US Army Garrison Benelux

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.

ACRONYMS

Acronym	Definition
ARLOC	Area Location
AST	Aboveground Storage Tank
BGS	Below Ground Surface
BGL	Below Ground Level
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BV/BS	Bioventing/Bioslurping
CC	Compliance-related Cleanup
CRL	Cleanup Restoration & Liabilities
CTC	Cost to Complete
DODI	Department of Defense Instruction
DPE	Département de la Police et des Contrôles
DRMO	Defense Reutilization and Marketing Office
DSD	Département du Sol et des Déchets
DUCS	Database of USAREUR Contaminated Sites
ENV	Environmental
FS	Feasibility Study
FY	Fiscal Year
HN	Host Nation
HRS	Hazard Ranking Score
IAP	Installation Action Plan
IAW	In Accordance With
ID	Identification
IR	Installation Restoration
IRA	Interim Remedial Action
ISCO	In-Situ Chemical Oxidation
JP	Jet Propellant
kg	kilogram
L	liter
LNAPL	Light Non-Aqueous Phase Liquid
LTM	Long-Term Management
m	meter
m^2	square meter
m3	cubic meter
mg/kg	milligram per kilogram
MR	Munitions Response

Acronym	Definition
MRSPP	Munitions Response Site Prioritization Protocol
NE	Northeast
NPL	National Priorities List
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbon
POL	Petroleum, Oil, and Lubricants
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operations)
RC	Response Complete
RD	Remedial Design
RI	Remedial Investigation
RIP	Remedy-in-Place
RRSE	Relative Risk Site Evaluation
SC	Site Closeout
SE	Southeast
SI	Site Inspection
TPH	Total Petroleum Hydrocarbon
ug/L	micrograms per liter
USAREUR	United States Army Europe
UST	Underground Storage Tank
VS	Walloon Threshold Values

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: 0/0

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

Number of Open Sites with Response Complete/Total Open CC Sites: 0/1

SITE-LEVEL INFORMATION

BE215 - Chievres Airbase

Installation Name: US Army Garrison Benelux

Installation City: Chievres

5560A.1001_CCNS010_BE215_Bldg 20059 USTs POL 10-1

Env Site ID: CCNS010

Cleanup Site: BE215_Bldg 20059 USTs POL 10-1

Alias: NSNS010

Regulatory Driver: DODI

RIP Date: 4/16/2015

RC Date: 9/30/2054

RC Reason: Not assigned

SC Date: 9/30/2054

Program: Compliance-related Cleanup

Subprogram: CC

NPL Status: No

Hazardous Ranking Score: 0

RRSE: N/A

MRSPP: N/A

Phase	Start	End
PA:	7/31/2004	9/30/2004
SI:	9/30/2004	12/31/2004
RI/FS:	1/31/2005	10/31/2009
RD:	9/30/2008	9/30/2010
IRA:	1/31/2009	10/31/2011
RA(C):	10/31/2011	4/15/2015
RA(O):	4/16/2015	9/30/2054
LTM:	- -	- -

Site Narrative: SITE LOCATION AND DESCRIPTION

1. Location- The site is a former fuel storage area (POL 10-1) located near Gate 1 in the northern portion of the Chievres Air Base (ARLOC BE215), near the northern installation boundary.

2. Physical Layout/Site Use- The site is used for storage of fuel products and contained a 380,000 L JP-8 UST a 10,000 L UST sump tank; a 6,000 L sump tank; an oil water separator; a pumping station; and four 40,000 L kerosene ASTs. The site contains roughly equal proportions of paved and unpaved areas.

CONCEPTUAL SITE MODEL

1. Release Description- In 1993, the main underground pipe broke causing a spill of 3,975 L of JP-8.

2. Media Impacted- TPH and BTEX are the primary contaminants in soil and groundwater that require remediation. To a lesser degree, PAH contaminated soil is also present.

3. Nature and Extent of Contamination- LNAPL has been detected in well P102 at a thickness of 10 cm and was previously detected in well P509 between December 2015 and February 2018. TPH has been detected in soil and groundwater at concentrations up to 3,408 mg/kg and 13,065 ug/L in exceedance of the Walloon Threshold Values (VS) of 130 mg/kg and 200 ug/L. Benzene has been detected in soil and groundwater at concentrations up to 9.5 mg/kg and 1,100 ug/L in exceedance of the VS of 0.2 mg/kg and 10 ug/L. The depth of contaminated soil is 0.0 - 5.0 m bgs with an aerial extent of about 6,000 m^2. The aerial extent of contaminated groundwater is around 13,656 m^2. The volume of soil and groundwater prior to 30 April 2007 is respectively 117,000 m3 and 28,000 m3. The average depth to groundwater at the site is 9.6 m bgs and flows northwest.

4. Receptors- The groundwater contamination plume is expected to flow off-post with a potential future impact to off-post groundwater extraction wells.

REMEDIAL OBJECTIVE

1. Long-Term Closeout Strategy- Reduce TPH and BTEX concentrations in soil and groundwater to below the VS.

2. Achievable Remedial Action Objective- Reduce TPH in soil and groundwater below the VS using soil excavation, and conduct biosparging/bioventing, to eliminate potential exposure to receptors. The biosparging/bioventing system was turned off in June 2021. A risk assessment was finalized in 2023 which recommended soil excavation and potential vapor intrusion mitigation measures for the housing development which will be constructed at the site.

