

FY2016

JOINT BASE MYER-HENDERSON HALL
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 Installation Management Command (IMCOM) - Atlantic Regional Office, the US Army Environmental Command (USAEC), Joint Base Myer-Henderson Hall, 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

AAFES	Army and Air Force Exchange Service
AEDB-R	Army Environmental Database-Restoration
AOC	Area of Concern
AST	Aboveground Storage Tank
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CAP	Corrective Action Plan
CENAB	USACE Baltimore District
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CIP	Community Involvement Plan
DCE	Dichloroethylene
DD	Decision Document
DES	Design
DoD	Department of Defense
DPW	Directorate of Public Works
ER,A	Environmental Restoration, Army
FMMC	Fort Myer Military Community
FMY	Site Designation for Fort Myer
FRA	Final Remedial Action
FS	Feasibility Study
FY	Fiscal Year
IAP	Installation Action Plan
IMCOM	Installation Management Command
IMP(C)	Implementation (Construction)
IMP(O)	Implementation (Operations)
INV	Investigation
IRA	Interim Remedial Action
IRP	Installation Restoration Program
ISC	Initial Site Characterization
JBM-HH	Joint Base Myer-Henderson Hall
JFHQ-NCR	Joint Force Headquarters-National Capital Region
LTM	Long-Term Management
MCL	Maximum Contaminant Level
MDW	US Army Military District of Washington
NCR	National Capital Region
NPL	National Priorities List
PA	Preliminary Assessment
PCE	Perchloroethylene
ppb	parts per billion
PX	Post Exchange
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete

Acronyms

RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
SVE	Soil Vapor Extraction
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
TRC	Technical Review Committee
USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAPHC	US Army Public Health Command
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compounds

Acronym Translation Table

CERCLA

Preliminary Assessment(PA)

Remedial Investigation(RI)

Feasibility Study(FS)

Remedial Design(RD)

Remedial Action (Construction)(RA(C))

Remedial Action (Operation)(RA(O))

Long Term Management(LTM)

Interim Remedial Action(IRA)

RCRA Underground Storage Tank (UST) Site Phase Terms

= Initial Site Characterization(ISC)

= Investigation(INV)

= Corrective Action Plan(CAP)

= Design(DES)

= Implementation (Construction)(IMP(C))

= Implementation (Operations)(IMP(O))

= Long Term Management(LTM)

= Interim Remedial Action(IRA)

Installation Information

Installation Locale

Installation Size (Acreage): 256

City: Arlington

County: Arlington

State: Virginia

Other Locale Information

Fort Myer consists of 256 acres located in Arlington, Virginia, adjacent to the Arlington National Cemetery. The county of Arlington bounds the installation on the west side. Access is provided by US Route 50 (Arlington Boulevard) from the west and Virginia Route 27 (Washington Boulevard) from the south.

Installation Mission

Joint Base Myer-Henderson Hall (JBM-HH) synchronizes, integrates, and delivers installation services while sustaining facilities in support of Joint Force Headquarters (JFHQ)-National Capital Region (NCR)/Military District of Washington (MDW) and the JBM-HH community in order to enable a ready and resilient Joint Force. On order, supports JFHQ-NCR/MDW and JTF-NCR homeland defense, defense support of civil authorities, and other contingency operations in the NCR.

Lead Organization

IMCOM

Lead Executing Agencies for Installation

USAEC

US Army Corps of Engineers (USACE) Baltimore District (CENAB)

Regulator Participation

Federal

US Environmental Protection Agency (USEPA) Region III

State

Virginia Department of Environmental Quality (VDEQ)

National Priorities List (NPL) Status

JOINT BASE MYER-HENDERSON HALL is not on the NPL

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

Installation is in the process of determining interest in establishing a RAB.

