FY2015

FORT BUCHANAN

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 Buchanan, 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
BERA	Baseline Ecological Risk Assessment
Bldg	Building
CA	Contamination Assessment
CAP	Corrective Action Plan
CAPECO	Caribbean Petroleum Corp.
CC	Compliance-related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMI(C)	Corrective Measures Implementation - Construction
CMI(O)	Corrective Measures Implementation - Operation
CMIP	Corrective Measurers Implementation Plan
CMS	Corrective Measure Study
CR	Compliance Restoration
CS	Confirmatory Sampling
CVOC	Chlorinated Volatile Organic Compound
CWM	Chemical Warfare Material
DD	Decision Document
DERP	Defense Environmental Restoration Program
DES	Design
DoD	Department of Defense
DOL	Department of Labor
DPW	Directorate of Public Works
DRO	Diesel Range Organics
EBS	Environmental Baseline Survey
FLDEP	Florida Department of Environmental Protection
FRA	Final Remedial Action
FS	Feasibility Study
GPR	Ground Penetrating Radar
GRO	Gasoline Range Organics
GTCL	Groundwater Target Cleanup Level
HHRA	Human Health Risk Assessment
IAP	Installation Action Plan
IM	Interim Measure
IMA	Installation Management Agency
IMA-SE	Installation Management Agency- Southeast Region
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
LTM	Long-Term Management

Acronyms

LUC	Land Use Control
MCL	Maximum Contaminant Level
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MR	Munitions Response
MW	Monitoring Well
N/A	Not Applicable
NFA	No Further Action
NPL	National Priorities List
NWB	Northwest Boundary
ODUSD(I&E)	Office of the Deputy Under Secretary of Defense (Installation & Environment)
ORC	Oxygen Releasing Compound
ORO	Oil Range Organics
OWS	Oil/Water Separator
PA	Preliminary Assessment
POL	Petroleum, Oil and Lubricants
PP	Proposed Plan
ppb	parts per billion
ppm	parts per million
PR	Puerto Rico
PREQB	Puerto Rico Environmental Quality Board
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
SI	Site Inspection
SOB	Statement of Record
SOUTHCOM	Southern Command
SSHP	Site Safety and Health Plan
SWI	Site-Wide Investigation
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TPH-DRO	Total Petroleum Hydrocarbons -Diesel Range Organics
TRC	Technical Review Committee
ug/L	micrograms per liter

Acronyms

USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAG	US Army Garrison
USAR	US Army Reserves
USARSO	US Army South
USATHAMA	US Army Toxic and Hazardous Materials Agency
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
VI	Vapor Intrusion
VOC	Volatile Organic Compounds

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)

Site Alias List

AEDB-R Site ID to Alias List

AEDB-R #	Alias
CC FTB-038	light pole
CC FTB-039	RFI SWI
CCFB04S003	Bldg. 380
FTB-034	NWBoundary

Installation Information

Installation Locale

Installation Size (Acreage): 746
City: San Juan
County: Bayamón and Guaynabo
State: Puerto Rico (PR)
Other Locale Information

Fort Buchanan is located within the San Juan metropolitan area on the north coast of Puerto Rico which is the smallest of the Greater Antilles that separates the Caribbean Sea from the Atlantic Ocean. The installation lies approximately six miles southwest of old San Juan and occupies approximately 746 acres within two municipalities, Bayamón and Guaynabo.

Fort Buchanan is located on the northern coastal plain, which is about five miles wide and slopes gently upward to the central mountain chain, the Cordillera Central. A busy commercial area lies to the east of Fort Buchanan outside the East Main Gate. State Road PR-2 connects San Juan with the municipalities of Guaynabo and Bayamón, and the surrounding shopping areas, restaurants, and other businesses. Fort Buchanan is surrounded to the north by Puerto Rico State Highway 28, to the northeast by Amelia Industrial Park, and to the northeastern corner by a federal detention center. The Puma Chemical Storage Facility (formerly the Caribbean Gulf Refinery) and the Puerto Rico Department of Corrections occupy land to the west of the installation. A privately-owned wooded area lies to the southwest, and numerous residential areas including Tintillo Gardens, Villa Caparra, Chalets de Caparra, Villa España, Tintillo Hills, and Victor Bragger lie to the south.

Installation Mission

Our mission is to provide standardized services and sustainable infrastructure in support of the Armed Forces and the diverse Fort Buchanan community.

Lead Organization

IMCOM

Lead Executing Agencies for Installation

USAEC

Regulator Participation

Federal	US Environmental Protection Agency (USEPA), Caribbean Field Office, Region II
State	Puerto Rico Environmental Quality Board (PREQB)

National Priorities List (NPL) Status

FORT BUCHANAN 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: Volatiles (VOC)

Affected Media of Concern: Groundwater

CR

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

Affected Media of Concern: Groundwater, Soil, Surface Water

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Start Date	End Date	End FY
Planned	201910	201912	2020

5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
FTB-034	FTB-034

Cleanup Program Summary

Installation Historic Activity

In 1903, the first Puerto Rican US Army unit, the Puerto Rico Regiment, was established under the command of Lieutenant Colonel James A. Buchanan. Camp Buchanan, established in 1923, was originally located on a 300-acre tract of land some six miles south of San Juan Bay.

From 1926 to 1930 Camp Buchanan was used as a maneuver training area and range by the regular Army and National Guard troops and as a Citizen Military Training Camp. A small arms firing range was established on 32 acres and was known as Camp Buchanan Training Area. Records indicated that chemical warfare material (CWM) was requested, received and stored at Camp Buchanan. In May 1940, Camp Buchanan training area was designated as Fort Buchanan and expanded to 1,514 acres and later to 4,500 acres and permanent facilities were constructed.

During World War II, Fort Buchanan housed a depot supplying the Army Antilles Department. It also processed local troops through its replacement center. The industrial complex included pier facilities, ammunition storage areas, and an extensive railroad network connecting it to the bay.

After World War II, the post was gradually reduced to its present 746 acres. The post continued to be used throughout the Korean War as a supply and replacement depot.

Until closure as an Army post in 1966, it remained a command depot with post facilities, a personnel center, and a special training center. With the deactivation of the Antilles Command on Dec. 31, 1966, Fort Buchanan came under US Navy control. A detachment of approximately 100 personnel remained as a residual element designated as US Army Command Group and was placed under command of the US Army Forces Southern Command (SOUTHCOM) in Panama. This element consisted of a small command group and support detachment, Rodriguez US Army Hospital (inactivated in 1971), and advisory groups for the US Army Reserves (USAR), the National Guard and the Reserve Officers' Training Corps. While not organic to the command, an armed forced examining and entrance station and intelligence corps detachment (inactivated in 1971) also received support from the command.

In December 1971, Fort Buchanan returned to US Army control under the Third Army. It continued to support the USAR, including seven Army Reserve Centers throughout Puerto Rico. It became host to a number of tenant activities of the Reserve components, Navy, Coast Guard, Air Force and several nonmilitary federal agencies.

On July 1, 1973 as a result of Army reorganization, Camp Buchanan was redesignated as US Army Garrison (USAG), Fort Buchanan, under direct control of Headquarters US Army Forces Command. Initially the Commander, USAG, commanded the Senior Army Advisors to the USAR and National Guard elements in Puerto Rico and the US Virgin Islands, the Readiness Group, and the USAR.

Following the Department of Defense (DoD) Unified Command Plan, Fort Buchanan came under control of SOUTHCOM. On Aug. 13, 1999 it became the home of US Army South (USARSO).

On Oct. 1, 2003, Fort Buchanan became the third Army Reserve Installation within the Installation Management Agency, southeast Region (IMA-SE) with the Deputy Commanding General of the US Army Reserve Command as our Senior Mission Commander.

In October 2006, the Installation Management Agency (IMA) became the US Army IMCOM.

Today, Buchanan is the only DoD installation in the Caribbean Basin area. It continues to support the reserve component and the active component Soldiers in Puerto Rico and US Virgin Islands and is a definite asset for DoD relations with Central and South America. The installation also provides support to DoD operations in the Caribbean area.

