

# **RED RIVER ARMY DEPOT**

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:** RED RIVER ARMY DEPOT

**Installation City:** TEXARKANA

**Installation County:** BOWIE

**Installation State:** TX

**Regulatory Participation - Federal:** N/A

**Regulatory Participation - State:** Texas Commission on Environmental Quality (TCEQ)

## ACRONYMS

Acronym	Definition
AOPI	Areas of Potential Interest
APAR	Affected Property Assessment Report
AST	Aboveground Storage Tank
BaP	Benzo(a)pyrene
CC	Compliance-related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CEL	Chromate Equalization Lagoon
CMI(C)	Corrective Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operations)
CMS	Corrective Measure Study
COC	Contaminants of Concern
CRL	Cleanup Restoration & Liabilities
DD	Decision Document
DNAPL	Dense Non-Aqueous Phase Liquids
ENV	Environmental
FS	Feasibility Study
ft	feet
FY	Fiscal Year
FYR	Five-Year Review
GWPS	Groundwater Protection Standards
IAP	Installation Action Plan
ID	Identification
IR	Installation Restoration
IRA	Interim Remedial Action
IRP	Installation Restoration Program
IWTP	Industrial Wastewater Treatment Plan
kg	kilogram
LNAPL	Light Non-Aqueous Phase Liquids
LTM	Long-Term Management
LUC	Land Use Control
MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
mg	milligram
mm	millimeter
MMRP	Military Munitions Response Program
MR	Munitions Response
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
NAPL	Non-Aqueous Phase Liquids

Acronym	Definition
NPL	National Priorities List
OB/OD	Open Burning and Open Detonation
OSD	Office of the Secretary of Defense
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PCL	Protective Concentration Levels
POL	Petroleum, Oil and Lubricants
PFAS	Polyfluoroalkyl Substances
PMZ	Plume Management Zone
PR	Periodic Review
PRB	Permeable Reactive Barrier
RA(C)	Remedial Action (Construction)
RACR	Response Action Completion Report
RA(O)	Remedial Action (Operations)
RAB	Restoration Advisory Board
RAP	Response Action Plan
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy-In-Place
RRAD	Red River Army Depot
RRSE	Relative Risk Site Evaluation
SC	Site Closeout
SI	Site Inspection
SWMU	Solid Waste Management Unit
TCEQ	Texas Commission on Environmental Quality
TAPP	Technical Assistance for Public Participation
TCA	Trichloroacetic Acid
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbons
UE	Unrestricted Exposure
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UU	Unlimited Use
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
WIA	Western Industrial Area

## 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: 5/13**

**Number of Open Sites with Response Complete/Total Open MR Sites: 2/3**

**Number of Open Sites with Response Complete/Total Open CC Sites: 0/2**



## SITE-LEVEL INFORMATION

**48515.1021\_RRAD-35\_SOIL UNDERLYING BLDG 345, NORTH**

**Env Site ID:** RRAD-35

**Cleanup Site:** SOIL UNDERLYING BLDG 345, NORTH

**Alias:** RRAD-35

**Regulatory Driver:** RCRA-C

**RIP Date:** 4/30/2007

**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
<b>RFA:</b>	3/31/1978	7/31/1978
<b>CS:</b>	--	--
<b>RFI/CMS:</b>	9/30/1991	9/30/2007
<b>DES:</b>	--	--
<b>IRA:</b>	11/30/1994	3/31/1995
<b>CMI(C):</b>	8/31/2005	4/30/2007
<b>CMI(O):</b>	8/15/2007	9/30/2054
<b>LTM:</b>	--	--

**Site Narrative:** Red River Army Depot (RRAD)-35 is one of three non-Base Realignment and Closure (BRAC) sites within the Western Industrial Area (WIA) solid waste management unit (SWMU). RRAD-35 has solvents contaminating the groundwater in a plume management zone (PMZ). The 371,242-square foot (ft) building has been used since the 1940s by the US Army for depot level renovation of military vehicles. Operations included solvent vats for cleaning and electroplating mechanical tear-down metal finishing and re-build of military vehicles. There were an unknown number of solvent trichloroethylene (TCE) trichloroacetic acid (TCA) spills during the 1950s and 1960s. This site is still active; however, TCE and TCA are no longer being used at the depot. Chlorinated solvents have been detected in the groundwater since 1991. These solvents are potentially causing a threat of exposure in surface water (Panther Creek). The source of the contamination is thought to be unrecorded solvent spills or releases into former drainage ditches which drained from the western portion of the site. The source of the contamination in the ditches was probably from solvent vats. Contaminated soil is covered by the building and is in part covered by the building or asphalt/concrete and is on top of a several hundred feet of thick layer of dense clay shale. Contaminants of concern (COC) include volatile organic compounds (VOC) in soil and groundwater. The groundwater solvent plume is modeled to stay within the 73.2392-acre PMZ for the WIA. TCEQ approved on Nov. 3, 2008, the Affected Property Assessment Report (APAR) the TCEQ equivalent to the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report dated Dec. 15, 2007, and Response Action Plan (RAP) dated December 2006 for the WIA and Panther Creek. Two permeable reactive barrier walls were entrenched elsewhere in the WIA in April 2007 to protect Panther Creek from solvents in groundwater from this site and others. TCEQ approved on Nov. 3, 2008, RRAD's Proposed Monitoring Well Locations for the Bio-mulch Wall dated Mar. 25, 2008. On Nov. 2, 2009, a deed notice was filed for the entire WIA restricting residential groundwater use. The Compliance Plan requires continued annual groundwater monitoring response action effectiveness reports every third year (most recent report was dated December 2020) and the periodic reviews (PR). Cleanup/exit strategy- Corrective Measures Implementation Operations (CMI(O)) will continue in the form of groundwater monitoring and reporting and is expected to continue indefinitely because of

increasing sampling data trends and non-attainment of the Remedial Action Objectives. Additionally, PRs will continue indefinitely, and Land Use Controls (LUC) will remain in place, restricting the site to industrial use.

## 48515.1022\_RRAD-36\_BLDG 371 (BATTERY SHOP) SOILS

**Env Site ID:** RRAD-36

**Cleanup Site:** BLDG 371 (BATTERY SHOP) SOILS

**Alias:** RRAD-36

**Regulatory Driver:** RCRA-C

**RIP Date:** 9/30/2007

**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
<b>RFA:</b>	7/31/1992	7/31/1992
<b>CS:</b>	--	--
<b>RFI/CMS:</b>	11/30/1998	9/30/2007
<b>DES:</b>	--	--
<b>IRA:</b>	--	--
<b>CMI(C):</b>	8/31/2005	9/30/2007
<b>CMI(O):</b>	8/15/2007	9/30/2054
<b>LTM:</b>	--	--

**Site Narrative:** Building 371 is currently used as a battery shop where large wet cell lead-acid forklift batteries are recharged and stored. Previous activities in the building included dynamometer testing and solvent cleaning of mechanical parts in vats. The reason is unknown as to why TCE contaminated the site, with possible reasons being pre-RCRA poor waste management practices or unrecorded spills / vat overflows. TCE contamination was identified in monitoring wells around Building 371. TCE in groundwater has exceeded protective concentration levels (PCL). Soil PCLs have not been exceeded. A revised APAR and a remedial action plan were completed and approved by the TCEQ Dec. 19, 2008. The remedial action plan included a 1.17-acre PMZ. The site PMZ is a land use control to only commercial-industrial usage and restriction on groundwater usage was put into a deed notice which was approved by TCEQ on Dec. 9, 2009. The site was incorporated into the RRAD RCRA Compliance Plan permit issued on Dec. 14, 2012. Cleanup/exit strategy - The site use is anticipated to remain industrial in support of installation mission functions. Groundwater monitoring of the solvent contamination to measure effectiveness of the PMZ is required by the approved RAP to continue in the CMI(O) phase. The Compliance Plan requires annual groundwater monitoring will continue through CMI(O), a response action effectiveness report completed every third year (most recent report was dated December 2020), and PRs indefinitely. The first PR was completed Aug 15, 2017, and the next PR began in April 2023.

