VOLUNTEER ARMY AMMUNITION PLANT

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: VOLUNTEER ARMY AMMUNITION PLANT

Installation City: CHATTANOOGA

Installation County: HAMILTON

Installation State: TN

Regulatory Participation - Federal: N/A

Regulatory Participation - State: Tennessee Department of Environment & Conservation (TDEC)

ACRONYMS

Acronym	Definition
AOC	Area of Concern
CC	Compliance-related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CM	Corrective Measure
CMI	Corrective Measure Implementation
CMI(C)	Corrective Measure Implementation (Construction)
CMI(O)	Corrective Measure Implementation (Operations)
CMS	Corrective Measure Study
CRL	Cleanup Restoration & Liabilities
DD	Decision Document
DEC	Data Evaluation Criteria
ENV	Environmental
FS	Feasibility Study
FY	Fiscal Year
FYR	Five Year Review
IAP	Installation Action Plan
ID	Identification
ICM	Interim Corrective Measures
IM	Interim Measure
IR	Installation Restoration
IRA	Interim Remedial Action
LTM	Long-Term Management
LUC	Land Use Control
MCL	Maximum Contaminant Levels
MDA	Miscellaneous Disposal Areas
MNA	Monitored Natural Attenuation
MR	Munitions Response
MRSPP	Munitions Response Site Prioritization Protocol
NFA	No Further Action
NPL	National Priorities List
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PR	Periodic Review
RAB	Restoration Advisory Board

Acronym	Definition
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operations)
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy-In-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SB	Statement of Basis
SC	Site Closeout
SI	Site Inspection
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TDEC	Tennessee Department of Environmental Control
TNT	Trinitrotoluene
TSDS	Toluene Storage and Distribution System
USEPA	US Environmental Protection Agency
UE	Unrestricted Exposure
UST	Underground Storage Tank
UU	Unlimited Use
VAAP	Volunteer Army Ammunition Plant

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: 7/8

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

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

SITE-LEVEL INFORMATION

47855.1001_VAAP-01_OLD EAST ACID AREA

Env Site ID: VAAP-01

Cleanup Site: OLD EAST ACID AREA

Alias: VAAP-01

Regulatory Driver: RCRA-C

RIP Date: 9/30/2007

RC Date: 9/30/2007

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:

MRSPP: N/A

Phase	Start	End
RFA:	1/31/1978	3/31/1984
CS:	12/31/1993	12/31/1994
RFI/CMS:	10/31/1998	9/19/2005
DES:	1/31/2004	9/19/2005
IRA:	- -	- -
CMI(C):	6/30/2005	9/30/2007
CMI(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: VAAP-01 (Area of Concern [AOC] 1) is known as the East Acid Area and encompasses approximately 18 acres east of the former central trinitrotoluene (TNT) production facilities on the western half of Volunteer Army Ammunition Plant (VAAP). The East Acid Area was operated intermittently during the various periods of production from 1941 to 1970. The area consisted of nitric and sulfuric acid production facilities an oleum (concentrated sulfuric acid) production facility and an ammonia storage facility. Except for several aboveground storage tanks (fuel oil and toluene) the production facilities were disassembled decontaminated and sold in 1974. The fuel oil and toluene tanks were demolished and sold for scrap in 2004. A site investigation was performed in 1994 and a remedial investigation (RI) was initiated in 1995. The results of the draft RI indicated that a remedial action was necessary, and it was determined that further delineation of the extent of contamination would be required. To fill data gaps supplemental sampling was completed in 1999. Results indicated contamination in soil and sediments surrounding the former production buildings were more widespread than originally believed. The vertical extent of soil contamination above proposed preliminary remediation goals was limited to the upper 20 feet. In December 2001, VAAP came under a US Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) order with a resulting change from Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) to RCRA process. The final RCRA Facility Investigation (RFI)/Corrective Measures Study (CMS) statement of basis and design was completed and approved in 2005. The corrective measure was completed (soil excavation to 10-20 feet with deed restrictions for soils) and the site was considered response complete (RC) in September 2007. The final CMS report was approved by USEPA letter dated Sept. 27, 2007. Land use control (LUC) plan was approved by the USEPA letter dated May 4, 2010. Groundwater is being handled under AOC 6 (North). In September 2011, the Army, and Tennessee Department of Environmental Control (TDEC) entered into a RCRA consent order which replaced the USEPA order of 2001. A long-term management (LTM) phase comprised of LUCs in accordance with this order is required due to residual contamination greater than unlimited use (UU)/unrestricted exposure (UE). TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 consent

