FY2015

FORT BENNING

Army Defense Environmental Restoration Program

Installation Action Plan

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Statement of Purpose

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

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), Fort Benning, the Installation Management Command (IMCOM) Atlantic Region, the executing agencies, regulatory agencies and the public, an IAP was completed. The IAP is used to track requirements, schedules, and tentative budgets for all major Army installation cleanup programs.

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

Acronyms

AEDB-CC	Army Environmental Database - Compliance-related Cleanup
AEDB-R	Army Environmental Database - Restoration
AOC	Area of Concern
AST	Aboveground Storage Tank
bgs	below ground surface
Bldg	Building
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CAP	Corrective Action Plan
CC	Compliance-related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMI(C)	Corrective Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operation)
CMS	Corrective Measures Study
COC	Contaminant of Concern
CR	Compliance Restoration
CRP	Community Relations Plan
CS	Confirmatory Sampling
DD	Decision Document
DDE	Dichlorodiphenylethene
DDT	Dichlorodiphenyltrichloroethane
DERP	Defense Environmental Restoration Program
DES	Design
DPE	Dual Phase Extraction
EOD	Explosive Ordnance Disposal
ER,A	Environmental Restoration, Army
FRA	Final Remedial Action
FS	Feasibility Study
FY	Fiscal Year
GAEPD	Georgia Environmental Protection Division
GIS	Geographic Information Systems
HRC	Hydrogen Releasing Compound
HRR	Historical Records Review
HRS2	Hazard Ranking System Scoring
IAP	Installation Action Plan
ICM	Interim Corrective Measure
IM	Interim Measure
IMCOM	Installation Management Command
IMP(C)	Implementation (Construction)
IMP(O)	Implementation (Operation)
INV	Investigation
IR	Installation Restoration
IRA	Interim Remedial Action
IRP	Installation Restoration Program

Acronyms

ISC	Initial Site Characterization
ISCO	In Situ Chemical Oxidation
LAAF	Lawson Army Air Field
LNAPL	Light Non-Aqueous Phase Liquid
LTM	Long-Term Management
LUC	Land Use Control
MC	Munitions Constituents
MCL	Maximum Contaminant Level
MCOE	Maneuver Center of Excellence
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MOGAS	Motor Gasoline
MPE	Multi-Phase Extraction
MR	Munitions Response
N/A	Not Applicable
NFA	No Further Action
NPDWR	National Primary Drinking Water Regulations
NPL	National Priorities List
NSDWR	National Secondary Drinking Water Regulations
ODUSD(I&E)	Office of the Deputy Under Secretary of Defense for Installations and Environment
OMA	Operation and Maintenance and Army
ORC	Oxygen Releasing Compound
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PBA	Performance-Based Acquisition
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
POL	Petroleum, Oil and Lubricant
ppb	parts per billion
PRG	Preliminary Remediation Goals
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Inspection

Acronyms

SVOC	Semi-Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TCE	Trichlorothylene
TRC	Technical Review Committee
ug/L	micrograms per liter
USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAEHA	US Army Environmental Hygiene Agency
USAIS	US Army Infantry School
USATHAMA	US Army Toxic and Hazardous Materials Agency (currently called USAEC)
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UTL	Upper Tolerance Limit
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds
WP	White Phosphorus

Acronym Translation Table

CERCLA		RCRA
Preliminary Assessment(PA)	=	RCRA Facility Assessment(RFA)
Site Inspection(SI)	=	Confirmation Sampling(CS)
Remedial Investigation/Feasibility Study(RI/FS)	=	RCRA Facility Investigation/Corrective Measures Study(RFI/CMS)
Remedial Design(RD)	=	Design(DES)
Remedial Action (Construction)(RA(C))	=	Corrective Measures Implementation (Construction)(CMI(C))
Remedial Action (Operation)(RA(O))	=	Corrective Measures Implementation (Operation)(CMI(O))
Long Term Management(LTM)	=	Long Term Management(LTM)
Interim Remedial Action(IRA)	=	Interim Measure(IM)

CERCLA		RCRA Underground Storage Tank (UST) Site Phase Terms
Preliminary Assessment(PA)	=	Initial Site Characterization(ISC)
Remedial Investigation(RI)	=	Investigation(INV)
Feasibility Study(FS)	=	Corrective Action Plan(CAP)
Remedial Design(RD)	=	Design(DES)
Remedial Action (Construction)(RA(C))	=	Implementation (Construction)(IMP(C))
Remedial Action (Operation)(RA(O))	=	Implementation (Operations)(IMP(O))
Long Term Management(LTM)	=	Long Term Management(LTM)
Interim Remedial Action(IRA)	=	Interim Remedial Action(IRA)

Installation Information

Installation Locale

Installation Size (Acreage): 182500
City: Columbus
County: Muscogee and Chattahoochee
State: Georgia
Other Locale Information

Fort Benning, situated in the western central portion of the state of Georgia, lies on the southern border of the city of Columbus, the second largest city in the state. Part of the reservation lies across the Chattahoochee River which forms the Georgia-Alabama border. It occupies an area of approximately 182,500 acres of which approximately 12,500 acres are in Alabama. Stretching about 20 miles north-south and east-west, Fort Benning covers three counties - Muscogee and Chattahoochee in Georgia and Russell in Alabama. The main post area of Fort Benning lies approximately eight miles southwest of the business district of Columbus, Georgia.

Installation Mission

Fort Benning and the Maneuver Center of Excellence (MCOE) provide trained, adaptive, and ready Soldiers and leaders for an Army at war, while developing future requirements for the individual Soldier and the Maneuver Force, and providing a world class quality of life for its Soldiers and Army families.

Fort Benning is also home to the Infantry School and the Armor School whose missions are to train and develop the combined arms combat leaders of the future.

Lead Organization

IMCOM

Lead Executing Agencies for Installation

Investigative and RA phases - US Army Corps of Engineers (USACE) South Atlantic Division, Savannah District.

Regulator Participation

Federal	US Environmental Protection Agency (USEPA) Region IV, Atlanta, GA Branch
State	Georgia Department of Natural Resources, Environmental Protection Division-Land Protection Branch

National Priorities List (NPL) Status

FORT BENNING is not on the NPL

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

The community has expressed no sufficient, sustained interest in a RAB.

Installation Information

Installation Program Summaries

IRP

Primary Contaminants of Concern: Metals, Pesticides, Petroleum, Oil and Lubricants (POL), Semi-volatiles (SVOC), Volatiles (VOC)

Affected Media of Concern: Groundwater, Soil, Surface Water

MMRP

Primary Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC)

Affected Media of Concern: Soil

CR

Primary Contaminants of Concern: Other (Free-product), Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH)

Affected Media of Concern: Groundwater, Soil

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Start Date	End Date	End FY
Complete	201206	201309	2013
Complete	200905	200910	2010
Planned	201806	201909	2019

Last Completed 5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
FBSB-26 Fixed Laundry Facility	FBSB-26
FBSB-26 Fixed Laundry Facility	FBSB-26
FBSB-64, Closed Landfill #2	FBSB-64
FBSB-64, Closed Landfill #2	FBSB-64
FBSB-70 Landfill 8	FBSB-26, FBSB-70
FBSB-70 Landfill 8	FBSB-26, FBSB-70
Landfill 6	FBSB-68
Landfill 6	FBSB-68
Ordnance Shop	FBSB-99
Ordnance Shop	FBSB-99
PESTICIDE MIXING/STORAGE AREA	FBSB-86
PESTICIDE MIXING/STORAGE AREA	FBSB-86

Results The field work has been completed by the Five Year Review Team and all the appropriate documents have been reviewed.

Actions The five year review team is the process of finalizing their Five Year Review Report.

Plans We will evaluate the final report and whatever recommendations are made.

Recommendations and Implementation Plans:
All recommendations from the 2012 five-year review were implemented. The next scheduled review is in 2018.

Land Use Control (LUC) Summary

LUC Title: Former Fixed Laundry Faci

Site(s): FBSB-26

ROD/DD Title: FBSB-26 Fixed Laundry Facility

Location of LUC

This former laundry site is located at the intersection of Indianhead Rd and Marchant Street on Main Post.

Land Use Restriction: Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation

Types of Engineering Controls: Signs

Types of Institutional Controls: Deed Restrictions, Restrictions on Groundwater Withdrawal

Date in Place: 199801

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections

Contaminants: VOC

Additional Information

This is a temporary Land Use Control while this site is undergoing corrective action. Once the site has reached remediation goals and received a No Further Action (NFA) designation by GAEPD the land use restrictions will be removed.

LUC Title: Landfill 8

Site(s): FBSB-70

ROD/DD Title: FBSB-70 Landfill 8

Location of LUC

Landfill 8 is a closed landfill located on Main Post next to the Veterinary Clinic.

Land Use Restriction: Landfill restriction - Prohibit activities that would impact the LF cap (or cover system) and drainage system, Landfill restriction - Prohibit excavation on LF cap or cover system, Landfill restriction - Prohibit installation of utility system lines through the site, Landfill restriction - Restrict access to the site, Landfill restriction - Restrict construction of buildings that may interfere with LF cap or cover system, Landfill restriction - Restrict vehicular traffic, Media specific - Prohibit activities that results in contact with contaminated sediments, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Fences, Signs

Types of Institutional Controls: Notations in Master Plan

Date in Place: 200510

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 200510

LUC Enforcement: Annual Inspections

Land Use Control (LUC) Summary

Contaminants: DIOXINS/DIBENZOFURANS, METALS

Additional Information

N/A

LUC Title: Ordnance Shop

Site(s): FBSB-99

ROD/DD Title: Ordnance Shop

Location of LUC

The former Ordnance Shop (Bldg 223) is located on Main Post along Kilgore Street. The building is now used as a furniture warehouse.

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

Types of Engineering Controls: Fences, Signs

Types of Institutional Controls: Restrictions on Groundwater Withdrawal

Date in Place: 199901

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections

Contaminants: VOC

Additional Information

This is a temporary Land Use Control while this site is undergoing corrective action. Once the site has reached remediation goals and received a No Further Action (NFA) designation by GAEPD the land use restrictions will be removed.

LUC Title: Pesticide Storage Area

Site(s): FBSB-86

ROD/DD Title: PESTICIDE MIXING/STORAGE AREA

Location of LUC

A small amount of DDT pesticide was located under the foundation of one of the buildings on-site (Bldg 266) and could not be removed without endangering the stability of the building. The pesticide was left in place and contained using heavy duty vinyl plastic sheeting and was also covered with fresh soil. If the building is ever demolished, the small amount of pesticide under the foundation must be removed and disposed of.

Land Use Restriction: Media specific - Prohibit activities that results in contact with contaminated sediments, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Fences, Signs

Types of Institutional Controls: Deed Notices, Notations in Master Plan, Restrictions on Groundwater Withdrawal, Restrictions on land use, Zoning

Date in Place: 199609

Modification Date: N/A

Land Use Control (LUC) Summary

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections

Contaminants: PESTICIDES

Additional Information

This is a temporary Land Use Control while this site is undergoing corrective action. Once the site has reached remediation goals and received a No Further Action (NFA) designation by GAEPD the land use restrictions will be removed.

LUC Title: Tank/Auto Repair Shop

Site(s): FBSB-93

ROD/DD Title: Tank Repair/Vehicle Maintenance Shop.

Location of LUC

The Tank Automotive Repair Shop is located in the Sand Hill area of Ft. Benning. The shop is currently being used to restore combat vehicles for the future Armor Museum.

Land Use Restriction: Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Fences, Signs

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

Date in Place: 199606

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: PETROLEUM HYDROCARBON

Additional Information

N/A

Cleanup Program Summary

Installation Historic Activity

Fort Benning is an active US Army Garrison facility under the jurisdiction of IMCOM Atlantic Region. Originally known as Camp Benning, the fort was established in September 1918 as a temporary facility and named in honor of a local Confederate hero, General Henry Lewis Benning. It was selected as the site for the new US Army Infantry School (USAIS) when the infantry training centers located at Fort Sill, Oklahoma, and Camps Perry and Hancock, Georgia, were closed.

In June 1919, the US Army purchased a large plantation from its owner, Arthur Bussey, and established headquarters in the family residence, which was known as Riverside. With the construction of new facilities and the relocation of the US Army infantry board from Fort Leavenworth, Kansas, Camp Benning began to grow. In 1922, it achieved permanent military status and was consequently redesignated as Fort Benning. It has been in continuous operation since that time.

Major troop units stationed at Fort Benning include the 3rd Brigade, 3rd Infantry Division, 75th Ranger Regiment, 11th Engineer Battalion (Combat), 13th Combat Sustainment Support Battalion, 14th Combat Support Hospital, and the 17th Air Support Operations Squadron.

As a result of the Base Realignment and Closure (BRAC) commission's decision to move the Armor School from Fort Knox, Kentucky to Fort Benning in 2011, the USAIS and the US Army Armor School have been integrated into the MCOE. Although both branches combine to form the MCOE, they also retain their individual prepotencies.

The 1982 installation assessment and revised hazard ranking system scoring (HRS2) found that Fort Benning's solid waste management units (SWMU) cumulatively pose little health or safety threat or a threat to the environment; however, certain individual sites pose greater health threats. For example, long-term exposure to the former pesticide mixing and storage facility may have resulted in an elevated cancer risk to workers.

In 1994, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) conducted a Resource Conservation and Recovery Act (RCRA) facility assessment of the installation. In 1995, the installation entered into a RCRA Part B permit with the state of Georgia. All of the identified SWMUs were listed in the part B permit. When the RCRA Part B permit expired in 2005, the installation entered into a corrective action permit with the state on Sept. 23, 2005. In general, most SWMUs require no RA, and those that do require corrective action are using monitored natural attenuation (MNA) combined with long-term monitoring. Fort Benning's Defense Environmental Restoration Program (DERP) has already addressed many of its identified cleanup sites. Nonetheless, cleanup actions will continue until 2018 and possibly longer, depending on requirements presented by the state.

