FY00
- Design selected Remedial Actions for OU D in FY00
- Complete bioventing at former OU A POL sites in FY00
- Conduct quarterly RAB meetings and another site tour in FY00
- Continue draining and pumping of ponds at OU C in FY00 and FY01

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** KS721402075600  
**Size:** 100,671 acres  
**Mission:** Provide training, readiness, and deployability for three component combat brigades; mobilize and deploy active and reserve component units  
**HRS Score:** 33.79; placed on NPL in August 1990  
**IAG Status:** IAG effective June 1991  
**Contaminants:** VOCs, pesticides, and lead  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$50.0 million  
**Estimated Cost to Completion (Completion Year):** \$34.4 million (FY2020)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2007



**Junction City, Kansas**

**Restoration Background**

Environmental studies from FY74 through FY86 identified a former pesticide storage facility, a dry cleaning facility and a closed landfill. Additional sites include a former firing range, two former landfill areas, an open burn/open detonation range (OB/OD), and a former fire training area.

The installation has identified five operable units (OUs): the Southwest Funston Landfill (OU1), the Pesticide Storage Facility (OU2), the Dry Cleaning Facility (OU3), the former Fire Training Area (OU4), and the 354 Area Solvent Detection Site (OU5). Groundwater contamination from OU4 was detected off post.

Remedial Investigation and Feasibility Studies (RI/FSs) began at OU1 and OU2 in FY91, and at OU3 in FY92. In FY94 to FY95, the installation stabilized the riverbank at OU1, conducted Removal Actions at OU2 and a former range site, and performed soil vapor extraction pilot tests at OU3 and OU4.

In FY96, the installation conducted soil investigations at OU4. In FY97, the Army obtained signatures on the final Records of Decision (RODs) for OU1 and OU2, which call for institutional controls. The installation performed initial field investigations at OU5. Remediation of fuel oil-contaminated utility trenches in the 6200 Family Housing Area was completed. EPA and state regulators participated in developing the Installation Action Plan.

In FY98, the Army submitted the draft Proposed Plan (PP) for OU3 to the regulators. The Army also completed an exposure control Engineering Evaluation and Cost Analysis (EE/CA) for OU4 that was followed by a public comment period and signing of the Action Memorandum (AM). An EE/CA for a groundwater

early action at OU4 also was drafted. The installation completed decision memorandums for many No Action and No Further Action sites. It also completed an EE/CA, drafted an AM, and initiated the design for riverbank stabilization at the Forsyth Landfill Area. The installation drafted an EE/CA for hot-spot ash and soil removal at the Old Southeast Funston Landfill Incinerator and for cover repairs at the Old Southeast Funston Landfill.

**FY99 Restoration Progress**

The installation submitted the groundwater modeling report for the Camp Funston Groundwater Evaluation project and completed the RI/FS work plan for OU5. The Phase I RI field investigations for OU5 were expanded because groundwater screening showed an additional source area upgradient of the planned study area. The installation completed the AM for Forsyth Landfill Area 2, but increased project costs and scheduling considerations (including protection of bald eagle habitat) delayed construction of the riverbank stabilization project. The installation completed an EE/CA and began construction of hot-spot ash and soil removal at the Old Southeast Funston Landfill Incinerator. It also began cover repairs at the Old Southeast Funston Landfill.

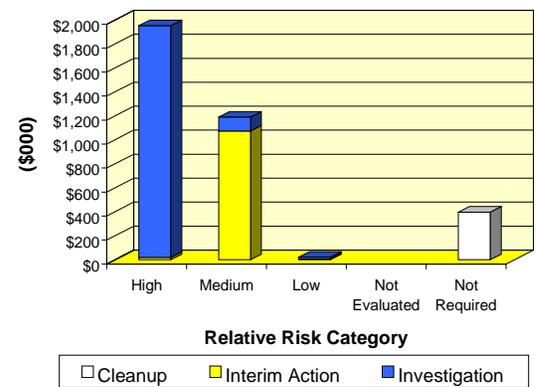
The installation did not complete the PP and the draft ROD for OU3 because of a need to further characterize the downgradient extent of alluvial groundwater contamination. The exposure control action and the early groundwater action EE/CA at OU4 were not completed because landowner permission was not given and because monitoring data showed a marked decrease in the contaminant levels, apparently due to the success of FY94–FY95 source removal and natural attenuation.

The Restoration Advisory Board reviewed and provided advice on proposed Removal Actions for the Funston Landfill and Incinerator and Forsyth Landfill Area 2 riverbank stabilization projects.

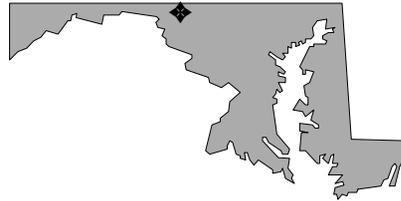
**Plan of Action**

- Complete OU4 RI in FY00
- Prepare decision document for 6200 Area fuel line site in FY00
- Complete Southeast Funston Landfill and Incinerator Removal Action construction in FY00
- Perform Forsyth Landfill Area 2 riverbank stabilization in FY00
- Perform RI surface water monitoring at OB/OD in FY00–FY05
- Complete PP and draft ROD for OU3 in FY01
- Complete OU4 FS and draft PP in FY01
- Complete OU5 RI and draft FS in FY01
- Develop Removal Action for OU5 in FY01

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** MD321022075800  
**Size:** 1,374 acres  
**Mission:** Supported Site R underground facility  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** UXO, heavy metals, and asbestos  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$3.4 million  
**Estimated Cost to Completion (Completion Year):** \$5.9 million (NA)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** NA



*Fort Ritchie, Maryland*

**Restoration Background**

In July 1995, the BRAC Commission recommended that Fort Ritchie be closed. The installation closed on September 30, 1998.

Environmental contamination at Fort Ritchie resulted from underground storage tanks (USTs), a mortar firing range, and a skeet range. The closed mortar range may contain unexploded ordnance (UXO). Housing units and administrative buildings contain asbestos and lead-based paint.

Interim Actions have included removal or replacement of USTs, relining of sewer lines with plastic, removal of falling lead paint and high-hazard friable asbestos, and closure of an incinerator. The Army also cleaned up a gasoline spill in FY92.

Measures to improve the decision-making process and communication at the installation include forming a planning group, conducting meetings at the town hall, conducting quarterly in-progress reviews, establishing hot lines to answer employee questions, and relaying installation updates to the local news media.

In FY96, the Army formed a BRAC cleanup team (BCT) to investigate and ensure cleanup of all areas of concern and allow transfer of all BRAC parcels. The commander also formed a Restoration Advisory Board (RAB). The Environmental Baseline Survey was completed. The installation's supporting U.S. Army Corps of Engineers (USACE) district negotiated a Total Environmental Restoration Contract for all restoration work. Work began on an Environmental Impact Statement (EIS).

In FY97, the installation completed the UXO archive search with the help of USACE, St. Louis District. The installation initiated hazardous, toxic, and radioactive waste (HTRW) sampling.

In FY98, the installation completed a revised draft Site Inspection report and BRAC Cleanup Plan version 2. It also completed UXO sampling, the UXO interim characterization report, and additional HTRW sampling. In addition, the installation signed a programmatic agreement for historic district preservation and completed the EIS and a Record of Decision. The installation completed a Finding of Suitability to Lease for all non-UXO property.

**FY99 Restoration Progress**

The installation completed Feasibility Studies for the Auto Craft Shop, the Administrative Area, the former Hospital Area, and the Wise Road Disposal Area. A groundwater monitoring report was completed for the former gas station. The Army completed Removal Actions at 19 UST sites, the incinerator, and the Reservoir Road area to expedite cleanup. An Engineering Evaluation and Cost Analysis (EE/CA) was completed for the Directorate of Public Works maintenance area and the incinerator area, and a final EE/CA was published for the ordnance and explosives impact area. The installation developed work plans and sampling and analysis plans for the golf shop, lakes, and the motor pool.

The Army made more than 300 acres (all non-UXO property) available for lease, but there were no transfers in FY99 because of ongoing environmental evaluation. The Local Redevelopment Authority wishes to have all property issues resolved before it takes ownership of any property.

**Plan of Action**

- Continue sampling at the golf shop and the motor pool in FY00
- Initiate ordnance and explosives removal in FY00
- Complete a Finding of Suitability for Early Transfer in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**

Fort Ritchie has no environmental restoration activities. Funding shown is for compliance and UXO clearance activities. All environmental compliance activities are scheduled for completion by FY02. All UXO activities are scheduled for completion by FY03.

**FFID:** IL521402083800  
**Size:** 712 acres  
**Mission:** Provided administrative and logistical support; nonexcess property currently used as Army Reserve installation and Navy Housing Area  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Fuel hydrocarbons, PAHs, metals, and UXO  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$35.8 million  
**Estimated Cost to Completion (Completion Year):** \$21.1 million (FY2033)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003



*Fort Sheridan, Illinois*

**Restoration Background**

In December 1988, the BRAC Commission recommended the closure of Fort Sheridan. The Fort’s missions have included cavalry and infantry training, NIKE systems maintenance, and administrative and logistical support. Currently, the Army uses 104 acres for an Army Reserve installation.

Sites include landfills, pesticide storage areas, hazardous material storage areas, underground storage tanks (USTs), polychlorinated biphenyl (PCB)-containing transformers, and unexploded ordnance (UXO) areas. Petroleum hydrocarbons, volatile organic compounds (VOCs), and polyaromatic hydrocarbons (PAHs) affect groundwater and soil. Early actions have included removal of USTs and contaminated soil.

Remedial Investigation and Feasibility Study (RI/FS) activities, beginning in FY90, identified groundwater and soil contamination at two gas stations, seven landfills, and the coal storage areas.

In FY94, an installation survey identified UXO at the former artillery range at the north end of the Fort. The installation completed an Environmental Baseline Survey (EBS), and the commander formed a BRAC cleanup team, which completed the version 1 BRAC Cleanup Plan (BCP).

FY95 actions included removal of contaminated soil from Building 208. The installation also began an Interim Action to close Landfills 6 and 7. The Army approved a Land Reuse Plan prepared by the Local Redevelopment Authority. The installation formed a Restoration Advisory Board (RAB).

In FY96, the Army completed a Time-Critical Removal Action involving removal of contaminated sediment from Buildings 43 and 368. The installation completed Phase II and Phase III RI fieldwork at the excess property, performed a UXO clearance, and completed version 2 of the BCP. The Army removed several USTs on excess property and conducted asbestos abatement for excess-area buildings. The Army also completed a radiological closeout survey.

In FY97, the Army completed the decision document for the Landfill 6 and 7 Interim Remedial Action (IRA). It began IRA construction and initiated a Non-Time-Critical Removal Action (NTCRA) for the coal storage areas and a blacksmith shop on excess property. In addition, the installation prepared an RI, a Proposed Plan (PP), and a No Action decision document for Landfills 3 and 4. The Army conducted lead-based paint hazard abatement for excess property. RI reports were prepared for the remaining excess property. The Army completed a site-specific EBS for property transfers and leases, and Phase II RI fieldwork on non-surplus property.

In FY98, the installation prepared two RI reports for the remainder of the excess property and an RI report for non-surplus property. It also completed a No Action decision document for portions of the excess property. The installation completed the NTCRA at the coal storage areas and the former blacksmith shop and completed UXO clearance at the former rifle range.

**FY99 Restoration Progress**

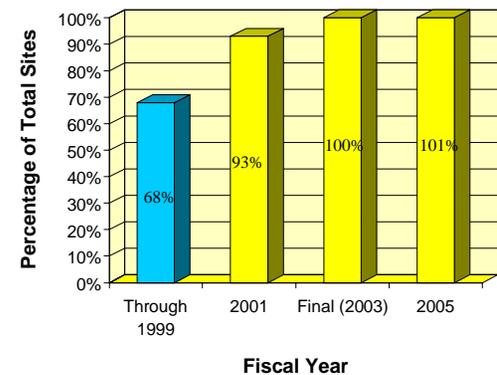
The installation prepared a No Action decision document for the remainder of the excess property and an EBS and Finding of Suitability to Transfer for excess property transfers. An RI, an FS, and No Action PP reports for non-surplus property were completed. The construction of IRA continued at Landfills 6 and 7, including completion of shoreline erosion protection systems, leachate collection system, and final landfill grading.

The RAB submitted a Technical Assistance for Public Participation application for installation approval.

**Plan of Action**

- Complete Phase III RI for non-surplus property sites in FY00
- Initiate Remedial Design for non-surplus property Phase II action sites in FY00
- Continue IRA at Landfills 6 and 7 in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** NY221022089700  
**Size:** 175 acres  
**Mission:** Provided administrative and logistical support and housing; nonexcess property currently used as an Army Reserve enclave.  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Fuel hydrocarbons and metals  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$0.9 million  
**Estimated Cost to Completion (Completion Year):** \$0 (FY1998)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY1998  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY1998



Bayside, New York

**Restoration Background**

In 1995, the BRAC Commission recommended closing Fort Totten except for use as an enclave for the U.S. Army Reserve.

In 1989, the installation initiated a broad Installation Restoration Program. The Army conducted several preliminary studies, including groundwater sampling at the former landfill area and soil sampling throughout the installation. The installation completed several Interim Remedial Actions and removals. The actions include removing and replacing polychlorinated biphenyl (PCB)-containing transformers, removing and replacing tanks, and removing petroleum-contaminated soil.

In FY95, the installation initiated an Environmental Baseline Survey (EBS), which identified seven areas on BRAC property that required further evaluation. In FY96, the installation submitted a draft EBS report to the regulatory agencies for review. An unexploded ordnance archive search was performed, along with a limited field survey.

In FY97, the Army completed the EBS and began an Environmental Investigation. The BRAC cleanup team (BCT) was able to expedite document review by implementing a 15-day review process. The BCT coordinated with Restoration Advisory Board (RAB) members in making decisions. The Army identified 100 acres of CERFA-uncontaminated acreage at the installation for transfer. The appropriate regulatory agencies concurred with this designation.

In FY98, the Army completed cleanup of the Old Fort Area. The installation tested four USTs for leaks and determined that removal was not necessary. It also determined that further monitoring of groundwater wells was unnecessary. The installation received regulatory concurrence on the remainder of the CERFA-uncontaminated acreage.

**FY99 Restoration Progress**

The EBS, which supports a Finding of Suitability to Transfer (FOST), is in its final draft version. The installation will complete it (along with the FOST) after 11 fuel oil underground storage tanks (USTs) are removed to meet the requirements of the reuse plan. This plan calls for demolition of the buildings that these fuel tanks service. Removal of the tanks is also necessary to meet state regulatory requirements for permanent closure of temporarily out-of-service USTs.

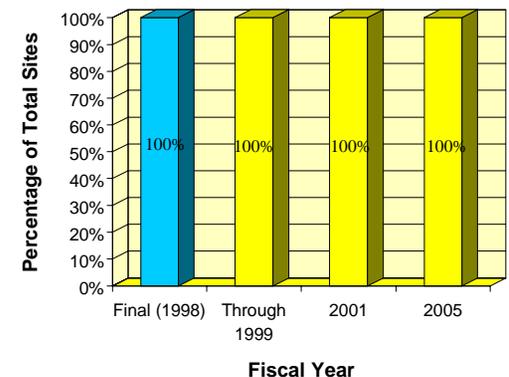
A programmatic agreement to address cultural resource issues was revised to reflect the comments of the State Historic Preservation Office (SHPO), the New York City Landmarks Preservation Commission (LPC), the City of New York, the Department of Education, and the National Park Service. These entities will take part in the Public Benefit Conveyance process in order to transfer the property. The final programmatic agreement was delayed due to disagreements on details about the covenants and on how jurisdiction would be divided between the SHPO and the LPC. When these issues are resolved, the final document will be signed.

The Army completed a final Environmental Assessment (EA) for the disposal and reuse action, as required by the National Environmental Policy Act. The EA resulted in a finding of no significant impact.

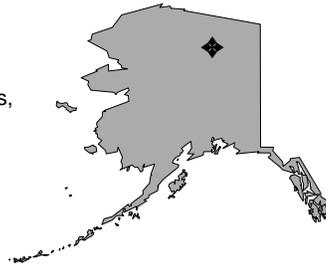
**Plan of Action**

- Remove 11 fuel oil USTs in FY00
- Complete the FOST and supporting EBS in FY00
- Complete and sign cultural resources programmatic agreement in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** AK021452242600  
**Size:** 917,993 acres  
**Mission:** House the Headquarters of the 6th Light Infantry Division  
**HRS Score:** 50.00; placed on NPL in August 1990  
**IAG Status:** Federal Facility Agreement signed in November 1991  
**Contaminants:** Petroleum/oil/lubricants, heavy metals, solvents, pesticides, paints, UXO, ordnance compounds, and chemical agents  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$100.4 million  
**Estimated Cost to Completion (Completion Year):** \$50.8 million (FY2023)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2003



**Fairbanks, Alaska**

## Restoration Background

Since World War II, Fort Wainwright has housed light infantry brigades, most recently the 1st Brigade, 6th Infantry Division (Light).

Studies at the installation identified a chemical agent dump, drum burial sites, underground storage tanks, a railroad car off-loading facility, an open burning/open detonation area, a former ordnance disposal site, solvent groundwater plumes, petroleum/oil/lubricant (POL) plumes, and pesticide-contaminated soil. The installation divided sites into five operable units (OUs).

The Army conducted two Interim Actions in FY93 and FY94 to remove drums and contaminated soil. In FY93, the installation completed Site Inspections at 30 sites, 15 of which required no further action. In FY94 and FY95, the installation conducted Remedial Investigation and Feasibility Study (RI/FS) activities, including characterization of POL and solvent groundwater plumes and fieldwork for a former landfill. The chemical agent dump site was addressed separately under an interim Record of Decision (ROD).

In FY96, the Army and regulators signed RODs for groundwater contamination in OU3 and soil and groundwater contamination in OU4. The OU4 remedy specifies natural attenuation of groundwater contamination, capping of the inactive portion of the landfill, and in situ treatment of coal storage yard soil and air sparging (AS) of associated groundwater. Remedial Design (RD) began for all sites addressed under those RODs. The Army completed the fire training pits (OU4) Removal Action and closed the site.

In FY97, the installation completed the FS, Proposed Plan, and ROD for OU1 and initiated RD for OU1 and OU2. The Army and

regulators signed the ROD for OU2. The OU4 RD was completed, the inactive portion of the landfill was capped, and the treatment system was installed at the coal storage yard. The installation completed the draft FS and initiated Treatability Studies (TSs), including installation of a horizontal well, at OU5.

In FY98, systems at OU3 were expanded because additional contamination was discovered, and OU4 achieved construction complete status. The installation began additional TSs at OU5. Removal of an old retaining structure at OU5 resulted in removal and treatment of 650 cubic yards of contaminated soil and 1,700 gallons of product.

The installation established a Technical Review Committee in FY90 and a Restoration Advisory Board (RAB) in FY97. The installation sends out quarterly restoration newsletters to keep the public informed of cleanup activities.

## FY99 Restoration Progress

The OU5 ROD was signed, and RD began. The installation continued the Chena River Aquatic Assessment Program on a reduced schedule. Petroleum-contaminated sites continue to be remediated under state agreement. Remediation progressed at OU1; all parties have reviewed the draft Remedial Action Report (RAR). The RAR for OU2 was finalized. Bottled water continued to be provided to neighboring churches.

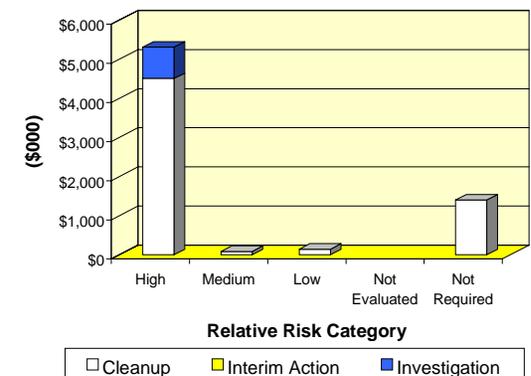
The horizontal well AS and soil vapor extraction (SVE) augmented system at OU5 and the sparge curtain are considered treatment in place because of their success in removing contamination. Inspection verified the integrity of the landfill cap at OU4 after its first full year in place. The installation continued a design verification study at OU3, which showed a greater area of

contamination than previously identified, requiring technology changes and increasing the cost for completing work at the site. An AS curtain was installed at the river to treat potential contamination moving off post. At OU2, treatment continued at the Defense Reutilization and Marketing Office yard to address benzene contamination. At OU1, investigation-derived waste soil containing pesticides is being treated by phytoremediation.

