LAKE CITY 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: LAKE CITY ARMY AMMUNITION PLANT
Installation City: INDEPENDENCE
Installation County: JACKSON
Installation State: MO
Regulatory Participation - Federal: United States Environmental Protection Agency
Regulatory Participation - State: Missouri Department of Natural Resources

ACRONYMS

Acronym	Definition
AEDB-R	Army Environmental Database - Restoration
AOI	Area of Interest
AOPI	Areas of Potential Interest
CC	Compliance-Related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
COC	Contaminant of Concern
CRL	Cleanup Restoration & Liabilities
CUG	Cleanup Goal
DCE	Dichloroethene
DD	Decision Document
ENV	Environmental
FFA	Federal Facilities Agreement
FS	Feasibility Study
GW	Groundwater
HA	Health Advisory
IMCOM	US Army Installation Management Command
IAP	Installation Action Plan
IR	Installation Restoration
IRA	Interim Remedial Action
IWOU	Installation-Wide Operable Unit
IWTP	Industrial Wastewater Treatment Plant
LCAAP	Lake City Army Ammunition Plant
LTM	Long-Term Management
LUC	Land Use Controls
LUCIP	Land Use Control Implementation Plan
MDNR	Missouri Department of Natural Resources
MNA	Monitored Natural Attenuation
MR	Munitions Response
MRSPP	Munitions Response Site Prioritization Protocol
NECOU	Northeast Corner Operable Unit
ng/L	nanograms per liter
NPL	National Priorities List
OSD	Office of the Secretary of Defense
OU	Operable Unit
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyls

Acronym	Definition
PCE	Tetrachloroethene
PFAS	Per- and Polyfluoroalkyl Substances
PFBS	Perfluorobutane Sulfonate
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PR	Periodic Review
P-QAPP	Programmatic-Quality Assurance Project Plan
QAPP	Quality Assurance Project Plan
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operations)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Cyclotrimethylenetrinitramine
RI	Remedial Investigation
RIP	Remedy-In-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RSL	Regional Screening Level
SARA	Superfund Amendments and Reauthorization Act
SC	Site Closeout
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethene
TNR	Trinitroresorcinol
UE	Unrestricted Exposure
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UU	Unlimited Use
VOC	Volatile Organic Compounds

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: 18/37

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

29405.1001_LCAAP-001_AREA 1 - BUILDING 83 WASTEWATE

Env Site ID: LCAAP-001

Cleanup Site: AREA 1 - BUILDING 83 WASTEWATE

Alias: LCAAP-001

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2054
LTM:	- -	- -

Site Narrative: Area 1 Wastewater Lagoon is located in the south central portion of the installation. The area was historically utilized for the production of the explosive compound trinitroresorcinol (TNR). Other historic processes included neutralization and disposal of wastes associated with TNR production (nitric and sulfuric acid, resorcinol, and sodium nitrate). Neutralized wastewater was discharged into five lagoons. The Resource Conservation and Recovery Act (RCRA) lagoons operated intermittently from 1941 through 1986. The lagoons were removed under an approved RCRA closure plan between 1986 and 1988. The post-closure plan for seven hazardous wastewater surface impoundments Area 1 and Area 4 included post-closure care (mowing, erosion control, burrow/nest removal, repair inspections, and groundwater monitoring) requirements for 30 years until April 2019. The United States Environmental Protection Agency (USEPA), the US Army, and the State of Missouri signed the “Federal Facilities Agreement (FFA) Lake City Army Ammunition Plant (LCAAP) Superfund Amendments and Reauthorization Act (SARA) 120 Interagency Agreement” in September 1989, deferring the environmental investigation, groundwater monitoring, and cleanup activities at the facility from the RCRA program to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) program. The deferral from the RCRA program to the CERCLA program is explicitly recognized in the facility’s Part I Permit. Groundwater monitoring, groundwater protection standards, and corrective action for releases of hazardous waste or hazardous constituents from hazardous waste management units subject to post-closure care had been deferred to the CERCLA program. Thirty years of post-closure care has occurred at the site and is currently under request with the state to complete long-term stewardship and strictly be managed under CERCLA. The primary contaminants of concern (COC) at Area 1 are arsenic, chromium, and lead. Results of historical sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Arsenic is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the Installation-Wide Operable Unit (IWOU) groundwater program. The Final IWOU Record of Decision (ROD) was completed in 2008. Per the 100 Percent Remedial Design/Remedial Action Work Plan dated 2008, following three consecutive years of no detections above groundwater cleanup