Installation Program Cleanup Progress

IRP

Prior Year Progress: Corrective measures operations continued at ten sites (FBSB-26, FBSB-39, FBSB-64, FBSB-68, FBSB-75, FBSB-86, FBSB-93, FBSB-99, FBSB-100 and FBSB-101. One site continued in the LTM phase: FBSB-70. A five-year performance-based contract for seven sites was awarded and is about to commence.

Future Plan of Action: Corrective measures operations will continue at ten sites and LTM will continue at one site. Several sites which have reached remedial goals will enter the confirmatory sampling phase in LTM.

MMRP

Prior Year Progress: The RFI Report for FTBN-001-R-01 was submitted to Georgia Environmental Protection Division (GAEPD) for review. We received their comments and responded to those comments. Revisions to the RFI Report were made and submitted to the state for approval.

Future Plan of Action: The RFI report for site FTBN-001-R-01 will be finalized and accepted by GAEPD. There may be a requirement to submit and implement a CMS.

CR

Prior Year Progress: Site CC-1622 received an NFA from GAEPD. Remediation continued at site CC-2485. An RFI at the former skeet range site CC-FBSB-102 continued, and the scope of the investigation was expanded based on new information. Sites CC-FBSB-103 and CC-FBSB-104 have been funded for RFIs to begin in FY15. A new site, CC-FBSB-105, was discovered; its RFA was completed and the report was sent to GAEPD. A requirement to conduct an RFI at this site (CC-FBSB-105) has not yet been determined.

Future Plan of Action: Remediation continues at site CC-2485. The RFI at sites CC-FBSB-102, FBSB-103, and FBSB-104 will continue. If the state requires an RFI for site CC-FBSB-105, an RFI will be conducted.

FORT BENNING

Army Defense Environmental Restoration Program
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 46/35

Installation Site Types with Future and/or Underway Phases

1 Above Ground Storage Tank
(FBSB-101)
1 Contaminated Buildings
(FBSB-39)
1 Contaminated Sediments
(FBSB-99)
4 Landfill
(FBSB-64, FBSB-68, FBSB-70, FBSB-75)
2 Spill Site Area
(FBSB-86, FBSB-93)
1 Training and Maneuver Area
(FBSB-100)
1 Underground Storage Tank
(FBSB-26)

Most Widespread Contaminants of Concern

Metals, Pesticides, Petroleum, Oil and Lubricants (POL), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern

Groundwater, Soil, Surface Water

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

Site ID	Site Name	Action	Remedy	FY
FBSB-96	MAIN MALL SERVICE STATION	FRA	REMOVAL	1998
FBSB-86	FORMER PEST MIXING STOR AREA (BLDG 1396)	FRA	WASTE REMOVAL - SOILS	1999
FBSB-86	FORMER PEST MIXING STOR AREA (BLDG 1396)	IRA	WASTE REMOVAL - SOILS	1999
FBSB-95	LEAKING USTS	FRA	AIR SPARGING	2001
FBSB-99	ORDNANCE SHOP	IRA	WASTE REMOVAL - SOILS	2004
FBSB-26	FIXED LAUNDRY (BLDG 2500)	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2005
FBSB-26	FIXED LAUNDRY (BLDG 2500)	FRA	NATURAL ATTENUATION	2005
FBSB-64	LANDFILL NO. 2	FRA	NATURAL ATTENUATION	2005
FBSB-68	LANDFILL NO. 6	FRA	NATURAL ATTENUATION	2005
FBSB-75	LANDFILL NO. 13	FRA	CAPPING	2005
FBSB-88	OLD FIRE TRAINING AREA	FRA	NATURAL ATTENUATION	2005
FBSB-94	INSTALLATION GAS STATIONS	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2005
FBSB-94	INSTALLATION GAS STATIONS	FRA	WASTE REMOVAL - LIQUIDS	2005
FBSB-39	ENG FIELD MAIN SHOP (BLDG 377)	FRA	NATURAL ATTENUATION	2006
FBSB-99	ORDNANCE SHOP	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2006
FBSB-99	ORDNANCE SHOP	FRA	INSTITUTIONAL CONTROLS	2006
FBSB-99	ORDNANCE SHOP	FRA	NATURAL ATTENUATION	2006
FBSB-39	ENG FIELD MAIN SHOP (BLDG 377)	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2007

IRP Summary

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

Site ID	Site Name	Action	Remedy	FY
FBSB-64	LANDFILL NO. 2	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2007
FBSB-93	INSTALL TANK RPR/VEH MAINT SHOPS	IRA	FREE PRODUCT RECOVERY	2007
FBSB-93	INSTALL TANK RPR/VEH MAINT SHOPS	FRA	INSTITUTIONAL CONTROLS	2007
FBSB-93	INSTALL TANK RPR/VEH MAINT SHOPS	FRA	NATURAL ATTENUATION	2007
FBSB-101	Two 30,000 gal AST's	IRA	REMOVAL	2008
FBSB-93	INSTALL TANK RPR/VEH MAINT SHOPS	FRA	CHEMICAL REDUCTION/OXIDATION	2009
FBSB-68	LANDFILL NO. 6	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2011
FBSB-101	Two 30,000 gal AST's	FRA	DUAL-PHASE EXTRACTION	2012
FBSB-101	Two 30,000 gal AST's	FRA	NATURAL ATTENUATION	2012
FBSB-101	Two 30,000 gal AST's	FRA	INSTITUTIONAL CONTROLS	2012
FBSB-70	LANDFILL NO. 8	FRA	NATURAL ATTENUATION	2013
FBSB-70	LANDFILL NO. 8	FRA	INSTITUTIONAL CONTROLS	2013

Duration of IRP

Date of IRP Inception: 198201

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201609/202710

Date of IRP completion including Long Term Management (LTM): 205609

IRP Contamination Assessment

Contamination Assessment Overview

In early surveys, Fort Benning considered the landfills to be of most concern. In 1986, the US Army Environmental Hygiene Agency (USAEHA) began surveying the landfills at Fort Benning for soil and groundwater contamination. Today, all of Fort Benning's known landfills have been evaluated.

Fort Benning's groundwater problems are minor. Notably, all contamination is restricted to areas on-post; it is highly unlikely that contaminants will migrate off-post. Furthermore, because Fort Benning is a large installation (about 182,500 acres), groundwater resources are enormous. The areas of contamination currently present will not significantly affect potential use of groundwater on the installation in the future.

Most areas of contamination at Fort Benning are small and are best remediated through simple removals. To date, 211 USTs and surrounding contaminated soil have been removed. In the future, the DERP may begin addressing lead contamination on closed and inactive firing and demolition ranges. One site with possible unexploded ordnance (UXO) contaminants was identified and is being investigated under the Military Munitions Response Program (MMRP). At the pesticide mixing and storage facility, cleanup of pesticide contamination has been accomplished through simple excavation and incineration off-post.

There is no significant contamination from landfill activities except for the aquifer under Landfill Nos. 6, 8, and 13. The aquifer under Landfill No. 13 is contaminated with trichloroethylene (TCE) and other contaminants. A CAP for this site, using MNA, was accepted by the GAEPD. Other Fort Benning landfills, including Landfill Nos. 6 and 8, have been investigated and will require corrective action, erosion control, and LTM.

Releases of gasoline, related fuels, and VOCs have caused the majority of Fort Benning's groundwater problems. Cleanup of groundwater contamination at leaking UST sites is also a high priority. Several former gas station sites, such as Bldg 3763, require MNA as a cleanup strategy. The main mall gasoline station was successfully cleaned up using air sparging and soil vapor extraction.

In 2007, two new sites (FBSB-100 and FBSB-101) were added to the program. These sites were overlooked during the installation assessment, which was conducted in the late-1980s. The VOCs in groundwater are the probable contaminants at these sites. Most SWMUs require no further RA, though some require MNA and LTM. Fort Benning's DERP has already addressed many of its identified cleanup sites. Nonetheless, cleanup actions and LTM will continue until 2016.

Cleanup Exit Strategy

Sites with contaminated soils that exceed the soil regulatory screening levels will have the soil excavated, removed and replaced with clean soil. Sites with groundwater contamination will undergo risk assessments [when no maximum contaminant level (MCL) has been established] to determine if corrective action is required. If corrective action is required, a CAP, recommending MNA, will be submitted to the state for approval.

IRP Previous Studies

	Title	Author	Date
1977			
	Landfill Study No. 26-0026-78, Fort Benning, Georgia, Landfill 13	USAEHA	AUG-1977
1979			
	DEH Draft Environmental Impact Statement: Ongoing Siting and Mission Activities.	US Army Infantry Center, Fort Benning, Georgia	SEP-1979
1982			
	Installation Assessment of Fort Benning, Georgia. Report No. 307	Prepared for USATHAMA by Environmental Science and Engineering	JUL-1982
1986			
	Groundwater Study No. 38-26-0905-87. Leachate Detection at Landfills 7 and 8	USAEHA	JUN-1986
	Geohydrologic Study No. 38-26-0833-87. Landfills 2 and 21	USAEHA	SEP-1986
	Geohydrologic Study No. 38-26-0602-87. Landfills 5 and 6	USAEHA	SEP-1986
1987			
	Geohydrologic Study No. 38-26-0816-87. Groundwater Quality at Closed Landfills 12, 14, and 15	USAEHA	FEB-1987
	USAEHA Geohydrologic Study NO. 38-26-0867-88. Groundwater Quality Investigations at Closed Landfills 16 and 19	USAEHA	MAY-1987
	Geohydrologic Study No. 38-26-0817-88. Landfills 3, 9, 18, and 20	USAEHA	SEP-1987
	Geohydrologic Study No. 38-26-0818-88. Landfills 4 and 10	USAEHA	SEP-1987
	Groundwater Quality Investigations at Closed Landfills 1, 11, 12, 13, 14, 15, 16, 19, and 23	USAEHA	SEP-1987
1988			
	Solid Waste Disposal Consultation No. 38-26-0889-88. Evaluation of the Cover System at Landfill No. 13	USAEHA	FEB-1988
	Environmental Operations Review No. 43-21-7035-89	USAEHA	SEP-1988
	Solid Waste Management Survey No. 38-26-0886-88	USAEHA	SEP-1988
1989			
	Site Specific Health and Safety Plan, Landfill No. 13	Prepared for the Savannah District Corps of Engineers by Hunter/ESE, Inc	JAN-1989
	RCRA Facility Investigation Work Progression Plan, Phase I, Landfill No. 13	Prepared for the Army Corps of Engineers, Kansas City District by Hunter/ESE Inc.	JAN-1989
	Fort Benning Remedial Investigation, Phase I, Technical Memorandum (Landfill 13	Prepared for the US Army Corps of Engineers, Kansas City District, by Environmental Science and Engineering, Inc	JUL-1989
1990			
	Fort Benning Remedial Investigation, Phase II, Technical Memorandum (Landfill 13).	Prepared for the US Army Corps of Engineers, Kansas City District, by Environmental Science and	MAY-1990

IRP Previous Studies

	Title	Author	Date
1990			
		Engineering, Inc.	
	Solid Waste Disposal Consultation No. 38-62-0190-91	USAEHA	SEP-1990
	Fort Benning Waste Analysis, Contract No. DABT1090P7030	Bio-Chem Analysts, Inc	SEP-1990
	Conceptual Design - 35 Design and Corrective Measures Study, Landfill No. 13	Prepared for the Kansas City District Corps of Engineers by Environmental Science and Engineering, Inc	OCT-1990
	Corrective Action Plan for Main Mall Service Station, Underground Fuel Storage Tanks	US Army Corps of Engineers, Savannah District.	OCT-1990
1991			
	Groundwater Quality Survey No. 38-26-0390-91. Camp Frank D. Merrill, Dahlonega	USAEHA	JUL-1991
	100% Specification Submittal for the Closure of Fort Benning Landfill No. 13	Prepared for the US Army Corps of Engineers, Kansas City District, by Environmental Science and Engineering, Inc.	JUL-1991
	100% Specification Submittal Operation and Maintenance Manual for the Closure of Fort Benning Landfill No.13	Prepared for the US Army Corps of Engineers, Kansas City District, by Environmental Science and Engineering	JUL-1991
	100% Submittal Health and Safety Design Analysis for the Closure of Fort Benning Landfill No. 13	Prepared for the US Army Corps of Engineers, Kansas City District, by Environmental Science and Engineering, Inc	JUL-1991
	Geohydrologic Study No. 38-26-K969-91	USAEHA	SEP-1991
1992			
	Preliminary Site Inspection For Fort Benning Military Reservation	Prepared for the US Army Corps of Engineers by Advanced Science, Inc.	JAN-1992
	Remedial Investigation/Feasibility Study, Fort Benning Pesticide Site, Chemical Agent Burial Site	Prepared for USATHAMA by ABB Environmental Services, Inc.	OCT-1992
1993			
	Final Installation Action Plan (IAP) for Fort Benning, Georgia	Prepared for the Savannah District Corps of Engineers by B & V Waste Science and Technology, Inc	JUL-1993
1994			
	Geohydrologic Study No. 38-26-KW27-94, Old Fire Training Area	USAEHA	SEP-1994
	RCRA Facility Assessment No. 38-26-2650-95	USACHPPM	DEC-1994
1995			
	RCRA Facility Assessment No. 38-26-3299-95	USACHPPM	AUG-1995

