FORT BUCHANAN

Army Cleanup Program

Installation Action Plan Final

June 2024

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STATEMENT OF PURPOSE

The Installation Action Plan (IAP) provides evidence that the Army is firmly committed to expeditious identification and cleanup of environmental contamination, and that the installation has a credible, organized program to carry out that commitment. The IAP provides an outline of the total multi-year environmental cleanup program for each site with ongoing or future planned restoration activity and includes the (1) environmental restoration requirements, (2) the rationale for the selected technical approach, and (3) foundation to develop corresponding financial needs for each cleanup site.

INSTALLATION OVERVIEW

Installation Name: FORT BUCHANAN

Installation City: SAN JUAN

Installation County: SAN JUAN

Installation State: PUERTO RICO

Regulatory Participation - Federal: US Environmental Protection Agency (USEPA), Caribbean Field Office, Region II

Regulatory Participation - State: Puerto Rico Department of Natural and Environmental Resources (PRDNER)

ACRONYMS

Acronym	Definition
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
CRL	Cleanup Restoration & Liabilities
CS	Confirmation Sampling
DD	Decision Document
DES	Design
ENV	Environmental
FS	Feasibility Study
FY	Fiscal Year
FYR	Five-Year Review
HRS	Hazard Ranking Score
IAP	Installation Action Plan
IR	Installation Restoration
IRA	Interim Remedial Action
LTM	Long-Term Management
LUC	Land Use Control
MEC	Munitions and Explosives of Concern
MNA	Monitored Natural Attenuation
MR	Munitions Response
MRSPP	Munitions Response Site Prioritization Protocol
NFA	No Further Action
NPL	National Priorities List
OWS	Oil/Water Separator
PA	Preliminary Assessment
PFAS	Per- and Polyfluoroalkyl Substances
POL	Petroleum, Oils, Lubricants
PP	Proposed Plan
ppb	parts per billion
ppm	parts per million
PRDENR	Puerto Rico Department of Environmental and Natural Resources
RAB	Restoration Advisory Board

Acronym	Definition
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	Resource Conservation and Recovery Act Facility Investigation
RI	Remedial Investigation
RIP	Remedy-in-Place
RRSE	Relative Risk Site Evaluation
SC	Site Closeout
SI	Site Inspection
TBD	To Be Determined
TCE	Trichloroethylene
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UU/UE	Unlimited Use / Unrestricted Exposure
VOC	Volatile Organic Compound

PHASE TRANSLATION TABLE

CERCLA Phase	RCRA Phase	RCRA UST Phase
Preliminary Assessment (PA)	RCRA Facility Assessment (RFA)	Initial Site Characterization (ISC)
Site Inspection (SI)	Confirmation Sampling (CS)	Investigation (INV)
Remedial Investigation/ Feasibility Study (RI/FS)	RCRA Facility Investigation/Corrective Measures Study (RFI/CMS)	Corrective Action Plan (CAP)
Remedial Design (RD)	Design (DES)	Design (DES)
Interim Remedial Action (IRA)	Interim Measure (IM)	Interim Remedial Action (IRA)
Remedial Action (Construction) (RA(C))	Corrective Measures Implementation (Construction) (CMI(C))	Implementation (Construction) (IMP(C))
Remedial Action (Operations) (RA(O))	Corrective Measures Implementation (Operations) (CMI(O))	Implementation (Operations) (IMP(O))
Long-Term Management (LTM)	Long-Term Management (LTM)	Long-Term Management (LTM)