Installation Program Cleanup Progress

IRP

Prior Year Progress: A CMI(C) was continued for the trichloroethylene (TCE) groundwater study. A vapor extraction study was implemented. Injection and extraction groundwater wells are proposed to be installed.

Future Plan of Action: A CMI(O) is scheduleded for the Northwest Boundary (NWB) area in FY15-45.

Design of CMI(C) for groundwater remediation will be completed. Thirty years of monitored natural attenuation (MNA) are anticipated. The Army is in the process of developing Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) related documents to memorialize all voluntary Resource Conservation and Recovery Act (RCRA) corrective action decisions for AEDB-R sites FTB 034 and CCFTB 039.

CR

Prior Year Progress: A RI and contamination assessment (CA) was completed for site FTB-038. A CMS was conducted for site CCFTB-039 - Former RFI Sites (No. 2 Pesticide Burial Trench, No. 3 Spent Solvent Area; No. 9 Used Oil Area, No. 11 Heavy Equip. Area and No. 12 intermittent waste disposal area). CMS recommends NFA. IMP(O) at CCFB04S003 continues.

Completion of site IMP(C) phase for Site CCFTB-040. Sites CCFB04S007 and CCFB07S001 received NFA letters from PREQB and all wells were permanantly closed in 2014.

Future Plan of Action: Complete a corrective measures study (CMS) for RFI sites No. 2 Pesticide Burial Trench; No. 3 Spent Solvent Area; No. 9 Used Oil Area; No. 11 Heavy Equipment Area; and No. 12 Intermittent Waste Disposal Area. CMS recommends no further action (NFA). The Army is in the process of developing CERCLA related documents to memorialize all voluntary RCRA Corrective Action Decisions for AEDB-R sites FTB-034 and CCFTB-039. Continue MNA at Site CCFB04S003.

FORT BUCHANAN

Army Defense Environmental Restoration Program
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 18/17

Installation Site Types with Future and/or Underway Phases

1 Contaminated Ground Water
(FTB-034)

Most Widespread Contaminants of Concern

Volatiles (VOC)

Media of Concern

Groundwater

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

Site ID	Site Name	Action	Remedy	FY
FTB-007	PX SERVICE STATION	FRA	OTHER	1984
FTB-016	BUILDING 539 PESTICIDE STORAGE	FRA	WASTE REMOVAL - SOILS	1991
FTB-034	TCE Groundwater Investigation	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2015

Duration of IRP

Date of IRP Inception: 198309

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201510/204509

Date of IRP completion including Long Term Management (LTM): 204509

IRP Contamination Assessment

Contamination Assessment Overview

In January 2005 the USAG Fort Buchanan was notified by the USEPA Region II to conduct an RFI for 15 sites. These include: five solid waste management units (SWMU); nine AOCs and one site (FTB-001-R-01) being addressed under the Military Munitions Response Program (MMRP). One of the five SWMU sites is the TCE contamination site and is being tracked separately as FTB-034. The remaining four SWMUs and nine AOC sites are collectively referred to as the site-wide investigation (SWI). Please see the site-specific descriptions for more details on the actions taken for each site.

Based on the Army's research and confirmed by USEPA there is no consent order issued for the site nor is there a RCRA permit. During the RFI and CMS cleanup was being performed under a voluntary cleanup agreement.

During the RFI the USEPA recommended the NWB component address the groundwater for the entire site since it was investigated in detail for the NWB area. The RFI SWI will address soils for the entire site and include limited groundwater evaluation as it pertains to each site.

A draft RFI report was submitted to USEPA for the TCE component in September 2009. Comments made by USEPA were received in September 2010. The final TCE report was submitted in March 2012 and approved in April 2012 by PREQB and USEPA. The report concluded the TCE groundwater plume was located at the northwest boundary and has moved off-site. The human health risk assessment (HHRA) determined there were no potential concerns for human contact to soil/surface water. The HHRA found potential concerns for the commercial worker and off-site resident exposure to groundwater.

A draft CMS work plan and report were submitted to PREQB and the USEPA in 2011. In June 2012, a draft final CMS was submitted to USEPA and PREQB. The CMS report presented five alternatives and presented the preferred alternative No. 3 Enhanced Bioremediation Reductive Dechlorination, MNA, and land use controls (LUC). In June 2012 the USEPA developed a statement of basis (SOB) that was released for community feedback with no response. A final CMS was submitted to USEPA and PREQB in September 2012 and was approved in October 2012. A new contract was awarded in January 2014 to conduct a pilot scale treatability study, vapor intrusion (VI) study, baseline groundwater sampling (conducted July 2014), implementation construction [IMP(C)] phase, and implementation operation [IMP(O)] phase. Groundwater sampling results indicate TCE plume is located within the installation boundaries.

From March to May 2014 a pilot treatability study was performed to determine the population size of the dehalococcoides present and the geochemical properties of the groundwater at the site. The study determined the need to augument the population.

In September 2014 a VI study was performed. In February 2015 the final version Corrective Measure Implementation Plan (CMIP) was submitted to the USEPA.

Based on the RFI SWI review comments from the USEPA dated Dec. 17, 2010, there were concerns raised regarding the site background concentration levels for pesticides and metals. Considering these comments it was anticipated that future limited RA (e.g., limited excavation/removal) may be required at sites FTB-035, FTB-036 and FTB-037. The three sites were opened up as CR sites. Because of the results of the background study and the final RFI, NFA was recommended for site nos. 1 (FTB-035), 4, 5, 6, 7 (FTB-036), 8, 10, 13 (FTB-037), and 15. Site nos. 2, 3, 9, 11 and 12 will move forward with a CMS phase. The CMS action will be captured in site CCFTB-039 under the CR program. The final RFI report was submitted in September 2012 and approved by PREQB and USEPA in October 2012. A new contract was awarded in January 2014 to conduct the CMS. A CMS was conducted (July 2014) for CCFTB-039 site nos. 2, 3, 9, 11, and 12. A report was submitted to the USEPA September 2014.

Cleanup Exit Strategy

A CMS for FTB-034 was completed to evaluate remedial alternatives for groundwater and a preferred remedy was recommended - Alternative No. 3, Enhanced Bioremediation - Reductive Dechlorination, MNA, and LUC.

The work was contracted in January 2014. Groundwater sampling results (July 2014) indicate TCE plume size has decreased and is located entirely within the installation boundaries. Anticipate MNA to go 30 years unless proven otherwise. Establish LUCs restricting groundwater use as a potable source in the area of the TCE plume.

Site CCFTB-039 will now be addressed in the CR program. The CMS recommended NFA and that notes be made to the master plan indicating land use to be zoned for industrial/community and not for residential for the former RFI site nos. 2, 3, 9, 11, and

12.

The US Army is in the process of developing CERCLA-related documents to memorialize all voluntary RCRA corrective action decisions for AEDB-R sites FTB-034 and CCFTB-039. In order to meet Defense Environmental Restoration (DERP) requirements, the Office of General Council requested that these documents be developed.