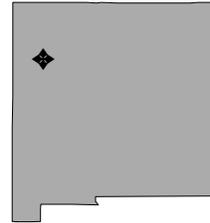
## Plan of Action

- Finalize RARs for OU1 in FY00
- Obtain long-term monitoring plan agreements from the state on petroleum-contaminated sites in FY00
- Complete explanation of significant differences for OU3 for extended amount of contamination FY00
- Complete operations and maintenance reports for OU4, OU1, and OU2 in FY00
- Continue Chena River Aquatic Assessment Program in FY00
- Continue remediating petroleum-contaminated sites under state agreement in FY00-FY01
- Continue to provide bottled water to neighboring churches in FY00-FY01
- Complete RD at OU5 in FY00 and attain construction complete status in FY01
- Complete RARs for OU3 and OU5 in FY01

## FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** NM621382097400  
**Size:** 22,120 acres  
**Mission:** Stored, shipped, and received ammunition components and disposed of obsolete or deteriorated explosives and ammunition  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Explosive compounds, UXO, PCBs, pesticides, heavy metals, asbestos, and lead-based paint  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$28.2 million  
**Estimated Cost to Completion (Completion Year):** \$24.1 million (FY2003)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003



*Gallup, New Mexico*

## Restoration Background

From 1949 to 1993, Fort Wingate stored, tested, and demilitarized munitions. Past practices deposited ordnance-related waste on and off the installation. Restoration efforts have focused on land affected by unexploded ordnance (UXO); the Open Burning and Open Detonation (OB/OD) Area; soil at a pistol range; pesticide-contaminated soil at Building 5; explosives-contaminated soil at the former Bomb Washout Plant Lagoons; polychlorinated biphenyl (PCB) contamination in Buildings 501 and 11; demolition of the former Bomb Washout Plant (Building 503); and three unpermitted solid waste landfills.

In FY94, the installation formed a BRAC cleanup team and a Restoration Advisory Board. In FY95, the installation revised the BRAC Cleanup Plan. The Army conducted a Removal Action to clear UXO from Indian tribal lands adjacent to the OB/OD Area. Remedial Designs (RDs) were completed for the pistol range and for Building 5 soil.

In FY96, the installation conducted additional fieldwork for a Remedial Investigation and Feasibility Study (RI/FS) and completed field investigations at the three unpermitted solid waste landfills. Groundwater contamination was detected at the former TNT Washout Plant.

In FY98, the installation completed RDs for the Group C and Central Landfills. The Army remediated PCB-contaminated soil at Buildings 536 and 537 and excavated and disposed of pesticide-contaminated soil from Building 5. The field program confirmed the extent of explosives contamination in groundwater and defined the northern extent of nitrite and nitrate groundwater contamination at the former

TNT Washout Plant. The Army installed monitoring wells at the Bomb Washout Plant site and the OB/OD unit. The installation demolished Buildings 501 and 503 and disposed of PCB-contaminated building materials. The process equipment was recycled, and the building materials were disposed of off site. By the end of FY98, all sites outside the OB/OD unit except Building 11 and Functional Test Range 1 (FTR1) had been investigated.

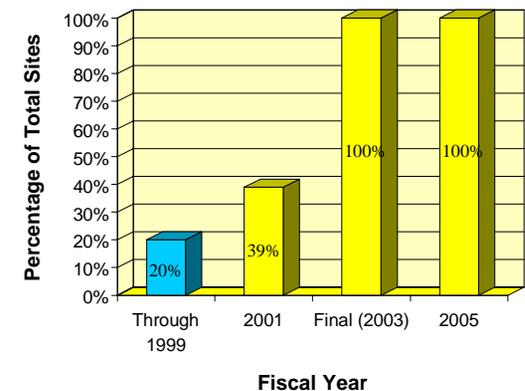
## FY99 Restoration Progress

The installation completed asbestos abatement in 8 buildings and an Assessment Survey Report on 29 buildings. The Human Health and Ecological Baseline Risk Assessments are awaiting regulatory approval. The installation completed a design plan for Building 11, and the PCB investigation at the site determined that no PCBs are being released into the environment. The installation completed the investigation at the disposal pits at FTR1 and an installationwide surface water assessment, which was submitted to the regulators for review. The Army submitted a no further action (NFA) petition to the regulators for the suspected petroleum, oil, and lubricants site. The UXO "kickout" clearance was completed for the southeastern and southern side of the OB/OD site. The Army will implement additional land use controls to facilitate transfer of southern area properties at Fort Wingate. The installation developed and submitted a draft application for a post-closure care permit. The Group C and Central Landfills were remediated, contoured, and reseeded. The Western Landfill design was completed. A Remedial Action (RA), consisting of removal of contaminated soil, was completed at the Pistol Range and the Coal Tar Storage Site. A contract was awarded for demolition of Building 29.

## Plan of Action

- Conduct Human Health and Ecological Baseline Risk Assessments in FY00
- Petition for NFA at specific sites in FY00
- Develop land use controls to facilitate transfer of installation's southern properties in FY00
- Revise and submit post-closure permit application in FY00
- Conduct soil background study in FY00
- Complete RAs at Group C and Central Landfills in FY00 and at Western Landfill in FY01
- Complete design plan for remediating TNT pits in FY01
- Remediate PCBs in Building 11 in FY01
- Complete investigation of septic tanks in FY01
- Complete RI and RD for Building 537 and RI for Building 9 in FY01

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** CA921402303800  
**Size:** 669 acres  
**Mission:** Conducted reserve training  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Metals, VOCs, SVOCs, fuel hydrocarbons, PCBs, PAHs, and pesticides  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$25.3 million  
**Estimated Cost to Completion (Completion Year):** \$2.2 million (FY2002)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2002



*Novato, California*

## Restoration Background

In December 1988, the BRAC Commission recommended closure of about 700 acres at Hamilton Army Airfield, as well as relocation of the airfield's mission. There are eight areas at the installation: a former petroleum/oil/lubricant (POL) hill area; a hospital complex; five "Out Parcels" (A-2, A-3, A-4, A-5, and A-6); and the main airfield parcel. Out Parcels A-2, A-3, A-5, and A-6 were transferred to the City of Novato, California, in 1996.

Investigations at the main airfield parcel addressed tidal wetlands, a perimeter drainage ditch, underground storage tanks (USTs), burn pits, aboveground storage tanks, onshore and offshore fuel lines, a former sewage treatment plant, a pump station, an aircraft maintenance and storage facility, the east levee construction debris disposal site, a POL area, and a revetment area. Metals, petroleum hydrocarbons, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs) are the main contaminants of concern.

In FY94, the installation formed a BRAC cleanup team (BCT) and a Restoration Advisory Board. To facilitate cleanup, the BCT conducted a bottom-up review of the installation's restoration program.

During FY95, the installation completed a draft Environmental Impact Statement. Additional Remedial Investigation (RI) work continued at five sites. Installation cleanup actions included removal of USTs and soil contaminated with petroleum constituents and PCBs.

In FY96, the Army continued RI and Feasibility Study (FS) activities on the main airfield BRAC parcel. In addition, the local

reuse authority selected a wetlands reuse scenario for the BRAC airfield parcel. In FY97, the Army removed two USTs.

In FY98, the comprehensive RI report was submitted to the regulatory agencies for review. An Interim Removal Action work plan was prepared, and fieldwork was initiated for several sites that were identified in the RI report. The Army completed the design for the onshore fuel line remedy and removed the fuel line. The offshore fuel line was flushed, sealed, and abandoned in place.

## FY99 Restoration Progress

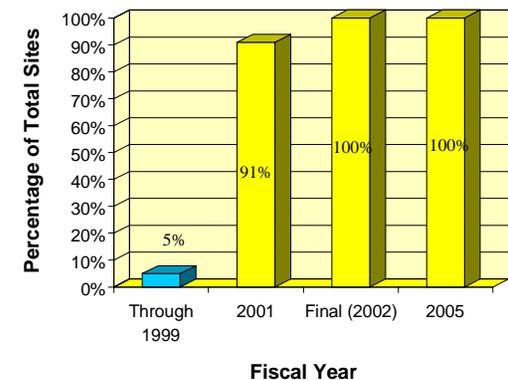
The installation completed a fate-and-transport study to justify leaving some remaining onshore fuel line contamination in place. The offshore fuel line closure report was approved by the regulators, and no further action is required on this site.

The Army initiated Removal Actions for several sites inside of the perimeter levee but did not complete them due to the endangered species breeding season, scheduling of other work, and the discovery of additional contamination during removals. The installation was unable to complete the planned risk assessment because of a lengthy regulatory review and comment resolution process. Completion of the planned Focused Feasibility Study (FFS) is awaiting completion of the risk assessment. Minor remaining contamination delayed the Parcel A-4 closure report, which the installation addressed in a Risk-Based Corrective Action report. The POL hill closure report was submitted to the regulators, who requested additional sampling. The Army submitted the closure report for the hospital area to the regulators, but it did not complete it, because of a lengthy regulatory review process.

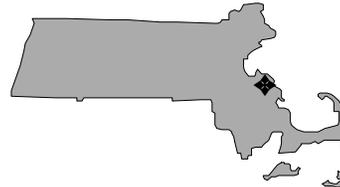
## Plan of Action

- Complete Interim Removal Actions for airfield sites in FY00
- Issue a Record of Decision (ROD) for airfield sites in FY00 and conduct long-term monitoring (LTM) if required
- In FY00, complete BRAC activities, except for LTM, for airfield sites
- Complete the risk assessment, the FFS, and fate-and-transport study documentation for airfield sites in FY00
- Complete closure reports for Parcel A-4, the POL hill, and the hospital area in FY00
- Prepare a sampling plan for coastal salt marsh sites in FY00
- Prepare an FFS and a ROD for coastal salt marsh sites in FY01

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** MA121402280500  
**Size:** 125 acres  
**Mission:** Served as a Naval Ammunition Depot and Army Reserve Center  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Petroleum/oil/lubricants, heavy metals, VOCs, PCBs, and asbestos  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$1.3 million  
**Estimated Cost to Completion (Completion Year):** \$0.2 million (FY2001)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2001



*Hingham, Massachusetts*

## Restoration Background

In July 1995, the BRAC Commission recommended closure of Hingham Annex, a subinstallation of Devens Reserve Forces Training Area. The Annex is now inactive. Studies have identified the following site types at the Annex: underground storage tanks (USTs), aboveground storage tanks (ASTs), spill sites, waste disposal areas, sewage filter beds, storage areas for polychlorinated biphenyl (PCB)-containing transformers, and areas with asbestos-containing materials (ACM). Investigations have determined that groundwater and soil are contaminated with volatile organic compounds (VOCs) and heavy metals.

Interim Actions at the installation include removal of USTs; ASTs; an oil-water separator; contaminated soil, including contaminated soil from an area that held PCB-containing electrical transformers; and ACM (building insulation and roofing tiles). The Army also used an innovative technology, asphalt batching, to remediate contaminated soil.

In FY93, the Army formed a BRAC cleanup team (BCT). During FY95, a Phase II Screening Site Inspection (SSI) was completed. The state regulatory agency allowed the installation to proceed with removal of soil contaminated with petroleum/oil/lubricants (POL), pending revision of the Human Health and Ecological Risk Assessments. In FY96, the installation removed the POL-contaminated soil. The installation conducted an Environmental Baseline Survey and received comments on the draft report. The BCT completed the BRAC Cleanup Plan (BCP). Public interest has been insufficient to support formation of a Restoration Advisory Board.

The Army completed the final BCP in FY97. Seven early actions were completed for asbestos at the Building 25 AST, the Building 25 Transformer Area, the Waste Disposal Area, the Building 54 Transformer Area, the Building 90 AST, and the Building 90 PCB Transformer. The installation conducted an unexploded ordnance archives search to support a recommendation of no further action and prepared a report on the results. It also performed release abatement measures while conducting a Phase II Comprehensive Site Assessment (CSA) and an SSI.

In FY98, the installation submitted the Human Health Risk Assessment to state regulators for review. A toxicity study was completed at two sites to address potential risks identified in an Ecological Risk Assessment. The installation also removed contaminated soil from seven sites. The installation removed soil contaminated with petroleum at three sites. A NEPA survey and a Cultural Resources Investigation were completed.

## FY99 Restoration Progress

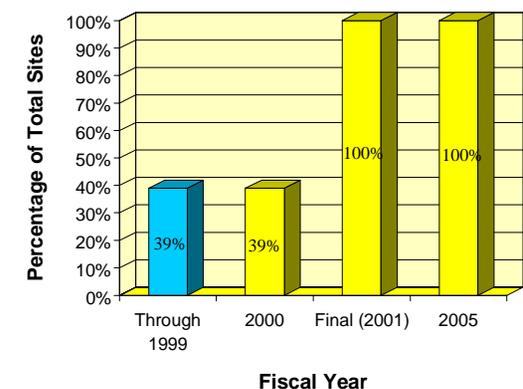
The installation completed a Removal Action at one POL-contaminated site, release abatement measures, and the final Phase II SSI, and is now attempting to resolve asbestos and solid waste issues with state regulators. The proposed CERFA-uncontaminated acreage has not yet received concurrence from regulatory agencies. The installation also completed topographical surveys and asbestos abatement.

The BCT worked on the CSA, provided oversight for the Asbestos Abatement Program, and worked with the local reuse authority to facilitate building demolition efforts.

## Plan of Action

- Resolve asbestos and solid waste issues with state regulators in FY00
- Propose acreage as CERFA-uncontaminated and receive concurrence from appropriate regulatory agencies in FY00
- Complete additional groundwater characterization with installation of additional monitoring wells (Sites SA2, SA3, SA4/7, SA10, SA11, SA12, SA18, SA22) in FY00
- Complete additional work to identify source(s) of benzene contamination at SA22 in FY00
- Begin Removal Action at SA25 in FY00
- Complete Phase II CSA under the Massachusetts Contingency Plan in FY00
- Prepare a Finding of Suitability to Transfer for CERFA-uncontaminated acreage in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** IA721382044500  
**Size:** 19,024 acres  
**Mission:** Load, assemble, and pack munitions  
**HRS Score:** 29.73; placed on NPL in August 1990  
**IAG Status:** IAG signed in December 1990  
**Contaminants:** Explosives, heavy metals, and VOCs  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$50.4 million  
**Estimated Cost to Completion (Completion Year):** \$55.4 million (FY2035)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2014



Middletown, Iowa

## Restoration Background

In 1941, the Army constructed the Iowa Army Ammunition Plant to load, assemble, and pack various conventional ammunition and fusing systems. During operations, industrial process wastewaters and by-products were disposed of at the installation. Site types include surface impoundments, production areas, landfills, and a fire training pit. Soil and groundwater contamination resulted primarily from disposal of explosives and heavy metal-containing wastes directly on soil. The installation also identified small amounts of contamination by volatile organic compounds (VOCs).

Environmental studies have identified 45 restoration sites. Of those sites, 40 require further action. In FY92, Remedial Investigation and Feasibility Study (RI/FS) activities began. In FY96, the installation completed its RI; however, supplemental RI efforts have since been initiated. Restoration activities through FY96 included closing one cell in the inert landfill, removing aboveground treatment tanks, removing lead-contaminated soil from a production line, and cleaning up an abandoned coal storage yard. The installation funded a project connecting local residences to a public water supply because of off-post environmental impacts. Other restoration activities involved excavation and off-site incineration of pesticide-contaminated soil and excavation of explosives-contaminated sumps. The installation has three operable units (OUs): a soil OU (OU1), a groundwater OU (OU3), and an overall OU (OU4).

In FY97, the Army removed more than 80,000 cubic yards of contaminated soil from the former Line 1 impoundment area and the Line 800 lagoon. It also created wetlands and began phytoremediation to clean up residual contamination.

In FY98, the Army completed two studies for removal of explosives contamination from soil. The U.S. Army Environmental Center completed the bioslurry demonstration, and the U.S. Army Corps of Engineers completed humic polymer testing. Soil removal at the former Line 1 impoundment area and the Line 800 lagoon was completed. The installation capped five landfill cells. Soil removal also was completed at the North Burn Pads. The installation initiated an off-post groundwater study and supplemental RI groundwater activities around the Line 800 lagoon. It also completed an interim soil Record of Decision (ROD) and a ROD addressing soil remediation.

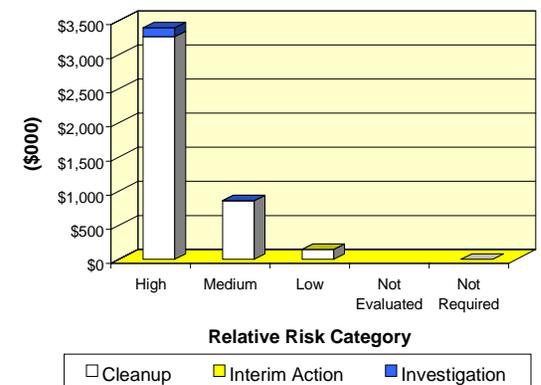
## FY99 Restoration Progress

The installation completed soil removal at the East Burn Pads, the North Burn Pads Landfill, and the fire training pit. It completed treatment of soil from the fire training pit through use of low-temperature thermal desorption. The installation also continued the off-post groundwater study and the supplemental RI activities around the Line 800 pink water lagoon. The OU3 ROD will be delayed until these investigations are complete. Phytoremediation monitoring continues; data show that the contaminant level in the area undergoing this treatment is decreasing. An additional restoration site was designated to better manage the site and cleanup activities.

## Plan of Action

- Complete cap extension at the Inert Disposal Area in FY00
- Complete soil removal at Lines 5A/5B in FY00
- Complete soil removals at the West Burn Pads in FY00
- Perform off-post groundwater study and RI activities for the Line 800 pink water lagoon

## FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** IN521382045400  
**Size:** 55,270 acres  
**Mission:** Performed production acceptance testing of ammunition, weapons, and their components  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Solvents, petroleum products, VOCs, PCBs, heavy metals, depleted uranium, and UXO  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$23.3 million  
**Estimated Cost to Completion (Completion Year):** \$16.9 million (FY2006)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2004



**Madison, Indiana**

### Restoration Background

In December 1988, the BRAC Commission recommended closure of the Jefferson Proving Ground in Madison, Indiana, and relocation of the installation’s mission to Yuma Proving Ground in Arizona. The installation was closed on September 30, 1995.

Sites identified during environmental studies included landfill and disposal areas, hazardous waste storage areas, fire training areas, underground storage tanks (USTs), and buildings with asbestos-containing materials. Contaminants at the installation include depleted uranium, heavy metals, unexploded ordnance (UXO), solvents, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and petroleum hydrocarbons. Interim Actions include installation of a landfill cap, removal of USTs, and excavation of contaminated soil.

In FY94, the installation formed a BRAC cleanup team (BCT) and a Restoration Advisory Board (RAB). The installation submitted the draft Phase I Remedial Investigation (RI) report for sites south of the firing line. In FY95, the installation removed 18 USTs, treated contaminated soil in Bioremediation Cell No. 1, and constructed a landfill cap at Gate No. 19. The installation also surveyed and decontaminated depleted uranium support facilities.

In FY96, the installation submitted Interim Remedial Action (IRA) work plans for 10 sites to the regulatory agencies and began cleanup activities. The installation also initiated UXO removal operations and long-term monitoring of the landfill at Gate No. 19. The Army completed Finding of Suitability to Transfer (FOST) and Finding of Suitability to Lease reports for parts of the installation, in conjunction with the Record of Decision. The installation issued an updated Community

Relations Plan. Phase II RI data collection began in FY96 and continued into FY97.

In FY98, the installation completed the Phase II RI report and submitted it for regulatory review. The installation also completed field studies for an Ecological Risk Assessment. Relative Risk Site Evaluations are under way for the remaining 10 sites.

### FY99 Restoration Progress

The installation implemented the open burning (OB) unit clean closure plan with the installation of additional groundwater monitoring wells and the acquisition of groundwater samples and soil samples. The planned closure of the OB unit is awaiting regulatory concurrence. A UXO statement of clearance was signed for the airfield area, and the UXO clearance fieldwork for the eastern parcel was completed. Phase II of the Engineering Evaluation and Cost Analysis (EE/CA) for UXO clearance on the western parcel was completed. The Army completed a FOST for approximately 1,200 acres and submitted two additional FOSTs for public review.

Changes in state program managers and lack of response from federal regulators have delayed the signature of decision documents supporting RI and Feasibility Study (FS) requirements.

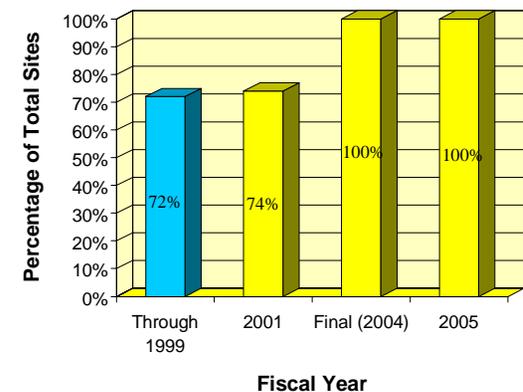
While the BCT awaits regulatory concurrence on Phase II RI data and the open burning unit closure plan, the installation has decided to continue with the fieldwork. The installation is providing new FOSTs as property becomes available and will issue an EE/CA for public comment concerning UXO clearance of the western parcel of the installation.

The installation commander approved the RAB’s Technical Assistance for Public Participation (TAPP) application. The TAPP contract will provide RAB community members with technical review and training services concerning the RI. The TAPP contractor provided a report on the Phase II RI to the RAB.