goals in a downgradient well, then sampling from that well shall be suspended. At that time sampling will be discontinued in upgradient wells associated with the same unit.

Cleanup/Exit Strategy - no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA 30 years (due to showing 30-year forecast here) of post-closure groundwater sampling will be completed. Land use controls (LUC) are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for unlimited use (UU) and unrestricted exposure (UE); therefore, five-year reviews will occur indefinitely.

29405.1002_LCAAP-002_AREA 2 - BUILDING 85 WASTEWATE

Env Site ID: LCAAP-002

Cleanup Site: AREA 2 - BUILDING 85 WASTEWATE

Alias: LCAAP-002

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	5/31/1988	10/31/1989
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2054
LTM:	- -	- -

Site Narrative: Area 2 is located in the south-central portion of the installation immediately north of Area 1. Neutralized wastewater from the production of lead-based initiating compounds (tetrazene lead styphnate) was discharged into two large lagoons and one small lagoon. The two large lagoons were removed in 1990 under an approved RCRA Closure Plan. The Post-Closure Plan for Area 2 included post closure care (mowing, erosion control, burrow/nest removal, repair inspections, and groundwater monitoring) requirements for 30 years until 2020. The USEPA, the US Army, and the State of Missouri signed the FFA Lake City AAP SARA 120 Interagency Agreement in September 1989, deferring the environmental investigation, groundwater monitoring, and cleanup activities at the facility from the RCRA program to the CERCLA program. The deferral from the RCRA program to the CERCLA program is explicitly recognized in the facility's Part I Permit. Groundwater monitoring, groundwater protection standards, and corrective action for releases of hazardous waste or hazardous constituents from hazardous waste management units subject to post-closure care had been deferred to the CERCLA program. Thirty years of post-closure care has occurred at the site and is currently under request with the state to complete long-term stewardship and strictly be managed under CERCLA. The primary COC at Area 2 is lead. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Lead is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA 30-years (due to showing 30-year forecast here) of post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when

hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1003_LCAAP-003_AREA 3 - SANDPITS

Env Site ID: LCAAP-003

Cleanup Site: AREA 3 - SANDPITS

Alias: LCAAP-003

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2009

RC Reason: All Required Cleanup(s) Completed

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	9/30/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2009
LTM:	10/31/2009	9/30/2054

Site Narrative: Area 3 Sandpits is located in the far northwest corner of the installation and is made up of 41-acres. A series of sand quarry pits and small lagoons were used from the 1950s through the mid-1970s for disposal of installation construction materials and demolition/remodeling debris industrial wastewater treatment plant (IWTP) sludge and some off-site material. The primary COC at Area 3 is the PAH benzo(a)pyrene. Benzo(a) pyrene was present in soil at Area 3 above the human health risk levels and PAHs copper and zinc may pose an unacceptable risk to terrestrial ecological receptors. The Final IWOU ROD was completed in 2008. A vegetative cover was placed over the contaminated area and groundwater sampling was required for an estimated two years to ensure that waste had not impacted groundwater (per the 100 percent remedial design (RD)/remedial action work plan (RAWP) dated 2008). Sampling discontinued in 2013 at 03MW21 (2007) 03MW22 (2008) 03MW023 (2009) 03MW018 after two consecutive sampling events were below cleanup goals.