PROGRAM SUMMARY

Number of Open Sites with Response Complete/Total Open IR Sites: 2/5

Number of Open Sites with Response Complete/Total Open MR Sites: 1/1

Number of Open Sites with Response Complete/Total Open CC Sites: 0/0

SITE-LEVEL INFORMATION

RQ327.1023_FTB-034_TCE Groundwater Investigation

Env Site ID: FTB-034

Cleanup Site: TCE Groundwater Investigation

Alias: NWBOUNDARY

Regulatory Driver: CERCLA

RIP Date: 7/15/2015

RC Date: 9/30/2054

RC Reason: Not assigned

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE: High

MRSPP: N/A

Phase	Start	End
PA:	2/29/1996	1/31/1997
SI:	2/29/1996	1/31/1997
RI/FS:	2/28/2006	9/15/2012
RD:	5/15/2013	1/15/2014
IRA:	- -	- -
RA(C):	3/15/2015	7/15/2015
RA(O):	7/15/2015	9/30/2054
LTM:	- -	- -

Site Narrative: This site is composed of a groundwater plume approximately 50 acres in size, of chlorinated solvents, primarily trichloroethylene (TCE). 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-Department of Defense property. In accordance with the USEPA letter of January 2005, 48 monitoring wells were installed. Forty-seven monitoring wells remain. The groundwater exceeds maximum contaminant levels for TCE- 5 parts per billion (ppb). The final Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) was approved by USEPA on April 11, 2012. The final corrective measures study (CMS) was approved by the USEPA on Oct. 16, 2012. The CMS recommended enhanced in situ bioremediation reductive dechlorination. A pilot treatability study was performed in May 2014 to determine the feasibility of the corrective action. In July 2014, a baseline groundwater sampling was performed. Fort Buchanan submitted the final version of the corrective measure's implementation plan in February 2015. In November 2014, a vapor intrusion assessment was performed to investigate concentrations of volatile organic compounds (VOC) in near-slab soil gas. During May to July 2015 the enhanced bioremediation system was installed, and the corrective measures implementation (construction) phase was completed. Monitored natural attenuation (MNA) and land use controls (LUC) are part of the remedial action. Cleanup was being performed as a voluntary action. Fort Buchanan developed Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)-related documents to memorialize all voluntary RCRA corrective action decisions for sites FTB 034 and CCFTB 039. In 2015, a proposed plan (PP) was developed, and a public meeting held; and in November 2015, a final decision document (DD) was issued under CERCLA. LUC inspections are conducted annually by the environmental restoration manager. Groundwater monitoring for MNA will continue until regulatory levels for VOCs are achieved. Additional injection was performed in fiscal year (FY)2021. LUCs and five-year/periodic reviews will continue. Monitoring well MW-13B was the only well that exceeded the Interim Remedial Goal of 100 micrograms per liter (µg/L) for TCE which is above the state accepted groundwater standard. Because hazardous substances, pollutants, or contaminants will

remain at the site at concentrations exceeding levels that allow for unlimited use/unrestricted exposure (UU/UE), five-year remedy reviews will continue until UU/UE is achieved.

RQ327.1027_CCFB04S003_Building 380 OWS

Env Site ID: CCFB04S003

Cleanup Site: Building 380 OWS

Alias: CCFB04S003

Regulatory Driver: RCRA-I

RIP Date: 6/15/2016

RC Date: 9/30/2054

RC Reason: Not assigned

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE:

MRSPP: N/A

Phase	Start	End
ISC:	6/30/1990	6/30/1991
INV:	1/31/2006	9/30/2006
CAP:	9/30/2006	9/30/2007
DES:	9/30/2007	9/30/2008
IRA:	- -	- -
IMP(C):	5/15/2011	6/15/2016
IMP(O):	8/15/2012	9/30/2054
LTM:	- -	- -