order modification established the final corrective action requirements of LUCs and periodic reviews for this site will continue indefinitely. Current and future land use is industrial/commercial. Low potential for off-site migration.

47855.1002_VAAP-02_CFI LEASE AREA

Env Site ID: VAAP-02

Cleanup Site: CFI LEASE AREA

Alias: VAAP-02

Regulatory Driver: RCRA-C

RIP Date: 12/15/2012

RC Date: 12/15/2012

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:

MRSPP: N/A

Phase	Start	End
RFA:	1/31/1978	5/31/1985
CS:	1/15/1980	1/15/2008
RFI/CMS:	1/15/2008	6/30/2010
DES:	7/31/2010	10/15/2010
IRA:	7/31/2004	7/31/2006
CMI(C):	10/15/2011	12/15/2012
CMI(O):	- -	- -
LTM:	12/15/2012	9/30/2054

Site Narrative: Site VAAP-02 (Solid Waste Management Unit [SWMU] 7) consists of approximately 686 acres located along the western boundary of the former VAAP. Nitric acid sulfuric acid and oleum were produced during Army use. From 1962 to 1982, a contractor leased the facilities for production of fertilizers and urea. All equipment and facilities have been disposed of. For soils some constituents including arsenic total chromium lead manganese total carcinogenic polycyclic aromatic hydrocarbons (PAH) and total polychlorinated biphenyls (PCB) exceeded the data evaluation criteria (DEC). The site is a high-risk area and is a part of the USEPA RCRA order issued in December 2001. The site is also a TDEC Superfund site. A site inspection (SI) was performed in 1994 and an RI was initiated in 1995 and given final approval as an RFI/CMS in 2004. In that year a decision document (DD) to support an interim measure (IM) cleanup of soil constituents exceeding DECs was issued prior to starting work. Remediation of PCBs was accomplished under a hybrid cleanup approach using procedures of 40CFR761(a). Soils that were contaminated with metals were stabilized on-site and then disposed of at an approved off-site landfill. The PCBs which did not meet DECs were treated as a hazardous waste and disposed of off-site at a Toxic Substance Control Act approved landfill. In June 2004, the final interim corrective measure (ICM) work plan for removal of contamination associated with the area was approved. In 2006, as part of the interim corrective action removal of 13,335 cubic yards (cy) of soil and sediment contaminated with lead PCBs, arsenic vanadium, and chromium was completed. Originally, a final CMS for the site was to be completed by the end of fiscal year (FY)2008. However, regulatory agencies and the cleanup team determined that groundwater would be more appropriately addressed for this site in a separate action rather than inclusion in the site-wide groundwater CMS. As part of the confirmatory sampling for the soils corrective measures work nitrate/nitrite exceeding maximum contaminant levels (MCL) was discovered in groundwater at the site. Since nitrate contamination is not RCRA waste subject to the 2003 USEPA administrative order and the CMS for soils was not drafted all contaminants were subsequently addressed in one set of documents under the CERCLA process (rather than having a RCRA and a CERCLA set of documents). This resulted in extension of the previous projected remedy-in-place (RIP)/RC date for