### Plan of Action

- Obtain regulatory concurrence on Phase II RI data in FY00
- Sign decision document(s) to eliminate site(s) from the RI in FY00
- Complete FS for solvent sites in FY00
- Obtain regulatory concurrence for closure of open burning unit in FY00
- Continue to prepare technical memorandums through FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** IL521382046000  
**Size:** 23,544 acres  
**Mission:** Manufacture, load, assemble, and pack munitions and explosives  
**HRS Score:** 35.23 (Loading, Assembling, and Packing Area); placed on NPL in March 1989  
 32.08 (Manufacturing Area); placed on NPL in July 1987  
**IAG Status:** IAG signed in June 1989  
**Contaminants:** Explosives, heavy metals, VOCs, and PCBs  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$39.0 million  
**Estimated Cost to Completion (Completion Year):** \$121.5 million (FY2010)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2009



### Wilmington, Illinois

### Restoration Background

The Army constructed Joliet Army Ammunition Plant (JOAAP) in the early 1940s. It was one of the largest munitions and explosives manufacturers in the Midwest. Installation operations included manufacturing of explosives and loading, assembling, and packing (LAP) of munitions for shipment. The 14,385-acre LAP Area and the 9,159-acre Manufacturing Area have been placed on the National Priorities List (NPL).

Environmental studies conducted between FY78 and FY88 identified 53 sites. Prominent site types in the LAP and Manufacturing Areas include ash piles, landfills, open burning and open detonation areas, and surface impoundments. The installation consolidated all sites into two operable units, one that addresses groundwater contamination and another for contamination of soil.

During a FY85 Interim Remedial Action (IRA), the Army removed more than 7 million gallons of explosives-contaminated water from the Red Water Lagoon. After disposing of the water off site, the Army dredged the lagoon, removed the sludge and liner, and covered the entire area with a clay cap. IRA activities in FY93 included capping two ash piles.

Phase II Remedial Investigations (RIs) were completed for the Manufacturing Area (FY94) and for the LAP Area (FY95) and approved by the regulatory agencies. In FY94, the Joliet Arsenal Citizen Planning Commission developed and approved a future land use plan for the installation. In FY95, the installation formed a Restoration Advisory Board (RAB).

In FY96, more than 1,000 exterior-mounted, oil-filled electrical switches that contained polychlorinated biphenyls (PCBs) and 3

oil pits from the explosives burning ground were removed from the installation. The installation also removed petroleum- and PCB-contaminated soil from Site L6.

In FY97, the Army completed Feasibility Studies at all active study sites at the installation. The installation transferred more than 15,000 acres of land to the Forest Service, and 982 acres to the Department of Veterans Affairs. The installation partnered with EPA and U.S. Army Corps of Engineers Waterways Experiment Station (USAWES) on a groundwater natural attenuation and phytoremediation study, including state and federal remedial project managers in the review of internal draft reports. In FY98, the installation released an installationwide Proposed Plan and held a public presentation and comment period. It also began Remedial Design (RD) for soil and groundwater remediation.

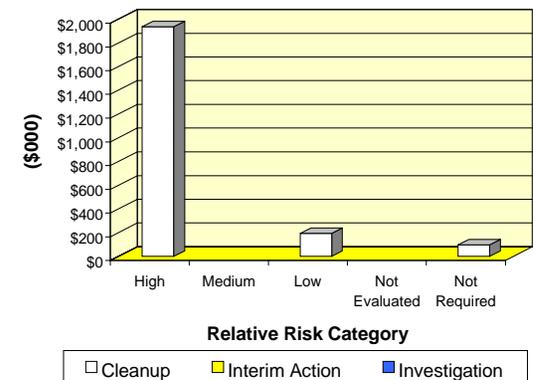
### FY99 Restoration Progress

Joliet completed the installationwide Record of Decision (ROD), and approved the associated RD and Remedial Action work plans. The installation completed remediation of all but one PCB-contaminated site, finished excavation of the Trinitrophenylmethylamine (TETRYL) Production Area, and initiated a groundwater remedy. Excavation of the TNT Production Area is 50 percent complete. The installation chose bioremediation as the cleanup technology after completing the field demonstrations. The transfer of land to the State of Illinois was delayed because of continuing negotiations, but 2,000 acres was offered for industrial park reuse. Progress continued on the land transfer to Will County.

### Plan of Action

- Complete excavation of the TNT Production Area, the Redwater Treatment Area, Group 4, and Test Site in FY00
- Initiate treatment of stockpiled, explosives-contaminated soil in FY00
- Conduct unexploded ordnance sweeps in FY00
- Continue groundwater remedy in FY00
- Convey 455 acres to Will County for reuse as a landfill in FY00
- Finalize interim components of ROD in FY01
- Convey additional land to State of Illinois in FY01

### FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** MO721382048900  
**Size:** 3,935 acres  
**Mission:** Manufacture, store, and test small-arms munitions  
**HRS Score:** 33.62; placed on NPL in July 1987  
**IAG Status:** IAG signed in September 1989  
**Contaminants:** Explosives, heavy metals, solvents, and petroleum/oil/lubricants  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$56.1 million  
**Estimated Cost to Completion (Completion Year):** \$83.4 million (FY2028)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2011



### Independence, Missouri

### Restoration Background

Operations at the Lake City Army Ammunition Plant, a government-owned, contractor-operated facility, include the manufacture, storage, and testing of small-arms munitions. Principal site types at the installation include abandoned disposal pits, sumps, firing ranges, old lagoons, old dumps, and closed RCRA lagoons and burning grounds. Environmental studies identified 73 sites, which were consolidated into 35 sites for further investigation.

Sampling at seven representative areas identified groundwater contaminated with volatile organic compounds, explosives, and heavy metals. After the plant was placed on the National Priorities List (NPL), it conducted a Remedial Investigation and Feasibility Study (RI/FS) focusing on four operable units (OUs), the Northeast Corner OU, the Area 18 OU, the Area 8 OU, and an installationwide OU. Area 8 was subsequently incorporated into the installationwide OU.

In FY93, the installation drafted RI/FS reports for the Area 18 OU and the Northeast Corner OU. In FY94, the installation completed the draft RI report for the Area 8 and installationwide OUs and finished Relative Risk Site Evaluations. The installation completed an Engineering Evaluation and Cost Analysis (EE/CA), an Action Memorandum (AM), and design documents in FY95.

In FY96, the installation began revising its Community Relations Plan. It also initiated a Removal Action at the Area 18 OU, with concurrent development of the final Record of Decision (ROD). The Army completed the FS report for the Area 18 OU and

submitted the Proposed Plan to the regulatory agencies. Also, in FY96, the installation initiated Removal Actions for sumps, installationwide groundwater containment, and the capping and leachate collection system for the abandoned landfill in Area 16. The installation submitted a draft final FS for the Northeast Corner OU.

In FY97, the installation completed a pump-and-treat system for Area 18. It developed an EE/CA and an AM for the leachate collection trench and a cap for the abandoned landfill in the Area 16/Northeast Corner OU. The Army proceeded with an interim ROD to install a permeable reactive barrier in the Northeast Corner OU. The commander formed a Restoration Advisory Board.

In FY98, the installation completed the final ROD for the Northeast Corner OU Interim Action. It also installed an extraction well at the northern boundary to prevent off-post migration of a contaminated groundwater plume. Installationwide characterization of groundwater was completed. Cleanup of depleted uranium on the firing range began under a Nuclear Regulatory Commission decommissioning plan.

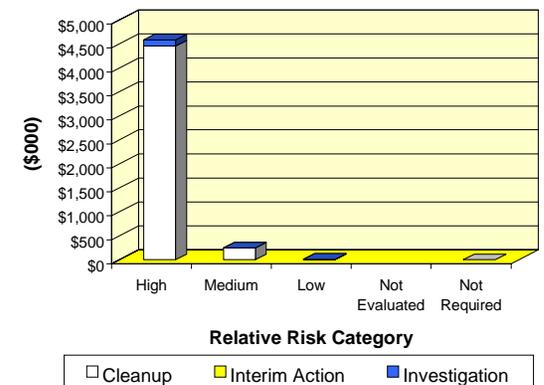
### FY99 Restoration Progress

The installation completed the ROD and continued Remedial Design (RD) activities for Area 18. RD activities for the Interim Action in the Northeast Corner OU also continued. The installation initiated an Interim Remedial Action for noncontroversial metals-contaminated soil sites and completed sampling of sump contents.

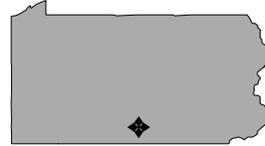
### Plan of Action

- Complete final FS, Proposed Plan, and ROD for the entire Northeast Corner OU in FY00
- Complete the final risk-based screening criteria document and installationwide FS in FY00
- Complete RA construction of the Northeast Corner OU Interim Action in FY00
- Complete RD for Area 18 in FY00 and initiate Remedial Action (RA) construction in FY01
- Complete Northeast Corner OU final action FS in FY00 and ROD in FY01
- Complete installationwide Interim Action Proposed Plan in FY00 and ROD in FY01
- Complete AM for installationwide groundwater Removal Action in FY01
- Complete sump removal in FY01

### FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** PA321382050300  
**Size:** 19,243 acres  
**Mission:** Store, maintain, and decommission ammunition; rebuild and store tracked and wheeled vehicles; rebuild, store, and maintain missiles; provide warehousing and bulk storage  
**HRS Score:** 34.21 (Southeastern Area); placed on NPL in July 1987  
 37.51 (Property Disposal Office); placed on NPL in March 1989  
**IAG Status:** IAG signed in February 1989  
**Contaminants:** VOCs, petroleum/oil/lubricants, PCBs, heavy metals, explosives, and asbestos  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$95.1 million  
**Estimated Cost to Completion (Completion Year):** \$47.4 million (FY2042)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2004  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY2003



*Franklin County, Pennsylvania*

## Restoration Background

Letterkenny Army Depot contains various contaminated sites, including disposal lagoons and trenches, oil burn pits, an open burning and open detonation area, an explosives washout plant, two scrap yards, landfills, industrial wastewater treatment plant lagoons, and industrial wastewater sewer lines. The National Priorities List (NPL) sites are in the south part of the installation.

The installation has concentrated its remedial efforts on source removal, including excavation, low-temperature thermal treatment, backfilling, and capping of soil in the industrial wastewater treatment plant lagoons and the three K-Areas; emergency repairs to leaking industrial wastewater sewers; removal of the Property Disposal Office (PDO) fire training pit; and emergency removal of playground soil at the PDO Area and of sediment contaminated with polychlorinated biphenyls (PCBs) in the Rocky Spring springhouse. In FY91, the installation signed a Record of Decision (ROD) for no further action for PDO Operable Unit (OU) 1. Remedial Investigations and Feasibility Studies (RI/FSs) were expanded to 10 OUs in the Southeastern Area and 6 OUs in the PDO Area.

In FY94, the Army completed the RI/FS for contaminated groundwater at PDO OU2 and began RI fieldwork at the Mercury Detections in Rocky Spring Lake and at five OUs in the Southeastern Area. In FY95, the Army upgraded the groundwater extraction and treatment system. The installation completed a Remedial Action (RA) in the K-Area part of the Disposal Area, treating volatile organic compound (VOC)-contaminated soil. A draft final ROD was prepared for PDO OU2.

In FY96, the installation began removing contaminated sediment from the Rowe Run and Southeast drainage sites, delineation and removal at the old PDO Oil Burn Pit, and delineation of contaminated soil at the spill area in Area A of Southeastern Area OU5. It also completed Phase I of an Environmental Baseline Survey (EBS).

In FY97, the installation completed three Removal Actions at the spill site in Area A, the industrial wastewater sewers, and the Open Truck Storage Area. A Removal Action was initiated at the former PDO Oil Burn Pit for in situ treatment of chlorinated solvent-contaminated soil.

In FY98, the installation prepared draft RI reports for Southeastern Area OUs 2, 4, and 5. The Army signed a ROD for the Phase I parcel and prepared a Proposed Plan. A Finding of No Significant Impact Environmental Assessment was signed.

The Army established a BRAC cleanup team, the community formed a Local Redevelopment Authority, and the installation established a Restoration Advisory Board in FY96.

## FY99 Restoration Progress

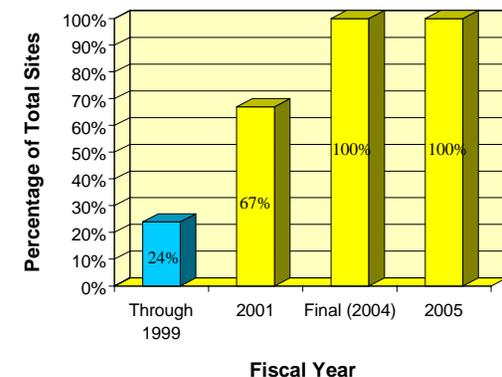
Completion of pilot studies for the Southeastern Area OU3 postponed a planned Focused Feasibility Study (FFS) report. The first phase of the investigation for PDO OU6 and Southeastern Area OU8 was delayed for completion of technical investigation plans. The construction of a treatment plant at Rowe Spring was delayed because additional time was needed to negotiate an access easement. The installation began PCB removal at the Defense Reutilization and Marketing Office (DRMO) scrap yard, but the removal was halted while a tear gas cannister issue was resolved. Long-term monitoring began at PDO OUs 2, 4A, and 4B. The

installation also completed a Finding of Suitability to Transfer for Phase I BRAC parcels. The in situ treatment at the former PDO Oil Burn Pit is 90 percent complete.

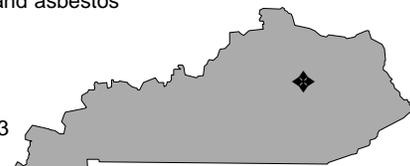
## Plan of Action

- Complete first phase RI/FS and RA reports for PDO OU6 and Southeastern Area OU8 sites in FY00
- Complete draft FFS report for Southeastern Area OUs 3 and 10 in FY00
- Complete PCB removal at DRMO scrap yard in FY00
- Complete RI and risk assessment for Southeastern Area OUs 2, 4, 5, and 6 in FY00
- Complete RI/FS and RA for soil at the former PDO Oil Burn Pit and PDO OU1 in FY00
- Conduct soil Removal Action at the Open Vehicle Storage Area and the Lead Ingot Storage Area in FY00–FY01

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** KY421382050900  
**Size:** 780 acres  
**Mission:** Conducted light industrial operations, including paint stripping, metal plating, etching, and anodizing  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** VOCs, SVOCs, heavy metals, PCBs, pesticides, herbicides, and asbestos  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$26.7 million  
**Estimated Cost to Completion (Completion Year):** \$9.3 million (FY2030)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003



Lexington, Kentucky

## Restoration Background

In December 1988, the BRAC Commission recommended closure of the Lexington Facility, Lexington-Bluegrass Army Depot (LBAD). The installation closed as scheduled in FY95.

In FY90, studies identified 67 sites requiring further investigation. A RCRA Facility Assessment identified 30 solid waste management units (SWMUs) and two areas of concern (AOCs).

The Army began fieldwork for a RCRA Facility Investigation (RFI) and a Corrective Measures Study (CMS) in FY90. Sampling data from the initial phase of the RFI showed contaminated groundwater, soil, and sediment at 29 sites. The major AOCs were three landfills (new, old, and industrial and sanitary waste disposal), industrial waste lagoons, industrial wastewater treatment plants (IWTPs), the Industrial Sludge and Sewage Waste Disposal Site (Area A), Area B, the north end of Building 135, and groundwater. The Phase I RFI and groundwater investigation demonstrated the need for soil cleanup.

In FY94, the installation formed a BRAC cleanup team and completed an Environmental Baseline Survey and a BRAC Cleanup Plan (BCP).

In FY95, the installation submitted the final Phase I RFI, the CMS, and groundwater investigation documents to regulatory agencies for approval. It also removed the last underground storage tanks, contaminated soil, polychlorinated biphenyl (PCB)-containing transformers, and asbestos.

In FY96, the installation completed Interim Remedial Actions (IRAs) at Area A, Area B, the Coal Pile Run-Off Area, and other locations. In FY97, it completed removal of contaminated soil and sludge from the industrial waste lagoons. Early actions took

place at the sump and sand filter at Building 139 and at the oil-water separator at Buildings 8, 10, 19, and 43.

In FY97, the Kentucky Department of Environmental Protection (KDEP) issued a Corrective Action Order to the Army. The Army signed an interim lease with the Commonwealth of Kentucky for the entire depot. EPA and KDEP concurred with the Phase I RFI and CMS documents. A Phase II installationwide groundwater investigation (RFI/CMS) began. Interim measure work plans for a number of SWMUs were forwarded to KDEP and EPA for approval. The Army completed the cap on the three landfills; excavated contaminated soil from the lagoons, Area A, Area B, and IWTP; and conducted Remedial Actions at other AOCs.

In FY98, the Army issued the draft Phase II RFI (soil) and provided a draft RCRA Statement of Basis (SOB) to KDEP and EPA on the three landfill sites and the Group II sites. LBAD established a Restoration Advisory Board.

## FY99 Restoration Progress

KDEP and EPA approved the transfer of the structures listed in the Phase IIB Finding of Suitability of Transfer (FOST) and sent the FOST to the Army Materiel Command for signature. The installation completed the Phase II RFI soil investigation. The Phase II installationwide groundwater investigation also was completed, but the draft report was delayed by regulatory issues.

The Army provided an SOB to KDEP and EPA concerning institutional control sites (Buildings 3, 9, 42, and 46), Buildings 19 and 43, the Golf Course Ponds, and the Industrial Sludge and Sewage Waste Disposal Site (Area A). The installation completed IRAs at Buildings 63, 130, 135, and 154; the New Wastewater

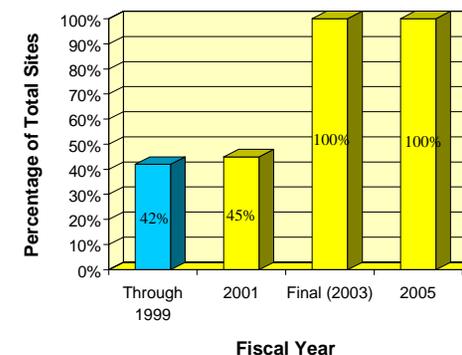
Treatment Plant; and the Old Wastewater Treatment Plant. The installation completed version 3 of the BCP.

The installation issued a revised SOB for the landfills and 13 No Further Action sites, and is awaiting KDEP and EPA review.

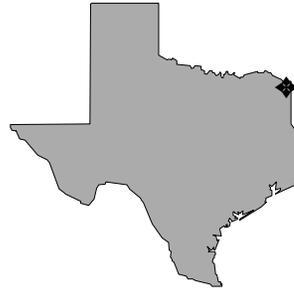
## Plan of Action

- Transfer the structures listed in the Phase IIB FOST to the Commonwealth of Kentucky in FY00
- Develop a FOST for the public benefit conveyance parcel in FY00
- Develop a FOST for the recreational area of the economic development conveyance parcel in FY00
- Develop and issue SOBs for Building 303, the former lagoon, and several other sites in FY00
- Complete the Phase II RFI/CMS for soil and groundwater in FY00
- Resolve with KDEP the lead cleanup standards for affected sites in FY00
- Draft and complete Phase II CMS in FY00–FY01

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** TX621382183100  
**Size:** 15,546 acres  
**Mission:** Load, assemble, and pack ammunition  
**HRS Score:** 31.85; placed on NPL in July 1987  
**IAG Status:** IAG signed in September 1990  
**Contaminants:** VOCs, petroleum, heavy metals, and explosives  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$17.4 million  
**Estimated Cost to Completion (Completion Year):** \$17.8 million (FY2003)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2003



Texarkana, Texas

## Restoration Background

Lone Star Army Ammunition Plant loads and packs munitions. From 1943 to 1944, the Old Demolition Area (ODA) was used to destroy faulty or nonstandard explosives. Environmental studies revealed explosives and metal contamination in the ODA. EPA therefore placed that area on the National Priorities List (NPL) in July 1987. The ODA is the only CERCLA site at the installation.

RCRA sites investigated include surface impoundments, landfills, fuel storage areas, and load lines. Investigations revealed soil contamination with solvents, metals, and explosives at some sites. At one site, groundwater is contaminated.

Interim Actions undertaken by the installation include closing two surface impoundments, installing industrial wastewater treatment facilities, and removing the bulk fuel storage area and the service station. In FY92, the installation began a RCRA Facility Investigation (RFI) for RCRA corrective action sites and completed a corrective action at one underground storage tank site.

In FY95, the installation conducted soil boring and installed monitoring wells, accompanied by analytical sampling, for the ODA Phase IV Remedial Investigation (RI). It also obtained regulatory approval for and began sampling of biota at the ODA. The installation conducted groundwater investigations under RCRA at the two closed surface impoundments and performed soil and groundwater investigations at the bulk fuel storage area.

In FY96, the Army collected samples of groundwater and surface soil at the ODA. RI activities in the area were completed. The installation took soil borings and established groundwater wells for the RFI. In FY97, the state approved a background survey report on ambient concentrations of contaminants for the installation.

In FY98, the installation submitted a draft Record of Decision (ROD) to EPA. A Focused Feasibility Study and a Proposed Plan were also submitted for the ODA. The Army decontaminated and removed cisterns and prepared closure reports. Contaminated soil at Paint Filter Site and RDX Pit K 2 was excavated. The installation also completed soil removal and decontamination activities at nine sites and completed two Relative Risk Site Evaluations. The installation solicited interest in forming a Restoration Advisory Board (RAB), but the interest was insufficient.