Site Narrative: Building 380 served as a motor pool. The site contained two wash racks, an oil/water separator (OWS) and two 5,000-gallon underground storage tanks (UST). In 2003, free-product was observed in a nearby storm drain. Site investigations were conducted and identified petroleum oils and lubricants (POL) contaminants in soil and groundwater. Free-product was encountered in monitoring wells MW-14 and MW-5. Cleanup requirements are under the RCRA UST Subtitle I requirements. USEPA delegated the cleanup authority to the Puerto Rico Department of Environmental and Natural Resources (PRDENR). During 2008, remedial activities were initiated. Efforts included conducting a baseline groundwater sampling; delineating free-product plume and setting up a collection system; removing the OWS; investigating USTs used to operate the lift bays; removing contaminated soil in the traffic circle (during two separate occasions totaling 135 cubic yards; removing an additional 568 cubic yards under the last UST and piping removal locations in 2015); adding oxygen releasing compound to the backfill to enhance the micro-bacterial remediation of the fuel-impacted soils; installing a chemical oxidation remediation system in 2012; injecting a total of 720 gallons in 2016 (6,000 pounds) of Regenesis PlumeStop and 32 gallons (720 pounds) of oxygen releasing compound - advanced. The laboratory analytical results for groundwater samples in MW-5R, MW-14R, and MW-21 showed concentrations above the PRDENR groundwater cleanup screening levels for benzene (5 ppb) and naphthalene (0.17 ppb). In an onsite meeting with PRDENR it was discussed to continue groundwater sampling efforts until cleanup levels are achieved. Some monitoring wells were removed in March 2017 to construct the Memorial Park and four monitoring wells were replaced. In July 2019, groundwater sampling results indicated that concentrations of benzene were now below PRDENR requirements, but concentrations of naphthalene were still elevated above regulatory standards. On Sept. 25, 2019, a new contract was awarded to perform another year of quarterly sampling. On Sept. 26, 2019, a meeting was conducted with PRDENR to present the results of the 2018-2019 groundwater sampling. The groundwater results of the October 2019 sampling event indicated a slight rebound in benzene and lead over the regulatory limits. A summary report was provided to PRDNER in December 2019. Groundwater samples were

collected again in January and November 2020. Benzene and lead were below regulatory requirements again. Naphthalene concentrations levels were above regulatory limits in four wells. Two sampling rounds were postponed due to restricted access. Based on the historic exceedances of benzene and present exceedances of naphthalene, groundwater sampling (sampling, reporting, and a closeout meeting with regulator) is required to monitor remediation results to achieve acceptable cleanup levels and will lead to regulatory approval for no further action (NFA) based on PRDENR Regulation for the Control of Underground Storage Tank June 2018. The first periodic review was completed in FY20. It is anticipated that periodic reviews will be conducted every five years. LUC inspections are conducted annually by the environmental restoration manager. Continue groundwater monitoring for MNA until regulatory levels for POL are achieved. Continue LUCs and periodic reviews. The naphthalene concentration increased from 0.27 µg/L as compared to the previous groundwater sampling event conducted in August 2022. Laboratory analytical results for monitoring well MW-22 showed a naphthalene concentration of 1.0 µg/L, above the DNER WQS of 0.17 µg/L. Because hazardous substances, pollutants, or contaminants will remain at the site at concentrations exceeding levels that allow for UU/UE, five-year remedy reviews will continue until UU/UE is achieved.

RQ327.1029_CC FTB-038_Fuel impacted soil near Bldg.

Env Site ID: CC FTB-038

Cleanup Site: Fuel impacted soil near Bldg.

Alias: LIGHT POLE

Regulatory Driver: OTHER

RIP Date: 1/15/2017

RC Date: 1/15/2017

RC Reason: All Required Cleanup(s) Completed

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE: Not Evaluated

MRSPP: N/A

Phase	Start	End
PA:	8/15/2008	11/15/2011
SI:	9/15/2013	8/15/2014
RI/FS:	9/15/2014	1/15/2017
RD:	- -	- -
IRA:	3/15/2015	9/15/2015
RA(C):	- -	- -
RA(O):	- -	- -
LTM:	1/15/2017	9/30/2054