## 48515.1023\_RRAD-37\_SOILS UNDERLYING BLDG 373(DYNAMO)

**Env Site ID:** RRAD-37

**Cleanup Site:** SOILS UNDERLYING BLDG 373(DYNAMO)

**Alias:** RRAD-37

**Regulatory Driver:** RCRA-C

**RIP Date:** 8/31/2008

**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
<b>RFA:</b>	3/31/1978	7/31/1978
<b>CS:</b>	12/31/1997	5/31/1998
<b>RFI/CMS:</b>	11/30/1998	9/30/2007
<b>DES:</b>	--	--
<b>IRA:</b>	--	--
<b>CMI(C):</b>	8/31/2005	9/30/2007
<b>CMI(O):</b>	8/31/2008	9/30/2054
<b>LTM:</b>	--	--

**Site Narrative:** RRAD-37 has releases of petroleum products contaminating the groundwater for which monitoring began in 2008. Building 373 is in the main industrial area and is used for dynamometer work and military vehicle power pack repair. Building 373 was originally a 39,478-square-foot building constructed in 1947 which has since had several expansions. The primary use of the facility has been for work on engines and transmission including dynamometer testing. The historical source for petroleum product contamination is gasoline, diesel, motor oils, and jet propellant-eight fuels used in Building 373 for spills and the formerly leaking fuel lines under the facility. Light non-aqueous phase liquids (LNAPL) petroleum oil and lubricants (POL); Total petroleum hydrocarbons (TPH) in range C6-C35 are the COC. Groundwater and soil are the media of concern. The Army continues to use the site and anticipates the land use will remain as continued commercial-industrial usage. In 1998, RRAD employees discovered an unknown amount of petroleum product on the surface water, in the storm water drainage flume outside Building 373. An initial inspection by the US Army Corps of Engineers (USACE) Fort Worth District of the drainage culvert revealed evidence of contamination, and a black oily substance with a strong petroleum odor was discharging from the industrial waste collection system. The oily substance was also observed leaking from cracks in the walls of the building basement and drainage flume. Investigation performed during the RFI phase determined TPH, groundwater, and soil contamination under building 373. An APAR and a RAP were finalized in September 2006; TCEQ accepted the APAR and RAP on May 20, 2009. Cleanup actions specified in the Decision Document (DD) signed in June 2009 include vacuum extraction to remove petroleum product from groundwater under Building 373, LUCs in the form of deed, recordation of a PMZ commercial/industrial land use restriction, and long-term monitoring. The plume management zone around Building 373 was surveyed as 1.7023-acres. Requirements are for annual groundwater monitoring, semi-annual vacuum extraction of a well inside Building 373, semi-annual visual inspections of ditches, and LUC effectiveness and will be documented in periodic year review reports. The response action established will prevent human exposure to site COCs by physically removing LNAPL, reducing TPH concentrations to below Tier 1, PCLs establishing a PMZ, and

implementing institutional controls that prohibit groundwater use. Vacuum extraction of petroleum product contaminated groundwater under Building 373 was conducted quarterly from 2008 until 2012 and is now conducted semiannually. Semiannual vacuum extraction will be continued until remedial actions goals are met. The first-year data summary report was completed in April 2010; and the first of a permit required every third-year response action effectiveness report was completed May 2011. Subsequent response action effectiveness reports were in January 2015 and 2018. This site's PMZ was formally incorporated into the installation compliance plan permit monitoring program through a major amendment to RRAD Permit CP-50178 that was issued Dec. 14, 2012. The potential for off-site migration is unlikely. The first PR was completed Aug. 15, 2017. The CMI(O) phase to continue groundwater monitoring continues. Annual monitoring reports, response action effectiveness reports every third year (most recent Dec 2020) and PR indefinitely. Cleanup/exit strategy will continue through the CMI(O) phase - Vacuum extraction of POL contaminated groundwater and monitoring is required for 30 years from the 2008 start per the approved RAP. Groundwater COCs will be monitored to confirm plume stability and confirm that COCs are not migrating beyond the PMZ. Permit required groundwater monitoring is planned through FY38 and is tracked.

## 48515.1028\_RRAD-43\_SOILS NEAR TRANSFER PUMPS, BLDG

**Env Site ID:** RRAD-43

**Cleanup Site:** SOILS NEAR TRANSFER PUMPS, BLDG

**Alias:** RRAD-43

**Regulatory Driver:** RCRA-C

**RIP Date:** 8/31/2008

**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
<b>RFA:</b>	12/31/1988	12/31/1988
<b>CS:</b>	--	--
<b>RFI/CMS:</b>	12/31/1990	9/30/2007
<b>DES:</b>	8/31/2005	9/30/2007
<b>IRA:</b>	--	--
<b>CMI(C):</b>	8/31/2005	9/30/2007
<b>CMI(O):</b>	8/31/2008	9/30/2054
<b>LTM:</b>	--	--

**Site Narrative:** RRAD-43 is a former fuel station constructed in 1976 which is located across Texas Avenue from Building 473. The site has three 10,000-gallon aboveground storage tanks (ASTs) and one 20,000-gallon AST inside berm #454. A concrete liner was retrofitted to the berm's gravel floor prior to 2007. The ASTs were used to store POLs and used antifreeze, and one AST was used to store solvents. The soil was contaminated with hydrocarbons solvents and antifreeze spills from past activities at the transfer pump site. Installation Restoration Program (IRP) eligibility is due to historic release of solvents from either product lines pumping/storage operations or from one of the four storage tanks. The tank formerly used for solvent storage apparently was a source for spills or leaks to soil and groundwater that occurred before the gravel floor berm was retrofitted with a concrete floor. Polycyclic aromatic hydrocarbons (PAHs) and VOCs are COCs. Groundwater has been impacted by solvents. Soil has been impacted with solvents and PAHs. An APAR was submitted to the TCEQ in 2004 and 2005. State comments on the APAR were received in January of 2006. A revised APAR and RAP were submitted to the State. A soil removal action of the site's abandoned pump island and investigation of underground piping were carried out in late 2007 and 2008. A RA was completed on soils contaminated with vinyl chloride 1,1-dichloroethene and 1,1,1-trichloroethane; which completed removal of the pump island. The removal included sampling subsurface pipelines and removal of the pump island and contaminated soils not under storage tank-related berm structures. A revised APAR and RAP were submitted to TCEQ. Additional TCEQ comments were received, and new wells were installed in order to address comments. The APAR and RAP were approved by TCEQ in November 2008. The Response Action Completion Report (RACR) for remedial activities was approved by TCEQ in February 2009. A PMZ and land-use restrictions to commercial/industrial were established through a Nov. 2, 2009, deed notice. A RCRA permit amendment formally incorporating this site's PMZ into the installation compliance plan permit monitoring program was issued Dec. 14, 2012. The RRAD permit requires annual monitoring and reporting. The TCEQ-approved RAP requires 30 years of groundwater monitoring. Since there is a LUC restricting land use to commercial/industrial use and a PMZ, there is a requirement for a PR for this site

after the CMI(O) period ends. Cleanup/exit strategy - CMI(O) continues with groundwater monitoring required by the RAP through 2038, and annual monitoring reports (Response Action Effectiveness Reports) due every third year (most recent December 2020). PR and LUCs will continue indefinitely since the Army still uses the storage tanks and has no plans to change land use.