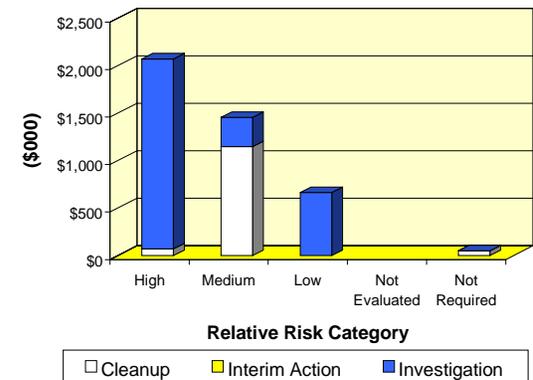
## FY99 Restoration Progress

All parties (EPA, the state, and the Army) signed the ROD for the ODA. Removal of ordnance debris and construction of soil cover and erosion control berms can now proceed. Phase I of RFI activities was completed, and RFI activities began at the G and O ponds. (Items in the FY98 Plan of Action indicating that all RFI activities, removal of ordnance debris, and construction of erosion control berms would be completed in FY99 were erroneous. The items should have indicated completion in FY01.) Natural attenuation technologies planned for FY99 will be implemented after the Corrective Measures Study (CMS) for the Western Inactive Sanitary Landfill (WISL) is complete.

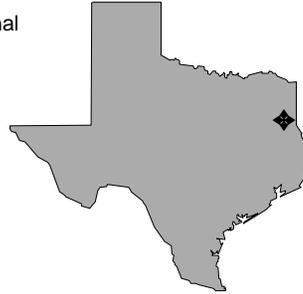
## Plan of Action

- Begin Phase II RFI activities at nine sites in FY00
- Resolicit interest in establishing a RAB in FY00
- Complete RFI activities at the G and O Ponds in FY01
- Complete CMS for the WISL in FY01
- Implement natural attenuation technologies in FY01

## FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** TX621382052900  
**Size:** 8,493 acres  
**Mission:** Loaded, assembled, and packed pyrotechnic and illuminating signal munitions  
**HRS Score:** 39.83; placed on NPL in August 1990  
**IAG Status:** IAG signed in October 1991  
**Contaminants:** Explosives, heavy metals, VOCs, and perchlorate  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$66.5 million  
**Estimated Cost to Completion (Completion Year):** \$55.5 million (FY2005)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2005



**Karnack, Texas**

## Restoration Background

Longhorn Army Ammunition Plant (LHAAP) manufactured pyrotechnic and illuminating signal munitions and solid-propellant rocket motors. Environmental studies identified 50 sites, including storage areas, landfills, open burning grounds, industrial areas, burial pits, sumps, and wastewater treatment plants. Eighteen of these sites are eligible for the Installation Restoration Program (IRP). The installation divided the sites into five groups.

A FY84 Remedial Action (RA) included design and construction of a landfill cap for an unlined evaporation pond formerly known as the Rocket Motor Washout Pond. In FY91, the installation began a Remedial Investigation and Feasibility Study (RI/FS) at 13 sites. Phase I of the RI was completed in FY93. The Army completed Phase II investigations at 11 sites that required additional fieldwork in FY95.

In FY94, the Army completed a pilot-scale study for groundwater extraction and treatment to remove trichloroethene (TCE) and methylene chloride at Burning Ground No. 3, which includes the capped, unlined evaporation pond. During FY95, the installation completed three Records of Decision (RODs), one for Burning Ground No. 3, another for two landfills, and a third for two sites at which no further action was necessary.

In FY96, construction began on the Burning Ground Treatment Facility and the caps for Landfills 12 and 16. The installation completed the Phase II RI. It also began evaluating alternatives for pumping and treating the groundwater at Site 16. An RA began for 84 wastewater sumps.

In FY97, the installation compiled data to complete the Group 1 RI and initiated Phase III of the RI for Groups 2 and 4. It also completed construction of the Burning Ground Treatment Facility and began treatment of groundwater and soil. A Site Inspection report for Group 5 recommended no further action at two of the four sites. In addition, the Army initiated four Interim Actions and/or Removal Actions.

In FY98, the installation completed a no further action ROD for Group 1 sites (1, 11, 27, and 54) and finished treatment of 30,000 cubic yards of source material. The Army completed the Landfill 12 cap. Field studies were initiated for Groups 2 and 4.

The installation's Technical Review Committee meets quarterly. The commander attempted to form a Restoration Advisory Board, but interest was not sufficient to sustain the effort.

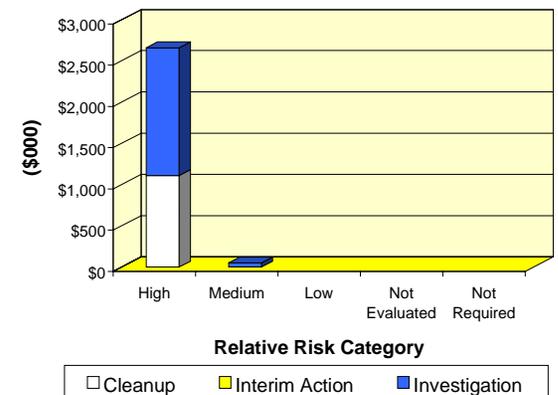
## FY99 Restoration Progress

The installation completed the capping of Landfill 16 and the fieldwork for the Group 2 and 4 RI/FSs. The installation continued collection and treatment of groundwater from the Burning Ground. The Army completed the accelerated RI for Site 16, but the FS was delayed because the contractor needed to collect more samples. Perchlorate was detected in groundwater, surface water, soil, and sediment at the installation. The Army awarded a Technical Assistance for Public Participation contract to determine the effects of on-post contamination in surface waters entering Caddo Lake.

## Plan of Action

- Continue collection and treatment of groundwater from the Burning Ground in FY00
- Complete FS for Site 16 in FY02
- Complete Remedial Design for Site 16 in FY02

## FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** LA621382053300  
**Size:** 14,974 acres  
**Mission:** Manufacture ammunition metal parts and maintain ammunition production facilities  
**HRS Score:** 30.26; placed on NPL in March 1989  
**IAG Status:** IAG signed in 1989  
**Contaminants:** Oils, grease, degreasers, phosphates, solvents, and metal plating sludges, acids, fly ash, TNT, RDX, and HMX  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$53.1 million  
**Estimated Cost to Completion (Completion Year):** \$8.4 million (FY2002)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2002



*Doyline, Louisiana*

## Restoration Background

Sites identified at the Louisiana Army Ammunition Plant include lagoons, burning grounds, and landfills contaminated with explosives and plating wastes. The Army identified seven sites during a Preliminary Assessment and Site Inspection in FY78 and completed a preliminary Remedial Investigation and Feasibility Study (RI/FS) in FY82. The installation initiated full-scale RI/FS activities at four of the seven sites in FY85. The studies identified no off-site contamination; however, groundwater-monitoring wells at the installation were contaminated with explosive compounds, such as TNT, RDX, and HMX.

The potential for off-site migration of contaminants required groundwater monitoring beyond the northern and southern boundaries of the installation, which still continues.

Between FY89 and FY90, the installation incinerated almost 102,000 tons of explosives-contaminated soil and treated more than 53 million gallons of contaminated water. The lagoons underwent RCRA closure and were revegetated. The installation must monitor the vegetated protective cap and maintain it regularly to ensure its integrity.

The Army identified two additional sites in FY93 and FY94, the Y-Line Etching Facility and the Load-Assemble-Pack Lines. In FY95, the installation began the RI at the Load-Assemble-Pack Lines and completed the RI at the Y-Line Etching Facility. In FY94, the Army completed a 5-year review of the Interim Remedial Action at the Area P lagoons, evaluating the effectiveness of interim measures. The review confirmed that the source of the contamination had been removed. The installation established a partnership with the U.S. Army Corps of Engineers Waterways Experiment Station to study the feasibility of using

natural attenuation to treat groundwater contaminated with explosives.

In FY96, the installation received approval from EPA for the Record of Decision (ROD) concerning soil at the first seven sites. A separate operable unit (OU) will address the installationwide groundwater. In addition, the installation completed the first phase of the RI at the Load-Assemble-Pack Lines and began the FS for the Y-Line Etching Facility.

In FY97, the installation completed the RI/FS for the Y-Line Etching Facility. The RI/FS determined that there was no risk from contaminated soil at the site. The groundwater, however, is contaminated with trichloroethene. Remedial options for the contaminated groundwater will be developed under the installationwide groundwater OU.

In FY98, the installation initiated work on the RIs for the Ecological Risk Assessment (ERA) and installationwide groundwater OU. The Proposed Plan for Area Y is complete.

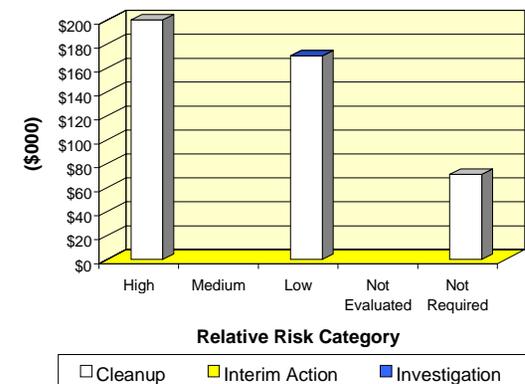
## FY99 Restoration Progress

The installation prepared a draft No Further Action ROD for soil at the Y-line Etching Facility. The Army did not complete the RI for the ERA on schedule because of fieldwork delays and a change of scope in the work. The fieldwork for the groundwater OU RI will be finished concurrently with the ERA RI fieldwork. The Army completed a natural attenuation study to aid in completion of the FS for the groundwater OU.

## Plan of Action

- Complete the No Action ROD for soil at the Y-Line Etching Facility in FY00
- Complete all fieldwork for the remaining installationwide (groundwater and soil) OUs in FY00
- Complete the ERA and FS for the installationwide groundwater OU in FY00 and the installationwide soil OU in FY01
- Complete the ROD for the installationwide groundwater OU in FY01 and the installationwide soil OU in FY02

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** TN421382058200  
**Size:** 22,419 acres  
**Mission:** Load, assemble, pack, ship, and demilitarize explosive ordnance  
**HRS Score:** 58.15; placed on NPL in July 1987  
**IAG Status:** IAG signed in 1989  
**Contaminants:** Munitions-related wastes  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$88.5 million  
**Estimated Cost to Completion (Completion Year):** \$143.0 million (FY2029)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2009



## Milan, Tennessee

### Restoration Background

Preliminary Assessment and Site Inspection activities conducted at Milan Army Ammunition Plant in FY87 identified 25 sites requiring further investigation. The installation grouped the sites into five operable units (OUs).

A Remedial Investigation and Feasibility Study (RI/FS) began in FY88. EPA and state regulatory agencies approved the RI report in FY92. The report recommended no further action at three sites, Remedial Design and Remedial Action (RA) for the O-Line Ponds and associated groundwater, and collection of additional RI data for the remaining sites.

In FY91, the Army discovered the explosive compound RDX in the City of Milan's municipal water supply wells. In FY93, representatives of the Army, the City of Milan, EPA, and the State of Tennessee completed a contingency plan to ensure that safe drinking water would be available to residents. The city completed a new drinking water well field in 1998 using funds provided by the Army.

In FY92, a Record of Decision (ROD) was signed for the construction of the OU1 groundwater treatment plant. This treatment system was built to pump and treat explosives-contaminated groundwater emanating directly from the former O-Line Ponds. Final construction was completed in 1996.

In FY93, a ROD was signed to extend a cap over the former O-Line Ponds to prevent further leaching of explosive contaminants in groundwater. Construction was completed in 1996.

In FY94, a ROD was signed for the construction of a groundwater treatment facility for the Northern Boundary Area (OU3) of the

installation. The levels of RDX and TNT were increasing and the contamination was migrating off post. The construction of the treatment facility and subsequent treatment of the groundwater required the installation to obtain an off-post real estate interest. A perpetual lease was signed in September 1996 to obtain this interest.

In FY95, a ROD was signed for construction of a bioremediation facility to remedy the contaminated soil in the Northern Industrial Areas. An industrial landfill was also constructed for disposal of bioremediated soil.

The installation formed a Restoration Advisory Board in FY94.

### FY99 Restoration Progress

The Army continued to operate the granular activated carbon OU1 groundwater treatment facility. The installation began a 5-year review of the OU1 RA. The construction of the OU3 groundwater treatment facility was completed. The facility is under a capture zone analysis review, which will determine whether additional extraction wells are required. The plant is in full operation, with no detectable explosives contamination discharging into a local tributary.

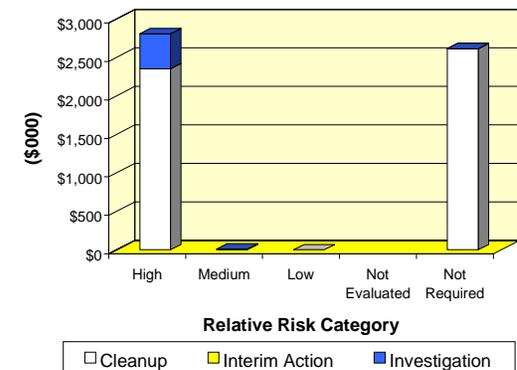
The Army completed construction of the OU3 and OU4 bioremediation system and optimized the treatment additives to provide the necessary reduction in the explosive compounds contained within the soil matrix. The system is currently in full-scale operation. The Army submitted an Explanation of Significant Differences to the regulators to allow land application of the treated soil. The Army submitted to the regulators a final ROD for OU4, the Western Boundary Area, and Region 1

groundwater treatment. The final RI/FS was submitted for OU4 Regions 2 and 3.

### Plan of Action

- Complete RI work on installation groundwater study in FY00
- Submit FS for OU5 Southern Study Area in FY00
- In FY01, test Fenton's reagent to determine its applicability in treating the groundwater aquifer by using hydrogen peroxide

### FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** CA921352066100  
**Size:** 422 acres  
**Mission:** Military Traffic Management Command, Western Area  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** POLs, TCE, solvents, lead, and PCBs  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$15.0 million  
**Estimated Cost to Completion (Completion Year):** \$7.2 million (FY2003)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY1996



Oakland, California

## Restoration Background

In 1995, the BRAC Commission recommended closure of Oakland Army Base (OARB). The Army closed the installation and ceased operation as scheduled on September 30, 1999.

Between 1989 and 1995, the installation began to characterize potentially contaminated areas through its Installation Restoration Program (IRP). These areas included underground storage tanks (USTs); Berth 6 and 6 ½ where storm drain bedding materials were contaminated with oil and fuel products; pesticides and oil in soil and groundwater at Building 991; lead-contaminated soil at the West Grand Avenue Overpass roadsides; chlorinated solvents in soil and groundwater at Building 807; and soil contaminated with polychlorinated biphenyls (PCBs) at Building 648.

In FY95, implementation of the CERCLA and CERFA requirements under the BRAC Environmental Restoration Program began. The installation surveyed living quarters and recreational areas for lead-based paint and found lead contamination above the action levels in several areas.

In FY96, the installation formed a BRAC cleanup team (BCT) and a Restoration Advisory Board (RAB). The installation conducted an asbestos survey of the housing units and the Child Development Center. Seven of the 31 samples indicated the presence of asbestos in floor tiles, roofing material, and dry wall, but in a form that presented no hazard to residents and workers.

In FY97, the installation initiated Remedial Investigations and Feasibility Studies (RI/FSs) for Operable Units (OUs) 1, 2, 3, and 7, as planned. In FY98, the installation completed an initial BRAC Cleanup Plan and an Environmental Baseline Survey for

each of the 26 BRAC parcels that make up the base. Parcels found to have a known or potential release of hazardous materials were surveyed in the follow-on Preliminary Assessment and Site Inspection. The Army restructured funding for cleanup requirements. Activities under the base compliance program continued progressing toward closure of storage tanks and oil-water separators.

## FY99 Restoration Progress

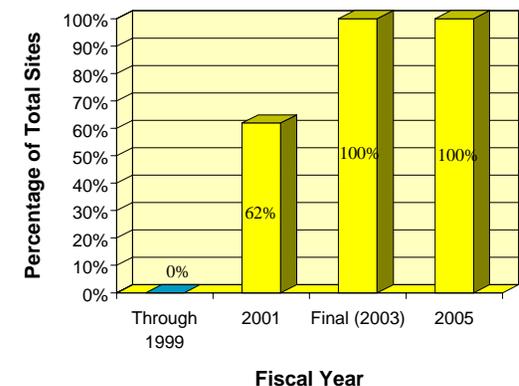
The Army conducted a limited scope independent technical review (ITR) for OUs 2 and 7, which resulted in decreased cleanup requirements for OU2 and an Army proposal to reduce the cleanup levels required for OU7, which is still being negotiated with the regulators. The regulatory agencies approved RIs for OUs 2 and 7. Preparation of Finding of Suitability to Transfer (FOST) documents began for No Further Action parcels in OUs 1 and 3. Funding for the OU4 RI was secured, and the work plan began. The regulatory agencies approved plans for completion of UST removal. OU6 has been vacated with no newly discovered issues. RI/FS work began for OU4.

Regulatory delays in approving the RIs postponed completion of FSs and decision documents. Remedial Actions (RAs) for OUs 1, 2, 3, and 7 are also on hold pending regulatory approval of the RIs.

## Plan of Action

- Complete FSs and decision documents for OUs 1, 2, 3, and 7 in FY00
- Complete RI/FS for OU4 in FY00
- Complete storage tank closures in FY00
- Complete a FOST for parcels in OU5 in FY00
- Complete Remedial Design and RA for OUs 2 and 7 in FY00

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** CA921372067600  
**Size:** 27,827 acres  
**Mission:** Housed 7th Infantry Division (Light); supports the Defense Language Institute Foreign Language Center, currently at the Presidio of Monterey, California  
**HRS Score:** 42.24; placed on NPL in February 1990  
**IAG Status:** Federal Facility Agreement signed in July 1990  
**Contaminants:** VOCs, petroleum hydrocarbons, heavy metals, and pesticides  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$193.1 million  
**Estimated Cost to Completion (Completion Year):** \$334.8 million (FY2033)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003



Marina, California

**Restoration Background**

From 1917 to 1994, Fort Ord served primarily as a training and staging installation for infantry units. In July 1991, the BRAC Commission recommended closing Fort Ord and moving the 7th Infantry Division (Light) to Fort Lewis, Washington. The Army closed Fort Ord in September 1994.

In FY87, a hydrogeological investigation identified the sanitary landfills at Fort Ord as potential sources of contamination for the city of Marina’s backup drinking water supply well. In FY89, a Remedial Investigation and Feasibility Study (RI/FS) began for the landfills. In FY90, a Preliminary Assessment and Site Inspection identified 61 sites, including landfills, underground storage tanks, motor pools, family housing areas, a fire training area, an 8,000-acre impact area, and an explosive ordnance disposal area. The installation determined that petroleum hydrocarbons and volatile organic compounds (VOCs) had migrated into groundwater.

In FY94, the installation converted its Technical Review Committee (TRC) to a Restoration Advisory Board (RAB) and formed a BRAC cleanup team (BCT). In FY95, the installation constructed a groundwater treatment system at the post landfill and completed a Record of Decision (ROD) for Fritzsche Army Air Field (FAAF) Operable Unit (OU) 1.

In FY96, the Army completed Proposed Plans (PPs) and a ROD for the RI sites and remediation of lead-contaminated soil at the Beach Ranges Site 3. The Army began to cap the OU2 landfill and construct a groundwater pump-and-treat system. The landfill, with a groundwater treatment system, was proposed as a corrective action management unit to allow consolidation of waste. In FY97, the BCT completed a ROD for remedial sites, an

interim ROD for Site 3, and an explanation of significant differences for OU2.

In FY98, the installation completed design of the Site 12 groundwater pump-and-treat system, waste removal at six sites, and closure and cap construction for 143 acres of the 150-acre landfill. It also consolidated over 300,000 cubic yards of waste into OU2 and recycled over 750,000 pounds of lead from Site 3. It prepared a report on potential disposal areas at FAAF and completed Removal Actions at Sites 34 and 39a for clean closure. The Army completed Phase I and Phase II Engineering Evaluations and Cost Analyses (EE/CAs) addressing Removal Actions for ordnance and explosives (OE) sites. EPA and California EPA concurred on the Phase I EE/CA and Action Memorandum (AM) 1 for the 12 No Action OE sites. In light of the Army’s notice that it would conduct an RI/FS of OE at the former Fort Ord, a federal district court dismissed a lawsuit challenging the Army’s approach to UXO response activities at the installation. The RI/FS is ongoing.

**FY99 Restoration Progress**

Long-term monitoring data for OU1 and OU2 groundwater treatment systems indicated the need for specific construction enhancements, which were designed and approved. The installation constructed a groundwater pump-and-treatment system for Site 12 and drafted an OE work plan for a recurring review report for EE/CA Phase I sites. Assessment or cleanup of sites affected by OE continued; however, because of completion of the Phase II AM, all ongoing OE clearance activities will transition to Non-Time-Critical Removal Actions (NCRAs). The installation began a multiphase RI/FS for OE and completed Remedial Action

(RA) and post-remediation risk assessment reports, except those addressing Site 39.