Site Narrative: Soils contaminated with fuel were discovered in 2008 while replacing a light pole near Building 517. The source of the fuel contamination has not been determined and there are no known USTs or aboveground storage tanks sites in the immediate vicinity. A grab soil sample was collected on Aug. 1, 2008, from the excavated soil. The soil sample results exceeded regulatory levels for total petroleum hydrocarbons – diesel range organics [225 parts per million (ppm)], total petroleum hydrocarbons – oil range organics (260 ppm), total petroleum hydrocarbons total (485 ppm); semi-volatiles 1- methylnaphthalene (132 ppb), 2- methylnaphthalene (180 ppb) and benz(a)anthracene (27 ppb). An investigation was conducted in 2014 to determine horizontal and vertical extent of the fuel impacted soil. Soils with benzo(a)pyrene concentrations above the regulatory levels were only detected in surface soil. Elevated concentrations of total petroleum hydrocarbons – gasoline range organics above the PRDENR UST regulations were also detected in surface soil samples. No groundwater impacts were detected. A corrective action plan was developed. An RFI/CMS was completed. A source removal was completed. Confirmatory soil sample results indicate that limited contaminated soils remain confined in place. However, existing utilities hindered additional excavation. An NFA letter from USEPA was received Jan. 9, 2017. Based on Fort Buchanan's research and confirmed by the USEPA, there is no consent order for the installation nor is there a RCRA permit. Cleanup at Fort Buchanan is performed under a voluntary cleanup agreement between the installation and USEPA. The periodic reviews are conducted every five years. LUC inspections are conducted by the environmental restoration manager. LUCs and periodic reviews will continue. The contaminant levels have not reached acceptable residential levels. Because the future land use will remain industrial and hazardous substances, pollutants, or contaminants will remain at the site at concentrations exceeding levels that allow for UU/UE, five-year remedy reviews will continue indefinitely.

RQ327.1031_CC FTB-039_Former RFI Sites 2,3,9,11, & 1

Env Site ID: CC FTB-039

Cleanup Site: Former RFI Sites 2,3,9,11, & 1

Alias: #

Regulatory Driver: CERCLA

RIP Date: 3/15/2016

RC Date: 3/15/2016

RC Reason: All Required Cleanup(s) Completed

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE: Not Evaluated

MRSPP: N/A

Phase	Start	End
PA:	1/15/1991	12/15/1991
SI:	1/15/1992	12/15/1992
RI/FS:	2/15/2014	3/15/2016
RD:	- -	- -
IRA:	- -	- -
RA(C):	- -	- -
RA(O):	- -	- -
LTM:	3/15/2016	9/30/2054

Site Narrative: Fort Buchanan was notified in 2005 by the USEPA to conduct an RFI. These sites were combined in the site-wide investigation RFI and was performed from 2006 to 2012. The final RFI was approved by the USEPA on Oct. 2, 2012. The final RFI recommended that sites 2, 3, 9, 11, and 12 would require additional action and all other sites are NFA. Site CCFTB-039 is associated with the CMS for sites 2, 3, 9, 11, and 12. Contaminants of concern are metals and pesticides. The media of concern are soil, sediments, and groundwater. Site 12 exceeded the baseline ecological risk assessment due to concentrations of metal in soil. The RFI recommended this site move forward to a CMS. A CMS was conducted in 2014. Analytical results indicate testing parameters are under the industrial screening levels; therefore, the Army recommended NFA, and the sites be maintained in the installation master plan as an industrial/commercial zone. The draft final CMS was submitted to the USEPA in September 2014. A DD was signed on Dec. 18, 2015, recommending NFA. An NFA letter was received from USEPA on March 15, 2016. LUC inspections are conducted annually by the environmental restoration manager. LUCs and five-year reviews will continue. The contaminant levels have not reached acceptable residential levels. Because the future land use will remain industrial and hazardous substances, pollutants, or contaminants will remain at the site at concentrations exceeding levels that allow for UU/UE, five-year remedy reviews will continue indefinitely.