## 48515.1038\_RRAD-55\_CHROMATE EQUALIZATION LAGOON

**Env Site ID:** RRAD-55

**Cleanup Site:** CHROMATE EQUALIZATION LAGOON

**Alias:** RRAD-55

**Regulatory Driver:** RCRA-C

**RIP Date:** 12/31/1989

**RC Date:** 12/31/1989

**RC Reason:** Study Completed, No Cleanup Required

**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
<b>RFA:</b>	3/31/1978	7/31/1978
<b>CS:</b>	5/31/1981	5/31/1981
<b>RFI/CMS:</b>	--	--
<b>DES:</b>	5/31/1988	8/31/1988
<b>IRA:</b>	--	--
<b>CMI(C):</b>	12/31/1988	12/31/1989
<b>CMI(O):</b>	--	--
<b>LTM:</b>	12/31/1989	9/30/2054

**Site Narrative:** The Chromate Equalization Lagoon (CEL) area was located at the Industrial Wastewater Treatment Plant (IWTP) within the WIA and served as the raw collection point for electroplating rinse water. The lagoon was about 65-ft width by 95-ft length and operated from 1978 to 1989. The area was excavated upon closure is now part of the former lagoon and is covered with industrial wastewater storage tanks and associated concrete containment berms. The RRAD-55 property as part of the IWTP site was subject to the utility privatization initiative funded by BRAC 2005. Elevated levels of heavy metals and solvents were historically detected in the groundwater which necessitates compliance monitoring as part of permit required 30-year post-closure care. Groundwater Protection Standards (GWPS) were exceeded for the parameter lead in 2003, 2008, 2010, 2013, 2014, 2015, 2016, and 2018 at the CEL site. The GWPS standard for lead is 3 parts per billion. Sampling groundwater for solvents and metals is a permit requirement. RRAD submitted a closure certification Aug. 28, 1989. The Texas Water Commission responded Oct. 24, 1989, that RRAD had not demonstrated clean closure and that post-closure care must continue until it was shown that groundwater has not been contaminated. The post-closure period in RRAD's permit HW-50178 for this site ended in 2019; however, 112-trichloroethane cadmium, trichloroethene, and zinc exceeded the permit screening level, and the TCEQ has requested 10-years of additional monitoring. The site is part of the Compliance Monitoring program of RRAD's operation permit and changes to a compliance monitoring program, per 30 TAC §335.165(13), require a class 2 permit modification. Cleanup/Exit Strategy - The monitoring will continue as stated in RRAD permit section XI.D.7.c. until approval of the permit modification. It is unlikely that the TCEQ will approve ending post-closure monitoring prior to FY30, so monitoring is planned to continue through FY30. PR will continue because the site has a LUC restricting residential usage. The LUC will remain in place indefinitely.

## 48515.1039\_RRAD-56\_BUILDING 315 TRANSFER STATION

**Env Site ID:** RRAD-56

**Cleanup Site:** BUILDING 315 TRANSFER STATION

**Alias:** RRAD-56

**Regulatory Driver:** RCRA-C

**RIP Date:** 9/30/2007

**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
<b>RFA:</b>	6/30/1986	1/31/1987
<b>CS:</b>	6/30/1986	1/31/1987
<b>RFI/CMS:</b>	12/31/1997	9/30/2007
<b>DES:</b>	--	--
<b>IRA:</b>	6/30/1993	6/15/2006
<b>CMI(C):</b>	8/31/2005	9/30/2007
<b>CMI(O):</b>	4/30/2007	9/30/2054
<b>LTM:</b>	--	--

**Site Narrative:** This former fuel transfer station is located at the north end of Building 315 within the WIA. The site was used to transfer diesel fuel to and from an above ground storage tank. From June - August 1993, an underground storage tank (UST) that was part of the transfer station was removed. This was done as part of a contract that removed all remaining formerly active USTs a RRAD. In May 2006, an abandoned heating fuel (No. 2) 420,000-gallon capacity storage tank No. 319 was cleaned, demolished, and removed. The site is currently used for military vehicle storage and has administrative offices. The COCs for this site are VOCs, and the media of concern is soil and groundwater. The source of the contamination is thought to be unrecorded solvent spills or releases into a former drainage ditch located on the western portion of the site. The source of the contamination in the ditches was probably from solvent vats elsewhere in the WIA. TCEQ approved on Nov. 3, 2008, the APAR dated Dec. 15, 2007, and the RAP dated December 2006 for the WIA and Panther Creek. Two permeable reactive barrier walls were entrenched elsewhere in the WIA in April 2007, to protect Panther Creek from solvents in groundwater from this and other sites. The RAP for the WIA sites states groundwater monitoring began in April 2007 and ends in July 2037. TCEQ approved on Nov. 3, 2008, RRAD's proposed Monitoring Well Locations for the Bio-mulch Wall dated Mar. 25, 2008. On Nov. 2, 2009, a deed notice was filed for the entire WIA with restrictions from groundwater use restriction from residential use and details on contaminants of concern within an established PMZ. The solvent plume is within the 73.2392-acre PMZ for the WIA. TCEQ approved the deed notice on Dec. 9, 2009. The Compliance Plan requires continued annual groundwater monitoring response action effectiveness reports every third year (most recent report was dated December 2020) and PRs. Cleanup/exit strategy – CMI(O) will continue indefinitely consisting of groundwater monitoring reporting and PRs.

## 48515.1043\_RRAD-60\_BLDG 433, FORMER RUBBER PRODUCTS

**Env Site ID:** RRAD-60

**Cleanup Site:** BLDG 433, FORMER RUBBER PRODUCTS

**Alias:** RRAD-60

**Regulatory Driver:** RCRA-C

**RIP Date:** 10/15/2010

**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
<b>RFA:</b>	8/31/1994	9/30/1994
<b>CS:</b>	10/31/1994	4/30/1995
<b>RFI/CMS:</b>	10/31/1995	9/30/2007
<b>DES:</b>	8/31/2005	9/30/2007
<b>IRA:</b>	--	--
<b>CMI(C):</b>	5/15/2010	10/15/2010
<b>CMI(O):</b>	8/31/2007	9/30/2054
<b>LTM:</b>	--	--

**Site Narrative:** Building 433 is located at the northeast portion of the maintenance area, east of Building 443, south of Building 431, and west of the new Maneuver Systems Sustainment Center facilities. The plume management zone that partially surrounds this building is 12.962-acres. Building 433 was used for rubber stripping re-building of road wheels for tracked vehicles TCE and 111-TCA vapor degreasing, adhesive application, booths paint operations, sand blasting, and injection molding operations for light tracked armored vehicles. Rubber operations ceased in the early 1980s. The building has been partially demolished and partially renovated and is currently used for administrative and storage operations. There were unrecorded releases of solvents from vats in the north end of the building. COCs are VOCs and lead. Groundwater and soil are the media of concern. Samples collected from the soil and groundwater indicated contamination above PCLs. TCA and TCE degradation products have been detected in groundwater and soil. The groundwater plume appears to extend northwest from Building 433 up to Building 441. Groundwater sampling began April 26, 2007. TCEQ concurred that this site had Class III groundwater and gave the APAR and RAP final approval on Jan. 27, 2010. Solvent contamination of groundwater and remaining contaminated soil exceeding Texas residential protective concentration limits, caused the establishment of a 12.962-acre area surrounding Building 433 with a LUC of a PMZ with associated deed notice recordation approved Nov. 11, 2010. TCEQ requires annual groundwater reporting once every third year, a response action effectiveness report, and PRs. A removal action of lead-contaminate soil not under roads/driveways/buildings to establish commercial/industrial protective standards was conducted in May 2010 at the north end of Building 433. TCEQ approved the related RACR in October 2010. TCEQ approved a RCRA permit renewal application for a major amendment on Dec. 14, 2012. The amendment formally incorporated this site's PMZ into the installation compliance plan groundwater monitoring program. Building 433 is listed in the RRAD Compliance Plan as SWMU No. 9. Cleanup/exit strategy - The post-response action care period established in the approved RAP is for a period of 30-years. Annual groundwater reporting once every third year a response action effectiveness report (December 2020) and PRs are required. Cleanup continues under the CMI(O) phase through

groundwater monitoring of 32 monitor wells associated with the PMZ. This will continue through 2037. The PRs will be required in accordance with Army guidance. LUCs will be required indefinitely because the site was remediated to commercial/industrial standards.