IRP Previous Studies

	Title	Author	Date
1997			
	Subsurface Investigation for Relative Risk Ranking, Thirteen Installation Restoration Program (IRP) Sites	Savannah District USACE.	SEP-1997
1998			
	Phase I RFI Reports for FY97 SWMU Group	Savannah District USACE	DEC-1998
2000			
	RFI Reports for FY98 SWMU Group	Savannah District USACE.	JAN-2000
2002			
	RFI Reports for FY01 IRP SWMU Sites	Fort Benning Georgia	SEP-2002
	RFI Reports for FY02 IRP SWMU Sites	Fort Benning Georgia	SEP-2002
2003			
	Fort Benning Baseline Risk Assessment Installation Work Plan and Supportive Documents	Fort Benning Georgia	JUL-2003
2004			
	Phase III RCRA RFI for the Installation Tank Repair Compound, Vehicle Maintenance Shop Compound and Installation Gas Station, Building 3763	Fort Benning Georgia	MAR-2004
	Revised Final Work Plan, Interim Measures Removal Action for SWMU FBSB-97 Abandoned Drum Disposal Site	Fort Benning Georgia	MAR-2004
	Corrective Action Plan for SWMU FBSB-39, Building 377, Engineering Field Maintenance Shop	Fort Benning, Georgia	MAY-2004
	Chemical Safety Submission, Chemical Agent Burial Site, Harmony Church Area	Fort Benning, Georgia	AUG-2004
	RCRA Facility Workplan, Chemical Agent Burial Site	Fort Benning Georgia	SEP-2004
	Corrective Action Plan for SWMU-88, Old Fire Training Area	Fort Benning Georgia	DEC-2004
2005			
	Supplemental RFI Report and Baseline Risk Assessment for the Installation Tank Repair/Vehicle Maintenance Shop Compound, SWMUs FTBN-34O, FTBN-54C and FBSB-93	Fort Benning Georgia	FEB-2005
	Final Construction Summary Report, Maintenance Activities, Landfill 8	Fort Benning Georgia	FEB-2005
	Final Site Inspection Report, Military Munitions Response Program	Fort Benning GA	APR-2005
	Final Workplan, Extended Anomaly Investigations, MMRP	Fort Benning, Georgia	DEC-2005
	Corrective Action Plan, Fourth Semi-Annual Progress Report for SWMU FBSB-39, Building 377, Engineering Field Maintenance Shop	Fort Benning Georgia	DEC-2005
2006			
	Year 2006 Corrective Action Plan Progress Report for Landfill 13, Fort Benning, Georgia	Prepared by US Army Corps of Engineers, Savannah District	SEP-2006
	Corrective Action Plan Third Semi-Annual Progress Report for SWMU FBSB-88, Old Fire Training Area, Fort Benning, Georgia	Prepared by US Army Corps of Engineers, Savannah District.	OCT-2006
2007			

IRP Previous Studies

	Title	Author	Date
2007			
	Final Grenade and Bayonet Court Extended Anomaly Investigation, Fort Benning, Georgia	Prepared by US Army Corps of Engineers, Baltimore District	JAN-2007
	Corrective Action Plan First Semi-Annual Progress Report for SWMU FBSB-99 (FTBN-057) Small Arms Ordnance Shop No. 3, Fort Benning, Georgia	Prepared by the US Army Corps of Engineers, Savannah District	JAN-2007
	1st Semi-Annual Corrective Action Plan Progress Report for SWMU FBSB-26A/26C (FTBN -071) Former Fixed Laundry Facility, Fort Benning, Georgia.	Prepared by US Army Corps of Engineers, Savannah District	FEB-2007
	Corrective Action Plan First Semi-Annual Progress Report for SWMU FBSB-64 (FTBN-002), Closed Landfill 2, Fort Benning, Georgia	Prepared by US Army Corps of Engineers, Savannah District	FEB-2007
	Year 2007 Corrective Action Plan Progress Report for Landfill 13	US Army Corps of Engineers, Savannah District	OCT-2007
2008			
	Corrective Action Plan Third Semi-Annual Progress Report for SWMUs FBSB-99, FBSB-26, and FBSB-64	US Army Corps of Engineers, Savannah District	APR-2008
	Corrective Action Plan Fourth Semi-Annual Progress Report for SWMUs FBSB-99, FBSB-26, and FBSB-64	US Army Corps of Engineers, Savannah District	SEP-2008
	Year 2008 Corrective Action Plan Progress Report for Landfill 13	US Army Corps of Engineers, Savannah District	OCT-2008
2009			
	Corrective Action Plan Fifth Semi-Annual Progress Report for SWMUs FBSB-99, FBSB-26, and FBSB-64	US Army Corps of Engineers, Savannah District	MAR-2009
	Corrective Action Plan Sixth Semi-Annual Progress Report for SWMUs FBSB-99, FBSB-26, and FBSB-64	US Army Corps of Engineers, Savannah District	SEP-2009
	Year 2009 Corrective Action Plan Progress Report for Landfill 13	US Army Corps of Engineers, Savannah District	NOV-2009
2010			
	Corrective Action Plan Sixth Annual Progress Report for SWMU FBSB-86, Building 1396, Former Pesticide Mixing and Storage Area	US Army Corps of Engineers, Savannah District	JUL-2010
	RCRA 5 Year Periodic Review for SWMU FBSB-86 Former Pesticide Mixing and Storage Area	US Army Corps of Engineers, Savannah District	SEP-2010
2011			
	Corrective Action Plan Seventh Annual Progress Report for SWMU FBSB-86, Building 1396, Former Pesticide Mixing and Storage Area	US Army Corps of Engineers, Savannah District	MAY-2011
	Eighth Semiannual CAP Progress Report for SWMU FBSB-68 Closed Landfill No. 6	US Army Corps of Engineers, Savannah District	JUL-2011
	Year 2010 Corrective Action Plan Progress Report for Landfill 13.	US Army Corps of Engineers, Savannah District	JUL-2011
	Eighth Annual Monitoring Only Report for Installation	Prepared by SAIC for the	DEC-2011

IRP Previous Studies

	Title	Author	Date
2011			
	Gas Station , Building 3763, Underground Storage Tank Facility ID #9026343	US Army Corps of Engineers, Savannah District	
2012			
	Corrective Action Plan Progress Report (May 2011 event), Corrective Action Design and Implementation for SWMU FBSB-93: Installation Tank Repair Vehicle Maintenance Shop	Prepared by J2 Engineering for the Savannah District Corps of Engineers	JAN-2012
	Supplemental Monitoring Report for Installation Gas Station, Building 3763, Underground Storage Tank Facility ID 9026343	Prepared by SAIC for the US Army Corps of Engineers, Savannah District	MAR-2012
	Year 2011 Corrective Action Plan Progress Report for Landfill 13, Fort Benning, Georgia	Prepared by SAIC for US Army Corps of Engineers, Savannah District	MAR-2012
	Corrective Action Plan Eighth Annual Progress Report SWMU FBSB-86, Building 1396, Former Pesticide Mixing and Storage Area	US Army Corps of Engineers, Savannah District	JUN-2012
	Corrective Action Plan Eighth Annual Progress Report for SWMU FBSB-86, Building 1396, Former Pesticide Mixing and Storage Area	Savannah District Corps of Engineers	JUN-2012
	Corrective Action Plan Progress Report (May 2012 Event) for SWMU FBSB-101: Two ASTs Site at Sand Hill	Savannah District Corps of Engineers	DEC-2012
2013			
	Corrective Action Plan, 18th Semi-Annual Progress Report for SWMU FBSB-39, Building 377, Engineering Field Maintenance Shop, Ft. Benning Georgia	Savannah District Corps of Engineers	JAN-2013
	11th Semi-Annual Corrective Action plan Progress Report for SWMU FBSB-68, Closed Landfill No. 6	Savannah District Corps of Engineers	JAN-2013
	Corrective Action Plan Progress Report (August 2012 Event) for SWMU FBSB-100: Running Track Site at Sand Hill	Savannah District Corps of Engineers	FEB-2013
2014			
	3rd Corrective Action Plan Progress Report (February 2013 and May 2013) for Solid Waste Management Unit FBSB-101, Two ASTs at Sand Hill, Ft. Benning Georgia.	U.S. Army Corps of Engineers, Savannah District	JAN-2014
	4th Corrective Action Plan Progress Report for SWMU FBSB-101: Two ASTs at Sand Hill, Ft. Benning Georgia	J2 Engineering , Inc	FEB-2014
	14th CAP Progress Report (November 2013 Event) For SWMU FBSB-93: Installation Tank Repair /Vehicle Maintenance Compound, FT. Benning Georgia.	Seneca J2 Environmental JV	FEB-2014
	4th Corrective Action Plan (CAP) Progress Report (August 2013 Event) for Corrective Action Design and Implementation for Solid Waste Management Unit FBSB-100, (Running Track Site) Sand Hill, Ft. Benning Georgia	Seneca J2 Engineering JV	MAR-2014
	Corrective Action Plan Tenth Annual Progress Report, Building 1396, Former Pesticide Mixing and Storage Area, Ft. Benning Ga.	U.S. Army Corps of Engineers, Savannah District	APR-2014
	14th Corrective Action Plan Progress Report (November 2013 Event) for SWMU FBSB-93,	Seneca J2 Environmental JV	MAY-2014

IRP Previous Studies

2014

Title	Author	Date
Installation Tank Repair/Vehicle Maintenance Compound, Ft Benning, GA		
4th Corrective Action Progress Report (August 2013 Event) for SWMU FBSB- 100 Running Track Site at SandHill, Ft. Benning, GA	Seneca J2 Environmental JV	MAY-2014
Corrective Action Plan, Ninth Annual Progress Report for SWMU FBSB-86, Building 1396, Former Pesticide Mixing and Storage Area, Fort Benning. Georgia	Savannah District, Corps of Engineers	JUL-2014

FORT BENNING

Installation Restoration Program

Site Descriptions

Site ID: FBSB-100
Site Name: Athletic Field in Sand Hill

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200403	200508
RFI/CMS	200705	201609
CMI(C)	200707	201609
CMI(O)	200709	201609
LTM	201609	201909

RIP Date: 201609

RC Date: 201609

SITE DESCRIPTION

This site is located close to a running track which is part of an athletic and training complex in the Sand Hill area of Fort Benning. The site is northeast and upgradient of FBSB-93, the tank automotive repair shop, which is another SWMU located in the Sand Hill training area. A monitoring well was constructed at FBSB-100 to serve as an upgradient groundwater monitoring well for the investigation at FBSB-93. Various contaminants were detected in the groundwater and in the surface and subsurface soils at this site which indicated an upgradient source of contamination not associated with the tank automotive repair shop. 4,4-dichlorodiphenyltrichloroethane (DDT), 4,4-dichlorodiphenyldichloroethene (DDE), cadmium, lead, aldrin, methylene chloride, and benzene were discovered in the surface and subsurface soils, and phenol, TCE and xylene were detected in the groundwater. An RFI, completed in fiscal year (FY)07, only identified VOCs in groundwater as contaminants of concern (COC). In September 2008 a draft RFI report and draft CAP were completed and submitted to GAEPD. Comments concerning the RFI report were received from the state in December 2008.

The RFI report and draft CAP were extensively revised to incorporate all of GAEPD comments. Instead of replying to individual comments the revised RFI report was submitted to GAEPD in September 2010 and the CAP was submitted in December 2010.

In preparation for corrective action, emulsified vegetable oil with lactate along with an amendment to raise the pH of the groundwater was injected to prepare the subsurface conditions. Reducing conditions were established and microbes were injected into the groundwater.

Additional comments concerning the revised RFI report and CAP were received from GAEPD. The state requested an evaluation for vapor intrusion be added as part of the RFI. They also requested that two additional monitoring wells be installed and added to the monitoring program for corrective action. The monitoring wells were added in FY12. Two additional monitoring wells were installed and added to the monitoring program in FY12. The RFI report was revised to include a vapor instrusive evaluation. Corrective action was implemented along with a supplemental injection of microbes for FY13. Recent sampling results (FY13) indicate that TCE concentrations are below the remedial goal.

Both sampling events conducted in FY14 confirmed that the TCE concentrations were still below the remediation goals.

CLEANUP/EXIT STRATEGY

As a result of having achieved remediation goals in FY13, confirmatory sampling has begun and will continue throughout FY16. Groundwater well abandonment will occur after GAEPD concurs with a request for an NFA.

Site ID: FBSB-101
Site Name: Two 30,000 gal AST's

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200405	200509
RFI/CMS	200703	201109
IRA	200707	200809
CMI(C)	201101	201112
CMI(O)	201112	202009
LTM	202010	204410

RIP Date: 201112

RC Date: 202010

SITE DESCRIPTION

This site was discovered during the RFI for the tank automotive shop (FBSB-93) which is nearby. Two abandoned and rusty 30,000-gallon aboveground storage tanks (AST) were discovered along with the cement foundation remnants of an adjacent pump house and associated piping. The ASTs were located in dense woods next to a railroad siding and could not easily be seen from the road. The tanks were evidently used to refuel trains and were overlooked during the installation survey for potential sites for the Installation Restoration Program (IRP) in the late-1980s. A groundwater sample taken adjacent to the ASTs from a location downgradient to them was found to contain benzene, toluene, ethyl benzene and xylene (BTEX). Benzene levels in the groundwater were detected at 220 parts per billion (ppb). The state of Georgia required that the ASTs be investigated as a separate SWMU and they also requested that the ASTs and piping be removed as a source of continuing groundwater contamination.

RFI sampling in FY07 identified VOCs in groundwater and light non-aqueous phase liquid (LNAPL) in some wells. An IRA completed in June 2008 removed the two ASTs, the pumphouse and the associated piping.

The RFI was sent to the state in November 2010. The September 2011 CAP recommended a multiple-phase extraction (MPE) system, monitored natural attenuation (MNA) and land-use controls.

Construction of the remediation system was completed December 2011 and the MPE system became operational. As of November 2012, over 1.2 million gallons of groundwater were treated and 875 gallons of LNAPL were removed and disposed. Operations of the active remedy are estimated to run through FY16, followed by LTM activities. The CAP was approved by GAEPD in FY12. The remediation system has been in operation for two years. Concentrations of benzene and other petroleum hydrocarbons have been declining along with a reduction of free-product.

The results of a sampling event in October 2014 indicated that for the first time no free-product was detected.

CLEANUP/EXIT STRATEGY

Corrective action involves free-product removal using MPE, which is currently ongoing. This will be followed by performance monitoring until remediation goals have been achieved. A five-year review was conducted in 2013 to evaluate the efficiency of the remediation process. After remediation goals have been achieved, a three-year period of confirmatory sampling will follow. After NFA is reached, site closeout and groundwater well abandonment will occur.