Installation Program Summaries

IRP

Primary Contaminants of Concern: Volatiles (VOC)

Affected Media of Concern: Groundwater

5-Year / Periodic Review Summary

No 5-Year / Periodic Reviews have been scheduled

Cleanup Program Summary

Installation Historic Activity

Fort Myer is located on land that was owned by George Washington Parke Custis, the grandson of Martha Custis Washington. His daughter, Mary Anna Randolph Custis, married Lieutenant Robert E. Lee in 1831. The Lees left Arlington at the start of the Civil War in 1861. The US government expropriated the land because she was not able to pay the property taxes in person as required. Fort Cass was built at the location of the Caisson Stables in 1861. Fort Whipple was built on the land in 1863 as one of the 70 forts whose original mission was to form a protective barrier around the city of Washington. The fort was named in honor of Major General Amiel Whipple who died of war wounds. On Feb. 4, 1881, the post was renamed Fort Myer, in honor of Brigadier General Albert A. Myer, the first chief signal officer of the Army, who commanded the Signal Corps School at Fort Myer from 1869 until his death in 1880. Fort Myer is best known for its long history as a cavalry post.

By 1909, most of the present-day historic district of Fort Myer had been built. Spacious senior officer quarters were constructed along Jackson, Grant, and Lee Avenues. It was from Fort Myer that the first round-the-world radio messages were sent. The post is also widely known as the "Home of the Generals" because of the many high-ranking members of the Department of Defense (DoD) who reside on the post. Between the two World Wars, Fort Myer continued its mission as a cavalry post. At the beginning of the US involvement in World War II, the Cavalry was mechanized and the post served as a processing station and housing for defense troops, which were stationed at Fort Myer to protect the nation's capital. In 1942 the US Army School of Music moved to Fort Myer. In 1948, the 3rd Infantry Regiment, better known as "The Old Guard," was reactivated and assigned to Fort Myer and Fort McNair.

The installation houses several organizations that provide base operations support for the US Army and DoD. Organizations throughout the NCR that conduct official ceremonies and public events on behalf of the US government civilian and military leadership are housed here. These tenants include the 3rd US Infantry ("The Old Guard") and the US Army Band ("Pershing's Own").

The Fort Myer historic district was listed as a National Historic Landmark in 1972 and in 1973 was listed on the Virginia landmarks register.

Fort Myer is part of IMCOM - Atlantic Region.

The Fort Myer Military Community (FMMC), consisting of Fort Myer in Arlington, Virginia, Fort Lesley J. McNair in southwest Washington DC, and Henderson Hall Headquarters, United States Marine Corps, in Arlington, Virginia, merged to become JBM-HH Oct. 1, 2009, one of 12 DoD joint base initiatives.

Joint basing was designed to realign 26 co-located or close-proximity military installations into 12 joint bases to achieve economies of scale and provide common cross-service standards for installation management. Established by the Base Realignment and Closure (BRAC) 05 Recommendation No. 146, dated Nov. 5, 2005, joint basing became part of a DoD transformation to improve readiness in addition to achieving cost efficiencies. Full compliance was required by Sept. 15, 2011.

In the first Army-led redesignation ceremony, the FMMC Garrison Commander became the Joint Base Commander, and the Henderson Hall Commanding Officer became Commanding Officer of Headquarters and Service Battalion, Headquarters Marine Corps Henderson Hall.

JBM-HH serves over 150,000 active duty service men and women (to include Soldiers, sailors, airmen, Marines and coast guard) and their families, DoD civilian personnel, and retired military personnel in the NCR.

JBM-HH provides installation services and support to military members, civilians, retirees and their families with a quality of life commensurate with the quality of their service. On order, JBM-HH provides base support to MDW/JFHQ- NCR facilitating deployment of forces for homeland defense and defense support to civil authorities in the NCR.

Installation Program Cleanup Progress

IRP

Prior Year Progress: The feasibility study (FS) will be conducted and the soil vapor extraction (SVE) system will be removed.

Future Plan of Action: Groundwater monitoring will continue in 2017-2018. Future groundwater remedial work is anticipated but is not yet probable and measurable.