RQ327.1035_FTB-035_PFAS

Env Site ID: FTB-035

Cleanup Site: PFAS

Alias: #

Regulatory Driver: CERCLA

RIP Date: 9/20/2030

RC Date: 9/20/2030

RC Reason: Not assigned

SC Date: 9/20/2030

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	5/14/2019	9/15/2019
SI:	12/15/2019	3/15/2022
RI/FS:	10/1/2022	9/20/2030
RD:	- -	- -
IRA:	- -	- -
RA(C):	- -	- -
RA(O):	- -	- -
LTM:	- -	- -

Site Narrative: Per direction from Deputy Chief of Staff G-9, this site will account for all per- and polyfluoroalkyl substances (PFAS) costs at the installation. This is part of an existing contract centrally managed by the US Army Environmental Command. Site is considered a medium complexity installation. A preliminary assessment (PA)/site inspection (SI) completed and identified all releases of PFAS to the environment. Cleanup/exit strategy will be determined from the outcome of the remedial investigation (RI)/ feasibility study (FS). It is anticipated that there will be two areas of potential interest impacting groundwater moving on to the RI/FS phase.

RQ327.1020_FTB-001-R-01_CAMP BUCHANAN TRAINING AREA

Env Site ID: FTB-001-R-01

Cleanup Site: CAMP BUCHANAN TRAINING AREA

Alias: #

Regulatory Driver: CERCLA

RIP Date: 5/21/2013

RC Date: 5/21/2013

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: MR

NPL Status: No

Hazardous Ranking Score: 0

RRSE: N/A

MRSPP: 10

Phase	Start	End
PA:	4/30/2002	5/31/2003
SI:	12/31/2006	9/30/2008
RI/FS:	1/31/2009	5/21/2013
RD:	- -	- -
IRA:	- -	- -
RA(C):	- -	- -
RA(O):	- -	- -
LTM:	6/15/2013	9/30/2054

Site Narrative: Camp Buchanan training area was a 32-acre range used in the 1930s for small arms training. By the 1940s, the training area had been destroyed during the expansion of Fort Buchanan. Later, in the 1950s, a golf course, running track, and some buildings were built on the property once occupied by the training area. All of these facilities are currently in use. Contaminants of concern are munitions and explosives of concern (MEC). Media of concern is soil. Thirteen MEC items in the form of discarded military munitions (13 three-inch stoke mortars found buried in the subsurface at two locations on the running track and one M29 3.5-inch rocket) were found at the site but are not believed to be associated with the historical training. These materials may have been discarded during the extremely hectic build-up for the Korean War. The RI/FS fieldwork did not encounter any MEC items. The RI consisted of a geophysical investigation and environmental sampling for MEC. The remedial investigation determined there are no ecological or human health risks associated with lead found at the site. The RI/FS report was submitted for regulatory review in December 2011 and recommended NFA with LUCs. As per CERCLA guidelines, a PP was prepared, and a public meeting was held Sept. 12, 2012. There were no public comments. A DD was signed May 21, 2013, for NFA with continued installation-wide LUCs. A LUC plan was prepared in 2013. Later a land use control implementation plan was prepared in 2016. LUC inspections are conducted annually by the environmental restoration manager. LUCs and five-year reviews will continue. Since Fort Buchanan has an installation-wide MEC detection and remediation policy and unexploded ordnance (UXO) has been recovered at this site, the Army cannot guarantee all MEC has been removed. Fort Buchanan is currently undergoing an expanded historic record review to determine if future investigations need to be performed. Because the future land use will remain industrial and hazardous substances, pollutants, or contaminants will remain at the site at concentrations exceeding levels that allow for UU/UE, five-year remedy reviews will continue indefinitely.