Site ID: FBSB-26
Site Name: FIXED LAUNDRY (BLDG 2500)

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	198201	198207
CS	199705	199710
RFI/CMS	199801	200509
CMI(C)	200507	200509
CMI(O)	200509	201809
LTM	201810	202209

RIP Date: 200509

RC Date: 201809

SITE DESCRIPTION

Bldgs 2500 (SWMU 26C) and 2501 (SWMU 26A) were located at the intersection of Indianhead Road and Marchant Street on the main post. The buildings were demolished in January 1994. The area, approximately 250 feet by 250 feet, is now covered with asphalt and grass.

This site was first mentioned in the 1982 installation assessment of Fort Benning. Unfortunately, that document did not address the potential for past contamination at the site. The single reference to this facility on page 2-2 of that document states, "Bldg. 2500 houses a laundry in which no dry cleaning is performed." Additionally, the study gave no information about how the site was evaluated.

According to installation personnel who were interviewed, from the 1940s until 1984 all installation laundry and dry cleaning was processed at this site. Dry cleaning solvents previously used at the facility were stored in 20- to 50-gallon tanks inside the building. These tanks were removed when the operations ceased in 1984. No spills have been reported at the facility.

In December 1993, a site visit by Fort Benning personnel revealed what appeared to be three pipes coming out of the ground which may indicate the presence of USTs. A search of as-built construction drawings failed to confirm the presence of USTs. A geophysical survey conducted in 1999 failed to detect any USTs or associated piping.

Site FBSB-64 (Landfill 2) and FBSB-99 are both upgradient of the fixed laundry facility and may be contributing to the contamination detected at this site. Additionally, there are three other non-Environmental Restoration, Army (ER,A) SWMUs upgradient of both Landfill 2 and the fixed laundry facility which may be contributing to the contamination detected at this site. In FY98, the installation decided to conduct a full RFI using operations and maintenance and Army (OMA) funds for this phase. Results of the RFI indicated groundwater contamination in the form of chlorinated solvents in several upgradient wells. Because of the proximity of this site to FBSB-64, closed Landfill 2, both sites required additional investigation to determine the actual source of the contamination.

Since similar groundwater contaminants were detected in wells at FBSB-64 and FBSB-99, a supplemental RFI was completed in 2005. The supplemental RFI and baseline risk assessment (BRA) report was submitted to GAEPD and approved. In August 2006, a CAP recommending natural attenuation was submitted to GAEPD and approved.

The first, second, and third CAP progress reports were submitted to GAEPD. The results demonstrated that the detected concentrations of TCE in groundwater have been declining.

At the request of GAEPD, the CAP progress reports for FBSB-26, FBSB-64 and FBSB-99 were combined into one report beginning with the submission of the third CAP progress report. Sampling results indicated that overall chlorinated solvent concentrations are still decreasing.

The CAP progress reports seven through ten, have been submitted to GAEPD. Sampling reports showed a continued reduction in

total chlorinated solvent concentrations.

When a spike in concentrations of TCE occurred in three groundwater monitoring wells during the sixth and seventh sampling events a re-application of hydrogen releasing compound (HRC) took place in the summer of 2010. This supplemented a previous injection of HRC in 2007. An additional HRC injection took place in 2013.

Concentrations of TCE decreased in all groundwater monitoring wells from 2010 to 2013. Concentrations of COCs have been below the remediation goals in all wells (except two) for a period of three years. These two wells have been below remediation goals for a period of two years. However results of sampling in the spring of FY14 indicated that a rebound of TCE above remedial goals occurred in four groundwater monitoring wells. A five-year review was completed for this site in FY13.

Two sampling events were conducted in FY14. In April 2014, a rebound of TCE concentrations was detected in five groundwater monitoring wells above remedial goals. In October 2014, a second sampling event confirmed these detections.
Due to this rebound a limited HRC injection was performed upgradient of well FTBN-71-GW-6; this well had the highest TCE concentration and is upgradient of the other affected wells.

CLEANUP/EXIT STRATEGY

The cleanup strategy includes continued performance monitoring of groundwater with the possibility of supplemental HRC injections in the future. Once all wells have been below remediation goals, confirmatory sampling will take place for a period of three years.

After confirmatory sampling has been completed, all groundwater monitoring wells at this site will be left in place until upgradient sites (FBSB-64) and (FBSB-99) have reached their remediation goals. After NFA for all three sites is reached all groundwater monitoring wells will be abandoned.

Limited LUCs, restricting the use of groundwater for drinking purposes, are in place until NFAs have been achieved at all sites.

Site ID: FBSB-39
Site Name: ENG FIELD MAIN SHOP (BLDG 377)

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	198201	198207
CS	199705	199710
RFI/CMS	200007	200504
CMI(C)	200505	200709
CMI(O)	200603	201708
LTM	201709	202109

RIP Date: 200709

RC Date: 201709

SITE DESCRIPTION

Bldg 377 is a very large L-shaped building located at the west end of Tenth Division Road on the main post. Hazardous waste storage and operational practices were changed in 1986 to meet new environmental regulatory requirements. Based on practices prior to 1986, spills of diesel fuel, motor gasoline (MOGAS), antifreeze, waste oil, polychlorinated biphenyls (PCB) and cleaning solvents may have occurred.

In June 1993, two, 10,000-gallon capacity USTs containing diesel and MOGAS were removed from the northeast corner of the site. All wastes are presently sent to the post boiler plant for energy recovery. Staining was noted in the vicinity of the waste fuel area as well as throughout the vehicle parking lot. The 1982 preliminary site assessment addressed all sites at Fort Benning generating hazardous waste, but it did not address specific sites. Bldg 377 was never mentioned by name though the study generally evaluated POL handling facilities.

Results of an RFI conducted in FY01 indicated petroleum-related groundwater contamination in the vicinity of the washrack and UST adjacent to Bldg 377. Pesticide contamination above risk-based levels was also detected in the soil near Bldg 377. Arsenic and thallium were detected above background levels in the soils.

In FY01, additional groundwater monitoring wells were installed and sampled to delineate upgradient and downgradient groundwater contamination. Additional soil samples were collected to delineate the extent of pesticide contamination in the soil. RFI results confirmed that pesticides, and the metals arsenic and thallium are not COCs.

A supplemental RFI report and a BRA were submitted and approved by GAEPD. A CAP for MNA was submitted and approved by GAEPD. An amended CAP was approved by GAEPD in 2007 for insitu bioremediation. Nineteen CAP progress reports have been submitted to the state. As a result of a significant reduction in concentration of the COCs due to MNA, GAEPD approved a recommendation to reduce the number of wells in the monitoring program from 14 to 9.

In June 2007, an oxygen-releasing compound (ORC) injection was completed at this site to expedite the rate of bioremediation. The eighth progress report showed a slight rebound of concentrations of 1,3,5,-trimethylbenzene and naphthalene above remediation goals, and the ninth and tenth CAP progress reports showed that the overall trend is a reduction in the concentration of petroleum hydrocarbons in the groundwater. These progress reports also indicated that the areal extent of COCs in groundwater has also declined since the source of groundwater contamination was removed.

In order to address the slight rebound of concentrations of 1,2,4-trimethylbenzene in well FBSB-39-GW-2, an ORC injection took place in the vicinity of this well in FY09. A targeted reapplication of the ORC was performed for these selected areas in FY10. Performance monitoring of this reapplication took place in FY11, FY12, and FY13.

Groundwater sampling results from the most recent CAP progress report indicate that concentrationsof 1,2,4-trimethylbenzene and napthalene have been declining since the ORC was injected. While concentrations of napthalene have declined to levels below the remediation goal, 1,2,4-trimethylbenzene remains at levels still above its remediation goal in one well.

Site ID: FBSB-39
Site Name: ENG FIELD MAIN SHOP (BLDG 377)

An ORC injection took place in 2012 and 2013. Levels of 1,2,4 trimethylbenzene and 1,3,5 trimethylbenzene continue to fluctuate above remediation goals in one or two groundwater monitoring wells. The ORC injection that took place in FY12 was in the vicinity of two specific groundwater monitoring wells to target detections of trimethylbenzene that continue to fluctuate above remediation goals. Concentrations of trimethylbenzene continued to fluctuate above remediation goals therefore an additional ORC injection took place in 2014.

Two sampling events took place in FY14. There was only one detection of trimethylbenzene above remediation goals.

CLEANUP/EXIT STRATEGY

Future injections of ORC will be performed as necessary dependant on groundwater sampling data. If no future reductions in the concentrations of 1,2,4 trimethylbenzene and 1,3,5 trimethylbenzene are observed, alternative remediation methods will be considered. The GAEPD requires three years of semiannual confirmatory sampling after remediation goals are achieved before granting an NFA. This will be followed by abandonment of groundwater monitoring wells.

Site ID: FBSB-64
Site Name: LANDFILL NO. 2

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199106	199201
CS	199106	199201
RFI/CMS	199710	200507
CMI(C)	200507	200709
CMI(O)	200509	201809
LTM	201810	202209

RIP Date: 200709

RC Date: 201809

SITE DESCRIPTION

Landfill No. 2 is located on the main post and is bounded by Marchant Street on the north, Burr Street on the south, Riordon Street on the west, and Edward Street on the east. This landfill encompasses approximately 62 acres and was operated from 1943 to 1945 using the trench method. Documentation detailing disposed waste is not available. The USAEHA Geohydrologic Study (No. 3826-0833-87) prepared for Landfills Nos. 2 and 21 indicated that groundwater contamination had not resulted from past activities. In FY97, the installation conducted an RFI at this site using OMA funding.

The RFI found concentrations of TCE, lead, vanadium and chromium in excess of MCLs in downgradient groundwater monitoring wells. The supplemental RFI and BRA reports were submitted to GAEPD and approved in 2006. A CAP was also submitted to GAEPD and approved in 2006. The selected corrective action was a limited in situ remediation using an HRC followed by MNA. This was completed in 2006. In April 2007, the first semiannual CAP progress report was submitted to the state and comments were received Aug. 20, 2007. A response to their comments was submitted in October 2007. A CAP second semiannual progress report was submitted to GAEPD in December 2007.

At the request of GAEPD, the CAP progress reports for FBSB-26, FBSB-64 and FBSB-99 were combined into one report beginning with the submission of the third CAP progress report. The eighth CAP progress report was submitted to the state in September 2010.

Sampling results have indicated that overall chlorinated solvent concentrations are decreasing.

The CAP progress reports seven and eight have been submitted to GAEPD. Both sampling reports showed a continued reduction in total chlorinated solvent concentrations.

As a result of an upward trend in concentrations of TCE in two groundwater monitoring wells during the sixth and seventh sampling events a reapplication of HRC took place in the summer of 2010 and in 2013. The injections supplemented an initial injection of HRC in 2007. An additional injection of HRC was conducted in FY13. Concentrations of TCE have been decreasing since the supplemental injection of HRC in 2010, however concentrations of vinyl chloride have increased above remedial goals in one monitoring well. To address the increasing concentrations of vinyl chloride, injections of ORC around this specific groundwater well also took place in FY14.

There were two sampling events conducted in FY14. Additionally an ORC injection took place upgradient of groundwater monitoring well FBSB-64-11 to address the vinyl chloride concentrations.

CLEANUP/EXIT STRATEGY

The cleanup strategy includes continued performance monitoring of groundwater with the possibility of future, supplemental HRC injections to address concentrations of TCE should a bebound occur. A five-year review was conducted in FY13. After remediation goals are reached, semiannual confirmatory groundwater sampling will be conducted for a period of three years.

Site ID: FBSB-64
Site Name: LANDFILL NO. 2

Limited LUCs, restricting the use of groundwater for drinking purposes, have been implemented until remediation goals are achieved. After NFA is reached, groundwater monitoring wells will be abandoned.

Site ID: FBSB-68
Site Name: LANDFILL NO. 6

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	198608	199201
CS	198608	199201
RFI/CMS	200201	200504
CMI(C)	200505	201103
CMI(O)	200609	202309
LTM	202311	202709

RIP Date: 201103

RC Date: 202311

SITE DESCRIPTION

Landfill No. 6 covers approximately 14 acres in a wooded area one mile south of the main post and east of Lawson Army Air Field (LAAF) on Dixie Road. This solid waste trench-and-fill landfill was operated from 1954 to 1958.

The USAEHA Geohydrologic Study (No. 38-26-0602-87) prepared for Landfill Nos. 5 and 6 detected elevated levels of VOCs and SVOCs in groundwater samples. A 1991 USAEHA investigation concluded that Landfill No. 6 was not the source of the groundwater contamination, but that the adjacent site (FBSB-88) Old Fire Training Area was the likely source. However, supplemental investigations have determined that Landfill No. 6 is the source of contamination in the downgradient wells.

The 2002 RFI was performed concurrently with FBSB-88 (Old Fire Training Area) and FBSB-67 (closed Landfill No. 5), which are close to this site. The GAEPD requested additional delineation for FBSB-68. In 2003, a supplemental RFI was performed. The supplemental RFI and BRA reports were submitted to GAEPD and comments received. The GAEPD requested collection of additional soil samples plus the installation of an additional monitoring well in order to provide additional delineation. This work was performed in the fall 2005. The supplemental RFI and BRA reports were submitted to GAEPD and approved in 2006.

A CAP recommending natural attenuation was submitted to GAEPD in February 2007 and a revised CAP was submitted to the state in August 2007. Comments on the CAP were received and were responded to in September 2007. Following a second set of comments and responses, the CAP was approved 2008. Semiannual CAP progress reports began in September 2008. Since the CAP was approved, detections of benzene and TCE have fluctuated but basically remained at the same level.

In 2010, GAEPD approved the installation of an in situ system to accelerate bioremediation through the subsurface mass transfer of dissolved oxygen directly to the groundwater. Initial sampling results show an increase in petroleum hydrocarbons which was an expected result of the addition of oxygen to the subsurface groundwater.

The in situ system (a bio barrier) was completed in 2011. A total of 21 devices have been installed in order to provide a continuous downgradient barrier for the groundwater contamination to pass through. This barrier will reduce the levels of contaminants in the groundwater and prevent the migration of groundwater contamination further downgradient of the landfill.

CLEANUP/EXIT STRATEGY

Enhanced attenuation with semiannual groundwater monitoring will continue as long as the source of the contamination remains in the landfill.