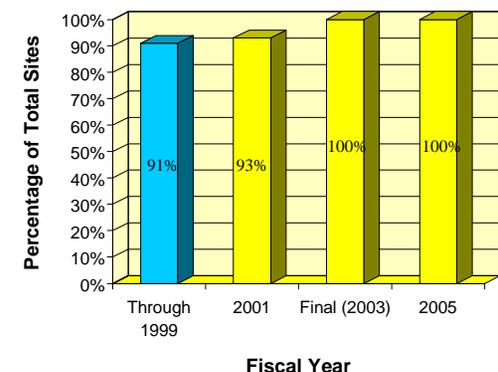
The installation could not prepare an agreement for cleanup of OE due to delays in the development of appropriate agreement language. The Ecological Risk Assessment, PP, and final ROD for Site 3 are awaiting review of confirmation sampling results. The Army did not complete waste removal at Site 39 because the area requiring RA is much larger than anticipated. The installation submitted a RCRA closure plan for three sites for regulatory review; however, only one plan was reviewed and implemented. The installation could not complete the planned FOSTs due to the OE lawsuit.

The installation reestablished the TRC and dissolved the RAB, but developed alternative public outreach initiatives to provide for public input. The Strategic Management Analysis Requirement Technology team was established to address OE cleanup.

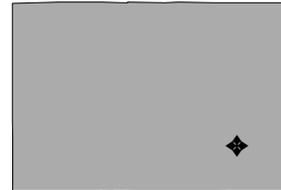
**Plan of Action**

- Continue NCRAs for OE sites in FY00
- Complete RCRA closures for Building T-111 and the former open-burn/open-detonation area in FY00
- Review two Findings of Suitability for Early Transfer in FY00
- Begin construction enhancements for the groundwater treatment systems at OUs in FY00
- Continue RA at Site 39 in FY00–FY01

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** CO821382072500  
**Size:** 23,121 acres  
**Mission:** Store chemical munitions  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Heavy metals, petroleum/oil/lubricants, VOCs, SVOCs, pesticides, explosives, PCBs, and UXO  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$79.4 million  
**Estimated Cost to Completion (Completion Year):** \$89.8 million (FY2030)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2011



### Pueblo, Colorado

## Restoration Background

In December 1988, the BRAC Commission recommended realignment of the Pueblo Depot Activity, primarily because of chemical demilitarization. In October 1996, the Army placed Pueblo Depot Activity under the Chemical and Biological Defense Command and changed its name to Pueblo Chemical Depot. Sites include a landfill, open burning and detonation grounds, an ordnance and explosives waste area, lagoons, former building sites, oil-water separators, a TNT washout facility and discharge system, and hazardous waste storage units. Heavy metals, volatile organic compounds (VOCs), and explosives are the primary contaminants affecting soil and groundwater.

Between FY89 and FY94, the Army conducted RCRA Facility Investigations (RFIs) for 45 solid waste management units (SWMUs). In FY94, the installation formed a Restoration Advisory Board (RAB) and a BRAC cleanup team (BCT). The installation completed a final CERFA report, and the community formed a Local Redevelopment Authority, which prepared a Land Reuse Plan.

In FY95, the installation constructed a groundwater extraction and treatment system to remediate and prevent off-site migration of contaminated groundwater. RFI and corrective measure work also began on seven additional SWMU sites.

In FY96, the installation conducted cleanup and removal of TNT washout buildings and identified the source of TNT by-products in an off-post spring. The installation developed Team Pueblo to coordinate public involvement in restoration, reuse, closure, and cleanup activities.

In FY97, the Environmental Baseline Survey (EBS) and the Finding of Suitability to Lease (FOSL) were completed for 74

buildings, which were released for reuse. Demolition of TNT buildings, clearance of unexploded ordnance, removal of the deactivation incinerator and 6 underground storage tanks, decontamination of 2 buildings, and demolition of 28 structures also occurred. RFI work also began on three new SWMU sites.

In FY98, the installation completed soil removal at the TNT washout lagoons (SWMU 17) and stored the contaminated soil in permitted buildings for eventual treatment. A temporary groundwater filter unit was installed at Ciruli Spring to remove TNT contamination from a drinking water source. An EBS and a FOSL were completed for 766 buildings. One additional SWMU site was identified.

## FY99 Restoration Progress

The installation implemented full-scale bioremediation of the 21,000 cubic yards of TNT-contaminated soil excavated from SWMU 17. Groundwater treatment at the landfill and Ciruli Spring and soil remediation at the area south of B Block continued. The installation postponed hot spot removal within the landfill because of funding constraints. A hot spot consisting of soil contaminated with TCE was identified near monitoring well CM1, which led the state to designate CM1 as a new SWMU site. The Army is investigating off-installation contamination discovered in public drinking wells and associated with the TNT washout facility at SWMU 17. The Army is providing drinking water to nine off-site well water users.

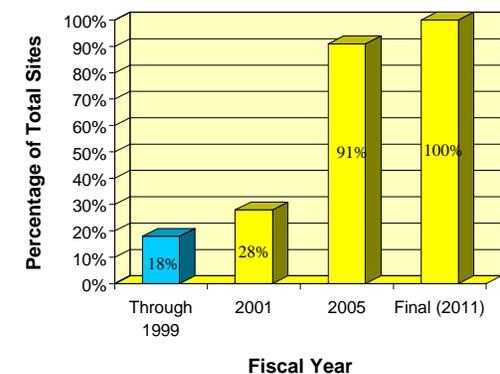
The Army cleaned up or demolished the 700 Area and 180 Series buildings. Buildings 591 and 592 were modified and repaired for use for TNT bioremediation. The installation postponed EBS, FOSL, and early transfer activities due to funding constraints and concerns about chemical demilitarization issues.

The installation submitted a No Further Action (NFA) methodology report and a justification package for six SWMUs to the state for approval of NFA designation in the RCRA Part B permit. By reducing the analytes to be tested, the sitewide groundwater monitoring program was simplified and condensed. The Army conducted an independent technical review of the environmental cleanup program, which resulted in numerous recommendations on the installation's overall strategy and on specific technical issues. A new SWMU site was identified by the state in the 700 Building area. The BCT prepared a draft final version of BRAC Cleanup Plan version 3, but funding constraints and chemical demilitarization issues delayed the plan's completion. RAB members approved the RAB charter.

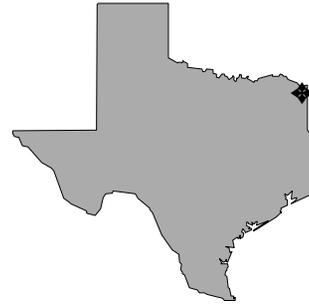
## Plan of Action

- Delete five SWMUs from the RCRA Part B permit in FY00
- Implement the CM1 corrective measure in FY00
- In FY00, define nature and extent of off-site contamination related to the TNT washout facility
- Complete the RFI work plan for Mercury Storage Building 543 and version 3 of the BCP in FY00
- Optimize sitewide groundwater monitoring program in FY00
- Complete bioremediation of 21,000 cubic yards of TNT-contaminated soil in FY00–FY01
- Design and implement corrective measure for off-site contamination related to the TNT washout facility and hot spot removal at the landfill in FY01

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** TX621382073800  
**Size:** 19,081 acres (includes 625 acres that have been transferred to LRA in June 1999)  
**Mission:** Provide maintenance for light combat vehicles, support rubber production, store ammunition, and conduct training  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** TCE  
**Media Affected:** Groundwater, surface water, and sediment  
**Funding to Date:** \$16.2 million  
**Estimated Cost to Completion (Completion Year):** \$20.9 million (FY2002)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2001  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY2002



*Texarkana, Texas*

## Restoration Background

In July 1995, the BRAC Commission recommended realignment of Red River Army Depot. Of 765 acres of BRAC property, 625 acres was transferred to Local Redevelopment Authority (LRA) in June 1999. All maintenance missions except those related to the Bradley Fighting Vehicle Series were recommended for relocation to other depots. The installation will retain its ammunition storage, intern training, civilian training, and rubber production missions.

Areas of environmental concern at the depot included the oil-water separator lagoons, spill sites associated with previous industrial and pre-RCRA disposal activities, and spill sites associated with pesticide storage and mixing activities. Trichloroethene (TCE) is the main contaminant affecting groundwater at the installation.

Interim Actions at the installation include removing the former Hays Treatment Plant Dunbar filter beds, demolishing buildings and Army-peculiar equipment, and removing contaminated soil. In FY95, the installation formed a BRAC cleanup team (BCT). The community formed an LRA. The installation continued its partnership with the Texas Natural Resource Conservation Commission through the Defense and State Memorandum of Agreement program. The installation removed more than 2,000 cubic yards of contaminated sediment from the north and south stormwater drainage ditches in the Wastewater Treatment Area.

In FY96, the installation commander formed a Restoration Advisory Board. The installation prepared the final draft Environmental Baseline Survey (EBS) report. The BCT prepared version 1 of the BRAC Cleanup Plan (BCP).

In FY97, the Red River Local Redevelopment Authority (RRLRA) requested that the Army modify the excess footprint at the installation to make the footprint contiguous. The new footprint total is 765 acres. Because of this change, a draft Supplemental EBS was completed. The installation completed closure of the final and intermediate lagoons at the industrial waste treatment plant.

In FY98, the installation completed sampling on the remaining 148 acres of BRAC property and prepared a Treatability Study informing the regulators of the status of the TCE-contaminated groundwater. Based on the results of the study, the installation reevaluated risk associated with the Western Industrial Area (WIA) groundwater and recommended no action. The Army completed three of four tasks in the risk assessment and a Corrective Measures Study (CMS) for nine sites. The installation also developed heavy-metals background levels for soil and prepared a master Finding of Suitability to Lease for the excess footprint.

## FY99 Restoration Progress

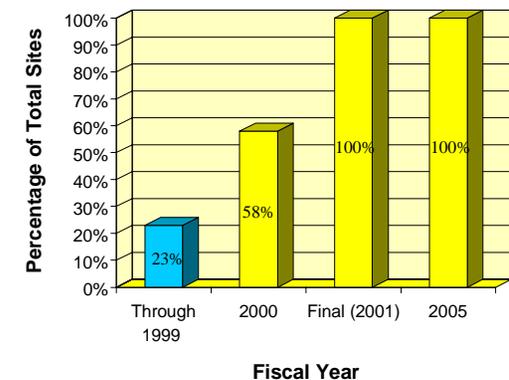
The Army proposed Remedial Actions (RAs) for five sites, but did not initiate the RAs because the sites qualified to be closed by deed notice instead of soil removal. The Army transferred 625 acres to the RRLRA and completed the draft final version of the Cultural Resources Memorandum of Agreement (MOA). The Finding of Suitability to Transfer (FOST) for all Environmental Condition of Property 1 through 4 sites was completed. The installation removed soil and sediment at the pesticide pit site to obtain closure for soil in accordance with the Texas Risk Reduction Standards.

The installation completed the BCP version 2 final draft, but completion of the final version was delayed by a change in contractor personnel. Completion of the risk assessments for the WIA and pesticide pit was delayed by BCT disagreements. The FOST for privatization of utilities was not completed because the Army did not receive a formal presentation of rates from the RRLRA to determine whether utility privatization is economical.

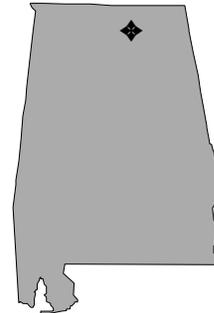
## Plan of Action

- Complete BCP version 2 in FY00
- Transfer Water Tower and 68 acres to RRLRA in FY00
- Complete Cultural Resources MOA in FY00
- Complete WIA and pesticide pit risk assessment in FY00
- Complete CMS for the WIA and pesticide pit and obtain BCT approval in FY01
- Design, obtain BCT approval for, and initiate all RAs planned for excess footprint in FY01
- Initiate long-term monitoring at pesticide pit and WIA in FY02

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** AL421382074200  
**Size:** 38,300 acres  
**Mission:** Army Aviation and Missile Command  
**HRS Score:** 33.40; placed on NPL in June 1994  
**IAG Status:** Federal Facility Agreement under negotiation  
**Contaminants:** Heavy metals, solvents, CWM, and pesticides  
**Media Affected:** Groundwater, sediment, and soil  
**Funding to Date:** \$68.4 million  
**Estimated Cost to Completion (Completion Year):** \$234.6 million (FY2015)  
**Final Remedy in Place and Response Complete Date for All Sites:** FY2012



### Huntsville, Alabama

### Restoration Background

Past operations at the Redstone Arsenal (RSA) include production, receipt and shipment, storage, demilitarization, and disposal of chemical and high-explosive munitions. Commercial chemical pesticides also have been produced at the installation. RSA currently conducts military research and development, manages procurement, and supports the Army's aviation and missile weapons systems.

Studies beginning in FY77 have identified 298 sites at RSA. Of these sites, 216 are Army sites and 82 are sites at Marshall Space Flight Center (MSFC), which is the responsibility of NASA. Site types include past disposal sites, landfills, open burning and open detonation (OB/OD) areas, chemical munitions disposal sites, and solvent spill sites. Primary contaminants of concern are heavy metals, solvents, chemical weapons/munitions (CWM), and pesticides.

In FY94, Interim Remedial Actions (IRAs) began at three dismantled lewisite manufacturing plants and at the closed portions of the OB/OD grounds. Also in FY94, RSA formed a Technical Review Committee and established information repositories at five locations. In FY95, the Army identified 11 sites as requiring no further action (NFA). The installation completed three IRA designs, including three groundwater extraction and treatment systems and a RCRA cap.

In FY96, Site Inspection fieldwork began at 38 sites, Remedial Investigation (RI) activities continued at 39 sites, and Feasibility Study (FS) activities began at 10 sites. The Army constructed a groundwater extraction system and an air stripper and began treating contaminated groundwater in the upper aquifer at the Closed Unlined Sanitary Landfill. RSA officials surveyed the

public to determine community interest in forming a Restoration Advisory Board. Little interest was expressed.

In FY97, the installation completed the RCRA cap for the closed lewisite manufacturing plant. All fieldwork for a Removal Action involving an industrial septic tank system was completed. The Army completed NFA decision documents (DDs) for three sites and Proposed Plans for four sites. The installation organized sites into operable units (OUs) and developed an installationwide RI work plan.

In FY98, the Army completed construction and start-up of the groundwater extraction and treatment plant at the OB/OD grounds. The installation submitted a DD and six interim Records of Decision (RODs) for regulator review. Construction of the soil vapor extraction (SVE) system for solvent-contaminated soil began at the OB/OD grounds. A horizontal well was used to dewater the soil for this system.

### FY99 Restoration Progress

Negotiations continued toward a Federal Facility Agreement (FFA). RSA also completed nine RI/FSs and integrated the SVE system with the existing RSA-13 treatment plant. Completion of the groundwater remediation system at OU10 was delayed due to placement of the effluent discharge line; however, the equipment foundation pad and 50 percent of the effluent pipeline were installed.

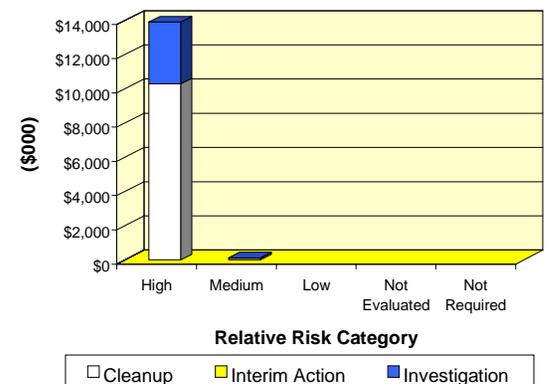
The installation closed out OU3 with an NFA ROD. Other RODs were delayed because of regulator issues. The installation closed out MSFC-60 with an NFA DD. It also initiated design of two remediation systems to control contaminant source migration to off-post receptors. RSA further reduced contaminant sources by

using SVE and air-stripping technologies at OU14 and OU10, respectively. Operation of the remediation system at the former RSA Rocket Engine Facility North Plant was not completed due to a delay in availability of construction parts.

### Plan of Action

- Complete negotiations for the FFA in FY00
- Complete two Removal Actions in FY00 at a waste accumulation area and a rock quarry
- Close out OUs 1, 6c, and 13 with RODs for five sites in FY00
- Begin operating remediation system at the former RSA Rocket Engine Facility North Plant in FY00
- Complete eight RI/FSs and prepare up to eight Remedial Designs and Proposed Plans in FY00
- Continue to participate in the Alabama Partnering Initiative in FY00
- Install site fencing as an institutional control in OU6, OU8, and OU15 in FY00
- Extend the existing soil caps on two arsenic waste lagoons in FY00

### FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** CA921382075900  
**Size:** 172 acres  
**Mission:** Manufacture grenades, projectiles, and steel cartridge casings  
**HRS Score:** 63.94; placed on NPL in February 1990  
**IAG Status:** IAG signed in April 1990  
**Contaminants:** Chromium, cyanide, and zinc  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$43.1 million  
**Estimated Cost to Completion (Completion Year):** \$18.6 million (FY2015)  
**Final Remedy in Place and Response Complete Date for All Sites:** FY1998



*Riverbank, California*

## Restoration Background

In 1942, the Army constructed what is now the Riverbank Army Ammunition Plant as an aluminum reduction plant to supply military requirements. Since 1951, the installation has manufactured steel cartridge cases for the Army and the Navy. Other manufactured products include grenades and projectiles, which the Army ships to other ammunition plants for loading operations.

In FY85, chromium was detected in drinking water wells at residences west of the installation. As an Interim Action, the installation began a quarterly groundwater monitoring program. The Army provided alternative water supplies from deeper groundwater wells to five residences with contaminated wells. A Preliminary Assessment and Site Inspection identified the following sites: an industrial wastewater treatment plant, an abandoned landfill, and four evaporation and percolation ponds located north of the plant near the Stanislaus River.

An FY90 Interim Action included construction of a groundwater extraction and treatment system. In FY92, the Army constructed a water distribution system for 70 nearby residences. In FY93, the regulatory agencies approved the final Remedial Investigation and Feasibility Study report, and the Army presented the Proposed Plan to the public for review. The plan recommended (1) expansion of the groundwater extraction and treatment system to provide complete capture of the contaminated groundwater plume and (2) placement of a final cap over the abandoned landfill.

In FY94, the installation completed a Removal Action at the four evaporation and percolation ponds and received approval from EPA and the state regulatory agency for the first installationwide Record of Decision. The installation also formed

a Technical Review Committee, which meets monthly. In FY95, the installation completed construction of the landfill cap.

In FY96, the Army constructed the off-site groundwater extraction system to minimize migration of the plume and to demonstrate capture of the plume. The installation began a maintenance program for the landfill cap.

In FY97, the installation completed expansion of the groundwater extraction and treatment system and began long-term monitoring (LTM). The petition to delete the installation from the National Priorities List (NPL) was submitted. EPA approved the preliminary Closeout Report and the Remedial Action Completion Report. Riverbank became the first DoD installation on the NPL to reach the construction complete milestone.

In FY98, the installation eliminated chemical use at the interim groundwater treatment system by using an ion exchange system to remove chromium and cyanide contaminants from the groundwater.

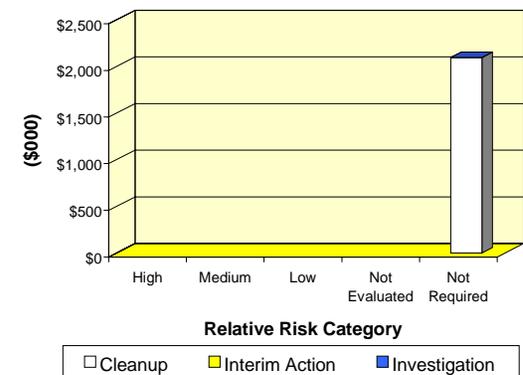
## FY99 Restoration Progress

The installation continued to optimize the groundwater treatment system. The Army added the successful ion exchange system to the overall treatment system. This addition resulted in a 40 percent reduction in operating costs in its first year of implementation. The installation began an optimization effort to further reduce LTM costs.

## Plan of Action

- Complete closeout of Remedial Actions by FY03
- Achieve NPL deletion by FY03

## FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** CO821382076900  
**Size:** 17,228 acres  
**Mission:** Manufactured and stored chemical munitions  
**HRS Score:** 58.15; placed on NPL in July 1987  
**IAG Status:** IAG and Federal Facility Agreement signed in 1989  
**Contaminants:** Pesticides, chemical agents, VOCs, chlorinated organics, PCBs, UXO, heavy metals, and solvents  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$958.1 million  
**Estimated Cost to Completion (Completion Year):** \$989.1 million (FY2041)  
**Final Remedy in Place and Response Complete Date for All Sites:** FY2010



**Adams County, Colorado**

### Restoration Background

Rocky Mountain Arsenal operated as a chemical munitions production facility from 1942 until 1982. It has been the focus of an aggressive soil and groundwater contamination cleanup program since the 1980s. Contaminated sites included liquid waste in unlined and lined lagoons and basins, open burning and detonation areas, and landfills that received both liquid and solid wastes.

In FY84, the Army completed a Preliminary Assessment and Site Inspection that identified 179 potentially contaminated sites. Subsequently, the installation was divided into two operable units (OUs): the On-Post OU and the Off-Post OU. The Army completed Remedial Investigation and Feasibility Study activities at both OUs by FY96. Identification of additional sites raised the total number to 209.

The Army has completed 14 emergency responses at 17 sites at the arsenal. Four groundwater extraction and treatment systems have been installed on site and one off site. In FY90, 10.5 million gallons of chemical wastewater and 580,000 cubic yards of contaminated soil were removed from the Basin F Area. Hundreds of drums of waste and tons of asbestos and related materials were disposed of off post. The installation closed 450 abandoned wells and the sewer systems in the South Plants, and closed and removed the former hydrazine blending facility. It also used a submerged quench incineration system to remediate liquid waste removed from Basin F. The Army later dismantled the system and removed it from the installation.