IRP Previous Studies

	Title	Author	Date
1984			
	Installation Assessment of Fort Buchanan	Environmental Science & Engineering Inc. and US Army Toxic and Hazardous Materials Agency	JUN-1984
1992			
	Geophysical Investigationat Solid Waste Management Unit NO. 3, Fort Buchanan, PR	Geotechnical Laboratory	FEB-1992
1993			
	Soil Sampling Program at Solid Waste Management Unit No. 3, Fort Buchanan, PR	Geotechnical Laboratory	MAR-1993
1997			
	Environmental Baseline Survey	Woodward-Clyde Federal Services	JAN-1997
1999			
	Geohydrologic Study No. 38-EH-8181-98, US Army Garrison, Fort Buchanan, PR	USACHPPM	OCT-1999
2006			
	Draft Final Project Management Plan	HGS Engineering, Inc.	MAR-2006
	Northwest Boundary Investigation Work Plan and Quality Assurance Project Plan	EA Engineering, Science, and Technology	DEC-2006
2007			
	Addendum #1 to the Northwest Boundary Investigation Work Plan	EA Engineering, Science, and Technology	APR-2007
	Addendum #2 Northwest Boundary Investigation Work Plan	EA Engineering, Science, and Technology	OCT-2007
2008			
	RCRA Facility Investigation Work Plan and Quality Assurance Project Plan	EA Engineering, Science, and Technology	MAR-2008
	Addendum #3 to the Northwest Boundary Investigation Work Plan	EA Engineering, Science, and Technology	MAR-2008
	Memorandum about the Phase III Well Completion Report - Northwest Boundary Investigation Area	EA Engineering, Science, and Technology	MAR-2008
	Addendum #4 to the Northwest Boundary Investigation Work Plan, Draft Version	EA Engineering, Science, and Technology	JUL-2008
	Addendum #5 to the Northwest Boundary Investigation Work Plan, Draft Version	EA Engineering, Science, and Technology	AUG-2008
	Quality Assurance Project Plan RCRA Facility Investigation, U.S. Army Garrison Fort Buchanan, PR	EA Engineering, Science, and Technology	SEP-2008
	Phase IV and Phase VI Well Completion and Soil Investigation Report, Northwest Boundary Investigation Area, Fort Buchanan, PR	EA Engineering, Science, and Technology	NOV-2008
	Revised Phase IV and Phase VI Well Completion and Soil Investigation Report, Northwest Boundary Investigation Area, Fort Buchanan, PR	EA Engineering, Science, and Technology	NOV-2008
2009			
	Draft Final RCRA Facility Investigation Report U.S Army Garrison Fort Buchanan	EA Engineering Science, and Technology	APR-2009
	Draft Final RCRA Facility Investigation Report U.S Army Garrison Fort Buchanan	EA Engineering Science, and Technology, Inc.	JUL-2009
	Draft RCRA Facility Investigation northwest Boundary Investigation Final Report U.S. Army Garrison Fort	EA Engineering Science, and Technology	AUG-2009

IRP Previous Studies

	Title	Author	Date
2009			
	Buchanan, Puerto Rico		
2010			
	Draft Final RCRA Facility Investigation Report U.S Army Garrison Fort Buchanan	EA Engineering Science & Technology	JUN-2010
	Well Integrity Monitoring Well Sampling Report	EA Engineering Science & Technology	SEP-2010
	Addendum #6 to the Northwest Boundary Investigation Work Plan U.S. Army Garrison For t Buchanan,Puerto Rico	EA Engineering Science & Technology	NOV-2010
2011			
	Addendum #1 Technical Memorandum Background Concentrations of Metals and Organochlorine Pesticides for the Fort Buchanan RFI. (Draft)	EA Engineering Science & Technology	FEB-2011
	ADDENDUM #1 TO THE RCRA FACILITY INVESTIGATION WORK PLAN	EA Engineering Science & Technology	MAY-2011
	Northwest Boundary TCE Investigation Corrective Measures Study Work Plan Draft	EA Engineering Science & Technology	MAY-2011
	Northwest Boundary TCE Investigation Corrective Measures Study Work Plan US Army Garrison Fort Buchanan, Puerto Rico (Draft)	EA Engineering Science & Technology	JUL-2011
	ADDENDUM #1 to the RCRA Facility Investigation Work Plan Final Version	EA Science & Technology	JUL-2011
	Addendum #2 to the RCRA Facility Investigation Work Plan US Army Garrison, Fort Buchanan, Puerto Rico (Draft)	EA Engineering Science & Technology	AUG-2011
	Northwest Boundary TCE Investigation Corrective Measures Study Work Plan US Army Garrison Fort Buchanan, Puerto Rico (Final)	EA Engineering Science & Technology	SEP-2011
	Northwest Boundary TCE Investigation Corrective Measures Study Work Plan US Army Garrison Fort Buchanan, Puerto Rico (Final)	EA Engineering Science & Technology	NOV-2011
	RCRA Facility Investigation, northwest Boundary Area, US Army Garrison Fort Buchanan, Puerto Rico Working final with response to comments.	EA Engineering Science & Technology	DEC-2011
	Technical Memorandum Background Concentrations of Metals and Organochlorine Pesticides for the Fort Buchanan RFI. (Draft)	EA Engineering Science & Technology	DEC-2011
	DRAFT LETTER REPORTSite 12, Results of Sediment Pore Water Sampling for the Fort Buchanan Site-wide RCRA Facility Investigation US ARMY GARRISON, Fort Buchanan, Puerto Rico	EA Engineering Science & Technology	DEC-2011
2012			
	RCRA Facility Investigation Northwest Boundary Area U.S. Army Garrison, Fort Buchanan Final March 2012	EA Engineering Science & Technology	MAR-2012
	Northwest Boundary Groundwater Corrective Measure Study Report, Final March 2012	EA Engineering Science & Technology	MAR-2012
	RCRA Facility Investigation Northwest Boundary Area U.S. Army Garrison, Fort Buchanan Final September 2012	EA Engineering Science & Technology	SEP-2012
	RCRA Facility Investigation (RFI) Site Wide Investigation Report Final September 2012	EA Engineering Science & Technology	SEP-2012
2013			

IRP Previous Studies

	Title	Author	Date
2013			
	FINAL MUNITIONS RESPONSE REMEDIAL ACTION DECISION DOCUMENT FOR THE FORT BUCHANAN MUNITIONS RESPONSE SITE CAMP BUCHANAN TRAINING AREA SAN JUAN, PUERTO RICO April 2013	ECC	APR-2013
	FINAL LAND USE CONTROL PLAN FORT BUCHANAN MUNITIONS RESPONSE SITE CAMP BUCHANAN TRAINING AREA SAN JUAN, PUERTO RICO SEPTEMBER 2013	U.S. ARMY	SEP-2013
2014			
	Draft Corrective Measure Study Pilot Scale Treatability Study Work Plan FTB-034 Northwest Boundary Area	KEMRON Environmental Services Inc.	FEB-2014
	Vapor Intrusion Investigation Work Plan Ftb-034 Northwestern Boundary Groundwater Army Garrison-Fort Buchanan Draft Version	KEMRON Environmental Services Inc.	FEB-2014
	Sampling And Analysis Plan UFP Quality Assurance Project Plan The Northwest Boundary Area (FTB-034 TCE Groundwater Plume) Fort Buchanan Puerto Rico Draft Version	KEMRON Environmental Services Inc.	FEB-2014
	Accident Prevention Plan RCRA CMS/CMIP for the FTB-034 and CCFTB-039 Army Garrison Fort Buchanan, Puerto Rico Draft Version	KEMRON Environmental Services Inc.	FEB-2014
	Vapor Intrusion Investigation Work Plan Ftb-034 Northwestern Boundary Groundwater Army Garrison-Fort Buchanan Draft /FinalVersion	KEMRON Environmental Services Inc.	APR-2014
	Draft Final Sampling and Analysis Plan, Unified Federal Policy Quality Assurance Project Plan, FTB-034, Northwest Boundary Area Groundwater, Fort Buchanan, Bayamon, Puerto Rico, Revision 1	KEMRON Environmental Services Inc.	APR-2014
	Final Sampling and Analysis Plan Unified Federal Policy Quality Assurance Project Plan, FTB-034, Northwest Boundary Area Groundwater, Fort Buchanan, Bayamon, Puerto Rico,	KEMRON Environmental Services Inc.	JUN-2014
	Vapor Intrusion Work Plan FTB-034 Northwestern Boundary Groundwater Army Garrison-Fort Buchanan Army Resrves Bayamon, Puerto Rico	KEMRON Environmental Services Inc.	JUN-2014
	Final CMS Treatability Study Report FTB-034 Northwest Boundary Groundwater US Army Garrison Fort Buchanan Army Reserves Bayamon, Puerto Rico	KEMRON	JUN-2014
	CMS Corrective Measures Implementation Plan FTB-034 Northwest Boundary Groundwater US Army Garrison Fort Buchanan Army Reserves Draft	KEMRON Environmental Services Inc.	SEP-2014
	CMS Corrective Measures Implementation Plan FTB-034 Northwest Boundary Groundwater US Army Garrison Fort Buchanan Army Reserves Draft-Final	KEMRON	OCT-2014
	Corrective Measure Study Implementation Plan (CMIP)FTB-034 Northwest Boundary Groundwater Army Garrison-Fort Buchanan Army Reserves Bayamon, Puerto Rico Draft-Final Version	KEMRON Environmental Services	OCT-2014
	Vapor Intrusion Assessment Report Draft Version FTB-034 Northwestern Boundary Groundwater Army Garrison-Fort Buchanan Army Reserves Bayamon, Puerto Rico	KEMRON	OCT-2014
	Vapor Intrusion Assessment Report Draft -Final Version FTB-034 Northwestern Boundary	KEMRON	NOV-2014