A five-year review was conducted in 2013. Once remediation goals are met, three years of semiannual confirmatory sampling will be conducted. After NFA is reached, site closeout and groundwater monitoring well abandonment will occur.

Site ID: FBSB-70
Site Name: LANDFILL NO. 8

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Metals

Media of Concern: Groundwater

Phases	Start	End
RFA	199106	199201
CS	199106	199201
RFI/CMS	199908	201308
CMI(C)	200510	201308
CMI(O)	200610	201308
LTM	201309	204509

RIP Date: 201308

RC Date: 201308

SITE DESCRIPTION

Landfill No. 8 is located west of the veterinary hospital and occupies 14 acres. The landfill was operated from 1961 to 1966 as a trench and fill area. It is situated in a potentially sensitive area, as it drains into the Upatoi Creek. The slope of the landfill is within 50 meters of the east bank of the river. Documentation detailing waste disposed at this site is not available. The landfill has eroded to the point that garbage is recognizable on the surface and slope of the landfill. Landfill No. 8 is listed in the installation RCRA Part B permit along with all other Fort Benning SWMUs.

Although various contaminants were detected in soil and groundwater, all were below their respective screening levels.

A geophysical study was conducted and the monitoring of inclinometers for three years (1999 to 2002) has indicated that the landfill is relatively stable with little movement indicated.

A June 1986 Geohydrologic Study by the USAEHA (No.38-26-0905-87) recommended that measures be taken at the landfill to control erosion and include groundwater monitoring. Limited groundwater monitoring by the USAEHA revealed that levels of contamination were well within the National Security Drinking Water Regulations (NSDWR) levels. An RFI was conducted in FY99 and results were submitted to GAEPD in FY00.

The RFI report was approved by GAEPD and called for continued groundwater monitoring and slope stabilization monitoring. The pesticide storage formulation area, which is adjacent to Landfill No. 8, was a continuing source of pesticide contamination in the groundwater. In 1997 a contaminated soil removal was completed at the pesticide storage formulation area and this has reduced the levels of pesticide contamination in Landfill No. 8 groundwater. The primary groundwater contaminant was VOCs, which were below MCLs but above screening levels. VOCs were detected in only one of ten monitoring wells.

Access to this site is highly restricted and controlled. A locked fence gate prevents access and the landfill is situated on a high elevation bluff, bounded by a river. The locked gate is the only access to the site. In FY03, steps were taken to control surface erosion, establish a vegetative cover on the landfill, and direct the flow of surface water runoff on the landfill.

In FY03, a supplemental RFI sampling of soil, sediment, surface water and groundwater was conducted. In FY05, the supplemental RFI and BRA reports were submitted; they were approved in FY06. The state requested submittal of a CAP to address detections of iron and manganese that are above MCLs in groundwater. In August 2007, a CAP was submitted to GAEPD and review comments were received. An additional set of comments concerning the supplemental RFI and BRA reports have also been received and responded to.

In January 2009, GAEPD reviewed the installation's response to comments concerning the supplemental RFI report. The installation responded to the state's comments concerning the supplemental RFI and BRA reports in October 2009 and received their approval May 2010. A CAP was submitted in August 2007. The CAP proposed permanent LUCs to maintain the integrity of the landfill. The GAEPD had expressed concern about one detection of lead above MCLs in two monitoring wells during previous sampling events. The installation discussed the lead detections with the state at the FY11 data gathering visit. The installation

proposed sampling all the groundwater monitoring wells for detections of lead; however, GAEPD stated only two groundwater monitoring wells with previous detections of lead would be required to be resampled. The two wells were re-sampled in the summer of 2011. All sampling results for lead were non-detect in both wells. A response to the GAEPD letter was prepared and submitted, and the CAP which did not include a requirement for groundwater monitoring was approved in January 2013. A five-year review was conducted in 2013.

CLEANUP/EXIT STRATEGY

Mowing and maintenance of the landfill cap will be maintained. LUCs restricting digging and use of groundwater are in place. The GAEPD requested an annual letter report documenting the condition of the landfill cap and that LUCs are effective and still in place.

Site ID: FBSB-75
Site Name: LANDFILL NO. 13

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199106	199201
CS	199106	199201
RFI/CMS	199705	200502
CMI(C)	200505	200509
CMI(O)	200509	202710
LTM	202711	205609

RIP Date: 200509

RC Date: 202710

SITE DESCRIPTION

Landfill No. 13 is an 85-acre landfill located near the intersection of Marne Road and Cusseta Road. Operations at this landfill were initiated in 1965 and continued until 1983. This landfill was operated as an area fill sanitary landfill and was closed according to its permit. Documentation detailing disposed waste at this site is not available though it is thought that household garbage and industrial wastes (solvents) may have been discarded here.

A December 1987 Groundwater Study by USAEHA (No.38-26-0000875-88) indicated groundwater contamination at the site, recommending that an RFI be performed. In 1991, an RFI recommending the preparation of a CAP was prepared and submitted to GAEPD. The plan recommended that a RCRA cap was needed to contain the soil contamination unit. No action was recommended to specifically address groundwater contamination. In 1995, construction of a RCRA composite cap was begun and completed in 1996. An RFI to investigate groundwater contamination was completed in May 1997. The recommendation from the RFI was to monitor the groundwater for three to five years to evaluate performance of the RCRA cap with respect to impacts on groundwater contamination. The GAEPD's comments required preparation and submittal of a CAP.

Groundwater monitoring since 1998 has consistently shown a low level of two contaminants: vinyl chloride and benzene. Both contaminants slightly exceed MCLs in two wells out of a total of 24. A plume is localized in an area of less than an acre. Surface water sampling has not detected any contaminants above regulatory criteria since the start of the monitoring program.

The installation has conducted a risk assessment and submitted a risk assessment report to GAEPD. The report, approved by the GAEPD, recommended continued groundwater monitoring. Results of the risk assessment were used in preparation of the groundwater CAP.

Runoff from the major catchment areas is controlled by berms and rock flumes. In FY03, an engineering study was conducted to determine the sources and extent of landfill seepage areas, the subsidence of the landfill cap, and the integrity of the synthetic liner and methane vents. While the results of the study showed no current impact to the integrity of the cap, it recommended maintenance actions to prevent any future degradation. The recommendations were implemented in FY07.

In FY04, the CAP was finalized and the remedy included long-term groundwater monitoring and institutional controls for the landfill.

In October 2007, a CAP progress report for 2007 was submitted. Sampling results indicated that concentrations of benzene were below the MCL in all monitoring wells with the exception of one, where the concentration was slightly above the MCL.

In January 2009, the 2008 CAP progress report was submitted to the state. Recent sampling results indicate that benzene and vinyl chloride concentrations remain slightly above their respective MCLs. A statistical analysis was performed to determine the trend of VOCs detected during the current sampling event. Only significant downward trends were detected. The CAP progress report for 2013 was submitted to the state in 2013. Vinyl chloride was the only contaminant above the MCL in one groundwater monitoring well.

Site ID: FBSB-75
Site Name: LANDFILL NO. 13

A five-year review was conducted in 2013.

A multiple award task order contract was awarded to a new contractor for groundwater monitoring as well as for mowing and maintenance in FY15.

CLEANUP/EXIT STRATEGY

LTM of the landfill cap and fencing will continue. Once the concentrations of benzene and vinyl chloride are below their respective MCLs, three years of annual confirmatory sampling will be conducted before an NFA will be requested. Well abandonment activities will then be conducted.

Site ID: FBSB-86
Site Name: FORMER PEST MIXING STOR AREA (BLDG 1396)

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Pesticides

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198909	199003
CS	198909	199003
RFI/CMS	199003	199901
DES	199502	199901
IRA	199702	199812
CMI(C)	199702	199901
CMI(O)	201502	201909
LTM	201911	202209

RIP Date: 201502

RC Date: 201910

SITE DESCRIPTION

The Former Pesticide Mixing and Storage Area (Bldgs 1396 and 267), located west of the intersection of Anderson Avenue and Tenth Division Road on the main post, was the central location for pesticide mixing and storage for all of Fort Benning. As early as 1945, pesticides including DDT, Mirex, Chlordane and Lindane were mixed at this site. According to installation personnel, mixing at this facility was discontinued in the late-1980s, though pesticides were stored inside the building until as late as 1993.

Sampling and analysis efforts were conducted between 1988 and 1994 by USAEHA and ABB Environmental Services. Elevated concentrations of pesticides in the soils surrounding buildings were found. Due to GAEPD comments on the RI/FS in 1994, Fort Benning initiated an interim corrective measure (ICM) to remove contaminated soils. The ICM was completed in March 1998 with the removal of 6,003 tons of soil. A small amount of contaminated soil had to be left in place under a building foundation (Bldg 267). Should the building be demolished, the small amount of pesticides will be removed.

A CAP was prepared in 1999. The remedy was excavation of contaminated soils (completed through ICM), institutional controls and performance monitoring of the groundwater. The CAP has been modified a few times. Semiannual groundwater sampling and reporting has been underway since 2006. The state approved Fort Benning's request to transfer three downgradient monitoring wells, located within project FBSB-70 (Landfill No. 8), to the FBSB-86 groundwater monitoring network. The reason for this transfer was the detection of similar pesticide compounds in one or more of these downgradient wells which is related to the pesticide site.

Recent groundwater sampling results confirmed there is a reduction in the total amount of pesticides detected in groundwater. All detections are below the preliminary remediation goals (PRG) and MCLs for all sampling events. The 2013 sampling results indicated that only two compounds, dieldrin and heptachlor epoxide were detected. Both of these compounds were below remediation goals and MCLs which agree with previous monitoring results. A five-year review was conducted in 2013.

Continued groundwater sampling is required by GAEPD due to the presence of residual pesticides in the soil under building 267.

The 10th Corrective Action Plan Monitoring Report was submitted in the spring of FY14. All COCs remain below remediation goals. Fort Benning has recommended removing two monitoring wells from the well monitoring program and that future sampling events after FY15 be performed every five years until the residual contaminated soils are removed.

CLEANUP/EXIT STRATEGY

As a result of the five-year review, removal of the residual pesticides under Bldg 267 is being considered. Three years of confirmatory sampling will be conducted and well abandonment will take place after an NFA from GAEPD is received.

Site ID: FBSB-93
Site Name: INSTALL TANK RPR/VEH MAINT SHOPS

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199101	199201
CS	199705	199710
RFI/CMS	199808	200808
IRA	200504	200611
CMI(C)	200609	200810
CMI(O)	200811	201909
LTM	201910	202309

RIP Date: 200811

RC Date: 201909

SITE DESCRIPTION

The Installation Tank Repair/Vehicle Maintenance Shop consists of approximately two- to three- fenced acres located approximately 400-feet east of the intersection of 11th Airborne Division Road and 187th Infantry Regiment Street in the Sand Hill area. In addition to Building 3716, the area contains seven separate maintenance shops, an abandoned washrack, an abandoned oil change and grease rack, the foundation of a former large vehicle maintenance shop and an unpaved military equipment park. Prior to implementation of the installation waste recycling program, waste segregation and proper disposal methods were not implemented.

RFI activities occurred between 1998 and 2003. In 2006, a BRA work plan was submitted as a supplement to the RFI report and approved by GAEPD. In March 2007, a CAP was prepared and submitted to GAEPD. The corrective action includes ISCO using an ozone sparging system along with institutional controls and MNA. Since 2008, the installation has received and responded to several sets of comments from the state concerning the CAP. The installation received formal approval of the CAP in 2011.

In 2006, an IRA was conducted during which dual phase extraction was used for free-product removal. Following the action, the free-product levels did not change appreciably.

Construction of the ozone sparging system was complete in 2008; operations began October 2008. The sparging system includes a total of 82 sparge points. Between 2008 and 2012, 36,000 pounds of ozone was injected. Semiannual CAP progress reports have been submitted to the state. An initial decline in concentrations in the monitoring wells had been noted from the first quarterly sampling event (February 2009) to the November 2012 sampling event. In 2011, a slight rebound was noted in two wells with a sheen of free-product detected in the well which previously had free-product removed. In addition to performance monitoring and continued ozone sparging, dual phase extraction (DPE) events have been scheduled to address the re-occurrence of free-product in the affected groundwater monitoring well. The system will be run until remedial goals are obtained. Since operation of the remediation system in 2009, overall concentrations of COCs have been declining and the size of the plume has been shrinking significantly. Wells located in the core of the plume have shown a rebound that fluctuates in concentrations over time. The fluctuations are believed to be related to changes in the subsurface conditions of the perched aquifer. Changing groundwater elevations allow the release of COCs from soils to the dissolved phase in the groundwater.

In FY12, an upgradient groundwater monitoring well was installed to ensure there was not an additional upgradient contamination source. Several upgradient soil borings were also obtained to determine if there was evidence of additional contamination in the soils. No evidence of a secondary upgradient source was detected.

Concurrent with the additional monitoring well installation, the ozone system was overhauled and the ozone generator replaced, distribution of the ozone to sparge points was targeted to concentrate on the sparge points located in the plume core. A five-year review of the system was conducted in 2013.

In 2014 ten additional sparging wells were added to the sparge system. These additional wells were used to inject calcium

persulfate into the subsurface to enhance remediation.

In FY14 20 damaged sparging wells were replaced. Groundwater sampling results in November 2014 indicate that concentrations of COCs have declined since the injection of calcium persulfate.

CLEANUP/EXIT STRATEGY

Operation of the remediation system will continue until remediation goals have been achieved. This will be followed by three years of semiannual confirmatory sampling. After confirmatory sampling is complete, an NFA designation will be requested for this site. Site closeout will include decommissioning of the ozone sparging system with abandonment of 92 sparging wells and 18 groundwater monitoring wells.