In FY94, the Army converted its Technical Review Committee to a Restoration Advisory Board (RAB).

In FY96, the Army and regulators signed Records of Decision (RODs) for both OUs. An oversight partnership formed in FY96 and developed a Remedial Design Implementation Schedule for the On-Post OU in FY97. The Army completed Remedial Designs (RDs) for chemical and sanitary sewer plugging and for the trenches remediation. The design for the consolidation area within Basin A was also completed.

In FY98, the installation's contractor completed a design for an on-site hazardous waste landfill (HWL), and construction began at the Basin A Consolidation Area and the HWL. The Army completed Remedial Actions (RAs) for chemical and sanitary sewer plugging, off-post soil tillage, the off-post water supply system, and modification of the North Boundary containment system for treatment of N-nitro-sodimthyamine. RD was completed for four of the Phase I (outlying area) RAs.

### FY99 Restoration Progress

The Basin A Consolidation Area, Phase I of the HWL, and the landfill wastewater treatment system reached construction completion and are now operational. The program manager implemented an innovative waste tracking system to provide control over structural debris and excavated soil that were disposed of on site. An RA was completed for the off-post well closure. The contractor completed RD for seven RAs.

The Program Manager postponed four Phase I RDs, however, these were not critical path projects and did not impact the target completion date. The RDs for burial trench soil remediation, munitions testing soil remediation, and miscellaneous structure demolition and removal were postponed for incorporation of new field data. The RD for demolition of the South Plants agent

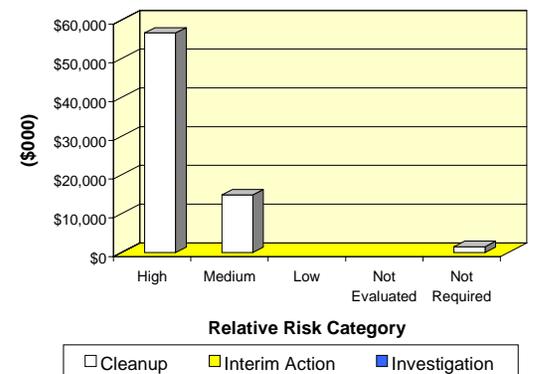
structures was postponed for development of agent monitoring protocols. This RD delay, in turn, delayed the award of Phase I contracts. All four RDs for Phase II RAs began.

Implementation of installationwide programs and operation of groundwater treatment systems continued.

### Plan of Action

- Complete RA for trench slurry walls and post-ROD Removal Actions for structures in FY00
- Complete RA for four Phase I projects and the confined flow system well closure project in FY00
- Complete RD for the four remaining Phase I projects in FY00
- Complete RD for two Phase II projects and one Phase III project in FY00
- Complete Treatability Studies for two Phase II projects in FY00
- Continue implementing installationwide programs and operating groundwater treatment systems in FY00
- Initiate CERCLA 5-year site review in FY00
- Award contracts for Phase I RAs and begin remediation in FY00
- Continue off-post and on-post water acquisition tasks in FY00

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** CA921382078000  
**Size:** 485 acres  
**Mission:** Repair and maintain communications and electronic equipment  
**HRS Score:** 44.46; placed on NPL in July 1987  
**IAG Status:** IAG signed in 1988  
**Contaminants:** Waste oil and grease; solvents; metal plating wastes; and wastewater containing caustics, cyanide, and metals  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$58.4 million  
**Estimated Cost to Completion (Completion Year):** \$7.6 million (FY2004)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY1997



Sacramento, California

## Restoration Background

In July 1987, the BRAC Commission recommended closure of the Sacramento Army Depot. The Army decommissioned the installation in March 1995.

The installation conducted environmental studies that identified 55 sites, 47 of which required no further action. The remaining sites were divided into four operable units (OUs). The installation conducted Remedial Investigation and Feasibility Study (RI/FS) activities for the four OUs between FY89 and FY92, and an installationwide RI/FS began in FY92. The Army and regulatory agencies signed Records of Decision (RODs) for all four OUs. The Army completed the Remedial Actions (RAs) at all sites, except groundwater cleanup, which requires long-term operation.

In FY93, the installation completed the RA at the Tank No. 2 OU. This RA consisted of use of a soil vapor extraction (SVE) system to clean up soil contaminated with organic solvents. In FY94, air sparging was used to treat soil and groundwater at Parking Lot 3 and the Freon 113 Areas. Operation of an SVE system achieved Phase I cleanup goals at the South Post Burn Pits, the source of off-site groundwater contamination. Also in FY94, the installation completed a pilot-scale test of soil washing at the Oxidation Lagoons, a BRAC Cleanup Plan, and a CERFA report. The commander formed a Restoration Advisory Board in FY94.

In FY95, an installationwide ROD and the Environmental Impact Statement (EIS) for disposal and reuse were completed and signed. Other environmental restoration efforts included surveys of all asbestos and lead-based paint and radiation surveys of buildings.

In FY96, the installation completed upgrades of the groundwater treatment plant for long-term monitoring and operations. Upgrades to the system included new piping systems and additional extraction wells. Sacramento Army Depot removed the source of groundwater contamination. The installation completed an RA at the Oxidation Lagoons and the South Post Burn Pits. The soil from those two areas was treated and placed in stabilization pits. The Nuclear Regulatory Commission (NRC) approved closeout of the NRC license. In addition, EPA concurred with the determination that the treatment system at Parking Lot 3 is in place and functioning as designed.

In FY97, the Army initiated a partial National Priorities List (NPL) deletion request for areas not associated with groundwater contamination. The Army also determined that a cap for the Old Burn Pits was unnecessary.

In FY98, Finding of Suitability to Transfer (FOST) and BRAC Disposal Support Packages (BDSPs) were developed for two of the last three parcels to be transferred. The installation also identified the cause of performance problems with horizontal extraction wells installed in FY96.

## FY99 Restoration Progress

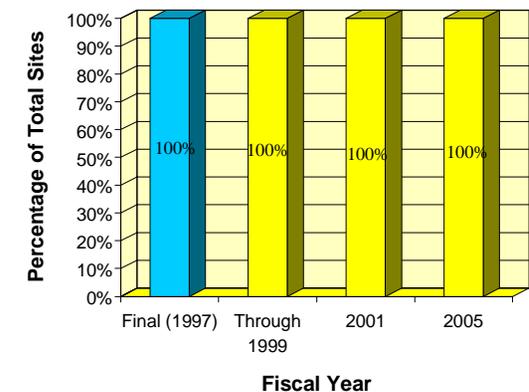
The Army completed the FOSTs and BDSPs for two of the last three parcels to be transferred. Both FOSTs have been signed, and parcel transfer is awaiting development of deed packages. The installation has received Operating Properly and Successfully designation from regulators for the South Post Groundwater Treatment Plant (GWTP), which will allow transfer of the final parcel during groundwater remediation. The U.S. Army Environmental Center (AEC) conducted an Independent Technical

Review to evaluate the cost-effectiveness of the groundwater treatment system and other cleanup efforts. It also completed groundwater modeling efforts, which will be incorporated into the Plume Capture Assessment Report. Additional efforts are expected based on initial regulatory review. The approval of future closeout phases is dependent on the installation's ability to demonstrate plume capture. The Parking Lot 3 cleanup is near completion.

## Plan of Action

- Complete FOST, BDSP, and covenant package for the transfer of final parcel in FY00
- Complete Closure Plan outlining strategies and requirements in FY00
- Begin closeout of Parking Lot 3 in FY00
- Continue optimization of groundwater treatment system in FY00

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** IL521382080300  
**Size:** 13,062 acres  
**Mission:** Receive, store, and demilitarize ammunition; manufacture ammunition-specific equipment  
**HRS Score:** 42.20; placed on NPL in March 1989  
**IAG Status:** IAG signed in 1989  
**Contaminants:** Explosives, metals, solvents, petroleum/oil/lubricants, and VOCs  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$67.4 million  
**Estimated Cost to Completion (Completion Year):** \$196.4 million (FY2032)  
**Final Remedy in Place and Response Complete Date for BRAC Sites:** FY2005



Savanna, Illinois

**Restoration Background**

In July 1995, the BRAC Commission recommended closure of the Savanna Depot Activity and relocation of the U.S. Army Defense Ammunition Center and School to McAlester Army Ammunition Plant in Oklahoma.

The installation began operation in 1917 as the Savanna Proving Grounds. During the 1920s, the mission changed to include storage, receipt, issuance, demilitarization, and renovation of ammunition.

Contaminants were released at landfills; the open burning and open detonation ground; the fire training area; and ammunition load, assemble, and pack facilities. Remedial Investigation and Feasibility Study (RI/FS) activities, beginning in FY89, delineated the extent of explosives-contaminated groundwater, soil, and sediment at all sites.

In FY90, a Remedial Action began at the TNT washout lagoons to remove contaminated sediment. In FY92, the Army and regulators signed a Record of Decision approving incineration of TNT-contaminated soil and sediment from the site. In FY93, the installation began full-scale sediment removal, incineration, and ash-processing.

In FY93, the Army began using high-temperature thermal treatment for cleanup of volatile organic compound (VOC)-contaminated soil at the fire training area. In FY94, the installation completed incineration of TNT-contaminated sediment. In FY95, the installation completed a trial burn for the high-temperature thermal treatment system at the fire training area.

In FY96, the Army formed a BRAC cleanup team (BCT) and a Restoration Advisory Board. The installation drafted the RI/FS report for sites with anticipated cleanups. The installation also completed RCRA closure and cleanup activities at the ammunition deactivation

furnace. The BCT completed a draft Environmental Baseline Survey (EBS) report and submitted it for regulatory review.

In FY97, the installation completed cleanup of the fire training area and completed a BRAC Cleanup Plan. The Army signed a Total Environmental Restoration Contract, with Savanna as the anchor installation. In FY98, the installation developed the design for the cleanup of the reserve motor pool and completed the remediation of the polychlorinated biphenyl (PCB) vault. Remediation began in the open burning grounds (OBG).

**FY99 Restoration Progress**

The installation obtained funding for cleanup of the pesticide burial area and began an Engineering Evaluation and Cost Analysis (EE/CA) for a Removal Action. However, the identified pesticide is a listed hazardous waste under RCRA. Therefore, the Army postponed additional work until Army attorneys could notify the U.S. Department of Agriculture (USDA) that it is a potentially responsible party (PRP) and that the Army will attempt to recover the cleanup costs from USDA. The Removal Action is on hold.

The Army completed the OBG soil pile removal. Twenty thousand cubic yards of lead-contaminated soil was removed from the site and transported to a commercial landfill. Seven thousand cubic yards required stabilization before disposal. The Army submitted the OBG Ecological Risk Assessment (ERA) sampling plan to the regulators for review. The planning team and the ERA planning group wrote critical management objectives, which are under review by the regulators.

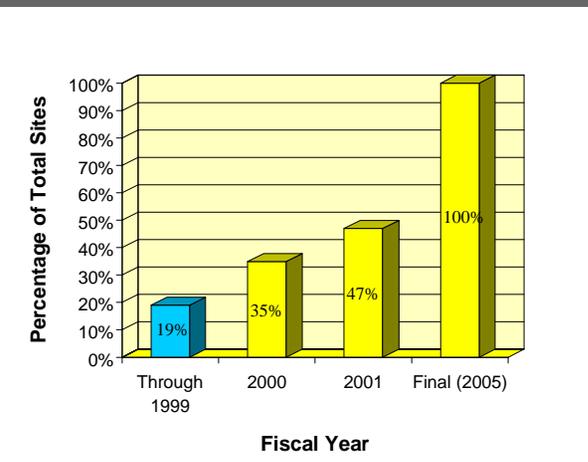
The Army updated the CERFA report and the EBS. The installation began an unexploded ordnance (UXO) EE/CA to identify areas that require UXO sweeps before the property is transferred. The depot submitted a work plan to the regulators for review. Dispute resolution

may be required to resolve regulator concerns about the UXO sweep methods and plan.

**Plan of Action**

- Resolve UXO and ecological risk issues with the regulators and initiate fieldwork in FY00
- Begin fieldwork at OBG in FY00
- Continue Preliminary Assessment, Site Inspection, and RI fieldwork until Phase I is completed on all sites in FY01
- Complete Removal Action at the pesticide burial area by FY01

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** NY221382083000  
**Size:** 10,594 acres  
**Mission:** Receive, store, distribute, maintain, and demilitarize conventional ammunition, explosives, and special weapons; store, maintain, and issue general supplies, including hazardous materials  
**HRS Score:** 37.30; placed on NPL in August 1990  
**IAG Status:** Federal Facility Agreement signed in January 1993  
**Contaminants:** Chlorinated solvents, radioactive isotopes, heavy metals, and petroleum hydrocarbons  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$65.3 million  
**Estimated Cost to Completion (Completion Year):** \$83.9 million (FY2004)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2004



*Romulus, New York*

## Restoration Background

In July 1995, the BRAC Commission recommended closing Seneca Army Depot, except for an enclave that will store hazardous materials and ores. The installation is scheduled to close in FY00.

During its operation, the installation stored munitions and supplies and distributed them to the Army. Such operations included demilitarization and disposal of munitions and explosives. Studies since FY78 have identified the following sites or site types: an open burning (OB) ground, an ash landfill, other landfills, low-level radioactive waste burial grounds, underground storage tanks (USTs), spill areas, fire training areas, and munitions disposal areas.

In FY94, the installation completed a solid waste management classification study, identifying 72 solid waste management units (SWMUs). Thirty-six units required no further action (NFA) or completion reports, 8 required Removal Actions, and 28 required Remedial Investigations and Feasibility Studies (RI/FSs). The 28 sites requiring RI/FSs were divided into 13 groups. Interim Actions included removal of several USTs and associated contaminated soil.

In FY95, the installation completed a Removal Action at the ash landfill. Approximately 35,000 cubic yards of soil was removed and treated.

In FY96, the installation completed RI/FSs for the first two groups of sites and drafted a Proposed Plan (PP). RI/FS work plans began for the remaining groups. Fieldwork began for three of the groups. The installation converted its Technical Review Committee to a Restoration Advisory Board and established a BRAC cleanup team. It also submitted a draft CERFA report to

the regulatory agencies for concurrence. The community formed a Local Reuse Authority and began developing a Land Reuse Plan.

In FY97, the installation completed an Environmental Baseline Survey (EBS). In FY98, it completed an Environmental Impact Statement (EIS) for BRAC closure and began two RIs. The installation also changed an RI to an Engineering Evaluation and Cost Analysis (EE/CA) for a Removal Action and began two additional Removal Actions. The installation initiated a Treatability Study (TS) for reactive wall treatment of the trichloroethene (TCE) plume and began Remedial Designs for the ash landfill and the OB ground.

## FY99 Restoration Progress

The Army completed the Record of Decision (ROD) for the OB ground, but the RODs for the ash landfill, the fire training area, and the deactivation furnaces were delayed by prolonged negotiations. The installation continued RIs at four sites. The beginning of long-term monitoring is awaiting completion of the RODs. The installation prepared an NFA decision document instead of a planned RI.

The innovative use of a treatment wall technology at the installation was successful. The TS at the Ash landfill continued to gather initial data. An independent technical review recommended a plan for a Removal Action for another site, but the regulatory agencies disagree about whether removal is appropriate based on the available data. The installation initiated the OB ground Remedial Action (RA). The first phase of this RA requires ordnance removal. The installation initiated a UXO EE/CA and completed the EE/CA for transfer of the prison parcel with one site requiring a Removal Action. The installation negotiated a reduced scope of work with the State Historic Preservation Office

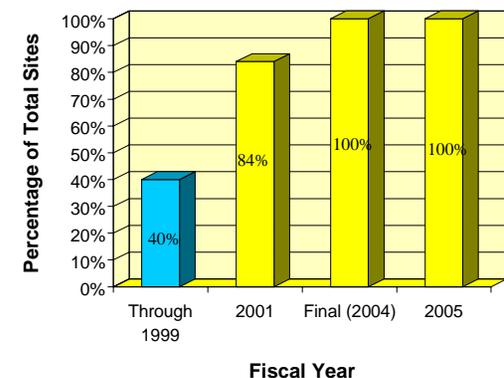
for survey of the ammunition storage area and initiated the resultant survey effort, leading toward a Memorandum of Agreement.

Results and recommendations from an Environmental Baseline survey (EBS) are under negotiation with the regulatory agencies. The agreement about the status of these sites has not been completed. The installation delayed NFA decision documents planned for 45 SWMUs because of higher priority issues. Planned FOSTs for three parcels were not issued because the parcels will not be suitable to transfer until resolution of issues about new sites identified in the EBS.

## Plan of Action

- Complete RODs for the ash landfill, fire training areas, deactivation furnaces, and munitions washout facility in FY00
- Complete NFA decision documents in FY00
- Complete transfer of three parcels (the prison site, the North depot, and the airfield) in FY00
- Complete Removal Actions in FY00
- Close installation in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** CA921382084300  
**Size:** 36,322 acres  
**Mission:** Receive, store, and maintain conventional ammunition to support demilitarization of conventional ammunition and receive, store, maintain, and issue operational project stocks and general supplies  
**HRS Score:** NA  
**IAG Status:** Two-party Federal Facility Agreement signed in May 1991  
**Contaminants:** Petroleum products, solvents, and explosives  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$35.5 million  
**Estimated Cost to Completion (Completion Year):** \$20.8 million (FY2025)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2000  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY2006



Herlong, California

**Restoration Background**

In 1995, the BRAC Commission recommended realignment of Sierra Army Depot. Approximately 4,537 acres was identified as excess. Contamination at the depot originated from burn trenches, explosives leaching beds, landfills, burial sites, spill sites, sewage lines, underground storage tanks, sumps, and fire training areas. Primary contaminants in soil and groundwater include trichloroethene (TCE), petroleum products, and explosives. Investigations identified 23 sites; 12 sites required no further action.

Restoration activities in FY95 included a bioventing project at the active fire training area and signing of a Record of Decision (ROD) for nine sites, seven of which specified a monitored natural attenuation remedy. The Army completed a design implementing composting to treat soil contaminated with explosives. In FY96, the Army developed a design for preventing off-post migration of a TCE-contaminated groundwater plume. It also developed an early warning groundwater transducer program to monitor petroleum and TCE plumes near the potable water supply network. By the end of FY96, RODs had addressed 17 of Sierra's 23 sites. Also in FY96, the installation formed a BRAC cleanup team (BCT). The latest version of the BRAC Cleanup Plan was published in FY97.

In FY97, the Army completed an Environmental Baseline Survey, and finished a Report of Availability and an Environmental Condition of Property (ECP) report for the BRAC cantonment parcel. The installation updated its Community Relations Plan and used the plan to establish a Restoration Advisory Board.

In FY98, the depot used contaminated soil from the BRAC property Rifle Range to resurface the impact berm at an active range on the retained parcel. The BRAC range was remediated and closed. The installation also completed a Removal Action for the BRAC

construction debris area. An Engineering Evaluation and Cost Analysis (EE/CA) project design was completed for the BRAC unexploded ordnance (UXO) areas. Preliminary screening at a contaminated soil area indicated that the site required no further action. The installation also completed reviews of three ECPs. RODs were signed for the Defense Reutilization and Marketing Office site. The selected remedy includes active bioventing of soil with a hot-spot removal, and natural attenuation for groundwater. The installation completed soil removals to close two other sites.

**FY99 Restoration Progress**

The installation completed one property transfer to the Federal Bureau of Prisons. It also removed all depleted uranium (DU) munitions, completed the final two Remedial Investigation (RI) reports, and remediated the TNT soil area, Building 1003 soil, and the large sewage treatment pond beds. Biocomposting was completed.

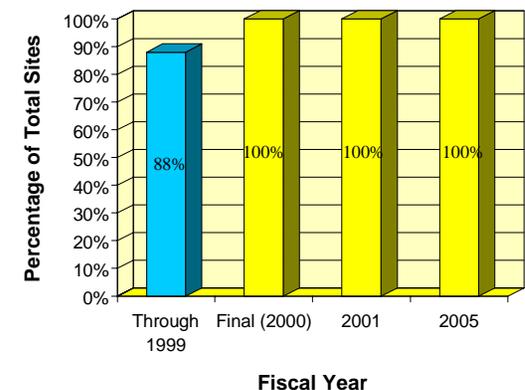
Following new state underground tank removal guidance, the installation began cleanup of a diesel-contaminated soil site. The state accepted the installation's proposal to reuse soil contaminated at 2,000 parts per million (ppm) or less (total petroleum hydrocarbons–diesel) for the construction base of a hard-capped storage lot. Regulators worked with the installation to develop an innovative approach to dealing with lead-contaminated soil. The approach involved in situ soil treatment using lead-trapping technology. The installation added one building with approximately 0.7 acres to the areas considered CERFA-clean.

The scheduled transfer of two properties to Susanville Indian Rancheria was delayed, one transfer by easement issues at the sponsoring agency and the other because the request for the property was withdrawn.