3. Specific Regulatory Standards and Legal Drivers- The VS have been used for evaluation of contaminant concentrations.

4. Remediation Methods Planned or Being Conducted- Excavation of approximately 30,000 m^3 of contaminated soil was completed in FY14 - FY15. A biosparging/bioventing remediation system operated in RA(O) through June 2021. The excavation of the soil will take place during February 2024 in order to ensure 1.5 m of clean soil on top the residual pollution to ensure the respect of the mitigation measure, as presented in the risk assessment.

5. Response Complete- Will be determined following the completion of the risk assessment.

6. Site Closure- The site will be closed following receipt of the final RA(O) summary report that concludes NFA.

7. Host Nation Involvement- The HN environmental authorities for the site are the DSD (Département du Sol et des Déchets) and DPE (Département de la Police et des Contrôles). The HN is aware of this site but does not have any decision-making authority.

PHASE SCHEDULE

1. Current Phase Objective- With the closure of the biosparging/bioventing remediation system in 2021, and completion of the risk assessment in FY23, the current phase objective is hot spot soil excavation. A housing construction project is planned in FY25 and may involve additional soil sampling and excavation in the footprint of the buildings. Indoor air and drinking water sampling will be conducted once the houses are constructed.

2. Milestones- RIP (4/16/2015), RC (9/30/2054), and Site Closeout (9/30/2054)

SCHEDULE & BUDGET CHANGES

1. Schedule- During the Spring 2024 datacall, the RAO phase end date was extended to account for thirty years of monitoring in accordance with DERP guidance.

2. Budget- The CTC for this site in Spring 2024 is TBD.

HISTORICAL SITE ACTIVITIES

In 1993, the main underground pipe broke at POL 10-1 causing a spill of 3,975 L of JP-8. This was discovered during a routine inspection of the nearby storm basin/pond, when small amounts of kerosene were observed flowing in the direction of the local drainage system and also leaking from the oil/water separator. Remediation in response to the spill commenced with free product recovery using a skimmer. Soil samples tested at the time contained TPH with maximum concentration of 2,447 mg/kg. Samples taken from monitoring wells showed a maximum reading of 120,000 ug/L for TPH (Dutch C standard used to determine if remediation is required was 600 ug/L) and 1,200 ug/L for BTEX (Dutch C value was 60 ug/L). It was estimated that the amount of contaminated soil was 500 to 1,000 m^3. A soil venting and groundwater pump & treat system was operated between July 1995 and March 1996 and removed 19,219 kg of contaminants. In March 1996, a 42-cm thick floating layer of free product was detected in the discharge water from the remediation system. Four single walled 50,000 L USTs were removed from the site in 1997. In 2004, soil samples revealed concentrations of TPH in the soil up to

6,800 mg/kg at a depth of 8.0 - 8.5 m below ground surface. Groundwater contained TPH of 24,000 ug/L in one well and 4,600 ug/L in a second well. BTEX concentrations were also elevated, with benzene being the primary component at a maximum of 870 ug/L. Based on these results, it was determined that additional study at this site was required. This consisted of replacement and installation of new groundwater monitoring wells and soil and groundwater testing. In 2014, excavation works were performed at POL 10-1 to remove tanks and related equipment. During these works soils impacted with total petroleum hydrocarbons (TPH) and volatile fuel derived hydrocarbons were excavated to a depth of approximately 5.0 m below ground level (bgl). After completion of the excavation works, a BV/BS system was installed at the presumed location of the remaining source zone. The BV/BS system operated in full-scale mode from November 2015 to June 2021, with a pause occurring in July 2017. A risk assessment was conducted for the site from late FY21 to FY23 which included a soil vapor study, soil sampling, monitoring well installation, comprehensive groundwater sampling, biosparging/bioventing remedy evaluation, and preparation of a human health risk assessment to summarize this effort. This site was previously included in the DUCs database under DUCS number NSNS010.

PROJECT APPROVAL

This project is required to maintain operations or protect human health and safety IAW Section 5.1.2 of DoDI4715.8 and DODI Enclosure 3, Chapter 1 (i). A final decision document was prepared for this site and signed on 27 April, 2011

SITE SUMMARY

SITE CLOSEOUT SUMMARY

CRL ID	Site Name	Site Closeout Date
5560A.1002	CCNS011_BE215 - Bldg 20071, USTs POL 10-	5/14/2021
5560A.1003	CCNS012_BE215 - Bldg 20049, USTs POL 10-	5/14/2021
5560A.1004	CCNS112_BE215 - Bldg 2008, Gas Station	2/28/2013
5560A.1005	CCNS111_BE215 - Bldg 20023, Heating Oil	3/31/2013
5560A.1006	CCNS110_BE215 - Bldg 20048, Heating Oil	3/15/2013
5560A.1007	CCNS002_BE215 - Bldg 20066, Dump, POL 10	5/14/2021
5560A.1008	CCNS015_BE215 - Bldg 20072, USTs POL 10-	1/15/2015
5560A.1009	CCNS102_BE215 - Bldg 20054, Former Skeet	9/30/2013
5560A.1010	CCNS108_BE215 - Bldg 20012, WW Discharge	3/15/2013
5560A.1011	CCNS013_BE215-FMR. FIREFIGHTING TRAINING	1/27/2021
5560A.1012	CCNS016_BE215-RUNWAY SWEEPING DUMP	1/31/2015
5560A.1013	CCNS113_BE215-FORMER FIRING RANGE	1/31/2015