Site ID: FBSB-99
Site Name: ORDNANCE SHOP

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	198201	198207
CS	199705	199710
RFI/CMS	199901	200604
IRA	200403	200406
CMI(C)	200510	200609
CMI(O)	200610	201809
LTM	201810	202209

RIP Date: 200610

RC Date: 201809

SITE DESCRIPTION

Building 223 (Ordnance Shop), located on Kilgore Street, was in use from the 1950s to the 1990s. The site is surrounded by a security fence. The 1982 installation assessment of Fort Benning reported that approximately 60 liters per month of solvents from Building 223 were being taken to the main heating plant for use as a fuel. The solvent was used to clean weapons. Approximately 300 to 380 liters of solvent were disposed into the sanitary sewer per month. There was a high potential for leakage of contaminants from the sewer into the groundwater and soil.

RFI activities were conducted between 1999 and 2006 and detected soil and groundwater contamination in the form of chlorinated solvents. PCE, TCE and cis-1,2-dichloroethene were detected above USEPA risk-based screening levels for tap water; TCE was also greater than its MCL. Concentrations of toluene and the above listed compounds were also found above regulatory levels in the subsurface soils. FBSB-99 was determined to be a primary source of groundwater contamination at two downgradient sites (FBSB-26 and FBSB-64). The CAP was approved by GAEPD in 2006. The selected corrective actions were in situ groundwater treatment using HRC at hotspots, MNA of groundwater, and institutional controls.

ICMs and removal of about 2,100 cubic yards of contaminated soil were complete in FY04.

There have been three HRC injection events, March 2006, June 2010 and in 2013. The overall trend in groundwater contamination levels since the source (soil) was removed is a reduction in concentration of COCs.

At the request of GAEPD, the CAP progress reports for FBSB-26, FBSB-64, and FBSB-99 were combined into one report beginning with the submission of the third CAP progress report. The 13th CAP progress report was submitted in 2013. This report showed a reduction in chlorinated solvent concentrations after the 2013 HRC injection; however, current sampling results show TCE concentrations are beginning to rebound in an upgradient groundwater monitoring well. An additional injection of HRC around this well took place in FY14. A five-year review was conducted in FY13.

Two sampling events took place in FY14 for performance monitoring. Concentrations of TCE showed a reduction as a result of the previous HRC injections.

CLEANUP/EXIT STRATEGY

The cleanup strategy includes continued performance monitoring of groundwater with the possibility of future supplemental HRC injections. After remediation goals are reached, semiannual confirmatory groundwater sampling will be conducted for a period of three years.

Limited LUCs restricting the use of groundwater for drinking purposes have been implemented until remediation goals are achieved. After NFA is reached, groundwater monitoring wells will be abandoned.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FBSB-29	GENERAL PURPOSE MAG (PARKS RANGE)	199201	This is an active site and does not qualify for funds under DERP.
FBSB-41	EXCHANGE SERVICE OIL(BLDG 1624 & 1625)	198707	This site was not eligible for inclusion in the DERP. It was moved to the CC program where it was investigated and received an NFA letter from GAEPD).
FBSB-52	AMMO STORAGE (BLDG 5962 THRU 5988)	199208	This site was not eligible for inclusion in the DERP. It was moved to the CC program.
FBSB-54	INSTALLATION PAINT FACILITIES (8)	200709	GAEPD designated in a letter that all 8 sites received an NFA..
FBSB-60	PESTICIDE MIXING STORAGE (BLDG 266)	199201	This site is not an IRP site and was moved to the CC program.
FBSB-61	BLDG 492- PCB SPILL	199201	This site is not an IRP site and was moved to the CC program.
FBSB-62	BATTERY RESTORATION (BUILDING 1751)	199507	This site is NFA according to a letter from GAEPD.
FBSB-63	LANDFILL NO. 1	199201	Because the USAEHA geohydrologic (No. 38-26-0817-88) study found no evidence of soil or groundwater contamination, no further response is planned at this site. The state of Georgia has concurred with this evaluation.
FBSB-65	LANDFILL NO. 3	199201	The USAEHA Geohydrologic Study (No. 38-26-0817-88) indicated that no groundwater contamination had resulted from past on-site disposal practices. Therefore, no further investigations are recommended at this site. The state of Georgia has concurred with this evaluation.
FBSB-66	LANDFILL NO. 4	200709	GAEPD issued an NFA for this site in FY05
FBSB-67	LANDFILL NO. 5	200409	This site was being investigated con-currently with FBSB-88 (Old Fire Training Area), and FBSB-68 (Closed Landfill 6), which are in close proximity to this site. Based on the RFI results of all three sites (FBSB-88, -67, -68), it has been deter-mined that this landfill is not a source of contamination. NFA was granted in 2005. All well abandonment will be included under FBSB-68 (Closed Landfill 6).
FBSB-69	LANDFILL NO. 7	201102	GAEPD issued an NFA in FY2010
FBSB-71	LANDFILL NO. 9	198803	NFA, based on the results of the USAEHA groundwater study.
FBSB-72	LANDFILL NO. 10	200107	The results of the investigation indicated that no contaminants above screening levels were found in groundwater. Also none of the compounds found in landfill soils or downgradient sediment samples exceeded the risk based screening criteria. The RFI Report recommended NFA, and was approved by the state.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FBSB-73	LANDFILL NO. 11	198906	Neither the 1994 USAEHA SWMU investigation nor the 1987 USAEHA geohydrologic study (#38-26-0875-88), found significant groundwater contamination at this site. National Primary Drinking Water Standards (NPDWR) were not exceeded by any analytical parameter. As a result no further actions are planned for this site. GAEPD concurred with our decision during their facility assessment of the installation.
FBSB-74	LANDFILL NO. 12	198708	This site was given a designation of NFA under the CC program. It was not investigated under DERP.
FBSB-76	LANDFILL NO. 14	198708	This site received an NFA under the CC program.
FBSB-77	LANDFILL NO. 15	198708	Based on the results of the USAEHA groundwater study and the 1994 SWMU investigation, no further investigations are planned at this site.
FBSB-78	LANDFILL NO. 16	198711	Based on the fact that NPDWR were not exceeded by any analytical parameter during USAEHA testing in 1987, no further investigations are recommended at this site.
FBSB-80	LANDFILL NO. 18	198803	Based on the results of the 1987 USAEHA Geohydrologic Study and the 1994 USAEHA SWMU investigation, no further actions are planned for this site.
FBSB-81	LANDFILL NO. 19	198711	Based on the results of the USAEHA Geohydrologic Study and the 1994 SWMU investigation, no further investigations are recommended at this site.
FBSB-82	LANDFILL NO. 20	198803	The USAEHA Geohydrologic Study (No. 38-26-0817-88) prepared for Landfill Nos. 3, 9, 18, and 20 indicated that no groundwater contamination had resulted from past on-site disposal practices. Based on available site information, and because the landfill debris was removed and relocated, no further investigations are planned at this site.
FBSB-83	LANDFILL NO. 21	199507	The USAEHA Geohydrologic Study (No. 38-26-0833) prepared for Landfill Nos. 2 and 21 indicated that no groundwater contamination had resulted from past on-site disposal practices. Based on available site information, and the fact that no groundwater contamination is occurring, no further actions or investigations are planned for this site.
FBSB-85	LANDFILL NO. 23	198906	Since the USAEHA groundwater study indicated that contamination levels were within NPDWR standards and the 1994

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			SWMU investigation confirmed this, no further actions are planned for this site.
FBSB-87	CHEMICAL AGT BURIAL SITE(HARMONY CHURCH)	200803	NFA approved by GAEPD April 2008.
FBSB-88	OLD FIRE TRAINING AREA	200806	NFA approved by GAEPD April 2008.
FBSB-89	LF ADJACENT TO TOXIC AGENT BURIAL SITE	199506	This site is NFA under the CC program.
FBSB-90	LF, NORTH END AT MASSEY RD	199507	This site is NFA under the CC program.
FBSB-91	INSTALLATION MOTOR REPAIR SHOP	200505	The Installation has received a NFA for this site at GAEPD in FY05.
FBSB-92	INSTALLATION FLAM MATL STGE	199507	This site is NFA under the CC program.
FBSB-94	INSTALLATION GAS STATIONS	201308	This site is designated as NFA by GAEPD under the UST Program, April 18, 2013.
FBSB-95	LEAKING USTS	200710	This site was given an NFA designation by GAEPD on August 10, 2007
FBSB-96	MAIN MALL SERVICE STATION	200403	Recent sampling results indicate that all groundwater monitoring wells show concentrations of BTEX below the regulatory limit of 71.28 micrograms per liter of Benzene. The most recent sampling event took place in the summer of FY03. This site was designated NFA by GAEPD in Nov 2003.
FBSB-97	ABANDONED DRUM DISPOSAL SITE	200509	GAEPD approved the NFA in FY05.
FBSB-98	SOIL CONTAMINATION AT STOCKADES	200403	As a result of the RFI, it was determined that this site is not the source of POL contamination. GAEPD agreed that this site requires NFA.

IRP Schedule

Date of IRP Inception: 198201

Past Phase Completion Milestones

1982	
CS	(FBSB-62 - BATTERY RESTORATION (BUILDING 1751))
RFA	(FBSB-26 - FIXED LAUNDRY (BLDG 2500), FBSB-39 - ENG FIELD MAIN SHOP (BLDG 377), FBSB-41 - EXCHANGE SERVICE OIL(BLDG 1624 & 1625), FBSB-62 - BATTERY RESTORATION (BUILDING 1751), FBSB-91 - INSTALLATION MOTOR REPAIR SHOP, FBSB-92 - INSTALLATION FLAM MATL STGE, FBSB-94 - INSTALLATION GAS STATIONS, FBSB-99 - ORDNANCE SHOP)
1987	
CS	(FBSB-74 - LANDFILL NO. 12, FBSB-76 - LANDFILL NO. 14, FBSB-77 - LANDFILL NO. 15, FBSB-78 - LANDFILL NO. 16, FBSB-80 - LANDFILL NO. 18, FBSB-83 - LANDFILL NO. 21)
RFI/CMS	(FBSB-74 - LANDFILL NO. 12, FBSB-76 - LANDFILL NO. 14, FBSB-77 - LANDFILL NO. 15, FBSB-83 - LANDFILL NO. 21)
RFA	(FBSB-74 - LANDFILL NO. 12, FBSB-76 - LANDFILL NO. 14, FBSB-77 - LANDFILL NO. 15, FBSB-78 - LANDFILL NO. 16, FBSB-80 - LANDFILL NO. 18, FBSB-83 - LANDFILL NO. 21)
1988	
CS	(FBSB-81 - LANDFILL NO. 19, FBSB-82 - LANDFILL NO. 20)
RFI/CMS	(FBSB-71 - LANDFILL NO. 9, FBSB-78 - LANDFILL NO. 16, FBSB-80 - LANDFILL NO. 18, FBSB-81 - LANDFILL NO. 19, FBSB-82 - LANDFILL NO. 20)
RFA	(FBSB-71 - LANDFILL NO. 9, FBSB-81 - LANDFILL NO. 19, FBSB-82 - LANDFILL NO. 20)
1989	
RFI/CMS	(FBSB-73 - LANDFILL NO. 11, FBSB-85 - LANDFILL NO. 23)
ISC	(FBSB-95 - LEAKING USTS, FBSB-96 - MAIN MALL SERVICE STATION)
RFA	(FBSB-73 - LANDFILL NO. 11, FBSB-85 - LANDFILL NO. 23)
CS	(FBSB-73 - LANDFILL NO. 11, FBSB-85 - LANDFILL NO. 23)
INV	(FBSB-95 - LEAKING USTS, FBSB-96 - MAIN MALL SERVICE STATION)
1990	
RFA	(FBSB-86 - FORMER PEST MIXING STOR AREA (BLDG 1396), FBSB-87 - CHEMICAL AGT BURIAL SITE(HARMONY CHURCH))
CS	(FBSB-86 - FORMER PEST MIXING STOR AREA (BLDG 1396), FBSB-87 - CHEMICAL AGT BURIAL SITE(HARMONY CHURCH))
1992	
RFA	(FBSB-29 - GENERAL PURPOSE MAG (PARKS RANGE), FBSB-52 - AMMO STORAGE (BLDG 5962 THRU 5988), FBSB-54 - INSTALLATION PAINT FACILITIES (8), FBSB-60 - PESTICIDE MIXING STORAGE (BLDG 266), FBSB-61 - BLDG 492- PCB SPILL, FBSB-63 - LANDFILL NO. 1, FBSB-64 - LANDFILL NO. 2, FBSB-65 - LANDFILL NO. 3, FBSB-66 - LANDFILL NO. 4, FBSB-67 - LANDFILL NO. 5, FBSB-68 - LANDFILL NO. 6, FBSB-69 - LANDFILL NO. 7, FBSB-70 - LANDFILL NO. 8, FBSB-72 - LANDFILL NO. 10, FBSB-75 - LANDFILL NO. 13, FBSB-88 - OLD FIRE TRAINING AREA, FBSB-90 - LF, NORTH END AT MASSEY RD, FBSB-93 - INSTALL TANK RPR/VEH MAINT SHOPS, FBSB-98 - SOIL CONTAMINATION AT STOCKADES)
PA	(FBSB-89 - LF ADJACENT TO TOXIC AGENT BURIAL SITE)
CS	(FBSB-29 - GENERAL PURPOSE MAG (PARKS RANGE), FBSB-52 - AMMO STORAGE (BLDG 5962 THRU 5988), FBSB-60 - PESTICIDE MIXING STORAGE (BLDG 266), FBSB-61 - BLDG 492- PCB SPILL, FBSB-63 - LANDFILL NO. 1, FBSB-64 - LANDFILL NO. 2, FBSB-65 - LANDFILL NO. 3, FBSB-66 - LANDFILL NO. 4, FBSB-67 - LANDFILL NO. 5, FBSB-68 - LANDFILL NO. 6, FBSB-69 - LANDFILL NO. 7, FBSB-70 - LANDFILL NO. 8, FBSB-72 - LANDFILL NO. 10, FBSB-75 - LANDFILL NO. 13, FBSB-88 - OLD FIRE TRAINING AREA)
1994	
RFA	(FBSB-97 - ABANDONED DRUM DISPOSAL SITE)
1995	
SI	(FBSB-89 - LF ADJACENT TO TOXIC AGENT BURIAL SITE)
CAP	(FBSB-96 - MAIN MALL SERVICE STATION)
CS	(FBSB-90 - LF, NORTH END AT MASSEY RD)