IRP Previous Studies

	Title	Author	Date
2014			
	Groundwater Army Garrison-Fort Buchanan Army Reserves Bayamon, Puerto Rico		
2015			
	Vapor Intrusion Assessment Report FTB-034 Northwest Boundary Groundwater Army Garrison-Fort Buchanan Army Reserves Bayamon, Puerto Rico Final Version	KEMRON Environmental Services, Inc.	MAR-2015
	Corrective Measure Study Implementation Plan (CMIP)FTB-034 Northwest Boundary Groundwater Army Garrison-Fort Buchanan Army Reserves Bayamon, Puerto Rico Final Version	KEMRON	MAR-2015

FORT BUCHANAN

Installation Restoration Program

Site Descriptions

Site ID: FTB-034
Site Name: TCE Groundwater Investigation
Alias: NWBoundary

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA	199602	199701
SI	199602	199701
RI/FS	200602	201209
RD	201305	201401
RA(C)	201402	201510
RA(O)	201510	204509

RIP Date: 201510

RC Date: 204509

SITE DESCRIPTION

This site is composed of a groundwater plume that previously was approximately 50 acres in size of chlorinated solvents, primarily TCE, that have been detected along the northwest boundary of Fort Buchanan and within the adjacent Puma Chemical Storage Facility (formerly the Caribbean Refinery Company property). In accordance with the USEPA's letter of January 2005, the Army has installed a total of 48 monitoring wells located in the northwest corner of Fort Buchanan and adjoining non-DoD property. The groundwater exceeds maximum contaminant levels (MCL) for TCE, tetrachloroethylene, vinyl chloride, and arsenic. Historically the area of contamination is located beneath the northwest portion of Fort Buchanan and extends northwesterly across Route 28 and Route 22 beneath adjoining non-DoD property. The Army initiated a phased delineation for the TCE plume.

A draft RFI report was submitted to the USEPA in September 2009. USEPA comments were received in September 2010. A second draft version of the RFI was submitted to the USEPA in December 2011. The final RFI was submitted in April 2012 and approved by USEPA on April 11, 2012. A draft CMS report was submitted in November 2011 and a final CMS was submitted May 2012 and again in September 2012. The CMS was approved by the USEPA letter dated Oct. 16, 2012. The CMS report presented five alternative remediation methods and proposed a third alternative: in situ enhanced bioremediation reductive dechlorination.

The enhanced bioremediation process stimulates anaerobic reductive dechlorination using carbon substrate, electron donor and nutrients to remediate the areas with the highest groundwater impacts, MNA, and LUCs. The remedy will be implemented through the use of a push-pull delivery approach using injection wells (source area) and DPT injection points (barrier wall) to deliver the carbon formula, followed by extracting groundwater at nearby wells to increase the radius of influence. Following the installation and development of the injection/extraction wells, the aquifer will be pre-conditioned by injecting the carbon substrate, nutrients and buffering agents. Once the aquifer has been pre-conditioned, the bacteria will be injected into the aquifer through the well screens using nitrogen gas at a low pressure to allow for enhanced reductive dechlorination of chlorinated volatile organic compounds (CVOC) in groundwater to expedite the remediation process.

The proposed work for the injection wells and extraction wells was contracted in January 2014. MNA and LUCs will be part of the proposed remediation action. In March - May a pilot treatability study was performed in 2014 to determine the feasibility of the corrective action. The study determined that enhanced bioremediation will work and that augmentation of existing native bacteria will be needed to reach target cleanup goals. In July 2014 a baseline groundwater sampling indicated the plume size has been reduced to approximately 12 acres and is within the installation footprint.

In November 2014, a VI assessment report draft-final version was performed to investigate concentrations of volatile organic compounds (VOC) in near-slab soil gas around buildings within 100 feet of the TCE plume. USEPA provided comments to the VI report in February 2015. The Army submitted final version of the VI in March 2015. In October 2014 a CMIP was prepared and provided to USEPA. USEPA provided comments to the CMIP in January 2015. Army submitted final version of the CMIP in February 2015.

Based on the Army's research and confirmed by the USEPA in FY10 there is no consent order or RCRA permit for the site. As a result, cleanup is being performed as a voluntary action. USEPA is providing oversight for all Installation Restoration Program

(IRP) cleanup.

CLEANUP/EXIT STRATEGY

Anticipated cleanup action will include source treatment with in situ enhanced bioremediation using an available commercialized substrate such as a lactate carbon donor to stimulate anaerobic reductive dechlorination as the principal treatment mechanism. The remedy will be implemented through the use of a push-pull delivery approach using injection wells (source area) and DPT injection points (barrier wall) to deliver the carbon formula, followed by extracting groundwater at nearby wells to increase the radius of influence. MNA and LUCs will be added.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FTB-001	DEH MOTOR POOL/SHOP BUILDING 556	198403	This site was closed based on the 1997 EBS. but subsequently was reopened under USEPA's request in letter dated 31 January 2005 to conduct an RFI. This site was investigated under the Site-Wide Investigation(Site #3). This site is currently investigated under the Compliance Restoration Program under CCFTB-039.
FTB-002	ANTILES SCHOOL SYS MOTOR POOL/SHOP	198403	This site was closed based on the 1984 Installation Assessment of Fort Buchanan (Environmental Science & Engineering Inc. and US Army Toxic and Hazardous Materials Agency).
FTB-003	AREAWIDE MILITARY SUPPORT ACTIVITY MP	198403	This site was closed based on the 1984 Installation Assessment of Fort Buchanan (Environmental Science & Engineering Inc. and US Army Toxic and Hazardous Materials Agency).
FTB-006	DIRECTORATE OF PERSONNEL AND CA AC SHOP	198403	This site was closed based on the 1984 Installation Assessment of Fort Buchanan (Environmental Science & Engineering Inc. and US Army Toxic and Hazardous Materials Agency).
FTB-007	PX SERVICE STATION	199201	This site was transferred to CC and received NFA.
FTB-008	WASH RACK BUILDING 538	198403	This site was closed based on the 1997 EBS.
FTB-012	MEDDAC LAB BUILDING 518	198403	This site was closed based on the 1984 Installation Assessment of Fort Buchanan (Environmental Science & Engineering Inc. and US Army Toxic and Hazardous Materials Agency).
FTB-013	VET LAB	198403	This site was closed based on the 1984 Installation Assessment of Fort Buchanan (Environmental Science & Engineering Inc. and US Army Toxic and Hazardous Materials Agency).
FTB-015	BUILDING 556 PESTICIDE STORAGE	198403	This site was closed based on the 1997 EBS.
FTB-016	BUILDING 539 PESTICIDE STORAGE	199101	This site was closed based on the 1997 EBS but subsequently was reopened under USEPA's request in letter dated 31 January 2005 to conduct an RFI. This site was investigated under the Site-Wide Investigation and resulted in NFA in the RFI dated September 2012 and approved by the USEPA October 2012.
FTB-017	PESTICIDE BURIAL N PR 28	199507	This site was closed based on the 1997 EBS but subsequently was reopened under USEPA's request in letter dated 31 January 2005 to conduct an RFI. This site was investigation under the Site-Wide Investigation(Site #2).This site is currently investigated under the Compliance Restoration Program under CCFTB-039.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FTB-019	DEH UST BUILDING 556	198403	NFA letter from PREQB from June 2001.
FTB-027	PHOTO LAB DPTSEC/TASC	198403	This site was closed based on the 1984 Installation Assessment of Fort Buchanan (Environmental Science & Engineering Inc. and US Army Toxic and Hazardous Materials Agency).
FTB-028	CONSTRUCTION LANDFILL	198403	This site was closed based on the 1997 EBS but subsequently was reopened under USEPA's request in letter dated 31 January 2005 to conduct an RFI. This site is currently tracked under the Site-Wide Investigation.
FTB029	ABANDONEDUST BLDG 152	199710	NFA letter from PREQB from April 1997.
PBC@Buchanan	RCRA Sites and TCE Groundwater	201209	All funds under the PBC were obligated and USAEC directed this site to be closed.
Site Wide Inv.	Site Wide Investigation	201210	USEPA letter dated 16 October 2012 approved RFI recommendation and sites with future phases are in the CR program.