the site. An abbreviated preliminary assessment (PA)/SI was finalized in June 2008. A draft RI/feasibility study (FS) was submitted to the regulatory agencies in February 2009 and approval of the RI/FS and selected remedy was received in February 2010. A proposed plan was approved and finalized in July 2010 and a record of decision was finalized and signed in August 2011. Final remedy is Monitored Natural Attenuation (MNA) of groundwater and LUCs; however, since there was no previous treatment at this site and MNA monitoring does not include degradation products, groundwater monitoring is more appropriate in the LTM phase. In September 2011, the state of Tennessee in concert with the USEPA and the Army, replaced USEPA 2001 order with a state of Tennessee-Army consent order. In December 2014, additional discussions with TDEC and other stakeholders resulted in the decision to reduce sampling of nitrates in the CFI Lease Area (VAAP-02) to one annual sample in one well and to include the results and reporting with VAAP-35 (47855.1018). TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 Consent Order Modification established the final corrective action requirements. LUCs, Periodic Reviews and LTM for this site will continue indefinitely. Current and future land use is industrial/commercial. Low potential for off-site migration.

47855.1010_VAAP-20_CONSTRUCTION DEBRIS DISPOSAL ARE

Env Site ID: VAAP-20

Cleanup Site: CONSTRUCTION DEBRIS DISPOSAL ARE

Alias: VAAP-20

Regulatory Driver: RCRA-C

RIP Date: 12/31/2009

RC Date: 12/31/2009

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:

MRSPP: N/A

Phase	Start	End
RFA:	1/31/1978	3/31/1984
CS:	1/31/1978	12/31/1994
RFI/CMS:	6/30/2002	5/31/2007
DES:	5/31/2007	4/30/2009
IRA:	- -	- -
CMI(C):	6/30/2009	12/31/2009
CMI(O):	- -	- -
LTM:	1/31/2010	9/30/2054

Site Narrative: Site VAAP-20 (SWMU 1) is located approximately 800 feet east of the East Acid Area in an undeveloped part of VAAP. The site consists of a 3-acre unlined landfill for decontaminated industrial waste and construction debris. The landfill was in operation from the 1970s to 2002. Surface debris was removed in 2002. The RFI concluded that soils contaminants are primarily PCBs, PAHs, metals, and volatile organic compounds associated with subsurface soils. An SI was performed in 1994 and an RI was initiated in 1995. Due to the switch to RCRA in 2004, the SI and RI were combined and submitted as a final RFI. The CMS which included a risk assessment was completed in 2006. Results of the risk assessment were that xylene was the primary risk driver in the soil for the future industrial worker and construction worker. In August 2007, the statement of basis (SB) was approved. In September 2007, the draft corrective measures implementation (CMI) work plan design was issued and was approved by USEPA/TDEC in May 2009. TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 consent order modification established the final corrective action requirements. LUCs, LTM and periodic reviews for this site will continue indefinitely. Current and future land use is industrial/commercial. Low potential for off-site migration.

47855.1011_VAAP-21_LANDFILL (WW II)

Env Site ID: VAAP-21

Cleanup Site: LANDFILL (WW II)

Alias: VAAP-21

Regulatory Driver: RCRA-C

RIP Date: 12/31/2009

RC Date: 12/31/2009

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:

MRSPP: N/A

Phase	Start	End
RFA:	1/31/1978	3/31/1984
CS:	1/31/1978	12/31/1994
RFI/CMS:	3/31/2001	7/31/2007
DES:	12/31/2006	6/30/2009
IRA:	- -	- -
CMI(C):	6/30/2009	12/31/2009
CMI(O):	- -	- -
LTM:	1/31/2010	9/30/2054