## 48515.1045\_RRAD-62\_POPPING FURNACE BLDG# 722

**Env Site ID:** RRAD-62

**Cleanup Site:** POPPING FURNACE BLDG# 722

**Alias:** RRAD-62

**Regulatory Driver:** RCRA-C

**RIP Date:** 7/31/2005

**RC Date:** 7/31/2005

**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
<b>RFA:</b>	3/31/1978	7/31/1978
<b>CS:</b>	5/31/1981	5/31/1981
<b>RFI/CMS:</b>	12/31/1997	4/30/2003
<b>DES:</b>	5/31/2003	6/30/2004
<b>IRA:</b>	--	--
<b>CMI(C):</b>	7/31/2004	7/31/2005
<b>CMI(O):</b>	--	--
<b>LTM:</b>	7/31/2005	9/30/2054

**Site Narrative:** Building 722 was a building that formerly contained two small ammunition item incinerators (popping furnaces) formerly located on the eastern side of Building 722 and associated equipment inside and outside the main building for performing ammunition demilitarization. Operation of the former ammunition furnaces (the initial source for metals contamination) was discontinued in 1977 or 1978, and the furnaces were removed in 1983. From 2000 – 2010, the area was formerly used for vehicle storage or training for the National Guard or Army Reserve. After soil excavations were completed in 2005, the tenant activity Morale Welfare and Recreation built a recycling facility which is still currently in operation. An APAR dated September 2003 identified releases of metals and explosives to site soils. A RAP dated February 2004 addressed the historical release of uncontrolled exhaust emissions from the former ammunition furnaces, and former operations conducted in Building 723 resulting in spilled burned bullets around the incinerator pad. During preliminary preparation of the APAR, it was determined that the PCLs calculated for critical contaminants of concern would rely on the Ecological Risk Assessment completed for the site. The Ecological PCLs were lower, and therefore, more protective than the default human health PCLs, so they were established as the PCLs for this site. A response action for contaminated soil was conducted in 2004 – 2005, as outlined in a RACR dated July 6, 2005. The response action left in place some soil with metals and explosives contamination exceeding residential protective concentration standards. The RACR was approved Oct. 11, 2005, and requires LUCs restricting the site 8.2-acre site to commercial/industrial use. The deed notice for the LUCs was approved by the State on Oct. 6, 2006, so a deed notice was filed with the county and RRAD Master Planning. The installation Commander signed the deed notice on Aug. 22, 2006, and TCEQ acknowledged and approved the deed notice Oct. 6, 2006. Cleanup/exit strategy - The area encompassing the site is identified as industrial use on the installation master plan, and there is no known future plan to use this property. The PRs will continue because the site has a LUC restricting residential usage. The LUC will remain in place indefinitely.

**48515.1046\_RRAD-63\_POPPING FURNACE BLDG #1027**

**Env Site ID:** RRAD-63

**Cleanup Site:** POPPING FURNACE BLDG #1027

**Alias:** RRAD-63

**Regulatory Driver:** RCRA-C

**RIP Date:** 10/15/2008

**RC Date:** 10/15/2008

**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
<b>RFA:</b>	3/31/1978	7/31/1978
<b>CS:</b>	5/31/1981	5/31/1981
<b>RFI/CMS:</b>	6/30/1990	9/30/2004
<b>DES:</b>	10/31/2004	9/30/2007
<b>IRA:</b>	--	--
<b>CMI(C):</b>	8/15/2005	10/15/2008
<b>CMI(O):</b>	--	--
<b>LTM:</b>	10/15/2008	9/30/2054

**Site Narrative:** Buildings 1027 and 1025 were located beside each other just north of the open burning/open detonation grounds and contained incinerators. The incinerators were used to thermally treat obsolete or off-specification munitions. Building 1025 ceased operation in the mid-1980s and was removed in the mid-1990s during an interim remedial action (IRA). Adjacent Building 1027 was in operation from 1956-1976 with some failed trial burns after that period. Building 1027 formerly housed an ammunition item incinerator (popping furnace) and associated equipment inside and outside the main building for ammunition demilitarization. Building 1027 was partially dismantled in the late 1990s (two walls, the foundation, and a shed remain). Currently the site is used for storing military vehicles. During incineration burned ammunition items spilled onto the soil when collection hoppers were over filled or moved melted lead and antimony overflowed collection containers. An April 17, 1995, Agreed Order was negotiated as a result of a state Notice of Violation in order to do remediation of munitions debris on site. An interim removal action was completed in FY95 and FY96 at Building 1027, which addressed the bulk of the source contamination and allowed addition of emissions control equipment. An interim closure report was submitted to the state on Apr. 22, 1997. A final soil and sediment final remediation action was completed in August 2007. A RACR was submitted to the TCEQ in February 2008. As soil was not removed to residential protective standards, the site has LUCs, a deed notice, and the first PR was completed Aug. 15, 2017. Cleanup/exit strategy – PRs and inspection of the LUC restricting the site from residential usage will continue indefinitely.

## 48515.1054\_RRAD-71\_BLDG 350, FORMER NI-CAD BATTERY

**Env Site ID:** RRAD-71

**Cleanup Site:** BLDG 350, FORMER NI-CAD BATTERY

**Alias:** RRAD-71

**Regulatory Driver:** RCRA-C

**RIP Date:** 9/30/2007

**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
<b>RFA:</b>	10/31/1996	1/31/1997
<b>CS:</b>	2/28/1998	6/30/1998
<b>RFI/CMS:</b>	11/30/1998	9/30/2007
<b>DES:</b>	--	--
<b>IRA:</b>	5/31/2003	9/30/2004
<b>CMI(C):</b>	8/31/2005	9/30/2007
<b>CMI(O):</b>	4/15/2007	9/30/2054
<b>LTM:</b>	--	--

**Site Narrative:** This site is one of the seven sites (3 IRP 4 BRAC) in the WIA PMZ. The site is currently used as an administrative office / breakroom along with parking for tow motors forklifts and wreckers. Building 350 was originally a 960-square foot building used for the maintenance of nickel-cadmium batteries. A floor drain that led to a concrete pit outside the building is suspected of having leaked from possible vats that might have contained cleaning solvents. There is a storm water drainage ditch beside the site. This site initially was identified as a BRAC site, but when the BRAC 1995 excess footprint changed, then site was IRP in 1997. The floor drain that led to a concrete pit outside the building is suspected of having leaked from possible vats that might have contained cleaning solvents. Historical spills of VOCs into the drainage ditch east of Building 350 are a probable source of most of the contamination at this site. The deep storm water ditch adjacent to the site might have also been used for pre-RCRA dumping of spent solvents from the former Building 348 chemical cleaning site (a BRAC 1995 site). VOCs are the contaminant of concern. Media of concern are groundwater and soil. High levels of solvents (690 parts per million) were detected in groundwater. From Nov. 18, 2003, to April 8, 2004, the US Army performed a dual phase extraction pilot study of solvent extraction from groundwater at Building 350 and concluded that it was not economically practical to address dense non-aqueous phase liquids (DNAPL) recovery. TCEQ disagreed and requested completion of a non-aqueous phase liquids (NAPL) assessment at the WIA, and implementation of an effective NAPL recovery system to satisfy NAPL response action triggers, for the purpose of protecting Panther Creek from additional exposure to dissolved and/or NAPL COCs. A PMZ monitored natural attenuation and permeable reactive barrier (PRB) bio-walls to protect Panther Creek were the actual response actions implemented. TCEQ approved on Nov. 3, 2008, the APAR dated Dec. 15, 2007, and the RAP dated December 2006 for the WIA and Panther Creek. Two PRB walls were entrenched elsewhere in the WIA in April 2007 to protect Panther Creek from solvents in groundwater from this site and others. TCEQ approved on Nov. 3, 2008, R'AD's Proposed Monitoring Well Locations for the Bio-mulch Wall dated March 25, 2008. On Nov. 2, 2009, a deed notice was filed for the entire WIA, with restriction from groundwater use, restriction of using the land for

residential use, and details on contaminants of concern within an established PMZ. TCEQ approved the deed notice on Dec. 9, 2009. Also required is annual groundwater reporting once every third year, a response action effectiveness report (December 2020) and PRs. There is no potential for off-site migration potential as modeled during investigations. The site is restricted to commercial/industrial land use. The Army plans to continue using the site for depot level maintenance of military vehicles and military support equipment. Cleanup/exit strategy - CMI(O) phase will continue, comprised of groundwater monitoring, reporting LUCs, and PRs. In FY37, the 30-years of monitoring required by TCEQ will be completed. Since the site was not cleaned to unlimited use (UU)/unrestricted exposure (UE), LUCs will remain indefinitely.