IRP Schedule

Date of IRP Inception: 198309

Past Phase Completion Milestones

1984

SI	(FTB-001 - DEH MOTOR POOL/SHOP BUILDING 556, FTB-002 - ANTILES SCHOOL SYS MOTOR POOL/SHOP, FTB-003 - AREAWIDE MILITARY SUPPORT ACTIVITY MP, FTB-006 - DIRECTORATE OF PERSONNEL AND CA AC SHOP, FTB-007 - PX SERVICE STATION, FTB-008 - WASH RACK BUILDING 538, FTB-012 - MEDDAC LAB BUILDING 518, FTB-013 - VET LAB, FTB-017 - PESTICIDE BURIAL N PR 28, FTB-027 - PHOTO LAB DPTSEC/TASC, FTB-028 - CONSTRUCTION LANDFILL)
PA	(FTB-001 - DEH MOTOR POOL/SHOP BUILDING 556, FTB-002 - ANTILES SCHOOL SYS MOTOR POOL/SHOP, FTB-003 - AREAWIDE MILITARY SUPPORT ACTIVITY MP, FTB-006 - DIRECTORATE OF PERSONNEL AND CA AC SHOP, FTB-007 - PX SERVICE STATION, FTB-008 - WASH RACK BUILDING 538, FTB-012 - MEDDAC LAB BUILDING 518, FTB-013 - VET LAB, FTB-017 - PESTICIDE BURIAL N PR 28, FTB-027 - PHOTO LAB DPTSEC/TASC, FTB-028 - CONSTRUCTION LANDFILL)
CS	(FTB-015 - BUILDING 556 PESTICIDE STORAGE, FTB-016 - BUILDING 539 PESTICIDE STORAGE)
RA(C)	(FTB-007 - PX SERVICE STATION)
INV	(FTB-019 - DEH UST BUILDING 556)
ISC	(FTB-019 - DEH UST BUILDING 556)
RFA	(FTB-015 - BUILDING 556 PESTICIDE STORAGE, FTB-016 - BUILDING 539 PESTICIDE STORAGE, PBC@Buchanan - RCRA Sites and TCE Groundwater, Site Wide Inv. - Site Wide Investigation)

1991

CMI(C)	(FTB-016 - BUILDING 539 PESTICIDE STORAGE)

1994

RI/FS	(FTB-017 - PESTICIDE BURIAL N PR 28)

1997

PA	(FTB-034 - TCE Groundwater Investigation)
SI	(FTB-034 - TCE Groundwater Investigation)

1998

ISC	(FTB029 - ABANDONEDUST BLDG 152)

2012

RI/FS	(FTB-034 - TCE Groundwater Investigation)
RFI/CMS	(PBC@Buchanan - RCRA Sites and TCE Groundwater)

2013

RFI/CMS	(Site Wide Inv. - Site Wide Investigation)

2014

RD	(FTB-034 - TCE Groundwater Investigation)

Additional Past Phase Completion Milestones

2014 Pilot Treatability Study FTB-034 TCE GW Inv.
2014 Vapor Intrusion Study FTB-034 TCE GW Inv.

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

IRP Schedule

Final RA(C) Completion Date: 201510

Schedule for Next Five-Year Review: 2019

Estimated Completion Date of IRP at Installation (including LTM phase): 204509

FORT BUCHANAN IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
FTB-034	TCE Groundwater Investigation	RA(C)						
		RA(O)						

FORT BUCHANAN

Army Defense Environmental Restoration Program
Compliance Restoration

CR Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 10/7

Installation Site Types with Future and/or Underway Phases

1 Disposal Pit/Dry Well
(CC FTB-039)
1 Oil Water Separator
(CCFB04S003)
1 Spill Site Area
(CC FTB-038)

Most Widespread Contaminants of Concern

Metals, Pesticides, Petroleum, Oil and Lubricants (POL)

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
CCFB04S008	Building 746 UST Corrective Actions	FRA	REMOVAL	2008
CCFB07S001	UST Corrective Action Site 376	FRA	GROUND WATER TREATMENT	2011
CCFB04S003	Building 380 OWS	FRA	FREE PRODUCT RECOVERY	2012
CCFB04S007	Building 390 UST Corrective Actions	FRA	FREE PRODUCT RECOVERY	2012
CCFB04S007	Building 390 UST Corrective Actions	FRA	REMOVAL	2012
CCFB04S008	Building 746 UST Corrective Actions	FRA	WASTE REMOVAL - SOILS	2012
CCFB04S003	Building 380 OWS	FRA	REMOVAL	2013
CCFB04S003	Building 380 OWS	FRA	GROUND WATER TREATMENT	2014
CC FTB-040	UST removal and fuel impacted soil	FRA	WASTE REMOVAL - SOILS	2015

Duration of CR

Date of CR Inception: 199006

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201602/204508

Date of CR completion including Long Term Management (LTM): 204508

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 CR in AEDB-R to distinguish them from the original IR sites and IR metrics.

The CR sites include:

- Fuel impacted sites from former underground storage tanks (UST) at Buildings 376 (CCFB07S001) and 390 (CCFB04S007); Reports submitted to PREQB in March 2013.

- A fuel impacted site near Building 517 (lightpole Project-CCFTB-038); A site investigation was conducted in March 2014.

- A POL site that includes Building 380 (CCFB04S003); In situ chemical oxidation and source removal was conducted in 2012.

- Individual sites from the SWI that will move forward in the cleanup process. These sites include former SWI No. 2 Pesticide Burial Trench, former SWI No. 3 Spent Solvent Storage Area, former SWI No. 9 Used Oils Storage Area, former SWI site No. 11 Heavy Equipment Storage Area and former site No. 12 Intermittent Waste Disposal Area. Former SWI site nos. 2, 3, 9, 11 and 12 will conduct a CMS and will be tracked under site CCFTB-039.

-CCFTB-040 consisted of an abandoned UST encountered at the new Directorate of Public Works (DPW) Building 34 in FY13. Over 500 cubic yards of fuel impacted soil was removed.

Cleanup Exit Strategy

The investigations and RAs will develop toward a goal of NFA. Methods of remediation include in situ treatment using chemical oxidation (Perozone®) for POL contamination followed by monitoring for a specified number of years at Building at 380. In addition, source removal is proposed for isolated hot spots at Building 380 and Building 517.

A final remediation report was submitted to PREQB in spring 2013 seeking NFA for Buildings 376 and 390. Agency approval was received in 2014 and all wells permanently closed in December 2014.

The US Army submitted a UST closure report to the agency in December 2013 regarding NFA at site CCFTB-040. The US Army communicated closure to the agency in September 2014 for site CCFTB-040. The agency provided an approval letter in February 2015.

Remediation continued at Building 380 with source removal in the traffic circle in spring 2013 and chemical oxidation in 2011 and again near MW-5 in July to December 2014. NFA approval is anticipated at Building 380 in August 2015.

In January 2014 a CMS was contracted for former RFI SWI sites nos. 2, 3, 9, 11 and 12. The results of the September 2014 draft/final version of the CMS recommended NFA with notes in the master plan for industrial/community use at the former RFI SWI sites. The USEPA provided comments in January 2015 to finalize the report.