Site Narrative: Site VAAP-21(SWMU 2) is located in the west-central portion of VAAP. The site comprises approximately 15 acres and consists of an unlined landfill that operated between 1941 and the late-1960s. The landfill and disposal trenches received red water, ash, red water sludge, and refuse. The site is a medium risk area and is included in the USEPA RCRA order issued in December 2001. The site is also a TDEC Superfund site. An RFI including sampling and trenching which was completed in December 2003, which indicated contaminants of lead explosives PAHs and PCBs in surface and subsurface soils. Additional groundwater data was gathered to fill data gaps from the RFI to support the CMS. During seasonal fluctuations, groundwater appears to encounter waste in the trenches. In December 2006, a CMS was submitted to the USEPA/TDEC. The final DD was provided by USEPA in accordance with the RCRA order in March 2008. Additional groundwater sampling and data analysis were conducted in Spring 2009 to rule out upwelling of groundwater into the debris field. As a result of the additional data collection the selected remedy was a low permeability soil cap and approved by USEPA/TDEC in May 2009. The CMI work plan was approved in June 2009 and remedy construction (CMI(C) phase) was completed in December 2009, with the LTM phase beginning in January 2010. The Corrective Measure (CM) was implemented (landfill cap) with deed restrictions LUCs and annual maintenance and inspections. The CM completion report was approved by the USEPA on Apr. 7, 2010. Groundwater is addressed under AOC 6 (South). TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 consent order modification established the final corrective action requirements. LUCs, LTM and periodic reviews for this site will continue indefinitely. Current and future land use is industrial/commercial. Low potential for off-site migration.

47855.1015_VAAP-32_TNT MFG VALLEY/INCL RDWTR TREATM

Env Site ID: VAAP-32

Cleanup Site: TNT MFG VALLEY/INCL RDWTR TREATM

Alias: VAAP-32

Regulatory Driver: RCRA-C

RIP Date: 8/31/2011

RC Date: 8/31/2011

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:

MRSPP: N/A

Phase	Start	End
RFA:	1/31/1978	3/31/1984
CS:	1/31/1978	3/31/1984
RFI/CMS:	10/31/1985	9/30/2004
DES:	7/31/2004	6/30/2005
IRA:	- -	- -
CMI(C):	7/31/2007	8/31/2011
CMI(O):	- -	- -
LTM:	9/1/2011	9/30/2054

Site Narrative: Site VAAP-32 (AOCs 3a, 3b, 3c, 3d and 4) is located in the north central portion of the plant and is approximately 350 acres. It includes the old and new TNT production facilities Red Water Treatment Plant and the Industrial Surface Water Pollution Control Facilities (former site VAAP-034). The site originally consisted of 16 TNT production batch process lines built in 1942 in support of World War II. Today only the foundations of the old batch process lines and buildings of six new continuous process lines built in early 1970s are present at the site. Limited disposal occurred at the site. Contamination is suspected to be primarily the result of spills during production. Initial RI results indicated high levels of explosives in soil sediment and groundwater. Additional contaminants include arsenic lead PCBs and PAHs. An SI was conducted in 1994. The RFI/CMS for the site was approved and indicated that 43,300 cy of explosives PCBs and metals-contaminated soils required removal. Explosive-contaminated soil along with metals and PCBs contaminated soils was to be stabilized and placed in off-site landfills. The SB was approved. In 2007, the contractor proposed a change in the remedy. Rather than dig and haul a new innovative process of using alkaline hydrolysis to treat nitroaromatic compounds was proposed. The soil was treated ex situ; once nitroaromatics were destroyed to concentrations below cleanup goals the soils were returned to the excavations as backfill. This new method was approved by USEPA and TDEC. Delineation and treatment actions were initiated in FY08 and completed in August 2011. In accordance with the 2011 Army/TDEC RCRA order, the final remedy requires LTM with LUCs due to residual contamination levels above UU/UE. TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 consent order modification established the final corrective action requirements. LUCs and periodic reviews for this site will continue indefinitely. Current and future land use is industrial/commercial. Low potential for off-site migration.

47855.1018_VAAP-35_GROUNDWATER

Env Site ID: VAAP-35

Cleanup Site: GROUNDWATER

Alias: VAAP-035

Regulatory Driver: RCRA-C

RIP Date: 3/15/2014

RC Date: 9/30/2053

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
RFA:	12/31/1999	2/29/2000
CS:	- -	- -
RFI/CMS:	3/31/2001	3/15/2013
DES:	9/26/2006	9/30/2013
IRA:	- -	- -
CMI(C):	10/15/2013	2/15/2014
CMI(O):	3/15/2014	9/30/2054
LTM:	- -	- -