Cleanup/Exit Strategy - site inspections (vegetative cover) and maintained with LUCs. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Area 3 specific LUCs also prohibit disturbance of the vegetative cover. This vegetative cover is inspected annually. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1004_LCAAP-004_AREA 4 - BUILDING 139 - BACKLI

Env Site ID: LCAAP-004

Cleanup Site: AREA 4 - BUILDING 139 - BACKLI

Alias: LCAAP-004

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2054
LTM:	- -	- -

Site Narrative: Area 4 Backline Pond is located in the south-central portion of the installation on the southern end of the Fuse Line Area. A series of small lagoons were used for disposal of wastewater from the neutralization of lead styphnate slurry, lead azide primer mix, and cyclotrimethylenetrinitramine (RDX). Two small lagoons also accepted chemical laboratory wastes. The wastewater lagoons were removed between 1985 and 1987 as part of a Missouri Department of Natural Resources (MDNR)-approved RCRA closure. The post-closure plan for seven hazardous wastewater surface impoundments Area 1 and Area 4 included post-closure care (mowing, erosion control, burrow/nest removal, repair inspections, and groundwater monitoring) requirements for 30 years until April 2019. The USEPA, the US Army, and the State of Missouri signed the FFA Lake City AAP SARA 120 Interagency Agreement in September 1989, deferring the environmental investigation, groundwater monitoring, and cleanup activities at the facility from the RCRA program to the CERCLA program. The deferral from the RCRA program to the CERCLA program is explicitly recognized in the facility's Part I Permit. Groundwater monitoring, groundwater protection standards, and corrective action for releases of hazardous waste or hazardous constituents from hazardous waste management units subject to post-closure care had been deferred to the CERCLA program. Thirty years of post-closure care has occurred at the site and is currently under request with the state to complete long-term stewardship and strictly be managed under CERCLA. The primary COCs at Area 1 are PAHs, vinyl chloride, arsenic, chromium, antimony, RDX, chloroethane, and benzene. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Arsenic is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the 100 Percent Remedial Design/Remedial Action Work Plan dated 2008 following three consecutive years of no detections above groundwater cleanup goals in a downgradient well, then sampling from that well shall be suspended. At that time sampling will be discontinued in upgradient wells associated with the same unit.

Cleanup/Exit Strategy - no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA 30-years (due to showing 30-year forecast here) of post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1005_LCAAP-005_AREA 5 - BUILDING 139 IMPOUNDM

Env Site ID: LCAAP-005

Cleanup Site: AREA 5 - BUILDING 139 IMPOUNDM

Alias: LCAAP-005

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2111

RC Reason: Not assigned

SC Date: 9/30/2140

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2111
LTM:	9/30/2111	9/30/2140

Site Narrative: Area 5 is located in the central portion of the installation north of Area 4 and within the Fuse Line Area. Neutralized wastewater from the production of explosive compounds (TNR, RDX) at impoundments was discharged into a lagoon as well as from solvent-cleaning and disposal activities. The lagoon operated intermittently and ceased operations in 1990. RCRA closure was performed during 1989 under an MDNR-approved closure plan. The Post-Closure Plan for IWTP East Lagoons included post-closure care (mowing, erosion control, burrow/nest removal, repair inspections, and groundwater monitoring) requirements for 30 years until April 2019. The USEPA, the US Army, and the State of Missouri signed the FFA Lake City AAP SARA 120 Interagency Agreement in September 1989, deferring the environmental investigation, groundwater monitoring, and cleanup activities at the facility from the RCRA program to the CERCLA program. The deferral from the RCRA program to the CERCLA program is explicitly recognized in the facility's Part I Permit. Groundwater monitoring, groundwater protection standards, and corrective action for releases of hazardous waste or hazardous constituents from hazardous waste management units subject to post-closure care had been deferred to the CERCLA program. Thirty years of post-closure care has occurred at the site and is currently under request with the state to complete long-term stewardship and strictly be managed under CERCLA. The primary COCs at Area 5 are antimony, lead, trichloroethene (TCE), cis-12-dichloroethene (DCE), vinyl chloride, RDX 2, nitrotoluene, and arsenic. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Arsenic is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the 100 Percent Remedial Design/Remedial Action Work Plan dated 2008 following three consecutive years of no detections above groundwater cleanup goals in a downgradient well then sampling from that well shall be suspended. At that time sampling will be discontinued in upgradient wells associated with the same unit.