The US Army is in the process of developing CERCLA related documents to memorialize all voluntary RCRA corrective action decisions for AEDB-R sites FTB 034 and CCFTB 039. In order to meet DERP requirements, the Office of General Council requested that these documents be developed.

CR Previous Studies

	Title	Author	Date
2008			
	Us Army Garrison Fort Buchanan Limited Source Removal Report for Area 746	Water & Air Research Inc.	OCT-2008
2009			
	US Army Garrison Fort Buchanan Supplemental Site Assessment Report for Area 376	Water & Air Research, Inc.	MAR-2009
	US Army Garrison Fort Buchanan Supplemental Site Assessment Report for Area 390	Water & Air Research Inc.	MAR-2009
	Health & Safety Plan Soil Clean up Activities at Army Garrison Fort Buchanan Building 390D Guaynabo, Puerto Rico	CR Environmental Inc. (CRE Inc)	OCT-2009
	Work Plan Soil Clean up Activities at Army Garrison Fort Buchanan Building 390D Guaynabo, Puerto Rico	CR Environmental Inc. (CRE Inc)	OCT-2009
2010			
	Work Plan Soil Clean up Activities at Army Garrison Fort Buchanan Building 390D Guaynabo, Puerto Rico	CR Environmental Inc. (CRE Inc.)	FEB-2010
	US Army Garrison Fort Buchanan April 2010 Supplemental Site Assessment Report for Area 376; Prepared for the United States Army Corps of Engineers Jacksonville CESAJ-CT Draft Version	Water & Air Research inc.	APR-2010
	US Army Garrison Fort Buchanan May 2010 Supplemental Site Assessment Report for Area 376; Prepared for the United States Army Corps of Engineers Jacksonville CESAJ-CT	Water & Air Research Inc.	MAY-2010
	US Army Garrison Fort Buchanan April 2010 Supplemental PilotTest Report for Area 390D; Prepared for the United States Army Corps of Engineers Jacksonville CESAJ-CT Draft Version	Water & Air Research Inc.	JUN-2010
	US Army Garrison Fort Buchanan Air Sparge/Soil Vapor Extraction Pilot Test Report for Area 390; Draft Version, August 2010.	Water & Air Research Inc.	AUG-2010
2011			
	Final Report Soil Cleanup Activities at the US Army Garrison Fort Buchanan Building 746 Guaynabo, Puerto Rico	CR Environmental Inc. (CRE Inc.)	FEB-2011
	Final Report Soil Cleanup Activities at the US Army Garrison Fort Buchanan Building 746 Guaynabo, Puerto Rico	CR Environmental Inc. (CRE Inc.)	MAR-2011
	Monthly Progress Report Compliance Clean up Remedial Action Phase Building 376, 380 and 390; Monthly	AEROSTAR	MAY-2011
	DRAFT ACCIDENT PREVENTION PLAN (APP) CLEANUP COMPLIANCE at FORT BUCHANAN, Puerto Rico	AEROSTAR	MAY-2011
	DRAFT FIELD SAMPLING PLAN (FSP) CLEANUP COMPLIANCE at FORT BUCHANAN, Puerto Rico	AEROSTAR	MAY-2011
	DRAFT Quality Control PLAN (QCP) CLEANUP COMPLIANCE at FORT BUCHANAN, Puerto Rico	AEROSTAR	MAY-2011
	DRAFT WORK PLAN (WP) CLEANUP COMPLIANCE at FORT BUCHANAN, Puerto Rico	AEROSTAR	MAY-2011
	DRAFT SITE SAFETY & HEALTH PLAN (SSHP) CLEANUP COMPLIANCE at FORT BUCHANAN, Puerto Rico	AEROSTAR	MAY-2011
	Monthly Progress Report Compliance Clean up Remedial Action Phase Building 376, 380 and 390;	AEROSTAR	DEC-2011

CR Previous Studies

	Title	Author	Date
2011			
	Monthly		
2012			
	Monthly Progress Report Compliance Clean up Remedial Action Phase Building 376, 380 and 390; Monthly	AEROSTAR	JAN-2012
	Monthly Progress Report Compliance Clean up Remedial Action Phase Building 376, 380 and 390; Monthly	AEROSTAR	DEC-2012
2013			
	Draft Remedial Implementation Report Clean up Compliance Remedial Action Phase Area 376 Fort Buchanan January 2013	AEROSTAR	JAN-2013
	Draft Remedial Implementation Report Clean up Compliance Remedial Action Phase Area 390 Fort Buchanan January 2013	AEROSTAR	JAN-2013
	Draft Remedial Implementation Report Clean up Compliance Remedial Action Phase Area 376 Fort Buchanan, Puerto Rico	AEROSTAR	MAR-2013
	Draft Remedial Implementation Report Clean up Compliance Remedial Action Phase Area 390 Fort Buchanan, Puerto Rico	AEROSTAR	MAR-2013
	UST REMOVAL ACTIVITIES FINAL REPORT AT NEW DIRECTORATE OF PUBLIC WOKS FACILITY US ARMY GARRISON FORT BUCHANAN UST # 02-13-0002	CRE	OCT-2013
	UST Removal Activities Final Report at New Directorate of Public Works Facility U.S. Army Garrison Fort Buchanan UST #02-13-0002	CRE	OCT-2013
2014			
	Draft Remedial Implementation Report Clean up Compliance Remedial Action Phase Area 390 Fort Buchanan, Puerto Rico	AEROSTAR	FEB-2014
	Draft Site Investigation Report Building 517 (CCFTB038) Cleanup Compliance Projects 2013 Continuation at Fort Buchanan Guaynabo, Puerto Rico	AEROSTAR	JUN-2014
	Corrective Measures Study FTB-039 Sites 2,3,9,11 & 12 U.S. Army Garrison Fort Buchanan version Draft	KEMRON Environmental Services Inc.	JUN-2014
	Corrective Measures Study FTB-039 Sites 2,3,9,11 & 12 U.S. Army Garrison Fort Buchanan version Draft Final	KEMRON Environmental Services Inc.	SEP-2014
2015			
	Draft Final RCRA Facility Investigation Report Building 517 (CCFTB038) Cleanup Compliance Projects 2013 Continuation at Fort Buchanan Guaynabo, Puerto Rico	AEROSTAR	MAR-2015

FORT BUCHANAN

Compliance Restoration

Site Descriptions

Site ID: CC FTB-038
Site Name: Fuel impacted soil near Bldg. 517
Alias: light pole

STATUS

Regulatory Driver: OTHER

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

Media of Concern: Soil

Phases	Start	End
PA	200808	201111
SI	201309	201408
RI/FS	201409	201503
RA(C)	201503	201509

RIP Date: N/A

RC Date: 201509

SITE DESCRIPTION

Soils contaminated with fuel were discovered while replacing a light pole within Fort Buchanan in August 2008. The source of the fuel contamination has not been determined and there are no known USTs or aboveground storage tanks (AST) sites in the immediate vicinity. Light pole (No. LH021) is located between Building 501 occupied by the installation bank - Banco Popular; and Building 517 occupied by Department of Labor (DOL). During the process to install the new light pole, the excavated soil had a petroleum odor. A grab soil sample was collected on Aug. 1, 2008 from the excavated soil and analyzed for total petroleum hydrocarbons-Diesel Range Organics (TPH-DRO), gasoline range organics (GRO), and oil range organics (ORO) and Toxicity Characteristic Leaching Procedure (TCLP) pesticides (method 8081A); TCLP herbicides (method 8151A); TCLP VOC (method 8260B)and TCLP semi volatiles (method 8270). The soil sample results exceeded regulatory levels for TPH-DRO [225 parts per million (ppm)], TPH- ORO (260 ppm), TPH total (485 ppm); semi volatiles 1- methylnaphthalene [(132 parts per billion (ppb)], 2-methylnaphthalene (180 ppb) and benz(a)anthracene (27 ppb). Due to regulatory exceedances for TPH, it was determined that additional investigation/delineation is required.