Site Narrative: Site VAAP-035 includes all groundwater (AOC 6) at VAAP. This site addresses all groundwater treatment MNA as well as installation-wide corrective measures implementation operations (CMI(O)) and LTM. Explosive concentrations above state guideline concentrations have been found in on-post wells and springs. Contaminants of concern are explosives arsenic and lead. In 1992, an RI was initiated and in 2003 and 2004, supplemental RFI fieldwork was conducted following the change in regulatory driver to RCRA by issuance of a 2001 USEPA administrative RCRA order. In March 2005, an installation-wide groundwater RFI was approved. Site-wide groundwater was addressed in two separate CMS documents and SBs. The first was a focused CMS addressing plume areas in selected portions of the southern groundwater basin with a remedy of MNA. In FY06, the focused CMS was completed and in FY07 the USEPA completed an operating properly and successfully determination for the focused CMS. The second CMS addressed the more highly contaminated plume areas. Extensive analysis and modeling were completed to determine the most applicable remedy. The site contains complicated hydrogeologic conditions with the combination of tightly bound residuum and karst formations. The MNA alternative proposed in the original draft CMS was not originally accepted by the regulatory agencies. As a result of all work at former VAAP being subject to the 2001 USEPA RCRA (3008h) Administrative Order a new alternative in situ chemical oxidation followed by MNA as a polishing step was proposed. This alternative proposed source treatment of explosives in the saturated soils at 10 areas. Before finalizing a remedial alternative of in situ chemical oxidation as the selected remedy, the Army conducted a treatability study prior to finalizing the CMS to determine if the method was viable. The treatability study was conducted in 2008 and recommended that a pilot study be conducted. Due to costs associated with a pilot study a phased approach was determined to be most efficient and was initially planned for 2010. In February 2009, USEPA and TDEC moved regulatory oversight and RCRA order compliance of VAAP to their respective RCRA/Solid Waste Divisions. In late 2009, TDEC was granted lead regulatory authority over a portion of VAAP which was subsequently removed from the USEPA RCRA order. In 2010, TDEC requested lead regulatory agency status for the remainder of the VAAP sites subject to the USEPA order. Following

equivalence review by USEPA in late 2010 and 2011 the Army and TDEC entered into a consent order which was finalized in September 2011. During the same time interval, multiple ongoing semiannual groundwater sampling rounds took place and yielded additional data supportive of the original proposed remedy of MNA. Following regulatory review of this groundwater sampling data it was determined that the most probable remedy would be MNA. The CMS was revised to reflect this remedial alternative, but TDEC requested stronger controls for off-site residents which required additional study planning and revision. In February 2013, TDEC approved the final remedy of MNA and LUCs. The CMI(C) phase was completed in February 2014 with CMI(O) beginning in February 2014. The SB for this site was published by TDEC concurrent with modification of the RCRA order in 2017. The SB was provided for public notice in parallel with the order modification and finalized with the order in September 2017. TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 consent order modification established the final corrective action requirements. CMI(O) for this site is on-going. LUCs, MNA, long term monitoring and periodic reviews for this site will continue indefinitely. Current and future land use is industrial/commercial. There is off-site migration.

47855.1021_VAAP-36_Toluene Storage and Dist System

Env Site ID: VAAP-36

Cleanup Site: Toluene Storage and Dist System

Alias: VAAP-36

Regulatory Driver: RCRA-C

RIP Date: 8/31/2011

RC Date: 8/31/2011

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:

MRSPP: N/A

Phase	Start	End
RFA:	9/30/2002	9/30/2003
CS:	- -	- -
RFI/CMS:	4/30/2006	8/31/2011
DES:	- -	- -
IRA:	11/30/2007	9/30/2008
CMI(C):	- -	- -
CMI(O):	- -	- -
LTM:	6/15/2017	9/30/2054