SITE SUMMARY

SITE CLOSEOUT SUMMARY

CRL ID	Site Name	Site Closeout Date
RQ327.1001	FTB-001_DEH MOTOR POOL/SHOP BUILDING 556	3/31/1984
RQ327.1002	FTB-002_ANTILES SCHOOL SYS MOTOR POOL/SH	3/31/1984
RQ327.1003	FTB-003_AREAWIDE MILITARY SUPPORT ACTIVI	3/31/1984
RQ327.1004	FTB-006_DIRECTORATE OF PERSONNEL AND CA	3/31/1984
RQ327.1005	FTB-007_PX SERVICE STATION	3/31/1984
RQ327.1006	FTB-008_WASH RACK BUILDING 538	3/31/1984
RQ327.1007	FTB-012_MEDDAC LAB BUILDING 518	3/31/1984
RQ327.1008	FTB-013_VET LAB	3/31/1984
RQ327.1009	FTB-015_BUILDING 556 PESTICIDE STORAGE	3/31/1984
RQ327.1010	FTB-016_BUILDING 539 PESTICIDE STORAGE	1/31/1991
RQ327.1011	FTB-017_PESTICIDE BURIAL N PR 28	12/31/1993
RQ327.1012	FTB-019_DEH UST BUILDING 556	3/31/1984
RQ327.1013	FTB-027_PHOTO LAB DPTSEC/TASC	3/31/1984
RQ327.1014	FTB-028_CONSTRUCTION LANDFILL	3/31/1984
RQ327.1019	FTB029_ABANDONEDUST BLDG 152	10/31/1997
RQ327.1022	Site Wide Inv._Site Wide Investigation	10/15/2012
RQ327.1024	PBC@Buchanan_RCRA Sites & TCE Groundwate	9/15/2012
RQ327.1025	CCFB04S007_Building 390 UST Corrective A	9/12/2014
RQ327.1026	CCFB07S001_UST Corrective Action Site 37	10/29/2014
RQ327.1028	CCFB04S008_Building 746 UST Corrective A	12/15/2011
RQ327.1030	CC FTB-040_UST removal and fuel Impacted	1/15/2015
RQ327.1032	CC FTB-035_SWMU 1: Old Haz Waste Cont. S	10/2/2012
RQ327.1033	CC FTB-036_Building 541	10/2/2012
RQ327.1034	CC FTB-037_Potential Haz. Mat. Burial	10/2/2012
RQ327.1021	FTB-002-R-01_PUNTA SALINAS RIFLE RANGE	9/30/2003
RQ327.1038	CCFB04S006_Building 615 UST Corrective A	7/31/2008
RQ327.1041	CCBU95S002_Building 138 UST Corrective A	7/31/2008

COMMUNITY INVOLVEMENT

Community Involvement Plan (Date Last Reviewed):	1/15/2017
Technical Review Committee Establishment Date:	N/A
Restoration Advisory Board (RAB) Establishment Date:	N/A
RAB Adjournment Date:	N/A
RAB Adjournment Reason:	N/A
Reasons for Not Establishing RAB:	No sufficient, sustained community interest in a RAB has been expressed by the community
RAB Date of Solicitation from Community:	5/4/2013
RAB Results of Solicitation:	In March 2009 and April 2011, only two representing participants showed up for the RAB meeting (PREQB and a Caribbean Petroleum Corporation representative). Based on solicitation results, interest was determined to be insufficient.
Current Technical Assistance for Public Participation (TAPP):	N/A
TAPP Title:	N/A
Potential TAPP:	N/A
Administrative Record Location:	DPW-BLDG. 34, South Gate Rd., Fort Buchanan, Puerto Rico 00934
Information Repository Location:	Dra Pilar Barbosa Public Library PO Box 1588 Bayamon, Puerto Rico 00960

FIVE-YEAR / PERIODIC REVIEW SUMMARY

Status	Review Type	Start Date	End Date	Plans Narrative	Actions Narrative	Results Narrative
Complete	FYR	10/09/2019	12/15/2020	LUCs and the dig permit coordination process prevent unauthorized intrusive excavations at the area.	Since there were no issues affecting protectiveness, there are no recommendations.	The remedies at the Camp Buchanan sites are protective of human health and the environment.
Planned	FYR	10/09/2024	12/15/2025	TBD	TBD	TBD