JOINT BASE MYER-HENDERSON HALL
Army Defense Environmental Restoration Program
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 7/6

Installation Site Types with Future and/or Underway Phases

1 Spill Site Area
(FMY-01)

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
FMY-06	MOTOR POOL (BLDG 209)	FRA	WASTE REMOVAL - SOILS	1995
FMY-01	OLD DRY CLEANING PLANT- SVE & GW RISK	IRA	WASTE REMOVAL - SOILS	1996
FMY-01	OLD DRY CLEANING PLANT- SVE & GW RISK	IRA	SOIL VAPOR EXTRACTION	1996
FMY-04	OLD AFES SERVICE STATION - VAPOR TREATME	FRA	WASTE REMOVAL - SOILS	2001

Duration of IRP

Date of IRP Inception: 199003

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201709/201709

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

IRP Contamination Assessment

Contamination Assessment Overview

The Old Dry Cleaning Plant Site - SVE & GW Risk (FMY-01) is comprised of two sites: the old post exchange (PX) service station site (FMY-04) and the Building 448 site (FMY-09). Contamination plumes from the old PX service station site and the old dry cleaning plant site overlap. The sites were combined into the old dry cleaning plant site per a determination by the major Army Command. In fiscal year (FY) 2000 the FMMC required Environmental Restoration, Army (ER,A) funds to remediate soil contamination in the old PX service station site (FMY-04) and reopened the site.

In April 1990, the old dry cleaning plant (FMY-01) was closed and subsequently demolished. In late-1996 construction of a new Army and Air Force Exchange Service (AAFES) shopette/class VI store was completed at that location. The dry cleaning plant operation leaked and/or spilled a significant amount of perchloroethylene (PCE) into the soil and groundwater. Prior to construction of the shopette, the soils on-site were remediated with a SVE system. During construction, several tons of contaminated soil were removed and disposed of appropriately. On Jan. 30, 1996 excavation and disposal of the contaminated soil at the site was completed. In FY2000 meetings with the VDEQ resulted in requirements for eight rounds of groundwater sampling, a remedial investigation (RI)/FS, and development of a decision document (DD) in accordance with Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) protocol.

In 1999 during pre-construction activities for the emergency service center, a "black layer" was discovered on the site of the former commissary near the old PX service station site. The "black layer," located within several feet of the ground surface, is believed to be the result of oils applied to the surface for dust suppression prior to the placement of fill for construction of the former commissary. This material was properly excavated and disposed of during recent site development.

In 2007, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) conducted groundwater sampling at FMY-01 to assess its status. Chlorinated volatile organic compounds (VOC) were identified above maximum contaminant levels (MCL) in at least one of 13 wells sampled. High concentrations were 35,000 parts per billion (ppb) PCE, 2,400 ppb trichloroethylene (TCE), and 2,100 ppb cis 1,2-dichloroethylene (DCE). A two-phased approach was recommended. During the first phase baseline groundwater data was collected and natural attenuation parameters were determined for the site. Based on the data collected, a pilot study (a combination of bioaugmentation and biostimulation) was selected for the site.

During the second phase, a pilot test was undertaken to determine if the chlorinated solvents in the groundwater could be reduced to ethene. Sampling was completed in March 2012, and the concentrations of chlorinated solvents did not decrease as predicted. Vapor intrusion (VI) investigations were conducted on Buildings 447 (Directorate of Public Works [DPW] Maintenance) and 468 (Army Air Force Mutual Aid Association) in February 2013 and May 2015.

Three groundwater wells were installed in April 2015. Groundwater, soil, and VI data were collected in April through June 2015. Analysis of the data indicated that soil and VI data quality objectives were achieved; however, supplemental data were needed to define the extent of potential groundwater contamination. One groundwater monitoring well was installed and sampled in November 2015. Additionally, an assessment of the SVE system was conducted in 2015.

Cleanup Exit Strategy

Additional groundwater monitoring events will be conducted in 2016. An RI report and draft FS are scheduled to be completed in 2016. The removal of the SVE system is expected to be completed in 2016. Future groundwater remedial work is anticipated but is not yet probable and measurable.