Site Narrative: Site VAAP-36 (SWMU 12c, d and g), the Toluene Tanks, and Distribution System was a network of aboveground storage tanks pipelines and distribution systems used to store and distribute toluene in support of the manufacture of TNT at VAAP. The pipeline was split into two lines conveying the toluene to storage tanks on low ridges along the east and west flanks of the TNT Manufacturing Valley. The RFI has characterized the site and determined that four areas required additional study or action. These include- Ammonium Nitrate Spill Area (also known as 'Western Ridge'), North Loading Facility at VAAP-02, South Loading Facility at VAAP-02, South Loading Facility at VAAP-01, and Vicinity of MW-168 Adjacent to VAAP-01. The South Loading Facilities at VAAP-01 and at VAAP-02 were addressed in FY07 and no additional action at those locations is required. For the North Loading Facility at VAAP-02 two overburden wells and a bedrock well were installed to collect additional groundwater data to confirm direct-push technology data on groundwater. Toluene was detected in the overburden wells at concentrations above the MCLs but not detected in the bedrock well. The remedy is LUCs for industrial use only and no use and no access to groundwater. Toluene was also added as an analyte to the existing southern groundwater basin remedy. For the Western Ridge site, an ICM of on-site treatment of toluene contaminated soils was completed. This location has been approved as no further action (NFA). The Army recommended NFA for the location in the vicinity of MW-168 and MNA for locations in the CFI Lease Area footprint. The draft Toluene Storage and Distribution System (TSDS) RFI was submitted to the regulatory agencies in June 2009. In April 2010, following regulatory personnel and program changes for both USEPA and TDEC the regulatory agencies requested the TSDS site be broken down into sub-sections for evaluation. The RFI was revised and resubmitted and received regulatory concurrence in December 2009, with remedy of LUCs which were incorporated into the September 2011 Army/TDEC RCRA consent order. LTM phase dates are tracked under this site until UU/UE. The selected final remedy is no further action for soil at all seven SWMU 12 sub-sites (SWMUs 12a to g) and groundwater at two of the five SWMU 12 sub-sites where groundwater was encountered. Residual groundwater contamination at SWMU 12 sub-sites TSDS-C, TSDC-D, and TSDS-G is being addressed under the remedy for AOC-6 (North).

TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 consent order modification established the final corrective action requirements. The SB was provided for public notice in parallel with the order modification and finalized with the order in September 2017. LTM and periodic reviews for this site will continue indefinitely. Current and future land use is industrial/commercial. Low potential for off-site migration.

47855.1022_VAAP-37_Miscellaneous Disposal Areas

Env Site ID: VAAP-37

Cleanup Site: Miscellaneous Disposal Areas

Alias: VAAP-37

Regulatory Driver: RCRA-C

RIP Date: 12/15/2012

RC Date: 12/15/2012

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:

MRSPP: N/A

Phase	Start	End
RFA:	6/30/2002	4/30/2004
CS:	- -	- -
RFI/CMS:	4/30/2006	12/15/2012
DES:	- -	- -
IRA:	1/31/2007	12/31/2008
CMI(C):	- -	- -
CMI(O):	- -	- -
LTM:	12/15/2012	9/30/2054

Site Narrative: Site VAAP-37 (AOC 14a) Miscellaneous Disposal Areas (MDA) consists of small areas in various locations at VAAP that were used to dispose of debris from former operations or demolition of former facilities at the site. There are currently two disposal areas included in the site. One was a debris pile (MDA-A) located adjacent to and west of the New Acid Area (VAAP-33). It consisted of remnants of large concrete storage tank saddles broken pieces of piping and bricks and mounds that were covered with soil and vegetation. The origin of the debris is unknown but was likely from demolition of a former facility pre-dating construction of the New Acid Area. The second area of debris was located adjacent to and just south of the site known as the Figure Eight Area or AOC-10b (MDA-B). AOC-10b is part of site VAAP-32. Debris at this site was found on the side of a shallow ravine and included large pieces of broken lead and graphite piping, graphite rods, broken glassware, and broken clay tiles and bricks. The origin of this debris is unknown; however similar debris is located at the Old East Acid Area (VAAP-01). The material and surrounding soil at MDA-B has been characterized and an ICM was completed and approved by USEPA and TDEC as NFA. Limited surface and subsurface soil sampling were conducted at MDA-A during the RFI for that site. Results indicated elevated levels of lead at 1510 milligrams per kilogram (mg/kg) along with low levels of PCBs at 4.6 mg/kg. Low levels of contamination were found at depths up to 25 feet below ground surface. An ICM for excavation and removal to an off-site approved landfill was implemented for MDA-A and completed in 2007; based on the data triggering the interim remedial action (IRA) treating all wood found as containing PCBs and disposing of it off-site seemed the most cost effective. However, during the IRA, the nature and extent of the contamination was determined to have not been fully defined. Additional sampling and IRA were conducted in 2008. The September 2001 implementation of an Army/TDEC RCRA consent order replaced a 2001 USEPA RCRA order. An RFI/CMS was submitted and approved in December 2012, with LUCs as the final remedy due to residual contamination above UU/UE levels for soils. LTM phase dates are tracked under this site until UU/UE. TDEC amended the Army Consent Order HWM11-CA01 on Sept. 25, 2017. The Class 3 consent order modification established the final corrective action requirements. LUCs and periodic reviews for