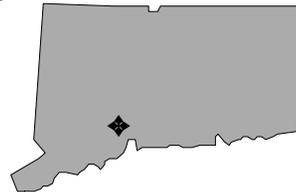
**Plan of Action**

- Complete BRAC ordnance and explosives and UXO EE/CA for Honey Lake East Shore and associated parcels in FY00
- Complete DU closeout report in FY00
- Complete 5-year report on monitored natural attenuation at TNT area in FY00
- Install and begin operating a remediation system and complete one BRAC property transfer in FY00
- Complete the action plan and ROD for the Honey Lake East Shore in FY01

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** CT121382292400  
**Size:** 124 acres  
**Mission:** Manufacture engines for heavy armor vehicles and rotary wing aircraft  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** PCBs, asbestos, fuel-related VOCs, solvents, metals, and PAHs  
**Media Affected:** Groundwater, soil, surface water, and sediment  
**Funding to Date:** \$17.1 million  
**Estimated Cost to Completion (Completion Year):** \$0.3 million (FY2001)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2001



Stratford, Connecticut

## Restoration Background

In July 1995, the BRAC Commission recommended closure of the Stratford Army Engine Plant. The installation closed in September 1998.

Since FY91, environmental studies at the installation have identified the following sites: transformers that contain polychlorinated biphenyls (PCBs), underground storage tanks (USTs), sludge lagoons, a fire training and explosives equipment testing area, hazardous materials and hazardous waste storage areas, and buildings constructed with asbestos-containing materials. Preliminary studies indicated that contaminants might include PCBs, fuel-related volatile organic compounds (VOCs), solvents, metals, polyaromatic hydrocarbons (PAHs), and asbestos.

Interim Actions at the installation have included removal of 27 USTs, capping of two sludge lagoons, and capping of one large parking lot area to immobilize contaminated soil. The installation closed two USTs in place. In FY95, the installation began a Remedial Investigation (RI) to identify and characterize contamination and affected media throughout the installation.

In FY96, the Army appointed a BRAC environmental coordinator and formed a BRAC cleanup team (BCT). The community formed a Local Redevelopment Authority to address socioeconomic issues related to closure of the installation and to develop a Land Reuse Plan. Phase II of the RI was completed. The installation began an asbestos survey of all buildings and started the NEPA process, including an archive search. A draft final Environmental Baseline Survey (EBS) and a draft BRAC Cleanup Plan (BCP) were completed.

In FY97, the installation received concurrence from the appropriate regulatory agencies on the EBS and CERFA reports. RI Phase III

began. The BCT reviewed the EBS and CERFA reports. An updated BCP was completed. The installation implemented systems for monitoring schedules and budgets.

In FY98, the installation implemented a Community Relations Plan, which includes establishment of a staffed on-site public information repository. The installation also began a Time-Critical Removal Action (TCRA) to address high concentrations of hexavalent chromium in soil in the old chrome-plating area. The installation began a major sitewide RI and Feasibility Study (FS) for a 76-acre upland portion of the property. The RI/FS includes performance of all risk assessments needed to expedite transfer of the property.

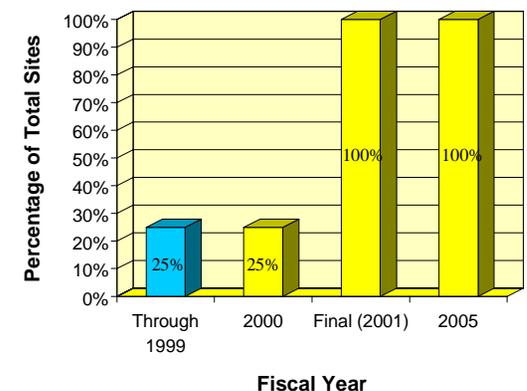
## FY99 Restoration Progress

The installation completed the investigation phase of two Engineering Evaluations and Cost Analyses (EE/CAs), one for Soils Operable Unit (OU) 01 (Causeway) and one for Groundwater OU02. The installation also completed a TCRA for the chrome-plating room (off-site disposal of heavy metal-contaminated soil and dust) and the RI phase of the RI/FS. The FS will be completed with the EE/CA. Version 2 of the BCP also was completed. An EE/CA approach is being used for remediating the causeway portion of the tidal flats. The proposed use of the land after transfer was revised, and it is no longer necessary to exchange fluids in the PCB-containing transformers to permit the transformers' reclassification by the Army.

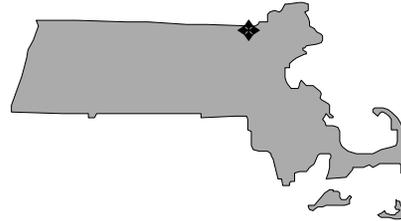
## Plan of Action

- Complete decision documents (DDs) for Soils OU01 and the EE/CAs for Groundwater OU02 in FY00
- Complete sitewide FS and EE/CA in FY00
- Integrate DDs into the sitewide Record of Decision (ROD) in FY00
- Complete the Proposed Plan and the ROD in FY00
- Initiate proposed remedies, with all in place and operating in FY01
- Initiate drafting of Finding of Suitability to Transfer (FOST) for completion in FY01
- Operate remediation of Soils OU01 and Groundwater OU02 in FY01

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** MA121402300900  
**Size:** 2,292 acres  
**Mission:** Train troops and test ordnance, materiel, and equipment  
**HRS Score:** 35.57; placed on NPL in February 1990  
**IAG Status:** IAG signed in May 1991  
**Contaminants:** VOCs, PCBs, pesticides, and heavy metals  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$12.8 million  
**Estimated Cost to Completion (Completion Year):** \$0.7 million (FY2000)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2000



*Middlesex County, Massachusetts*

## Restoration Background

In July 1995, the BRAC Commission recommended closure of the Sudbury Training Annex, a subpost of Fort Devens in eastern Massachusetts. Studies since FY80 identified several sites, including an old landfill, disposal and dump areas, a fire training pit, ordnance test areas, a leach field, underground storage tanks (USTs), a drum storage area, a burning ground area, and a chemical research and development area. In FY86, Remedial Investigation and Feasibility Study (RI/FS) activities confirmed groundwater contamination at two sites. The primary contaminants are volatile organic compounds (VOCs) and pesticides in groundwater and soil.

Interim Actions have included removal of drums, petroleum-contaminated soil, and a UST. In the mid-1980s, the installation excavated fuel-contaminated soil from a burning ground area and polychlorinated biphenyl (PCB)-contaminated soil from a transformer storage area. After the installation's National Priorities List (NPL) designation in 1990, a Technical Review Committee (TRC) was formed.

Between FY94 and FY96, the installation removed 2,300 tons of contaminated soil, 15 tons of debris, 107 abandoned drums, and 13 abandoned oil USTs. In FY95, the installation identified two additional sites, bringing the site total to 74. Actions included signing decision documents for no further action (NFA) at 19 sites; completing the final RI/FS and Proposed Plan for 5 sites; completing Site Inspections (SIs) for 15 sites; initiating SIs for 10 sites; and performing Engineering Evaluations and Cost Analyses for 4 sites. The installation also removed 1,200 tons of arsenic-contaminated soil. The Army completed the Remedial Design, and began Remedial Action at nine sites, resulting in removal of 11,800 cubic yards of soil

contaminated with total petroleum hydrocarbons, polyaromatic hydrocarbons, and metals. Records of Decision (RODs) for NFA were signed for five additional sites.

In FY97, all outstanding SIs were completed. The installation completed an archive search for unexploded ordnance (UXO) and installed a landfill cap. Site cleanups were completed, and a ROD for NFA was signed, for Sites A4, A7, and A9.

In FY98, the installation closed 93 monitoring wells, 5 abandoned septic systems, and 4 water supply wells. A 3-year installationwide arsenic study was completed. Two sites were identified for limited Removal Action. Draft Environmental Condition of Property (ECP) statements and Memoranda of Agreement (MOAs) were sent to the U.S. Army Forces Command (FORSCOM) for review. A cultural and natural resources survey, a UXO survey, and an Environmental Baseline Survey were completed; one building requires UXO clearance.

## FY99 Restoration Progress

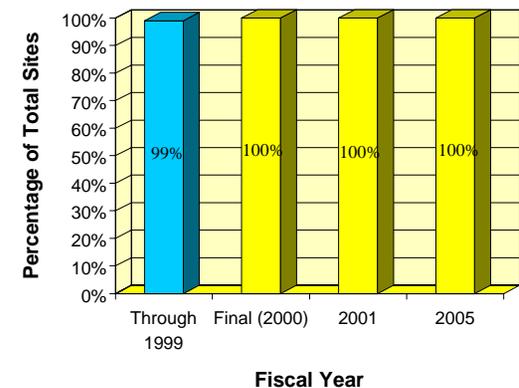
The installation completed asbestos abatement and two removals and received regulatory concurrence on the No Risk designation from the installation-wide arsenic study. Regulators drafted a final closeout report for NPL deletion. The installation was not deleted from the NPL because regulators required additional Removal Actions. The installation sent final MOAs and ECPs with a BRAC Disposal Support Package to FORSCOM for property transfer, but the actual property transfer is not yet complete. The installation also completed the third year of long-term monitoring, with the 5-year review due in 2001. Sudbury received regulatory concurrence on a finding of No Human Health or Environmental Risk.

Study Area P27 was declared an imminent hazard because of high arsenic levels in the soil (1,200 parts per million) and will require a Time-Critical Removal Action.

## Plan of Action

- Obtain regulatory signatures on No Action under CERCLA for arsenic investigation and for all remaining study areas (16) in FY00
- Complete and sign final NPL Closeout Report/Deletion and complete all BRAC 95 and CERCLA activities in FY00
- Sign NFA decision document for the installation-wide arsenic investigation, including 13 associated study areas, in FY00
- Sign NFADDs for remaining study areas in FY00
- Close the TRC and public repositories in FY00

**SITES ACHIEVING RIP OR RC PER FISCAL YEAR**



**FFID:** KS721382087800  
**Size:** 9,065 acres  
**Mission:** Manufactured smokeless powder and propellants; on standby status for production of nitroguanidine  
**HRS Score:** 50.00; proposed for NPL in February 1995  
**IAG Status:** None  
**Contaminants:** Nitrates, sulfates, lead, chromium, and propellants  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$16.6 million  
**Estimated Cost to Completion (Completion Year):** \$43.4 million (FY2032)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2010



### De Soto, Kansas

### Restoration Background

The Sunflower Army Ammunition Plant began operations in 1942. Its primary mission was to manufacture smokeless powder and propellants. Additional installation operations included the manufacture and regeneration of nitric and sulfuric acids and munitions proving. The installation no longer has a mission, and all real property is being designated as excess. Sources of contamination at the installation include production line areas, magazine storage areas, and 52 RCRA solid waste management units (SWMUs). EPA proposed placing the installation on the National Priorities List (NPL) after evaluating five munitions manufacturing surface impoundments as potential sources of hazardous waste.

Prominent site types at the installation include landfills, open burn and open detonation (OB/OD) areas, propellant production areas, dump sites, a battery handling area, settling ponds, wastewater lagoons, and drainage ditches.

A groundwater contamination survey in FY87 and a Site Inspection in FY88 revealed contaminated groundwater at the installation. An analysis also indicated contamination of surface water and sediment with heavy metals. Interim Actions have included removal of underground storage tanks and associated contaminated soil and cleanup of an asbestos dump.

The Army submitted an Ecological Risk Assessment (ERA) for the entire installation to EPA and the Kansas Department of Health and Environment (KDHE) for review. The assessment concluded that no further action was necessary for most of the areas studied. A final survey of benthic macroinvertebrates was completed; the survey concluded that biological features of surface water appear to be in good condition. A 1996 visit and summary conducted by the Agency

for Toxic Substances and Disease Registry identified no specific environmental or public health concerns related to the installation.

In FY98, the Army completed the restoration of the remaining wastewater lagoon. Groundwater and soil sampling and analysis were completed for all SWMUs. EPA and KDHE approved the installation's ERA and Community Relations Plan. The installation has a Technical Review Committee and a Restoration Advisory Board (RAB).

### FY99 Restoration Progress

The Army completed a draft Corrective Measures Study for SWMUs 10/11 and 22/32 and initiated a Remedial Action for SWMU 50 (North). The Army did not complete the planned Interim Remedial Action (IRA) for SWMU 50 (North) because the scope of work changed significantly and the additional funds needed to complete the expanded task were not available. Remediation of SWMU 23 was completed; closure is awaiting regulator approval. The installation prepared a final work plan for additional investigation activities at SWMUs 33, 34, and 35. EPA and KDHE approved the final RCRA Facility Investigation (RFI) reports for SWMUs 1, 2, 3, 6, 12, 13, 27, 36, 47, and 48. The RFIs for SWMUs 14, 21, 24, 25, 30, and 33 through 36 were not completed because of the discovery of potential by fraudulent laboratory manipulation of organic data. This issue has not been resolved. The Army completed a draft off-site well survey and submitted it to EPA and KDHE. The U.S. Army Center for Health Promotion and Preventive Medicine completed field evaluations for SWMUs 53 and 54.

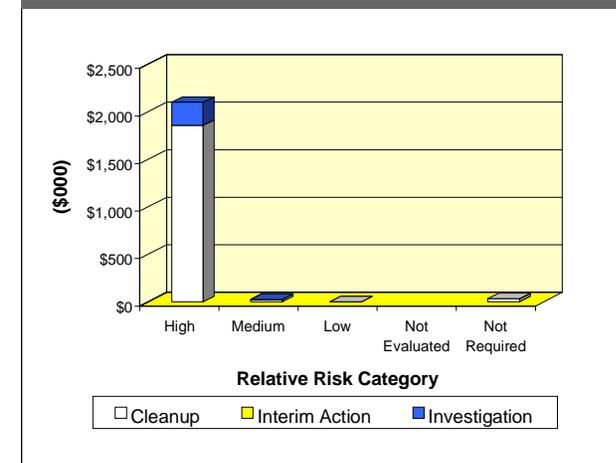
The installation delayed long-term monitoring (LTM) of groundwater beneath the lagoons because of a change in funding sources. The groundwater investigations for OU1 were not completed due to a lack

of funding. Lack of funding also delayed the completion of a grazing study, but a sufficient amount of testing has been completed to assure the regulatory agencies that cattle grazing on the installation is not a problem.

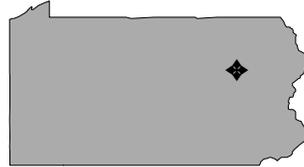
### Plan of Action

- Complete Removal Actions for SWMUs 10/11 and 22/32 in FY00
- Complete IRAs for SWMU 50 (North) in FY00
- Begin LTM for SWMUs 13, 27, 41, and 42 in FY00
- Complete the grazing study in FY00
- Complete closure of the OB/OD site (SWMU 23) in FY00

### FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** PA321382089200  
**Size:** 1,293 acres  
**Mission:** Provide logistics for communications and electronics equipment  
**HRS Score:** 37.93; placed on NPL in August 1990  
**IAG Status:** IAG signed in September 1990  
**Contaminants:** Heavy metals, VOCs, PCBs, petroleum/oil/lubricants, and UXO  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$13.9 million  
**Estimated Cost to Completion (Completion Year):** \$3.4 million (FY2021)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2011



**Tobyhanna, Pennsylvania**

## Restoration Background

Environmental studies at Tobyhanna Army Depot began in FY80. Identified sites include landfills, a disposal pit, underground storage tanks (USTs), burn areas, drum staging areas, a surface disposal area, a waste treatment plant, a spill site area, an unexploded ordnance (UXO) area, and a fire fighting training area. The most prominent sites are the burn areas and a drum staging area, which constitute Operable Unit (OU) 1. Contamination at these sites includes volatile organic compounds (VOCs), solvents, and heavy metals in groundwater; solvents, metals, polychlorinated biphenyls (PCBs), and petroleum/oil/lubricants (POL) in surface water and sediment; and solvents, metals, PCBs, POL, and UXO in soil.

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY90. In FY91, the installation constructed a water line extension to residences affected by contamination in OU1. In FY92, the installation completed RI fieldwork at OU1 and a Treatability Study of a soil volatilization technology. In FY94, the installation began an installationwide Ecological Risk Assessment (ERA).

In FY95, the installation conducted an Interim Remedial Action at OU1 Area B to remove contaminated soil. The installation formed a Restoration Advisory Board (RAB).

In FY96, the installation, EPA, and the Pennsylvania Department of Environmental Protection drafted the Proposed Plan for OU1. A cleanup action was completed at Oakes Swamp, Area of Concern (AOC) 8. In FY97, the installation completed a ROD for OU1 groundwater, specifying natural attenuation with long-term monitoring. The Army completed an RI for construction

and installation of groundwater monitoring wells at the Inactive Sanitary Landfill.

In FY98, the installation completed a closeout document for 35 No Further Action (NFA) sites. The installation also completed ERA fieldwork. A Burn Pan was removed at AOC 58, the fire fighting training area. The Army constructed four additional off-site monitoring wells adjacent to the Inactive Sanitary Landfill to determine whether contaminants had migrated. A Remedial Design document for long-term monitoring at OU1 was completed. The installation also completed a new Community Relations Plan, which was very favorable to the depot.

## FY99 Restoration Progress

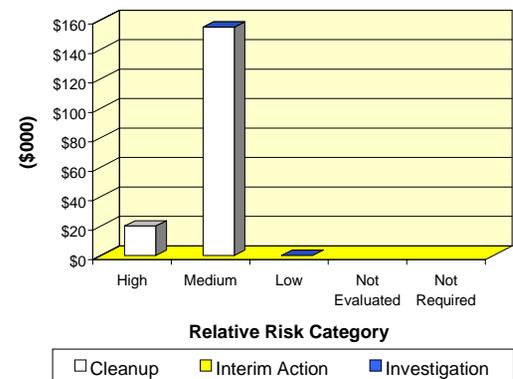
The installation completed a closeout document for 18 additional NFA sites and continued groundwater monitoring at OU1 and AOC 1. Health Risk Assessments were completed for two sites. The installation completed a Quality Assurance Project Plan for groundwater sampling and analysis at AOC 1. The RAB reviewed all of these documents as well as the Installation Action Plan and work plans.

EPA's Biological Technical Assistance Group is reviewing the final ERA document. The unexpected length of this review is due to a change of personnel at EPA. Less costly, yet sufficient, Health Risk Assessments were completed in lieu of the scheduled Focused Feasibility Studies.

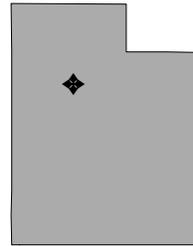
## Plan of Action

- Remove sewage drying beds at AOC 32 in FY00
- Complete a closeout document for five NFA sites in FY00
- Complete Proposed Remedial Action Plans for two sites in FY00
- Complete two RODs in FY00
- Finalize the ERA in FY00
- Complete all decision documents by FY01
- Continue groundwater monitoring at OU1 and AOC 1 until FY21

## FY00 FUNDING BY PHASE AND RELATIVE RISK



**FFID:** UT821382089400  
**Size:** 23,732 acres  
**Mission:** Store and demilitarize munitions  
**HRS Score:** 53.95; placed on NPL in August 1990  
**IAG Status:** Federal Facility Agreement signed in September 1991  
**Contaminants:** Solvents, metals, explosives, petroleum hydrocarbons, and PCBs  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$83.7 million  
**Estimated Cost to Completion (Completion Year):** \$107.5 million (FY2028)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2005  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY2009



Tooele, Utah

## Restoration Background

In July 1993, the BRAC Commission recommended realignment of the Tooele Army Depot (TEAD) maintenance mission. The commission recommended that the depot retain its conventional ammunition storage and chemical demilitarization missions. The Army transferred the 1,700-acre BRAC parcel using early transfer authority in 1999 and will retain 23,032 acres for the conventional ammunition mission.

Studies have been under way at the installation since FY79. Site characterizations included open burning and open detonation areas, an ammunition demilitarization facility, landfills, firing ranges, industrial sites, underground storage tanks (USTs), surface impoundments and lagoons, and drain fields. Organic solvents are the primary contaminants affecting groundwater.

TEAD's environmental programs are regulated under a CERCLA Federal Facility Agreement (FFA) and a RCRA corrective action permit. The installation has investigated 57 active sites and completed response actions at 17 sites (6 under CERCLA and 11 under RCRA).

In FY93, TEAD installed a pump-and-treat system as an Interim Removal Action to remove trichloroethene from a groundwater plume. In FY94, the Army, EPA, and the State of Utah approved a Record of Decision for six sites. Four of the six sites were No Further Action (NFA) sites.

In FY95, the community completed a draft Land Reuse Plan. The installation formed a BRAC cleanup team and a Restoration Advisory Board.

In FY96, TEAD completed the disposal and reuse Environmental Impact Statement (EIS) for the 1,700 acres available for transfer, and was able to transfer 41 acres to the Tooele City Redevelopment Agency. In FY97, the installation delineated the on-post extent of

another contaminated groundwater plume and initiated investigations to determine the source of contamination. The installation initiated Corrective Measures Studies (CMSs) and Feasibility Studies (FSs) for all sites requiring further actions. The installation completed an Interim Removal Action at the TNT Washout Facility, consisting of the removal and off-site disposal of settling basins containing explosives-contaminated sediment.

In FY98, the installation submitted a Finding of Suitability for Early Transfer (FOSET) for the remainder of the BRAC property for regulator approval. The installation removed two USTs and presented a bioventing system design to the regulators for treatment of the contaminated soil. The installation completed the remedial work for two BRAC sites and optimized the groundwater treatment system installed in FY93. The installation decided to compost explosives-contaminated soil and completed two Interim Removal Actions, one at the Chemical Range, and the other at the Building 1301 Washout Pond.