**48515.1056\_RRAD-73\_BLDG 414, GEN STORAGE BLDG, DIRT**

**Env Site ID:** RRAD-73

**Cleanup Site:** BLDG 414, GEN STORAGE BLDG, DIRT

**Alias:** RRAD-73

**Regulatory Driver:** RCRA-C

**RIP Date:** 8/28/2003

**RC Date:** 8/28/2003

**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
<b>RFA:</b>	10/31/1996	1/31/1997
<b>CS:</b>	2/28/1998	3/31/1999
<b>RFI/CMS:</b>	8/31/1999	9/30/1999
<b>DES:</b>	--	--
<b>IRA:</b>	--	--
<b>CMI(C):</b>	7/1/2003	8/28/2003
<b>CMI(O):</b>	--	--
<b>LTM:</b>	2/15/2013	9/30/2054

**Site Narrative:** Building 414 formerly was a multi-purpose dirt floored general warehouse building that was investigated as it was originally planned that the building would be transferred as part of BRAC 1995. The transfer never occurred. A RCRA Facility Investigation for Building 414 was completed in May 2000. Benzo(a)pyrene (BaP) in soil inside the dirt floored warehouse was detected at a concentration of 1.74-milligram (mg)/kilogram (kg), which exceeded the Texas soil-to-air industrial standard of 0.34-mg/kg. PAHs were the contaminant of concern, and soil was the media of concern. Due to soil contamination, a deed notice restricting the site to only commercial-industrial usage was filed July 8, 2003, and approved by the state Aug. 28, 2003. The shallow (less than 1.5-ft depth) soil contamination that caused deed notice of the site was near the center of the south half of the building. The warehouse was demolished in 2008-2009 for construction of a new facility that covers part of the former Building 414 site. The former contaminated site is now under a vehicle maintenance facility building, so Army commercial/industrial usage will continue. Cleanup/exit strategy - LUCs will continue indefinitely, and this site will be included in the PRs. The first PR was completed on Aug. 15, 2017.

## 48515.1091\_RRAD-99\_DRMO SCRAP YARD

**Env Site ID:** RRAD-99

**Cleanup Site:** DRMO SCRAP YARD

**Alias:** #

**Regulatory Driver:** RCRA-C

**RIP Date:** 7/15/2012

**RC Date:** 7/15/2012

**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:	1/31/2003	3/31/2008
CS:	--	--
RFI/CMS:	10/31/2008	3/31/2011
DES:	--	--
IRA:	--	--
CMI(C):	12/15/2011	7/15/2012
CMI(O):	--	--
LTM:	7/15/2012	9/30/2054

**Site Narrative:** This site is just southeast of the current RRAD Main Gate. This site was a largely open dirt field area of about 6-acres. The site was used for several decades to store junk metal material prior to being sold for metal recycling. It was adjacent to another area of about 6-acres, with dirt floor buildings where scrap material was formerly stored. The total acreage of both areas is about 12. The area served as a storage/recycling facility until approximately 2010, when the recycling mission was moved elsewhere at RRAD. The 12-acre site is now used as a vehicle and parts storage, a personnel vehicle parking lot, and as industrial depot level maintenance. Scrap metal material was dumped on the soil and sorted through for recycling which contaminated the soil. COC is metals, and the environmental media of concern is soil. An APAR was completed in October 2010, and the RAP were granted TCEQ regulator concurrence on Feb. 8, 2011. The approved RAP actions were annual inspections/maintenance of a parking lot cap that prevents exposure to soil metal contamination. In FY12 monitoring wells were plugged. Protective cap inspections began in FY12. The soil under the cap (i.e. parking lot No. 57B) does not meet Texas residential standards for metal lead. The soil at the portion of the former DRMO Scrap Yard not under the cap only meets commercial/industrial and not residential protective levels. Due to metal contamination, the site was subject to a deed notice which the state approved on April 28, 2011. Disposal of stockpiled soil from grading/redevelopment of part of the eastern half of the site into a new gravel storage lot occurred in FY12. The report on stabilization and landfill disposal of the stockpiled soil was approved by TCEQ in FY12. The first PR was completed on Aug. 15, 2017. Cleanup/exit strategy - The Army continues to use the site for depot level maintenance work, and the LUCs remain at commercial/industrial. Annual Post-Response Action Care Reports, protective cap, annual inspections, LUCs, and PRs will continue indefinitely.

## 48515.1103\_RRAD-PFAS\_PFAS

**Env Site ID:** RRAD-PFAS

**Cleanup Site:** PFAS

**Alias:** #

**Regulatory Driver:** CERCLA

**RIP Date:** 7/2/2028

**RC Date:** 7/2/2028

**RC Reason:** Not assigned

**SC Date:** 7/3/2028

**Program:** ENV Restoration, Army

**Subprogram:** IR

**NPL Status:** No

**Hazardous Ranking Score:** 0

**RRSE:**

**MRSPP:** N/A

Phase	Start	End
PA:	9/30/2017	9/29/2018
SI:	9/30/2018	7/1/2023
RI/FS:	7/2/2023	7/2/2028
RD:	--	--
IRA:	--	--
RA(C):	--	--
RA(O):	--	--
LTM:	--	--

**Site Narrative:** Per direction from Deputy Chief of Staff G-9, this site was created to account for all per- and polyfluoroalkyl substances (PFAS) costs at the installation. A final PA/SI report for PFAS was published in March 2023. The RRAD PA identified 17 Areas of Potential Interest (AOPI) for investigation during the SI phase. Sampling results from the 17 AOPIs were compared to risk-based screening levels promulgated by the Office of the Secretary of Defense (OSD) for six PFAS compounds. Four of the AOPIs will move forward for further study in a CERCLA remedial investigation, currently planned for FY25.

## 48515.1077\_RRAD-001-R-01\_VULCAN RANGE

**Env Site ID:** RRAD-001-R-01

**Cleanup Site:** VULCAN RANGE

**Alias:** #

**Regulatory Driver:** CERCLA

**RIP Date:** 6/15/2015

**RC Date:** 6/15/2015

**RC Reason:** All Required Cleanup(s) Completed

**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:	2/11/2002	5/1/2003
SI:	9/30/2003	8/31/2006
RI/FS:	3/31/2008	12/31/2011
RD:	--	--
IRA:	--	--
RA(C):	12/31/2011	6/15/2015
RA(O):	--	--
LTM:	6/15/2015	9/30/2054