1996	
DES	(FBSB-96 - MAIN MALL SERVICE STATION)
1998	
IMP(C)	(FBSB-96 - MAIN MALL SERVICE STATION)
CS	(FBSB-26 - FIXED LAUNDRY (BLDG 2500), FBSB-39 - ENG FIELD MAIN SHOP (BLDG 377), FBSB-54 - INSTALLATION PAINT FACILITIES (8), FBSB-91 - INSTALLATION MOTOR REPAIR SHOP, FBSB-93 - INSTALL TANK RPR/VEH MAINT SHOPS, FBSB-94 - INSTALLATION GAS STATIONS, FBSB-97 - ABANDONED DRUM DISPOSAL SITE, FBSB-98 - SOIL CONTAMINATION AT STOCKADES, FBSB-99 - ORDNANCE SHOP)
1999	
DES	(FBSB-86 - FORMER PEST MIXING STOR AREA (BLDG 1396))
CMI(C)	(FBSB-86 - FORMER PEST MIXING STOR AREA (BLDG 1396))
RFI/CMS	(FBSB-86 - FORMER PEST MIXING STOR AREA (BLDG 1396))
IRA	(FBSB-86 - FORMER PEST MIXING STOR AREA (BLDG 1396))
2001	
CAP	(FBSB-95 - LEAKING USTS)
RFI/CMS	(FBSB-72 - LANDFILL NO. 10)
IMP(C)	(FBSB-95 - LEAKING USTS)
2004	
RFI/CMS	(FBSB-66 - LANDFILL NO. 4, FBSB-67 - LANDFILL NO. 5, FBSB-98 - SOIL CONTAMINATION AT STOCKADES)
IMP(O)	(FBSB-96 - MAIN MALL SERVICE STATION)
IRA	(FBSB-99 - ORDNANCE SHOP)
2005	
RFI/CMS	(FBSB-26 - FIXED LAUNDRY (BLDG 2500), FBSB-39 - ENG FIELD MAIN SHOP (BLDG 377), FBSB-54 - INSTALLATION PAINT FACILITIES (8), FBSB-64 - LANDFILL NO. 2, FBSB-68 - LANDFILL NO. 6, FBSB-75 - LANDFILL NO. 13, FBSB-88 - OLD FIRE TRAINING AREA, FBSB-91 - INSTALLATION MOTOR REPAIR SHOP, FBSB-94 - INSTALLATION GAS STATIONS, FBSB-97 - ABANDONED DRUM DISPOSAL SITE)
RFA	(FBSB-100 - Athletic Field in Sand Hill, FBSB-101 - Two 30,000 gal AST's)
CMI(C)	(FBSB-26 - FIXED LAUNDRY (BLDG 2500), FBSB-75 - LANDFILL NO. 13, FBSB-88 - OLD FIRE TRAINING AREA, FBSB-94 - INSTALLATION GAS STATIONS)
2006	
CMI(C)	(FBSB-99 - ORDNANCE SHOP)
RFI/CMS	(FBSB-69 - LANDFILL NO. 7, FBSB-87 - CHEMICAL AGT BURIAL SITE(HARMONY CHURCH), FBSB-99 - ORDNANCE SHOP)
2007	
LTM	(FBSB-54 - INSTALLATION PAINT FACILITIES (8), FBSB-66 - LANDFILL NO. 4)
CMI(C)	(FBSB-39 - ENG FIELD MAIN SHOP (BLDG 377), FBSB-64 - LANDFILL NO. 2)
IRA	(FBSB-93 - INSTALL TANK RPR/VEH MAINT SHOPS)
2008	
LTM	(FBSB-87 - CHEMICAL AGT BURIAL SITE(HARMONY CHURCH))
RFI/CMS	(FBSB-93 - INSTALL TANK RPR/VEH MAINT SHOPS)
CMI(O)	(FBSB-88 - OLD FIRE TRAINING AREA)
IMP(O)	(FBSB-95 - LEAKING USTS)
IRA	(FBSB-101 - Two 30,000 gal AST's)
2009	
CMI(C)	(FBSB-93 - INSTALL TANK RPR/VEH MAINT SHOPS)

IRP Schedule

2011

CMI(C)	(FBSB-68 - LANDFILL NO. 6)
LTM	(FBSB-69 - LANDFILL NO. 7)
RFI/CMS	(FBSB-101 - Two 30,000 gal AST's)

2012

CMI(C)	(FBSB-101 - Two 30,000 gal AST's)

2013

CMI(O)	(FBSB-70 - LANDFILL NO. 8, FBSB-94 - INSTALLATION GAS STATIONS)
CMI(C)	(FBSB-70 - LANDFILL NO. 8)
RFI/CMS	(FBSB-70 - LANDFILL NO. 8)

Projected Phase Completion Milestones

See attached schedule

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

Site ID	Site Name	ROD/DD Title	ROD/DD Date
FBSB-70	LANDFILL NO. 8	FBSB-70 Landfill 8	20151130
FBSB-26	FIXED LAUNDRY (BLDG 2500)	FBSB-70 Landfill 8	20151130
FBSB-101	Two 30,000 gal AST's	FBSB-101 Two 30,000 gal AST's	20151130
FBSB-100	Athletic Field in Sand Hill	FBSB-100 Athletic Field in Sand Hill	20151130

Final RA(C) Completion Date: 201609

Schedule for Next Five-Year Review: 2019

Estimated Completion Date of IRP at Installation (including LTM phase): 205609

FORT BENNING IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
FBSB-100	Athletic Field in Sand Hill	RFI/CMS						
		CMI(C)						
		CMI(O)						
		LTM						
FBSB-101	Two 30,000 gal AST's	CMI(O)						
		LTM						
FBSB-26	FIXED LAUNDRY (BLDG 2500)	CMI(O)						
		LTM						
FBSB-39	ENG FIELD MAIN SHOP (BLDG 377)	CMI(O)						
		LTM						
FBSB-64	LANDFILL NO. 2	CMI(O)						
		LTM						
FBSB-68	LANDFILL NO. 6	CMI(O)						
		LTM						
FBSB-70	LANDFILL NO. 8	LTM						
FBSB-75	LANDFILL NO. 13	CMI(O)						
		LTM						
FBSB-86	FORMER PEST MIXING STOR AREA (BLDG 1396)	CMI(O)						
		LTM						
FBSB-93	INSTALL TANK RPR/VEH MAINT SHOPS	CMI(O)						
		LTM						
FBSB-99	ORDNANCE SHOP	CMI(O)						
		LTM						

FORT BENNING

Army Defense Environmental Restoration Program
Military Munitions Response Program

MMRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 2/1

Installation Site Types with Future and/or Underway Phases

1 Unexploded Munitions/Ordnance
(FTBN-001-R-01)

Most Widespread Contaminants of Concern

Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern

Soil

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

Site ID	Site Name	Action	Remedy	FY
N/A				

Duration of MMRP

Date of MMRP Inception 200202

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201809/201809

Date of MMRP completion including Long Term Management (LTM): 201709

MMRP Contamination Assessment

Contamination Assessment Overview

The grenade munitions burial site did not show evidence of MEC or munitions debris on the surface or subsurface. Only one explosive, nitrobenzene, was discovered in soil samples; concentrations were below the USEPA Region 9 residential and industrial PRGs. One metal, aluminum, was found in the soil at a level exceeding the USEPA Region 9 industrial PRGs. Several metals and inorganic compounds were also detected above the USEPA Region 9 residential PRGs and/or Fort Benning background 95 percent upper tolerance limits (UTL). No explosives or metals were detected above the USEPA Region 9 soil screening levels. No explosives were detected in groundwater samples, but arsenic and iron exceeding the USEPA Region 9 tap water PRGs were detected in the groundwater; however, both values are below the 95 percent UTL. A performance-based acquisition (PBA) contract for execution of the RI/FS was awarded in September 2012 and the investigation should be completed in 2014. The RI/FS focused on identifying potentially buried MEC items with additional sampling for MC if additional MEC burials were discovered.

The Grenade and Bayonet Court did not show evidence of MEC or MEC scrap on the surface. A geophysical survey identified a total of 1,371 anomalies. No explosives were detected in any of the soil samples. Arsenic was detected in the soil at concentrations exceeding the USEPA Region 9 industrial PRG. Aluminum, iron, lead, manganese, thallium and vanadium were detected at concentrations exceeding the USEPA Region 9 PRGs. Several metals and inorganic compounds were found in samples above the Fort Benning 95 percent UTLs. No metals were detected above the USEPA Region 9 soil screening levels.

Cleanup Exit Strategy

The installation plans to complete an RI/FS for FTBN-001-R-01 and execute follow-on phases and actions as required.

Since the results of the expanded SI failed to detect any evidence of MEC or MC at FTBN-002-R-01, an NFA decision was requested and approved by the state for the entire 25-acre Grenade and Bayonet Court site. No LTM is required.

MMRP Previous Studies

	Title	Author	Date
2005			
	Final Site Inspection Report Fort Benning	US Army Corps of Engineers, Baltimore District, by Malcolm Pirnie Inc	APR-2005
2006			
	Grenade and Bayonet Court Extended Anomaly Investigation	US Army Corps of Engineers, Baltimore District, by Malcolm Pirnie, Inc.	APR-2006
2007			
	Final Grenade and Bayonet Court Extended Anomaly Investigation, Fort Benning, Georgia	US Army Corps of Engineers, Baltimore District, by Malcolm Pirnie	JAN-2007
2010			
	Final Geophysical Survey Report, Grenade Munitions Burial Site	US Army Corps of Engineers, Huntsville District	FEB-2010
2014			
	RCRA Facility Investigation Report, Grenade Munitions Burial Site (FTBN-001R-01), Fort Benning Georgia	U.S. Army Corps of Engineers Huntsville District	JUL-2014

FORT BENNING

Military Munitions Response Program

Site Descriptions

Site ID: FTBN-001-R-01
Site Name: GRENADE MUNITIONS BURIAL SITE

STATUS

Regulatory Driver: RCRA

MRSPP Score: 05

Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
RFA	200202	200305
CS	200309	200504
RFI/CMS	201002	201709

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The 28.8-acre Grenade Munitions Burial Site is located in the southwestern portion of the installation, east of the LAAF. It was previously identified in the MMRP SI historic records review (HRR) as a 44.7 acre area; however, a determination was made that the site should be reduced to encompass only the portion of the area on which removal actions and explosive ordnance disposal (EOD) responses have been conducted. Thus, the site boundaries were changed and the acreage reduced to 28.8.

The site is currently overlain by the new Ranger Barracks Complex and a portion of the Whole Barracks Renewal Complex. From the 1920s to the 1950s the Grenade Munitions Burial Site was used as a disposal area for grenades and various other munitions types. Buried munitions originated from an ammunition storage area adjacent to the northern edge of the site. Three separate removal actions and five EOD response calls uncovered burial pits containing over 1,500 grenades and other munitions. All of the burial pits were discovered during construction activities at the site between May 1998 and August 2000. Munitions removed from the Grenade Munitions Burial Site include Mk2 hand grenades, M19 smoke rifle grenades, four-inch smokes white phosphorus (WP) mortar, M21 practice landmine, 37 millimeter projectiles, blasting caps, time fuses, igniters, bulk explosives, and small arms ammunition.

An SI of the Ranger Barracks Complex was conducted in 2005. Based on the results of the SI, 3.4 acres of the 28.8 acre complex were recommended for NFA because they were occupied by recently constructed buildings. The SI also recommended that 25.4 acres be included in an RFI.

A contract to conduct the RFI and an optional CMS was awarded in September 2012. An RFI was conducted at this site in 2013. The RFI and BRA reports have been submitted to GAEPD.

GAEPD comments regarding the RFI report has not yet been received; therefore, the future course of action has not yet been determined.

CLEANUP/EXIT STRATEGY

There was no MEC detected during the RFI. The RFI report recommended NFA with LUCs. If GAEPD does not agree with the RFI recommendations a CMS and CAP will be completed in FY15 to FY16. A removal action will be planned for FY17 to FY18.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FTBN-002-R-01	GRENADE AND BAYONET COURT	200701	An expanded SI was performed in December 2005. The investigation focused on the subsurface anomalies found during the previous geophysical survey. The expanded SI failed to detect or uncover any evidence of MEC or MC. A designation of NFA was approved for the site in December 2006.

MMRP Schedule

Date of MMRP Inception 200202

Past Phase Completion Milestones

2003

PA	(FTBN-002-R-01 - GRENADE AND BAYONET COURT)
RFA	(FTBN-001-R-01 - GRENADE MUNITIONS BURIAL SITE)

2005

CS	(FTBN-001-R-01 - GRENADE MUNITIONS BURIAL SITE)
SI	(FTBN-002-R-01 - GRENADE AND BAYONET COURT)

Projected Phase Completion Milestones

See attached schedule

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

To Be Determined

Final RA(C) Completion Date:

Schedule for Next Five-Year Review: 2019

Estimated Completion Date of MMRP at Installation (including LTM phase): 201709

FORT BENNING MMRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
FTBN-001-R-01	GRENADE MUNITIONS BURIAL SITE	RFI/CMS						

FORT BENNING

Army Defense Environmental Restoration Program
Compliance Restoration

CR Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 6/2

Installation Site Types with Future and/or Underway Phases

1 Firing Range
(CC-FBSB-102)

2 POL (Petroleum/Lubricants) Lines
(CC-FBSB-103, CC-FBSB-104)

1 Underground Storage Tank
(CC-2485)

Most Widespread Contaminants of Concern

Other (Free-product), Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern

Groundwater, Soil

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

Site ID	Site Name	Action	Remedy	FY
CC-1622	Main Post AAFEES Gas Station, BLDG 1622	FRA	FREE PRODUCT RECOVERY	2008
CC-2485	Lawson AAF UST (Bldg 2485)	FRA	FREE PRODUCT RECOVERY	2009
CC-2485	Lawson AAF UST (Bldg 2485)	FRA	IN-SITU SOIL TREATMENT	2012

Duration of CR

Date of CR Inception: 199508

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 202105/202105

Date of CR completion including Long Term Management (LTM): 202104

CR Contamination Assessment

Contamination Assessment Overview

Environmental restoration activities include the IRP and MMRP. On Dec. 29, 2008, the Office of the Deputy Under Secretary of Defense for Installations and Environment, [ODUSD(I&E)], issued an interim policy for DERP eligibility that rescinded the 1986 eligibility date for the IRP and the 2002 eligibility date for the MMRP. This made many sites previously addressed in the Army's Compliance-related Cleanup (CC) program eligible for the DERP. Sites that are now eligible for the Munitions Response (MR) program have been migrated from Army Environmental Database-Compliance-related Cleanup (AEDB-CC) and given the naming convention of other MR sites. The newly eligible non-MR type sites are considered to be Installation Restoration (IR) sites; however, the newly eligible sites are being coded as Compliance Restoration (CR) in AEDB-R to distinguish them from the original IR sites and IR metrics.