IRP Previous Studies

Year	Title	Author	Date
1991	Site Histories Report to US Army Corps of Engineers, Baltimore District on four Bldgs	Woodward - Clyde	MAY-1991
1992	Characterization Report	Baltimore District Corps of Engineers	JAN-1992
1995	Sample Analysis Report of Fort Myer Class Six Site	General Physics Corporation	AUG-1995
	Soil Samples to Evaluate Soil Vapor Extraction System (Former Dry Cleaning Plant/Service Station - Fort Myer)	Woodward Clyde Federal Services	OCT-1995
1997	Corrective Action Plan (CAP)	Woodward-Clyde Federal Services	MAR-1997
2007	Groundwater Monitoring Report	USACHPPM	OCT-2007
2010	Final Phase I Confirmation Study Memorandum for Former PX Dry Cleaning Facility	CDM	SEP-2010
2011	Final Phase II Pilot Study Work Plan for Former PX Dry Cleaning Facility	CDM	MAR-2011
2012	Final Extended Phase II Treatability Study Work Plan Update for Former PX Dry Cleaning Facility, Joint Base Myer-Henderson Hall,	CDM SMITH	JAN-2012
	Two-Phased Treatability Study, Former PX Dry Cleaning Facility, Joint Base Myer-Henderson Hall, Extended Treatability Study - Draft Work Plan Update	CDM SMITH	NOV-2012
2014	Final Project Management Plan, Remedial Investigation and Draft Feasibility Study for FMY-01, Former Dry Cleaning Facility	EA Engineering, Science, and Technology, Inc.	AUG-2014
2015	Remedial investigation Data Gap Uniform Federal Policy-Quality Assurance Project Plan For FMY-01, Former Dry Cleaning Facility, Joint Base Myer-Henderson Hall, Virginia	EA Engineering, Science, and Technology, Inc.	APR-2015

JOINT BASE MYER-HENDERSON HALL
Installation Restoration Program
Site Descriptions

Site Name: OLD DRY CLEANING PLANT-SVE & GW RISK

STATUS

Regulatory Driver: CERCLA
RRSE: HIGH
Contaminants of Concern: Volatiles (VOC)
Media of Concern: Groundwater

Table with 3 columns: Phases, Start, End. Rows include PA, SI, RI/FS, IRA with corresponding dates. RI/FS row is highlighted.

SITE DESCRIPTION

In the early 1990s, a PCE and benzene, toluene, ethylbenzene and xylenes (BTEX) release from underground storage tanks (UST), aboveground storage tanks (AST), and interior floor drains from dry cleaning operations and the old gas station, was discovered. Soon after, an SVE system was installed in 1993 and operated until 1997, when VDEQ and JBM-HH determined it was no longer effective. In 1996, during construction of the shoppette, contaminated soils were excavated and disposed. In 2001, prior to construction of the emergency service center, the FMMC conducted site characterization and remediation, excavating 2,009 cubic yards (cy) of soil at the site. The VDEQ required FMMC to monitor the groundwater quarterly.

In 2007, the US Army Public Health Command (USAPHC) conducted groundwater sampling and results indicated the presence of chlorinated VOCs at concentrations above MCLs. A pilot study was completed in 2011, as the first phase of a two-phased treatability study, to determine the effectiveness of biostimulation and bioaugmentation to facilitate the complete reduction of chlorinated contaminants in groundwater. VI investigations were conducted on Buildings 447 (DPW Maintenance) and 468 (Army Air Force Mutual Aid Association) in February 2013 and May 2015.

Soil and VI data were collected in 2015 and the results indicated that the data quality objectives for soil and VI were achieved. Four additional groundwater monitoring wells were installed in 2015 to delineate the extent of contamination. An assessment of the SVE system was conducted in 2015.