**Site Narrative:** SITE LOCATION AND DESCRIPTION- Site of a former pistol qualification range followed by various weapons testing. The name Vulcan Range refers to one of the last rebuilt weapon systems tested at the site which was the 20-millimeter (mm) Vulcan cannon. The Vulcan Test Range was located in the southeast portion of the installation and was used from 1969 until the 1990s. The Vulcan Test Range was used for annual qualifying with small caliber handguns and surveillance testing of pistol ammunition; then rebuilt weapons testing of 7.62-mm, 20-mm, 40-mm, rounds 155-mm systems, and possibly 105-mm cannons. This range consisted of a range fan from the Vulcan Test Range. Maps identifying the firing point and range fans for these munitions were located but target locations and impact areas were not shown in these maps, and therefore are unknown. The Vulcan Test Range is classified as a closed range. Industrial and production facilities are currently located in this former range area. Also, a portion of the Vulcan Test Range lies in an area that is classified as the currently operational 25mm cannon weapons test range that currently utilizes a covered shot trap. Metals and munitions and explosives of concern (MEC) are the COC, and soil is the media of concern. Approximately 4,600-cubic yards of soil exceeding the Tier 2 ecological PCL for lead were consolidated and covered by an ecological barrier consisting of approximately 0.37-acre of geotextile fabric, to prevent erosion and 1,300-tons of 2.5-inch rock between 6 and 21-inches thick. Thirty warning signs were installed around the perimeter of the Vulcan Range Munitions Response Site (MRS), along roads entering the MRS, and along the southern installation boundary patrol road to warn site users of potential MEC hazards and to inform them of the appropriate response if MEC or suspect MEC items are encountered. MEDIA(S) OF CONCERN - Soil. FUTURE LAND USE - Forestry, recreational, industrial, and production facilities are currently located in this former range area. A 25-mm cannon weapons test range is within the former Vulcan Range. The US Army will continue ownership of this property. SIGNIFICANT INVESTIGATIONS/CLEANUP ACTION COMPLETED- A Site Inspection (SI) was finalized in 2006 and based on the SI results, and remedial investigation (RI)/feasibility study (FS) was conducted. TCEQ approved the RI/FS Feb. 24, 2011. The FS detailed recommendations for remedial actions including institutional controls. The Proposed Plan (PP) was made

available for public comments in February 2011, but no public comments were received. The DD for the site was signed on Jan. 17, 2012. The fieldwork for the remedial actions was completed May through August 2013. 854 cubic yards of soil exceeding human health, commercial/industrial Tier I PCLs for lead were removed, stabilized, and disposed of at a landfill. 4,600-cubic yards of soil exceeding Tier II ecological PCLs for lead were consolidated and covered by a 0.37-acre ecological barrier within the site. TCEQ and US Environmental Protection Agency (USEPA) approvals of the remedial action report were received. A deed notice with LUCs was recorded in county records on Feb. 27, 2015. The deed notice / LUC was established for the ecological gravel protective cap barrier installed on an area of the MRS, and for other areas with soil remediated in May through August 2013 to commercial/ industrial, but not to Texas residential protective standards. There will be an indefinite duration of the LUC restriction from residential usage. Cleanup/exit strategy - Annual signage, cap inspections, LUCs, and five-year reviews will continue indefinitely.

**48515.1082\_RRAD-006-R-01\_D-AREA Y-SITE D060201**

**Env Site ID:** RRAD-006-R-01

**Cleanup Site:** D-AREA Y-SITE D060201

**Alias:** RRAD-59

**Regulatory Driver:** CERCLA

**RIP Date:** 6/15/2015

**RC Date:** 6/15/2015

**RC Reason:** All Required Cleanup(s) Completed

**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:	2/28/2002	5/31/2003
SI:	9/30/2003	8/31/2006
RI/FS:	3/31/2008	2/15/2011
RD:	--	--
IRA:	--	--
RA(C):	12/31/2011	6/15/2015
RA(O):	--	--
LTM:	6/15/2015	9/30/2054

**Site Narrative:** This site was used for ammunition storage from 1942 to 2011 and was located in the central portion of RRAD. An explosion occurred here on June 8, 1954, at 0236 hours, apparently as a result of a lightning strike. The Y-Site area was used for storage of 306 cluster bombs at the time of the explosion. The property was retained by RRAD after the BRAC 2005 realignment action and has been used for military vehicles and parts storage. DESCRIPTION OF RELEASE- the site is 411.8-acres. This is based upon a drawing showing maximum distribution of debris found after the bomb site explosion. CONTAMINANT(S) OF CONCERN AND LEVEL OF CONTAMINATION- MEC. The completion in 2012 and 2013 of limited MEC removal at the Y-Site Explosion Site Assessment Area resulted in a significant reduction in MEC hazards; however, some munitions may be missed and munitions under existing vegetation or structures such as roads buildings sidewalks and paved areas were not likely to be cleared. The MEC is from former storage of over 300 M26 500-lb. cluster bombs until an accidental detonation occurred, destroying, or scattering bombs and scattering debris around the site. MEDIA(S) OF CONCERN- Soil FUTURE LAND USE- Military vehicles and parts storage. In 2006, a SI was finalized. A RI/FS report was completed in November 2010. The FS recommended (alternative no.4a) LUCs, (signage and public education) partial MEC removal in the explosion site, (surface MEC removal for 73-acres and removal to depth of detection for 10-acres) construction support for 73-acres of the explosion site, and a buffer with on-call construction support in 10-acres of the explosion site, LUCs, and five-year reviews. The RI/FS report was approved by TCEQ on Feb. 24, 2011. No public comments were received on the January 2011 PP through the public comment period. Surface (70-acres) and subsurface (6-acres) removal of MEC occurred, along with the installation of 17 warning signs between November 2012 and February 2013. 22 MEC items were found and disposed of by demolitions, and 3,900-pounds of metal were recovered and processed. TCEQ and USEPA approvals of the response action reports were received. A deed notice with LUCs was recorded in county records on Feb. 27, 2015. On June 16, 2015, TCEQ approved the filing of the deed notice. Long term maintenance will consist of inspection of the warning signs annually for

the first five years, then every five years, and LUCs. Cleanup/exit strategy - LUCs inspections and five-year remedy reviews will continue indefinitely. The first five-year review was signed Feb. 15, 2017.

**48515.1095\_RRAD-011-R-03\_UNPERMITTED DEMOLITION ARE**

**Env Site ID:** RRAD-011-R-03

**Cleanup Site:** UNPERMITTED DEMOLITION ARE

**Alias: #**

**Regulatory Driver:** CERCLA

**RIP Date:** 10/01/2030

**RC Date:** 10/01/2030

**RC Reason:** Not assigned

**SC Date:** 10/02/2030

**Program:** ENV Restoration, Army

**Subprogram:** MR

**NPL Status:** No

**Hazardous Ranking Score:** 0

**RRSE:** N/A

**MRSPP:** 3

Phase	Start	End
PA:	4/30/2003	5/31/2003
SI:	9/15/2011	10/15/2012
RI/FS:	9/30/2010	10/01/2030
RD:	--	--
IRA:	--	--
RA(C):	--	--
RA(O):	--	--
LTM:	--	--

**Site Narrative:** This is an inactive unpermitted area surrounding the formally permitted Open Burning (OB) and Open Detonation (OD) areas, site CC-002-RR, and includes ammunition trench or pit burning areas. A white phosphorus burning area, debris storage areas, and a circular area affected by permitted OB/OD fragmentation and kick-out. The areas are a mixture of open pine-forested or grassy/brushy fields. The OB/OD demilitarization mission was identified as excess to Army requirements, and the permitted portion ceased operations in March 2011 due to a BRAC 2005 realignment. The permitted acreage of the site CC-002-RR OB/OD area is 30.54-acres, but the area observed affected within explosive fragmentation distance, along with adjacent areas suspected of having similar demilitarization operations, has been estimated at 590.7-acres per the Final SI Report Unpermitted Demolition Areas and Associated MRSs dated Oct. 24, 2012. The unpermitted site does not include storm water drainage channels and equipment trails associated with a wash rack; both of which have been split into separate sites. Before the SI, this site was estimated as 251.46-acres. The historical records review estimated the area as 609-acres. The SI report estimates the size from approximately 590.7-acres to 600.8-acres. Prior to the 1980s, unpermitted demolition areas were used for ammunition disposal by burning or detonation. After the 1980s, the unpermitted demolition areas were probably still affected from fragmentation erosion and traffic from the permitted OB/OD Areas. The unpermitted demolition areas surround the permitted OB/OD Areas (site CC-002-RR). A Final SI Report unpermitted demolition area and associated MRSs was completed Oct. 24, 2012. The SI determined based upon limited sampling that there were possibly concentrations of dinitrotoluene and metals of unacceptable risk, and that an RI was warranted. The SI report dated October 2012 was submitted to TCEQ for review and received approval. The RI determined that hazards to human health from potential exposure to MEC in soil on the surface and in the subsurface exist throughout the sites, and particularly in the high-density area. In addition, there are risks to human health from exposure to munitions constituents (MC) in soil in the northern part under an unrestricted land use scenario, and risks to ecological receptors from exposure to MC in soil in the northern part of the RRAD-011-R-03 site. CONTAMINANT(S) OF CONCERN AND LEVEL OF