Investigation (INV) was conducted in March 2014 to determine horizontal and vertical extent of the fuel impacted soil. Based on the analytical results, soils with benzo(a)pyrene concentrations above the regulatory levels were only detected in surface soil samples in soil borings SB-1, SB-2, SB-8 and SB-10. Elevated concentrations of TPH-GRO above the PREQB UST regulations were also detected in surface soil samples SB-7 and SB-8. No groundwater impacts were detected during this investigation.

Based on the presence of surface soil impacts, a corrective action plan (CAP) will be recommended that will describe potential remedial methods and be cost effective to be implemented. An RFI/CMS is being completed. Source removal is programmed for Spring FY15. It is anticipated that there will be no environmental liabilities in FY16.

Initial investigation was under the UST program. No tank was discovered. The site will be cleaned up as an AOC.

Based on the Army's research and confirmed by the USEPA,there is no consent order for the site nor is there a RCRA permit. Cleanup at Fort Buchanan is performed under a voluntary cleanup agreement between the Army and USEPA.

CLEANUP/EXIT STRATEGY

The INV delineated the contamination. An RFI/CMS is being developed and a subsequent soil removal action is anticipated.

Site ID: CC FTB-039
Site Name: Former RFI Sites 2,3,9,11,& 12
Alias: RFI SWI

STATUS

Regulatory Driver: CERCLA

Contaminants of Concern: Metals, Pesticides

Media of Concern: Groundwater, Sediment

Phases	Start	End
PA	199101	199112
SI	199201	199212
RI/FS	201402	201509

RIP Date: N/A

RC Date: 201602

SITE DESCRIPTION

Fort Buchanan was notified in 2005 by the USEPA to conduct an RFI. These sites were combined in the SWI RFI and was performed from 2006 to 2012. The final RFI was approved by the USEPA on Oct. 2, 2012.

Based on the Army's research and confirmed by the USEPA,there is no consent order for the site nor is there a RCRA permit. Cleanup at Fort Buchanan is performed under a voluntary clean up between the US Army, USEPA, and PREQB. USEPA is providing oversight to the IRP clean up programs.

After careful review of the voluntary nature of the remedial process at Fort Buchanan, the Army has concluded that additional steps are needed in order to remain compliant with Executive Order 12580, the DERP, and federal laws and regulations. In accordance with USEPA policy on the coordination of RCRA and CERCLA, and in furtherance of the Army's responsibilities under the DERP, the Army will produce a final DD, supported by a proposed plan (PP) available for public comment, under CERCLA. This DD will rely on the previously produced RCRA studies, investigations, and documents. The purpose of this DD is to close out the remedial process for those sites in a manner that satisfies RCRA, CERCLA, the National Contingency Plan, and DERP requirements.

The final RFI recommended that only site nos. 2, 3, 9, 11, and 12 would require additional action and all other sites are NFA. Site CCFTB-039 is associated with one CMS for site nos. 2, 3, 9, 11, and 12.

Site No. 2 is a suspected Pesticide Burial Trench located on the western side of Fort Buchanan. The RFI did not encounter any pesticides, but metals in the soil exceeded the USEPA's screening levels, therefore the RFI recommended to proceed to a CMS.

Site No. 3 is a Spent Solvent Storage Area. The RFI did not encounter any solvents but metals in the soil exceeded the USEPA's screening levels, therefore, the RFI recommended conducting a CMS.

Site No. 9 is a Used Oil Storage Area. The RFI did not encounter any used oil but metals in the soil exceeded the USEPA's screening levels, therefore the RFI recommended conducting a CMS.

Site No. 11 is a Heavy Equipment Storage Area. The RFI did not encounter any petroleum related constituents, but metals in the soil exceeded the USEPA's screening levels, therefore the RFI recommended conducting a CMS.

Site No. 12 is an intermittent waste disposal area that is overgrown with vegetation and a steep ravine with bedrock outcrops. The debris observed on the land surface was construction rubble. The Site is located adjacent to an elementary school; and is surrounded by an area currently being protected for the Puerto Rican Boa. The area occupies approximately two acres and is enclosed within a fence.

Surface soil, sediment, surface water, and groundwater data were evaluated for Site No. 12 as part of the RFI. The nature and extent evaluation found that numerous metals were present in soil at concentrations above screening levels. Fort Buchanan has collected additional soil samples at background locations to evaluate background levels for metals and pesticides in order to establish an updated human health risk and ecological risk analysis. Based on the HHRA metal and pesticide concentrations in sediment and groundwater exceeded the Baseline Ecological Risk Assessment (BERA) due to the concentrations of metal in soil;

the RFI recommended this site move forward to a CMS.

A CMS was conducted in May 2014. Analytical results indicate testing parameters are under the industrial screening levels; therefore the Army recommends NFA and the sites be maintained in the installation master plan as an industrial/commercial zone. In 2014, the US Army Toxic and Hazardous Material Agency (USATHAMA) concluded there was no risk driver for actions related to the site. The draft final was submitted to the USEPA in September 2014. The US Army considers the sites complete.

CLEANUP/EXIT STRATEGY

The CMS recommends NFA for all sites. The US Army will be responsible for maintaining and ensuring the land use for each site remains industrial/community use.

Site ID: CCFB04S003
Site Name: Building 380 OWS
Alias: Bldg. 380

STATUS

Regulatory Driver: RCRA

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

Media of Concern: Soil, Surface Water

Phases	Start	End
ISC	199006	199106
INV	200601	200609
CAP	200609	200709
DES	200709	200809
IMP(C)	201105	201408
IMP(O)	201208	204508

RIP Date: 201408

RC Date: 204508

SITE DESCRIPTION

Area 380/381 (gasoline station) includes:

Building 380 which served as a motor pool dispensing POLs for military tactical vehicles. The site contained two washracks, a below-grade oil/water separator (OWS) and two, 5,000 gallon USTs. In 1991, the USTs were replaced with two 10,000 gallon USTs. In November 2003, free-product was observed in a nearby storm drain drop inlet where an abandoned concrete pipeline was located. The OWS used to be connected to the storm drain but a new OWS was installed and is connected to the sewer system. Site investigations were conducted and identified petroleum hydrocarbon impacted soil and groundwater at the site. During subsequent investigations, free-product was measured in MW-14 and a trace was noted in MW-5. During 2008, remedial activities were initiated and consisted of a free-product recovery system. The system was removed because was not operating correctly. In 2009, the Army decided to use the site for refueling government operated vehicles. In 2010, Building 380 was demolished, but the pump dispensers were checked and made operational. The two USTs, OWS and the underground hydraulic components of the washrack lift remained. Free-product was discovered during the installation of a security fence in the vicinity of the service station (Building 380).

In FY11, the US Army Corps of Engineers (USACE) Jacksonville District provided technical oversight for remedial efforts. These efforts included conducting a baseline groundwater sampling; delineating free-product plume and setting up a collection system; removing the existing OWS; investigate and removing any UST used to operate the hydraulic lift bays; installing a chemical oxidation remediation system.

In May 2011, baseline groundwater samples were collected. Groundwater sample results indicated that concentrations of TPH were below regulatory limits but levels of benzene and naphthalene exceeded regulatory limits. Ten inches of free-product was measured in MW-14. A new free-product recovery well consisting of a 4-inch diameter. PVC pipe five feet deep with two 10-foot long laterals replaced the existing MW-14. Sixty cubic yards of fuel impacted soil was removed, characterized and disposed as non hazardous waste. Fifteen gallons of oxygen releasing compound (ORC) was added to the backfill to enhance the micro-bacterial remediation of the fuel impacted soils.

The OWS was removed. In addition, ground penetrating radar (GPR) was used over the hydraulic powered lift bays to look for two USTs. Anomalies identified at the site were excavated but no tanks were found. The tanks are believed to have been removed during the demolition activities of Building 380.