CLEANUP/EXIT STRATEGY

Additional groundwater monitoring events will be conducted in 2016. An RI report and draft FS are scheduled to be completed in 2016. The removal of the SVE system is expected to be completed in 2016. Future groundwater remedial work is anticipated but is not yet probable and measurable.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FMY-02	CARPENTER ROAD LANDFILL	199207	Study Completed, No cleanup required
FMY-03	OLD DEBRIS LANDFILLS (3)	199009	The Virginia Department of Environmental Quality issued an NFA letter in 1990 indicating that the site was grandfathered due to age of the landfill (closed in the 1960s) and the nature of the debris deposited.
FMY-04	OLD AFES SERVICE STATION - VAPOR TREATME	200108	The data was combined with FMY-01 Old Dry CLN-PLNT-GW Risk assessment. This site may be deleted. The funds are used to remediate the areas affected by the contamination from AAFES station. However, the site was combined with FMY-01. Per conversation with the USAEC, US Army Military District of Washington (MDW), and FMMC, on Sep. 26, 2000 all agreed to open FMY-04 site to accommodate the requirements for public safety center remediation at the Old PX site.
FMY-05	BOILER PLANT AREA	199208	Study Completed, No cleanup required
FMY-06	MOTOR POOL (BLDG 209)	199505	Study Completed, No cleanup required
FMY-07	NIKE SITE 93, OLNEY, MD	200009	NIKE silo closure plan was approved by the Maryland Department of the Environment in 1998 and closure was approved in 2000 by the same agency.

IRP Schedule

Date of IRP Inception: 199003

Past Phase Completion Milestones

1990

PA (FMY-02 - CARPENTER ROAD LANDFILL, FMY-03 - OLD DEBRIS LANDFILLS (3))

1992

PA (FMY-01 - OLD DRY CLEANING PLANT-SVE & GW RISK, FMY-04 - OLD AFES SERVICE STATION - VAPOR TREATME, FMY-05 - BOILER PLANT AREA)

SI (FMY-01 - OLD DRY CLEANING PLANT-SVE & GW RISK, FMY-02 - CARPENTER ROAD LANDFILL, FMY-05 - BOILER PLANT AREA)

ISC (FMY-06 - MOTOR POOL (BLDG 209))

1994

INV (FMY-06 - MOTOR POOL (BLDG 209))

DES (FMY-06 - MOTOR POOL (BLDG 209))

CAP (FMY-06 - MOTOR POOL (BLDG 209))

PA (FMY-07 - NIKE SITE 93, OLNEY, MD)

1995

IMP(C) (FMY-06 - MOTOR POOL (BLDG 209))

IMP(O) (FMY-06 - MOTOR POOL (BLDG 209))

1996

SI (FMY-07 - NIKE SITE 93, OLNEY, MD)

IRA (FMY-01 - OLD DRY CLEANING PLANT-SVE & GW RISK)

1998

RI/FS (FMY-07 - NIKE SITE 93, OLNEY, MD)

2000

SI (FMY-04 - OLD AFES SERVICE STATION - VAPOR TREATME)

RI/FS (FMY-04 - OLD AFES SERVICE STATION - VAPOR TREATME)

2001

RA(C) (FMY-04 - OLD AFES SERVICE STATION - VAPOR TREATME)

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
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Final RA(C) Completion Date: 200108

Schedule for Next Five-Year Review: N/A

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

JOINT BASE MYER-HENDERSON HALL IRP Schedule

 = phase underway

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
FMY-01	OLD DRY CLEANING PLANT-SVE & GW RISK	RI/FS						

Community Involvement

Technical Review Committee (TRC): None

Community Involvement Plan (Date Published): 201309

Restoration Advisory Board (RAB): No

Reason Not Established: Installation is in the process of determining interest in establishing a RAB.

Additional Community Involvement Information

The remaining issue at the last active site is groundwater contaminated with PCE from the old dry cleaners. The groundwater is not moving, so there is no threat to off-site facilities or residences in the area. The installation is currently in the process of determining if there is sufficient interest in the community to create a RAB.

A CIP was developed for JBM-HH in 2013. Community interviews in the area surrounding JBM-HH were conducted in 2013 and incorporated into the CIP.

Administrative Record is located at

The administrative record is located in the Directorate of Environmental Management, 111 Stewart Road, Bldg 321, Fort Myer, Virginia. Installation documentation was digitized in 2012.

Information Repository is located at

There is no current Information Repository. It may be located in a branch of the Arlington Public Library in Arlington, Virginia and is anticipated to be established in 2016.

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

TAPP Title: N/A

Potential TAPP: N/A