CONTAMINATION- Explosives MEC MC. There is potential for unacceptable risks to human health resulting from exposure to antimony, copper, and lead (example 782-mg/kg) in soil in unrestricted land use scenarios. Exposure to perchlorate in surface water, in creeks, also poses an unacceptable risk to human health. Unacceptable risks to ecological receptors are possible from exposure to antimony, copper, and lead in 17-acres of soil; barium, cadmium, copper, lead (example 320-mg/kg), and mercury in sediment; and cadmium, copper (example 80-micrograms/liter) and lead in surface water. In addition, MEC were identified as safety concerns, for example, geophysically characterized by a higher anomaly density area of 256-acres and lower anomaly density area of 430-acres. MEDIA(S) OF CONCERN- Soil, sediment, and surface water. Retained by the US Army, but due to a BRAC 2005 realignment, no ammunition demilitarization will occur. Part of the area not contaminated with MEC is used for military vehicle storage. SI report dated 2012 was submitted to TCEQ for review and was approved. The unpermitted OB/OD area sites (RRAD-011-R-01/02/03) were investigated with field work completed in January 2014, and was documented in a Final Remedial Investigation (RI) Report dated Nov. 30, 2014. Cleanup/exit strategy- Due to Army disagreements on strategy for the RA, a compensatory ecological set-aside was not approved by Army counsel. This site is still awaiting the finalization of a FS awarded in 2014, due to a disagreement between Army lawyers and TCEQ. The Army and the TCEQ have agreed to move forward with a supplemental FS to update actionable data and support the Remedial Action selection.

## 48515.1101\_CC-005-RR\_SLUDGE DRYING BEDS

**Env Site ID:** CC-005-RR

**Cleanup Site:** SLUDGE DRYING BEDS

**Alias:** #

**Regulatory Driver:** RCRA-C

**RIP Date:** 10/15/2005

**RC Date:** 9/30/2064

**RC Reason:** Not assigned

**SC Date:** 9/30/2064

**Program:** Compliance-related Cleanup

**Subprogram:** CC

**NPL Status:** No

**Hazardous Ranking Score:** 0

**RRSE:** N/A

**MRSPP:**

Phase	Start	End
<b>RFA:</b>	4/30/1992	4/30/1992
<b>CS:</b>	--	--
<b>RFI/CMS:</b>	--	--
<b>DES:</b>	--	--
<b>IRA:</b>	--	--
<b>CMI(C):</b>	5/31/2004	7/31/2004
<b>CMI(O):</b>	10/15/2005	9/30/2035
<b>LTM:</b>	10/1/2035	9/30/2064

**Site Narrative:** The Sludge Drying Beds was a 56 by 44-ft area (another reference says 60 by 76-ft) comprised of three adjacent concrete lined lagoon sections with a total capacity to store and process by draining and drying annually 21,000-gallons of wastewater treatment sludge. The Sludge Drying Beds were also used for drying metal containing industrial wastewater sludge from 1978 to April 28, 2005. The former waste processing site is within the current privatized IWTP within the WIA. After the sludge drying beds were demolished, three new wastewater storage tanks were constructed on the area where the sludge drying beds had been located. Unrecorded leaks, overflows, or spills from the former drying beds or associated underground piping are believed to be the source of solvents (11-DCA 3.8 parts per billion; 11-DCE 200 parts per billion) and elevated metals (arsenic) in groundwater. Future land use for this site is continued industrial use. In 2005, as part of the Army mandated utility privatization, the permitted lagoons were demolished and excavated and concurrence for the soil closure was received from the TCEQ. On Feb. 12, 2008, the Sludge Drying Beds (another permit name for the unit is Waste Piles) were transferred from Compliance Monitoring to Corrective Action Monitoring, due to detection of solvents in a new monitoring well beside Panther Creek. With the new less restrictive GWPS of the Corrective Action portion of that revised Compliance Plan permit, there has not yet been a GWPS exceedance triggering the need to pursue actual corrective action. There have been exceedances of metal GWPS in past years but upon subsequent or split duplicate sampling using field filtering, the metal concentrations have been less than the GWPS. Redevelopment of the well with high turbidity did not lessen the turbidity, but continued duplicate sampling with field filtering has been successful with analytical results not exceeding any GWPS. On Dec. 14, 2012, a 10-year renewal / major amendment of the Waste Permit and incorporated Compliance Plan was issued by TCEQ, which incorporated a new 30-year Corrective Action Program monitoring duration beginning from the 2005 date of unit closure. Cleanup/exit strategy - post-closure annual groundwater monitoring and reporting through 2035 is required. Since there is a LUC restricting the site to industrial use, the LTM phase will continue indefinitely. PRs will also be required during the LTM phase.

## 48515.1102\_CC-002-RR\_OPEN BURN/OPEN DETONATION AREA

**Env Site ID:** CC-002-RR

**Cleanup Site:** OPEN BURN/OPEN DETONATION AREA

**Alias:** #

**Regulatory Driver:** RCRA-C

**RIP Date:** 12/31/2029

**RC Date:** 12/31/2029

**RC Reason:** Not assigned

**SC Date:** 1/1/2030

**Program:** Compliance-related Cleanup

**Subprogram:** CC

**NPL Status:** No

**Hazardous Ranking Score:** 0

**RRSE:** N/A

**MRSPP:**

Phase	Start	End
<b>RFA:</b>	4/15/2003	5/15/2003
<b>CS:</b>	--	--
<b>RFI/CMS:</b>	10/15/2011	12/31/2029
<b>DES:</b>	--	--
<b>IRA:</b>	4/15/2003	12/31/2029
<b>CMI(C):</b>	--	--
<b>CMI(O):</b>	--	--
<b>LTM:</b>	--	--

**Site Narrative:** The OB/OD site consists of a former RCRA-permitted OD area and two OB areas (OB Area #1 and #2). These are located in the south-central area of RRAD. The areas are largely open dirt fields that were used for several decades for demolition of obsolete, off-specification, or unneeded ammunition and ammunition components. The RRAD Permit 50178 indicates the acreage of OB Area #1 was 6.44 OB, Area #2 was 5.74 acres, and the OD Area was 18.36-acres. The OB/OD mission was identified as excess to Army requirements per BRAC 2005, and demolition operations ceased March 30, 2011. The Army has retained ownership of the land, and it is unlikely the land will be developed due to the risk of unexploded ordnance (UXO). During ammunition demilitarization operations (1940s - 2011), the discovery of potential UXO during routine detonation operations was a common occurrence. For example, after demolition ceased two BLU-91B Gator Anti-Tank Mines were found at different times. These probably washed out from and were found on the surface in proximity to the OD site. These potentially, highly sensitive hazardous munitions were subsequently detonated by military Explosive Ordnance Demolition teams on August 27 and November 7, 2012. COC at the site are metals, explosives, and MEC. Groundwater and soil are the media of concern. Metals detected in the soil include barium, copper (470 mg/kg), lead (310 mg/kg), mercury (0.63-mg/kg), and silver (9.2-mg/kg). Explosives detected in the soil include RDX (1.9 mg/kg) and nitroglycerin (5.3-mg/kg). Perchlorate up to a concentration of 37.4-ppb has been detected in groundwater. From visual evidence of large quantities of rusting metal on the ground surface, and results from the RRAD OB/OD Surface Soil Sampling Report dated October 2011, the Army and TCEQ decided that the site would need to be fully studied. A RFI was completed in September 2013 as the Draft Final RFI Report for the Permitted OB/OD Areas, and TCEQ approved the report on Dec. 10, 2013. USEPA (Region 6) approved the report Jan. 2, 2014. Results of the RFI showed that the potential for horizontal extent of MEC encompassed the extent of each formerly permitted area. Based on the confirmed presence of MEC and the general level of site accessibility, the existence of potentially complete MEC exposure pathways were confirmed at the surface and in the