In FY12 the USACE recommended in situ treatment [chemical oxidation Perozone (R)] for POL contamination. Twelve injection points were installed and the chemical oxidation system was introduced from February to September 2012. Quarterly groundwater sampling was conducted. Based on the September 2012 groundwater sampling results, benzene and naphthalene concentrations are still above regulatory limits. Benzene is regulated by the state agency but naphthalene is not; however, the Florida Department Environmental Protection (FLDEP) Groundwater Target Cleanup Level (GTCL) for naphthalene is 14 micrograms per liter (ug/L). Benzene concentrations in groundwater exceed the PREQB and federal regulatory action levels of 5 ppb. Benzene concentration levels are 20.5 ppb at MW-5 and 1,042 ppb at the recovery well (RW-01) located at portions of the traffic circle not previously

excavated.

In April 2013, the remaining half of the traffic circle was excavated and 75 cubic yards of fuel impacted soil was removed and transported as non hazardous waste. A new recovery well was replaced. In 2014, four injection wells were added to the remaining area of contamination; six months more of in situ treatment (chemical oxidation) was implemented. Groundwater samples were collected in February 2015. Cleanup levels have not been attained. IMP(O) will be programmed for 30 years.

CLEANUP/EXIT STRATEGY

Groundwater monitoring of the site will continue until cleanup objectives are obtained. A request for NFA will then be submitted to PREQB. Because there is an indefinite cleanup period for this site, assume 30 years of groundwater sampling is required as per DoD guidance.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
CC FTB-035	SWMU 1: Old Haz Waste Cont. Storage	201210	EPA letter dated 16 October 2012 approved RFI recommendation for NFA.
CC FTB-036	Building 541	201210	EPA letter dated 16 October 2012 approved RFI recommendation for NFA.
CC FTB-037	Potential Haz. Mat. Burial	201210	EPA letter dated 16 October 2012 approved RFI recommendation for NFA.
CC FTB-040	UST removal and fuel impacted soil	201501	PREQB letter dated 14-Jan-2015 approval of UST Closure at Site CCFTB-040(New DPW Bldg. 34).
CCFB04S007	Building 390 UST Corrective Actions	201412	Letter from PREQB dated 12 Sep. 2014 indicating approval for No Further Action of the Final Remedial Implementation Report Cleanup Compliance RA Phase for Area 390.¿Carta de Relevo (UST 2-86-044 (LUST)
CCFB04S008	Building 746 UST Corrective Actions	201112	NFA letter from PREQB dated 18 Jan 2012.
CCFB07S001	UST Corrective Action Site 376	201412	Letter from PREQB dated 29 Oct. 2014 indicating approval for No Further Action of the Final Remedial Implementation Report Cleanup Compliance RA Phase for Area 376.¿Carta de Relevo (UST 2-86-044 (LUST).

CR Schedule

Date of CR Inception: 199006

Past Phase Completion Milestones

1991	
ISC	(CCFB04S003 - Building 380 OWS)
1992	
RFA	(CC FTB-035 - SWMU 1: Old Haz Waste Cont. Storage)
PA	(CC FTB-039 - Former RFI Sites 2,3,9,11,& 12)
1993	
SI	(CC FTB-039 - Former RFI Sites 2,3,9,11,& 12)
CS	(CC FTB-035 - SWMU 1: Old Haz Waste Cont. Storage)
1997	
ISC	(CCFB04S007 - Building 390 UST Corrective Actions, CCFB04S008 - Building 746 UST Corrective Actions, CCFB07S001 - UST Corrective Action Site 376)
1998	
RFA	(CC FTB-036 - Building 541, CC FTB-037 - Potential Haz. Mat. Burial)
2006	
INV	(CCFB04S003 - Building 380 OWS)
2007	
CAP	(CCFB04S003 - Building 380 OWS)
INV	(CCFB04S008 - Building 746 UST Corrective Actions)
2008	
DES	(CCFB04S003 - Building 380 OWS)
INV	(CCFB04S007 - Building 390 UST Corrective Actions)
2009	
CAP	(CCFB04S008 - Building 746 UST Corrective Actions)
DES	(CCFB04S008 - Building 746 UST Corrective Actions)
2010	
INV	(CCFB07S001 - UST Corrective Action Site 376)
2011	
DES	(CCFB04S007 - Building 390 UST Corrective Actions, CCFB07S001 - UST Corrective Action Site 376)
IMP(C)	(CCFB07S001 - UST Corrective Action Site 376)
CAP	(CCFB04S007 - Building 390 UST Corrective Actions, CCFB07S001 - UST Corrective Action Site 376)
2012	
IMP(C)	(CCFB04S007 - Building 390 UST Corrective Actions, CCFB04S008 - Building 746 UST Corrective Actions)
PA	(CC FTB-038 - Fuel impacted soil near Bldg. 517)
2013	
INV	(CC FTB-040 - UST removal and fuel impacted soil)
ISC	(CC FTB-040 - UST removal and fuel impacted soil)
RFI/CMS	(CC FTB-035 - SWMU 1: Old Haz Waste Cont. Storage, CC FTB-036 - Building 541, CC FTB-037 - Potential Haz. Mat. Burial)
2014	
IMP(C)	(CCFB04S003 - Building 380 OWS)
CAP	(CC FTB-040 - UST removal and fuel impacted soil)
SI	(CC FTB-038 - Fuel impacted soil near Bldg. 517)

Additional Past Phase Completion Milestones

2014 IMP (O) CCFB04S007 Building 390 UST Corrective Action.

CR Schedule

2014 IMP (O) CCFB07S001 Building 376 UST Corrective Action.

2015 IMP (C) CCFTB-040 UST removal and fuel impacted soil.

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

Final RA(C) Completion Date: 201509

Schedule for Next Five-Year Review: 2019

Estimated Completion Date of CR at Installation (including LTM phase): 204508

FORT BUCHANAN CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCFB04S003	Building 380 OWS	IMP(O)						

Community Involvement

Technical Review Committee (TRC): None

Community Involvement Plan (Date Published): 201301

Restoration Advisory Board (RAB): No

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

Community Interest Solicited on: 201306

Efforts Taken to Determine Interest

Community interest in a RAB was solicited in 1997 when the installation was almost placed in a BRAC round. Fort Buchanan re-solicited community interest in a RAB with public notices as part of the ongoing investigations in March 2009, April 2011, and again in June 2013. Letters notifying the community of insufficent interest were provided for the 2011 and 2013 attempts.

During the Earth Day Celebration in April 2010, 2011, 2012, 2013, and 2014 a RAB sign-up sheet and an information request sheet were placed at the restoration booth. There were no signatures in 2010-2012; there was one in 2013 and two in 2014.

Results

In March 2009, only two representing participants showed up for the RAB meeting [PREQB and a Caribbean Petroleum Corp., (CAPECO) representative]. Based on solicitation results, interest was determined to be insufficient. In April 2011, again there were two representatives from the community with personal interest. Neither wanted to cochair the RAB. It was determined that there was insufficient interest. Letters were sent to the community representatives indicating to them that they will be informed of the status of restoration projects. In June 2013, the meeting place was held outside the installation, Community Puente Blanco, Catano, Puerto Rico. On June 5, 2013, 24 people attended (18 from the community and six from government agencies). A power failure occurred and we rescheduled for June 27, 2013. Prior to the June 27, 2013 meeting a questionaire was distributed to the community in the Spanish language. On June 27, 2013 16 people attended of which four were from government agencies. The Army concluded insufficient interest from the community. Fact sheets regarding the environmental restoration program at Fort Buchanan are being prepared to distribute to the community on a biannual schedule. The first was provided in January 2015.

Follow-up Procedures

All present environmental restoration sites will be in RIP by 2015 and there will be no need for a RAB in the next solicitation period unless the community shows interest prior.

Additional Community Involvement Information

A letter dated Dec. 19, 2014 signed by the Commander indicating insufficient interest in a RAB was issued to attendees of the meeting to seek RAB members. The letter included a fact sheet on the status of environmental restoration cleanup sites. The fact sheets will be available biannually.

Administrative Record is located at

DPW-BLDG. 34, Environmental Division Storage Room
South Gate Rd.
Fort Buchanan, PR 00934
787-707-3575/3573

Information Repository is located at

Dra Pilar Barbosa Public Library
PO Box 1588
Bayamon, Puerto Rico 00960-1588
787-787-5161

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

TAPP Title: N/A

Potential TAPP: N/A