Leaking POL USTs are the primary sources of contamination with two of the five sites in the CR program.

The third site is a former skeet range which may have released lead and PAHs into the soil and groundwater environment.

Cleanup Exit Strategy

Once remediation goals are met, a designation of NFA will be requested from GAEPD.

CR Previous Studies

	Title	Author	Date
2003			
	Corrective Action Plan, Part B, Underground Storage Tank, Building 2485, Ft Benning	US Army Corps of Engineers, Savannah District	DEC-2003
2006			
	Amendment to Corrective Action Plan, Part A, Underground Storage Tank, Building 1622, Ft. Benning, GA	US Army Corps of Engineers, Savannah District	JUN-2006
2009			
	Resource Conservation and Recovery Act, Facility Assessment Report. for Supplemental Field Sampling and Analysis Activities for the Fort Benning Skeet Range	US Army Corps of Engineers, Savannah District	APR-2009
2010			
	Site Assessment Report with Confirmatory Sampling for Former Pumphouse and Dispenser System in Sand Hill	US Army Corps of Engineers, Savannah District.	MAY-2010
	Site Assessment Report with Confirmatory Sampling, Former AST, Pump House and Dispenser in Sand Hill	US Army Corps of Engineers, Savannah District	MAY-2010
	Sixth Monitoring Only Report (Sampling Round 8) Building 2485, Fort Benning, GA	US Army Corps of Engineers, Savannah District	MAY-2010
	Fourth Monitoring Only Report (Sampling Round 4) for Building 1622, Fort Benning, GA	US Army Corps of Engineers, Savannah District	AUG-2010
2013			
	RCRA Facility Investigation Report for Solid Waste Management Unit FBSB-102, Former Rod and Gun club Skeet Range.	US Army Corps of Engineers, Savannah District	JAN-2013
	Site Assessment Report with Confirmatory Sampling For CC-FBSB-105: Closed Fire Training Area	U.S. Army Corps of Engineers, Savannah District	DEC-2013
2014			
	Seventh Monitoring Only Report (Sampling Round 8) Building 2485, Fort Benning, GA	Savannah District Corps of Engineers	MAR-2014

FORT BENNING

Compliance Restoration

Site Descriptions

Site ID: CC-2485
Site Name: Lawson AAF UST (Bldg 2485)

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Other (Free-product)

Media of Concern: Groundwater

Phases	Start	End
ISC	199508	200009
CAP	200303	200510
IMP(C)	200606	201207
IMP(O)	200703	201610
LTM	201611	201709

RIP Date: 201207

RC Date: 201611

SITE DESCRIPTION

This site is located at LAAF, adjacent to Building 2485 in the main post area of Fort Benning.

A UST containing JP-5 (kerosene), installed in the late-1990s to fuel a large emergency generator, was found to be leaking in 1998 as a result of poorly repaired pipe connection when the UST was replaced. The product was confined to the area surrounding the UST and generator. The site was reported to GAEPD UST program and was investigated under that program following GAEPD UST guidelines.

A CAP, parts A and B, have been submitted and approved by GAEPD UST division. The CAP (part B) included free-product removal, groundwater monitoring, and a limited ISCO (for the dissolved phase when free-product is removed to trace levels) as the approved corrective actions.

Removal of free-product began in 2003 and continued through 2010. Free-product removal was initially performed using skimmer pumps installed in the three wells containing product. Product was pumped into a 250-gallon AST holding tank and disposed of periodically. To facilitate product removal, two DPE events were performed in August 2007 and November 2007.

Results of the DPE events indicated that the extent of free-product was greater than believed from the description of the spill that occurred at this site. An additional investigation using a membrane interface probe was performed to further delineate the extent of the plume and soil contamination in the area of the aircraft ramp. A third and forth extraction well and pump were installed as a result of this investigation. The forth extraction well is located within the active ramp area and free- product must be removed by sock and bailer at this location. A third DPE event was conducted in the summer of 2008 for 24 hours.

This event proved to be ineffective as wells produced too much water along with the product. The skimmer pumps continued to operate, goundwater and product monitoring also were continued to document the performance of the product removal system, annual progress reports were submitted to GAEPD. In 2010, as a result of the product removal system, it was noted that traces of product were no longer detected. In the fall of 2010, all skimmer pumps were removed to determine the true product levels in each well at the site. After one year, all wells showed only a trace of product (<1/8 inch). Absorbent socks were placed in wells containing product and periodically checked for rebound.

Product levels remained consistently low for a period of one year and in December of 2011 the planned ISCO event (per CAP-part B) was performed to remediate the residual product in the subsurface and reduce the dissolved constituents in the groundwater. After the December 2011 ISCO event, two rounds of performance monitoring were conducted in FY12. A small amount of product was detected July 2012, the planned second, ISCO injection event was conducted. Groundwater monitoring continued after the 2012 ISCO event and in 2013, a slight rebound of free-product was detected in two of the monitoring wells. Ongoing free-product removal is continuing by pumping and the use of absorbent socks. Performance monitoring is also continuing.

Free-product removal is expected to continue through FY16 and groundwater monitoring is expected to continue through FY17 at this time.

Site ID: CC-2485
Site Name: Lawson AAF UST (Bldg 2485)

A five-year review was conducted in 2013.

Three groundwater monitoring wells with a trace of free-product are being removed and replaced by a larger diameter free-product recovery well.

CLEANUP/EXIT STRATEGY

Site closeout will occur once the product levels have declined to less than 1/10 inch for two consecutive monitoring events, as all groundwater concentrations are currently below GAEPD UST criteria. A request for NFA will then be submitted to the state and once it is approved abandonment of 14 wells will follow.

Site ID: CC-FBSB-102
Site Name: A 70 acre former skeet range

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200901	200907
RFI/CMS	201102	201803
CMI(C)	201804	202104

RIP Date: N/A

RC Date: 202105

SITE DESCRIPTION

This former skeet range occupied 70 acres in the Harmony Church Area of Fort Benning. It operated for more than 30 years and is being considered as a potential future construction site. An RFA was conducted in 2009 with confirmatory sampling. Twenty (20) soil samples were collected from the area of the former skeet range. Eighteen (18) of the samples were surface soil samples from less than 1-foot below ground surface (bgs) and two were collected from a depth of 4-feet bgs in areas of heavy skeet debris.

Lead was detected in all 20 samples during the RFA, but no detections exceeded the established USEPA screening criteria for residential use of 400 ug/kg. PAHs were detected in 13 of the 20 samples. These detections exceeded various USEPA screening levels for residential land use in nine of the samples. Because of the exceedences, further delineation and removal of the skeet remnants were recommended.

An RFI to fully characterize the site began in FY12 and is ongoing. As a result of new information provided by old installation aerial photographs, discovered in 2013, the size of the investigation has been significantly expanded. The RFI report will be submitted to GAEPD in 2015. A five-year review was conducted in 2013.

An expanded investigation was performed in FY14 and the RFI report and risk assessment are being revised for resubmittal to GAEPD.

CLEANUP/EXIT STRATEGY

Based on results of the RFI, groundwater is not expected to be impacted. The exit strategy for this site includes preparing a CAP for soil removal. This is expected to result in an NFA determination by the state.

Site ID: CC-FBSB-103
Site Name: Former Pumphouse and Fuel Dispenser

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	201001	201005
RFI/CMS	201310	201812

RIP Date: N/A

RC Date: 201812

SITE DESCRIPTION

This site is located south of the intersection of 2nd Armored Division Road and 16th Infantry Regiment Street in the Sand Hill area of Fort Benning. The dispenser island was identified as Building 3251. The site was initially identified on an installation map as the location of a former area fueling system which was operated from the late-1940s until the 1950s. A schematic drawing of the site indicated that two, 25,000-gallon ASTs containing fuel occupied the site. Additionally, a pumphouse and numerous dispensing units along with 850 feet of piping were included. The only remaining structures are several concrete dispensing islands and the pumphouse.

The RFA/CS found VOCs, SVOCs, and lead above standards. RFI planning began in FY13 and the contract to conduct the RFI was awarded in December 2013. Based on the results of the RFI, corrective action and long-term monitoring may be required. If the results of the RFI indicate the presence of contaminants above regulatory limits, corrective action will be conducted until remedial goals have been achieved.

The RFI work plan was sent to GAEPD December 2014; comments have not yet been received.

CLEANUP/EXIT STRATEGY

If corrective action is required an NFA will be requested once remediation goals have been met and three years of confirmatory sampling of groundwater has been completed. If no corrective action is required, a request for an NFA will be submitted to the state.

Site ID: CC-FBSB-104
Site Name: A Former fuel dispensing facility

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	201001	201005
RFI/CMS	201311	201907

RIP Date: N/A

RC Date: 201907

SITE DESCRIPTION

This site is located at the intersection of 2nd Armored Division Road and Second Street in the Sand Hill area of Fort Benning. When operational it consisted of a 25,000-gallon AST, a pumphouse, and a fuel dispensing unit. The site was active during the 1940s. The RFA/CS found VOCs, SVOCs, and lead above standards. A contract to conduct the RFI will be awarded in FY14 and work should proceed in 2015. The RFI is scheduled to be conducted in 2015. If the results of the RFI indicate the presence of contaminants above regulatory limits, corrective action will be conducted until remedial goals have been achieved.

In FY15 a contract was awarded for the RFI and baseline risk assessment. A work plan is expected to be submitted to GAEPD in the fourth quarter of 2015.

CLEANUP/EXIT STRATEGY

If corrective action is required, an NFA will be requested once remediation goals have been met and three years of confirmatory sampling of groundwater has been completed. If no corrective action is required, a request for an NFA will be submitted to the state.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
CC-1622	Main Post AAFEES Gas Station, BLDG 1622	201212	Letter from GAEPD dated November 29, 2012 granting NFA status.
CC-FBSB-105	A former fire training area	201501	

CR Schedule

Date of CR Inception: 199508

Past Phase Completion Milestones

2000
ISC (CC-1622 - Main Post AAFEES Gas Station, BLDG 1622, CC-2485 - Lawson AAF UST (Bldg 2485))
2006
INV (CC-1622 - Main Post AAFEES Gas Station, BLDG 1622)
CAP (CC-2485 - Lawson AAF UST (Bldg 2485))
2008
IMP(C) (CC-1622 - Main Post AAFEES Gas Station, BLDG 1622)
CAP (CC-1622 - Main Post AAFEES Gas Station, BLDG 1622)
2009
RFA (CC-FBSB-102 - A 70 acre former skeet range)
2010
RFA (CC-FBSB-103 - Former Pumphouse and Fuel Dispenser, CC-FBSB-104 - A Former fuel dispensing facility)
2012
IMP(C) (CC-2485 - Lawson AAF UST (Bldg 2485))
2013
RFA (CC-FBSB-105 - A former fire training area)
IMP(O) (CC-1622 - Main Post AAFEES Gas Station, BLDG 1622)

Projected Phase Completion Milestones

See attached schedule

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

To Be Determined

Final RA(C) Completion Date: 202104

Schedule for Next Five-Year Review: 2019

Estimated Completion Date of CR at Installation (including LTM phase): 202104

FORT BENNING CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CC-2485	Lawson AAF UST (Bldg 2485)	IMP(O)						
		LTM						
CC-FBSB-102	A 70 acre former skeet range	RFI/CMS						
		CMI(C)						
CC-FBSB-103	Former Pumphouse and Fuel Dispenser	RFI/CMS						
CC-FBSB-104	A Former fuel dispensing facility	RFI/CMS						

Community Involvement

Technical Review Committee (TRC): None

Community Involvement Plan (Date Published): 201410

Restoration Advisory Board (RAB): No

Reason Not Established: The community has expressed no sufficient, sustained interest in a RAB.

Community Interest Solicited on: 201309

Efforts Taken to Determine Interest

The community relations plan (CRP) was last updated October 2014 and was used to improve lines of communication between Fort Benning and the residents of Columbus and Phenix City and determine community interest in forming a RAB.

Additionally on September 4-6, 2013, a notice was placed in the legal section of the local newspaper asking individuals who might be interested in forming a RAB or serving on a RAB to contact the environmental division.

A newspaper advertisement querying public support for forming a RAB will be placed in the local newspaper in 2015.

Results

The lack of responses to the newspaper advertisement and the lack of interest as shown in the CRP interviews indicated that there was not enough sustainable community interest in creating a Fort Benning RAB. Respondents repeatedly claimed that they trusted Fort Benning officials and the US Army to do what was necessary to clean up the environmental contamination.

Follow-up Procedures

The public will be queried every two years to determine if there is sufficient community interest in forming a RAB.

Additional Community Involvement Information

An update of the CRP will be completed in 2016. If the local community indicates an interest in establishing a RAB, one will be formed.

Administrative Record is located at

Meloy Hall,
Building 6, Room 310,
Fort Benning, GA 31905-5122
POC: 706.545.6427

Information Repository is located at

Sayers Memorial Library
Building 93, Wold Avenue
Fort Benning, GA 31905
POC: 706-545-4911

Columbus Public Library
Macon Road, Columbus, Ga.
31905

Current Technical Assistance for Public Participation (TAPP): N/A

TAPP Title: N/A

Potential TAPP: N/A