subsurface. The RFI determined that risks to humans are not expected due to munitions constituents, but an explosion hazard risk does exist at the site. At this time, the best corrective measures alternative has not been discussed with all stakeholders nor finalized. The Corrective Measures Study (CMS) recommended Alternative 3, a corrective measure implementation which assumes, in part, that a valid case can be made to TCEQ that the permit-required post-closure care can be stopped through a permit modification. While the idea of a permit modification is based upon preliminary discussions with the TCEQ, it is assumed for now that groundwater monitoring and reporting will be required through 2030. Cleanup/exit strategy - The RRAD HW-50178 Plan permit requires a 30-year compliance period for groundwater monitoring which began in 2000 and is reflected as an interim action. The Army and TCEQ have agreed to move forward with a supplemental RFI and new CMS to update actionable data and determine an appropriate remedial action.

## **SITE SUMMARY**

## SITE CLOSEOUT SUMMARY

CRL ID	Site Name	Site Closeout Date
48515.1002	RRAD-07_OTC HOSPITAL	5/31/1981
48515.1003	RRAD-08_OTC RIFLE RANGE	5/31/1981
48515.1004	RRAD-09_SURVEILLANCE AREA	5/31/1981
48515.1005	RRAD-10_SURVEILLANCE AREA (1953)	5/31/1981
48515.1006	RRAD-11_SURVEILLANCE AREA (PISTOL RANGE)	5/31/1981
48515.1007	RRAD-14_BUILDING 311 (X-RAY FACILITY)	1/31/1987
48515.1008	RRAD-15_RAD STGE (BLDGS B12-3,G5-6,G-14-	7/31/1978
48515.1009	RRAD-16_RAD STG(F14-1,A14-5,C3-5,C6-1,C9	7/31/1978
48515.1010	RRAD-17_RAD FIRE BUILDING S-661 (OLD T-6	7/31/1978
48515.1011	RRAD-18_RAD FIRE BUILDING 421	7/31/1978
48515.1012	RRAD-19_RAD WASTE STORAGE	7/31/1978
48515.1014	RRAD-21_FLM MATL STG (S-257,327,329,S-40	7/31/1978
48515.1015	RRAD-22_FLM MAT STG (S-547,S-648,T-1190)	7/31/1978
48515.1016	RRAD-26_AERATION LAGOONS (4) IN AREA K	4/30/1994
48515.1017	RRAD-28_WOODYARD LANDFILL	9/30/2006
48515.1018	RRAD-30_POPPING FURNACE BLDG #1025	1/31/2001
48515.1024	RRAD-38_WASTE PILES	10/31/1993
48515.1025	RRAD-39_FINAL LAGOON, IWTP	4/30/1997
48515.1026	RRAD-40_RAW PHOSPHATE DETENTION LAGOON,I	12/31/1994
48515.1027	RRAD-41_SOILS NEAR BLDG 430	1/31/1989
48515.1030	RRAD-45_SOILS UNDER BLDG 341	9/30/2002
48515.1031	RRAD-46_BIG CREEK	6/30/1992
48515.1033	RRAD-49_TNT WASHOUT FACILITY SOILS	3/31/1993
48515.1034	RRAD-50_OB/OD AREA	3/31/1993
48515.1037	RRAD-54_SOILS AT BLDG 420	8/31/1993
48515.1040	RRAD-57_MAINTENANCE SALVAGE YARD	7/31/1999
48515.1042	RRAD-59_D-AREA Y-SITE	5/31/1981
48515.1052	RRAD-69_BLDG 319 PIPELINE	1/31/1997
48515.1053	RRAD-70_BLDG 388, DISCHARGE LINE (SINK)	9/30/1999
48515.1057	RRAD-74_BLDG 411, ANNEALING VATS UNDER F	1/31/1997
48515.1059	RRAD-76_BLDG 421, RAD EMMITTING SOURCES	9/30/1996
48515.1060	RRAD-78_BLDG 443, RADIOLOGICAL SOURCE PR	9/30/1996
48515.1062	RRAD-81_AMMUNITION SURVEILLANCE TRACER T	5/31/1997
48515.1064	RRAD-83_COMP BUILDING 413	7/31/1997
48515.1076	RRAD77_BLDG 431, RADIOLOGICAL SOURCE PRE	9/30/1996
48515.1087	PBC Red River_PBC	9/15/2013
48515.1092	CC-002-RR_Open Burning/Open Detonation A	5/31/2003
48515.1096	CC-006-RR_Fuel Station, Building 393	9/15/2013
48515.1078	RRAD-002-R-01_VULCAN RANGE - TD	9/30/2011
48515.1079	RRAD-003-R-01_POPPING FURNACE, BLDG 722	5/31/2003
48515.1080	RRAD-004-R-01_POPPING FURNACE, BLDG 1027	5/31/2003
48515.1081	RRAD-005-R-01_POPPING FURNACE, BLDG 1025	5/31/2003

CRL ID	Site Name	Site Closeout Date
48515.1083	RRAD-007-R-01_GRENADE RANGE	9/30/2011
48515.1086	RRAD-010-R-01_TRACER TEST RANGE	3/15/2014
48515.1093	RRAD-011-R-01_DEMOLITION AREA CREEKS	12/30/2016
48515.1094	RRAD-011-R-02_DEMO. AREA WASHRACK/STORAG	1/15/2017
48515.1097	CC-0001-RR_DRMO Scrap Yard	7/31/2008
48515.1099	CC-003-RR_Creeks at Open Burning/ Open D	1/31/2000
48515.1100	CC-004-RR_OBOD Wash Rack/storage area/do	4/30/2006

## COMMUNITY INVOLVEMENT

<b>Community Involvement Plan (Date Last Reviewed):</b>	11/15/2012
<b>Technical Review Committee Establishment Date:</b>	2/15/1996
<b>Restoration Advisory Board (RAB) Establishment Date:</b>	2/29/1996
<b>RAB Adjournment Date:</b>	N/A
<b>RAB Adjournment Reason:</b>	N/A
<b>Reasons for Not Establishing RAB:</b>	No sufficient, sustained community interest in a RAB has been expressed by the community
<b>RAB Date of Solicitation from Community:</b>	10/22/2023
<b>RAB Results of Solicitation:</b>	Not sufficient interest
<b>Current Technical Assistance for Public Participation (TAPP):</b>	N/A
<b>TAPP Title:</b>	N/A
<b>Potential TAPP:</b>	N/A
<b>Administrative Record Location:</b>	RRAD Environmental Division ATTN: TARR-OL, Texarkana, TX 75507-5000
<b>Information Repository Location:</b>	Texarkana College, Palmer Memorial Library, 2500 N. Robison Road, Texarkana



## FIVE-YEAR / PERIODIC REVIEW SUMMARY

Status	Review Type	Start Date	End Date	Plans Narrative	Actions Narrative	Results Narrative
Completed	PR	2/15/2016	2/15/2017	N/A	N/A	Remedies are protective of human health and the environment on a short term.
Planned	PR	4/4/2023	4/4/2024	N/A	N/A	N/A