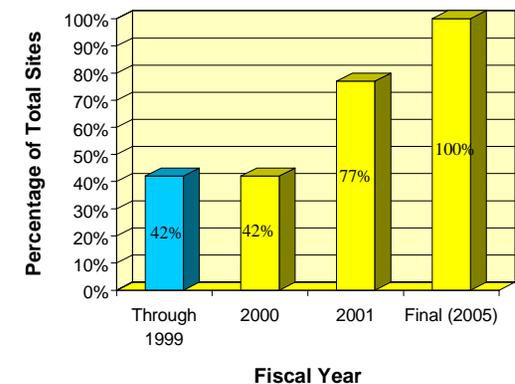
## FY99 Restoration Progress

The installation transferred the remainder of the 1,700 acres to the Tooele City Redevelopment Agency under the Early Transfer Authority. The regulators required more data to complete CMSs and FSs. TEAD installed bioventing systems to remediate contaminated soils. It also conducted risk assessment studies to develop a response alternative to address the groundwater contamination associated with the BRAC sites. The Phase I BRAC RCRA Facility Investigation (RFI) for groundwater contaminant sources was not completed due to additional sampling requirements.

## Plan of Action

- Initiate Remedial Design (RD) for RCRA corrective action in FY00
- Complete Phase I BRAC RFI (on-post portion) and initiate Phase I BRAC RFI (off-post portion) in FY00
- Initiate required RD for FFA sites in FY00
- Initiate source removal soil vapor extraction pilot studies, if required, in FY00
- Initiate Interim Action for source removal of groundwater contamination (BRAC parcel) in FY00
- Initiate Site Management Plan for land use controls in FY00 and begin RCRA corrective action in FY01
- Complete all required CMSs and FSs in FY00–FY01
- Complete remediation of two UST sites in FY01

## Sites Achieving RIP or RC Per Fiscal Year



**FFID:** MN521382090800  
**Size:** 2,370 acres  
**Mission:** Modified caretaker; provide support to DoD tenants; formerly manufactured small-arms ammunition and projectile casings  
**HRS Score:** 59.60; placed on NPL in September 1983  
**IAG Status:** Federal Facility Agreement signed in August 1987  
**Contaminants:** VOCs, PCBs, and heavy metals  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$124.5 million  
**Estimated Cost to Completion (Completion Year):** \$80.4 million (FY2040)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2006



**Arden Hills, Minnesota**

**Restoration Background**

Studies conducted since FY81 have verified that past waste disposal practices at this installation released hazardous contaminants into soil, groundwater, and sediment, which migrated into the Minneapolis-St. Paul groundwater supply. Twenty-eight sites, including former landfills, burning and burial grounds, ammunition testing and disposal sites, industrial operations buildings, and sewer system discharge areas, are grouped into three operable units (OUs).

Ammunition-related metals, volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs) are the primary soil contaminants at the installation. The Army has installed soil vapor extraction systems to remove VOCs from soil.

VOCs are the primary contaminants in groundwater. From FY86 to FY93, the Army installed groundwater extraction and treatment systems. The installation constructed a boundary groundwater recovery system to contain and treat VOC-contaminated groundwater at the installation's southwest boundary. The Army provided a permanent groundwater treatment system for the city of New Brighton, and the installation provided a municipal water supply hookup at the Lowry Grove Trailer Park.

In FY94, the OU3 Plume Groundwater Recovery System and the OU1 and OU3 municipal drinking water interconnection became operational. A boundary plume containment system was initiated to prevent off-post migration of VOCs in shallow groundwater. In FY96, the Army closed the Water Tower Area site and implemented a well advisory for OUs 1, 2, and 3. The installation established a Technical Review Committee in 1985 and a Restoration Advisory Board (RAB) in FY96.

In FY97, the Army implemented the alternate water supply plan, abandoning five residential wells. For OU1, two performance-monitoring wells were installed. On completion of the OU2 Feasibility Study, the installation drafted the OU2 Record of Decision (ROD). The Army began Remedial Design (RD) for eight shallow soil sites and two deep soil sites and completed removal of all contaminated soil from Site F.

In FY98, the Army and regulators signed an installationwide ROD. The Army completed the RD for six sites, initiated RD for five sites, and started Remedial Action (RA) for two sites. The RA (construction) for OU1 was completed; two additional containment wells and six additional performance monitoring wells were installed. The Army completed Engineering Evaluations and Cost Analyses (EE/CAs) for the Outdoor Firing Range, the Grenade Range, and the VOC-contaminated soil at Site A. It initiated a Removal Action at the Outdoor Firing Range and abandoned one residential well. The Tier I Ecological Risk Assessment (ERA) was completed.

**FY99 Restoration Progress**

Final cleanup continued at OU2. The Army completed RD for five sites, continued RA for two sites, and initiated RA for five sites at OU2. The Army also provided two private well owners and one commercial well owner with hookups to the municipal water supply. Regulatory approval was received for the Site F Closure Report, and the draft OU1 RA report was submitted for regulatory review. Dump characterization concluded at two sites, and the Removal Actions at the Grenade and Outdoor Firing Ranges continued. The statutory 5-year review of OU1, OU2, and OU3 began. RAs for deep groundwater in OUs 1 and 3 are expected to be operated and maintained for the next 40 years.

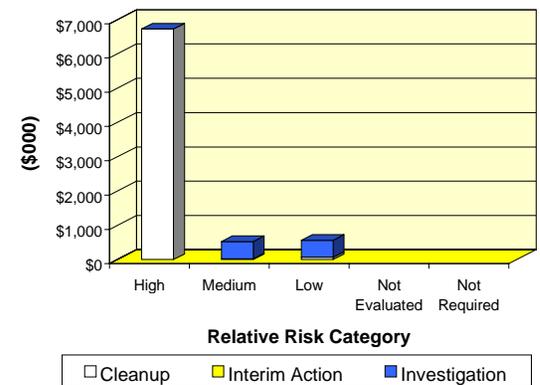
The Army did not complete the Tier II ERA as planned because of the lengthy review process. However, the work plan for the Tier II ERA for surface water and sediment was completed, and the field investigations began. The Army delayed the RA for eight sites at OU2 because there was unexpected asbestos, ammunition parts, and more contamination than originally believed.

The RAB applied for and received technical assistance through the Technical Assistance for Public Participation (TAPP) program. The TAPP project provided community members of the RAB with technical review of restoration documents and with reports summarized in nontechnical terms so that all RAB members could readily understand the issues and decisions reached on cleanup activities at the installation by Army and the regulators.

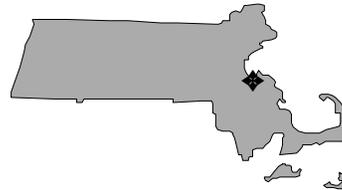
**Plan of Action**

- Complete RD for five sites, initiate RA at four sites, and complete RA at five sites in OU2 in FY00
- Complete RI and EE/CAs for two primer tracer areas in OU2 from FY00 to FY02
- Operate and maintain all RAs at OU1 and OU3 from FY00 to FY40
- Complete RD for three sites and RA for two sites in FY01
- Complete Tier II ERA in FY03

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** MA121382063100  
**Size:** 78 acres  
**Mission:** Research and develop food, clothing, equipment, and materials to support military operations  
**HRS Score:** 50.00; placed on NPL in May 1994  
**IAG Status:** None  
**Contaminants:** Pesticides, herbicides, pentachlorophenol, solvents, and VOCs  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$18.2 million  
**Estimated Cost to Completion (Completion Year):** \$32.9 million (FY2030)  
**Final Remedy in Place or Response Complete Date for All Sites:** FY2003



### Natick, Massachusetts

### Restoration Background

Since 1954, this installation has supported industrial, laboratory, and storage activities for research and development in food science and in aeromechanical, clothing, material, and equipment engineering. Operations used various volatile organic compounds (VOCs), including tetrachloroethene, trichloroethene (TCE), carbon disulfide, benzene, and chloroform. Site types include contaminated buildings, spill sites, storage areas, disposal pits, dry wells, and underground storage tanks.

In FY89, soil gas surveys detected VOCs under Building T-25 and the former proposed gymnasium areas. Groundwater, soil, and surface water samples collected during later studies also contained VOCs.

The installation completed an Expanded Site Inspection in FY92 that confirmed TCE contamination in groundwater. A Remedial Investigation and Feasibility Study (RI/FS) began in FY93. The installation has performed several Interim Actions, including removal of waste and contaminated soil and pavement from the drum storage area. The installation also removed a 1,000-gallon waste oil storage tank and associated contaminated soil and removed polychlorinated biphenyl-contaminated soil from an exploded transformer.

After its placement on the National Priorities List (NPL), the installation increased efforts to partner with state and federal regulators and to communicate with the community. The installation established a Restoration Advisory Board (RAB) in FY95.

In FY96, the installation conducted a Phase II RI of the Building T-25 area to address the concerns of regulatory agencies and the RAB. The Army completed the first iteration of the groundwater

model, detailing movement of water and contaminants within the complex alluvial aquifer. The Phase I RI for the Building T-25 area was completed, incorporating the views of the regulatory agencies. The installation began receiving drinking water from public wells and discontinued sampling of the installation's drinking water wells.

Also in FY96, all active sites received an initial Relative Risk Site Evaluation ranking, which incorporated the views of the regulatory agencies. The RAB received and reviewed work plans and reports and participated in relative risk rankings of NPL sites.

In FY97, the installation performed quarterly monitoring of groundwater contaminant levels in the monitoring well network. Bimonthly meetings with regulators increased coordination between regulators and the installation. To resolve issues with regulators, the installation established a consensus approach to new work. Field screening with geoprobe and ground-penetrating radar was used to expedite site characterization.

In FY98, the installation completed fieldwork for the RI at the former proposed gymnasium site and removed pesticide-contaminated soil. The installation also started the approved Building T-25 Treatability Study (TS) to contain contamination within the post boundaries and began investigating the boiler plant site.

### FY99 Restoration Progress

The installation completed and issued draft RIs for the gymnasium site and the water well supply site. The installation is awaiting regulator comments on the draft RIs. FSs may not be necessary. The installation also held a public hearing on the

Building T-25 groundwater Proposed Plan, issued a draft Record of Decision (ROD), and completed fieldwork on the Tier II Ecological Risk Assessment on the Building T-25 Outfall. The final Focused FS/TS of the Building T-25 area was also completed. Soldier Systems Center (SSC) continued to operate the TS system to produce containment of the Building T-25 groundwater plume.

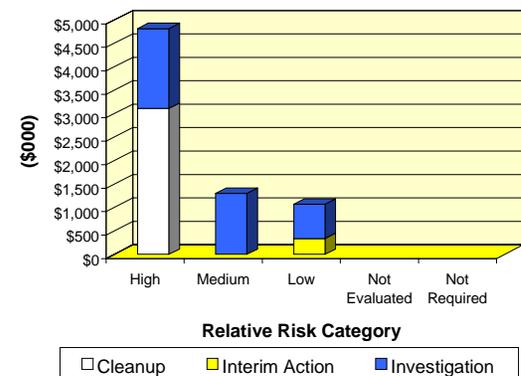
The installation was unable to begin the planned Removal Action at the boiler plant because of data quality problems; resampling was necessary.

SSC's RAB has been active for 5 years, meeting nine times a year to review documents, prioritize sites and actions, and offer advice on restoration activities. SSC meets biweekly with EPA and the Massachusetts Department of Environmental Protection to facilitate restoration progress.

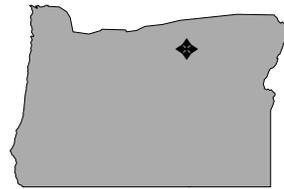
### Plan of Action

- Begin an FS of installation outfalls in FY00
- Begin Interim Removal Action at the gymnasium site in FY00
- Begin implementation of the Building T-25 groundwater ROD in FY00
- Begin a Removal Action at the boiler plant in FY00

**FY00 FUNDING BY PHASE AND RELATIVE RISK**



**FFID:** OR021382091700  
**Size:** 19,729 acres  
**Mission:** Store ammunition  
**HRS Score:** 31.31; placed on NPL in July 1987  
**IAG Status:** Federal Facility Agreement signed in October 1989  
**Contaminants:** Explosives, UXO, heavy metals, pesticides, and nitrates  
**Media Affected:** Groundwater and soil  
**Funding to Date:** \$49.4 million  
**Estimated Cost to Completion (Completion Year):** \$23.0 million (FY2023)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2002



### Hermiston, Oregon

## Restoration Background

In 1941, the Army established Umatilla Ordnance Depot as an ordnance facility for storing conventional munitions. Between 1945 and 1955, the installation's functions expanded to include demolition, renovation, and maintenance of ammunition. In 1962, the Army began to store chemical munitions at the depot. In December 1988, the BRAC Commission recommended realignment of the installation. In FY98, the installation officially changed its name from Umatilla Ordnance Depot to Umatilla Chemical Depot.

Studies from FY87 to FY90 identified 80 sites, including explosives-washout lagoons, an open burning and open detonation area, pesticide disposal pits, a deactivation furnace, and landfills. In FY92, the sites were grouped into nine operable units (OUs). Also in FY92, the Army signed a Record of Decision (ROD) selecting bioremediation by windrow composting as the treatment for the contaminated soil at the Washout Lagoon Soil OU. A ROD was also signed for the Deactivation Furnace OU.

In FY93, the Army and regulators signed two RODs for no further action at two landfills. In FY94, the installation completed Phase I of the bioremediation program for explosives-contaminated soil in the washout lagoon and stabilized lead-contaminated soil from the deactivation furnace. The installation transferred its conventional weapons mission to another installation. The commander formed a BRAC cleanup team (BCT), which completed a BRAC Cleanup Plan (BCP), and converted the installation's Technical Review Committee to a Restoration Advisory Board.

In FY95, the installation completed RODs for the Groundwater (GW) OU, the Bomb Washout Plant OU, the Miscellaneous Sites OU, and the Ammunition Demolition Activity Area (ADA) OU. The Army completed the Remedial Design (RD) for groundwater treatment and

soil stabilization at the Miscellaneous Sites OU, the ADA OU, and the Bomb Washout Plant OU. The RD for the GW OU addressed a 350-acre plume contaminated with explosives.

In FY96, the Army completed a lead-based paint assessment and bioremediation of 10,000 cubic yards of explosives-contaminated soil. In FY97, the Army began operating a groundwater treatment facility constructed in FY96 and completed remediation of contaminated soil in the ADA OU, the Miscellaneous Sites OU, and the Bomb Washout Plant OU.

In FY98, the installation completed landfill closure and capping. It also completed geophysical mapping and an Engineering Sampling Analysis Report for UXO in the ADA OU. All remaining heating oil underground storage tanks were removed and converted to aboveground propane tanks.

## FY99 Restoration Progress

The installation completed the Environmental Baseline Survey and the Finding of Suitability to Lease for the lease of 100/200 series warehouses. The U.S. Army Corps of Engineers, Huntsville Division, awarded a contract for the geophysical mapping and UXO clearance of the 650-acre quality assurance (QA) function range. The installation completed the Remedial Action (RA) report for the Bomb Washout Plant OU. The RA for ADA completion was delayed until completion of the Site 19 supplemental soil investigation. The planned National Priorities List (NPL) partial deletion is on hold pending issuance of the RA report.

The installation entered dispute resolution with EPA Region 10 regarding UXO issues in the ADA. Official land reuse decisions caused a delay in UXO cleanup negotiations for the ADA. The BCP

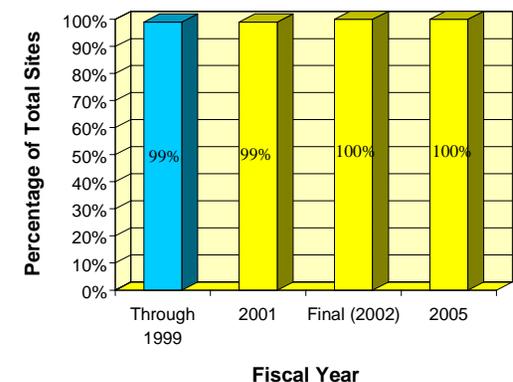
version 5 and statement of work for additional soil sampling of the ADA sites were completed.

The BCT met with the Oregon Department of Environmental Quality to request a review of Landfill OU monitoring and a reduction in long-term monitoring requirements. A new monitoring plan is being written to reduce sampling requirements.

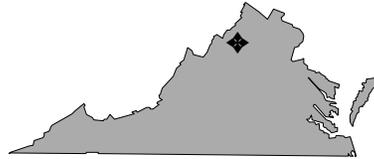
## Plan of Action

- Complete ADA supplemental soil investigation and remediation in FY00
- Complete RA report for GW OU in FY00
- Complete and sign interim lease for 100/200 series warehouses and rail classification yard with Umatilla local reuse authority during FY00
- Complete UXO geophysical mapping and clearance of QA function range in FY00
- Complete RA report for ADA in FY01
- Negotiate UXO cleanup levels for ADA OU in FY01
- Complete NPL partial deletion in FY01
- Prepare remaining documentation required for property transfer in FY06-FY07

## SITES ACHIEVING RIP OR RC PER FISCAL YEAR



**FFID:** VA321382093100  
**Size:** 696 acres  
**Mission:** Provide logistical support for assigned signals intelligence and electronics warfare weapon systems and equipment; provide communication jamming and intelligence fusion material capability  
**HRS Score:** NA  
**IAG Status:** None  
**Contaminants:** Metals, cyanide, VOCs, petroleum hydrocarbons, PCBs, photographic wastes, and asbestos  
**Media Affected:** Groundwater, surface water, sediment, and soil  
**Funding to Date:** \$9.3 million  
**Estimated Cost to Completion (Completion Year):** \$0 (FY2030)  
**Final Remedy in Place or Response Complete Date for BRAC Sites:** FY2003  
**Final Remedy in Place or Response Complete Date for Non-BRAC Sites:** FY1999



Vint Hill Farms, Virginia

## Restoration Background

In 1993, the BRAC Commission recommended closure of Vint Hill Farms Station. The Commission required the relocation of the maintenance and repair functions of the Army Communications-Electronic Command (CECOM), Intelligence Material Management Center (IMMC) to Tobyhanna Army Depot, Pennsylvania. The Commission also directed the transfer of the remaining components of IMMC, the Intelligence and Electronic Warfare Directorate, and the Program Execution Office for Intelligence and Electronic Warfare and Program Manager Signal Warfare to Fort Monmouth, New Jersey. The other non-CECOM activities were considered discretionary moves and were relocated primarily to Fort Belvoir, Virginia. The installation officially closed on October 1, 1997. The installation is in a caretaker status, providing minimal operations and maintenance and oversight of remedial activities until the Army transfers the property.

During the 1940s and 1950s, Vint Hill Farms Station served as a training center for Signal Corps personnel and as a refitting station for signal units. In FY90, a Preliminary Assessment (PA) identified 26 sites, including underground storage tanks (USTs), landfills, lagoons, storage areas, pit areas, fire training areas, disposal areas, spill sites, areas with asbestos-containing materials, lead-based paint areas, and transformers containing polychlorinated biphenyls (PCBs). The installation conducted Removal Actions for USTs, contaminated soil, and PCB-containing transformers. In FY90, soil and groundwater sampling revealed petroleum and solvent contamination.

In FY94, an enhanced PA identified 16 additional sites. Twelve of these sites were recommended for no further action (NFA). The installation formed a BRAC cleanup team and completed the final CERFA report and an Environmental Baseline Survey.

In FY95, the Army completed a Land Reuse Plan and submitted it to the regulatory agencies for approval. The installation also initiated a Remedial Investigation and Feasibility Study (RI/FS) for the Phase I reuse area identified by the Local Redevelopment Authority and began an Environmental Impact Statement (EIS). The installation formed a Restoration Advisory Board.

In FY96, the Army completed a final Site Inspection (SI) report identifying 24 sites for further investigation. RI/FS Phase I fieldwork was completed. In FY97, four areas requiring environmental evaluation (AREEs) were recommended for remediation, and the remaining AREEs were recommended for NFA. Regulators approved the recommended Interim Remedial Actions (IRAs) for the four AREEs slated for remediation, and the Army prepared Proposed Plans for these actions. The Army completed Phase II RI fieldwork.

In FY98, the Army submitted the final Phase I RI report and the draft Phase II RI report to the regulatory agencies. The Army recommended and completed IRAs for three AREEs and began an FS for AREE 1, the former landfill. The Army issued the final EIS and Record of Decision.

## FY99 Restoration Progress

The installation completed five decision documents for Phase I RI sites, the first Finding of Suitability to Transfer (FOST) for the associated 691 acres (of a total 701 acres), and the transfer by deed. The installation continued Remedial Action (RA) for Phase I sites, in coordination with the regulators, and Remedial Design (RD) and RA at active sites in the remaining 10 acres anticipated to be suitable for transfer in FY01 to FY03. It also completed the Phase II RI/FS report. The Phase II report recommended three AREEs for remediation.

## Plan of Action

- Complete Phase II FS/RD for active sites in FY00
- Begin long-term monitoring at AREE 1 after completion of associated RD activities in FY00
- Complete Phase II activities for three restoration sites in FY01 and for three compliance sites in FY03
- Complete Phase II decision documents and FOSTs in FY01–FY03

SITES ACHIEVING RIP OR RC PER FISCAL YEAR