this site will continue indefinitely. Current and future land use is industrial/commercial. Low potential for off-site migration.

SITE SUMMARY

SITE CLOSEOUT SUMMARY

CRL ID	Site Name	Site Closeout Date
47855.1003	VAAP-03_PISTOL RANGE	3/31/1984
47855.1004	VAAP-04_ENVIRONMENTAL LAB	3/31/1984
47855.1005	VAAP-05_OLD STORAGE AREA (EXP MAG)	9/30/2004
47855.1006	VAAP-06_NEW STORAGE AREA (EXP MAG)	10/31/2003
47855.1007	VAAP-15_BURNING GROUND/NEW LF	8/31/2003
47855.1008	VAAP-16_BURNING GROUND (WWII)	9/30/2004
47855.1009	VAAP-18_VANADIUM PENTOXIDE/ASBESTOS BURI	5/31/2011
47855.1012	VAAP-23_MAGAZINE AREA RWA-GS LANDFILL	7/31/2003
47855.1013	VAAP-30_MUSTARD AGENT SPILL (1947, CLEAN	3/31/1984
47855.1014	VAAP-31_WAREHOUSE AND PESTICIDE STORAGE	10/31/2006
47855.1016	VAAP-33_NEW ACID AREA	8/31/2004
47855.1017	VAAP-34_W W TREATMENT PONDS (POND 4, 5 +	3/31/1984
47855.1023	PBC @ VAAP_PBC	7/15/2016
47855.1019	VAAP-001-R-01_PISTOL RANGE - NORTH	8/31/2003
47855.1020	VAAP-002-R-01_PISTOL RANGE - SOUTH	8/31/2003

COMMUNITY INVOLVEMENT

Community Involvement Plan (Date Last Reviewed):	6/15/2017
Technical Review Committee Establishment Date:	N/A
Restoration Advisory Board (RAB) Establishment Date:	2/28/1998
RAB Adjournment Date:	12/15/2017
RAB Adjournment Reason:	N/A
Reasons for Not Establishing RAB:	Lack of outstanding cleanup issues or activities does not warrant establishment of a RAB.
RAB Date of Solicitation from Community:	N/A
RAB Results of Solicitation:	N/A
Current Technical Assistance for Public Participation (TAPP):	N/A
TAPP Title:	N/A
Potential TAPP:	N/A
Administrative Record Location:	Life Storage, 4429 Highway 58, Chattanooga, TN 37416
Information Repository Location:	Hamilton County Library, 1001 Broad Street, Chattanooga, TN 37402

FIVE-YEAR / PERIODIC REVIEW SUMMARY

Status	Review Type	Start Date	End Date	Plans Narrative	Actions Narrative	Results Narrative
Completed	PR	5/11/2020	12/31/2021	MNA {LUC GW Monitoring}	No Change	The remedial actions at VAAP were found to be protective in the short-term as the concentrations are decreasing and exposure path is not present.
Planned	PR	1/15/2027	2/15/2028	TBD	TBD	TBD