Cleanup/Exit Strategy - no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA until 2111, post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1006_LCAAP-006_AREA 6 - BUILDING 65 IMPOUNDME

Env Site ID: LCAAP-006

Cleanup Site: AREA 6 - BUILDING 65 IMPOUNDME

Alias: LCAAP-006

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 6 Impoundment approximately 32-acres is located in the central portion of the installation. There is one lagoon in Area 6 that was used to dispose of wastewater from the load assemble and pack activities for 20 millimeter (mm) ammunition. In 1990 it was removed under an approved MDNR closure. The post-closure plan included post-closure care (mowing, erosion control, burrow/nest removal, repair inspections, and groundwater monitoring) requirements for 30 years until September 2020. The USEPA, the US Army, and the State of Missouri signed the FFA Lake City AAP SARA 120 Interagency Agreement in September 1989, deferring the environmental investigation, groundwater monitoring, and cleanup activities at the facility from the RCRA program to the CERCLA program. The deferral from the RCRA program to the CERCLA program is explicitly recognized in the facility's Part I Permit. Groundwater monitoring, groundwater protection standards, and corrective action for releases of hazardous waste or hazardous constituents from hazardous waste management units subject to post-closure care had been deferred to the CERCLA program. Thirty years of post-closure care has occurred at the site and is currently under request with the state to complete long-term stewardship and strictly be managed under CERCLA. The primary COCs at Area 6 are arsenic, chromium, perchlorate, and RDX. Results of historic sampling indicate that the soil and groundwater do not contain these contaminants at levels that are above human health or ecological risk levels; therefore, no further response is required. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1007_LCAAP-007_AREA 7 - IND. WASTEWATER LAGOO

Env Site ID: LCAAP-007

Cleanup Site: AREA 7 - IND. WASTEWATER LAGOO

Alias: LCAAP-007

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2179

RC Reason: Not assigned

SC Date: 9/30/2208

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2179
LTM:	9/30/2179	9/30/2208

Site Narrative: Area 7 industrial wastewater lagoon located in the center of the installation to the north of Ditch A. Nine unlined lagoons was historically utilized as a settling basin for finished wastewater from the IWTP. The northern-most set of three lagoons became inactive and was covered in 1952 but was never remediated. The two remaining sets of three lagoons were RCRA-closed in 1989. The Post-Closure Plan for IWTP lagoon included post-closure care (mowing, erosion control, burrow/nest removal, repair inspections, and groundwater monitoring) requirements for 30 years until April 2019. The USEPA, the US Army, and the State of Missouri signed the FFA Lake City AAP SARA 120 Interagency Agreement in September 1989, deferring the environmental investigation, groundwater monitoring, and cleanup activities at the facility from the RCRA program to the CERCLA program. The deferral from the RCRA program to the CERCLA program is explicitly recognized in the facility's Part I Permit. One set of closed lagoons was retrofitted with double liners and a leachate collection system that currently accepts finished wastewater from the IWTP. Groundwater monitoring, groundwater protection standards, and corrective action for releases of hazardous waste or hazardous constituents from hazardous waste management units subject to post-closure care had been deferred to the CERCLA program. Thirty years of post-closure care has occurred at the site and is currently under request with the state to complete long-term stewardship and strictly be managed under CERCLA. The primary COCs at Area 7 are antimony, arsenic, barium, cadmium, chromium, copper, lead, selenium, zinc, TCE, tetrachloroethene (PCE), dichloromethane, RDX, 2,4-dinitrotoluene, aroclor 1260, vinyl chloride, perchlorate, manganese, iron, and 2-nitrotoluene. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Arsenic is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA until 2179, post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual

inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1008_LCAAP-008_AREA 8 – SOLID WASTE LANDFILL

Env Site ID: LCAAP-008

Cleanup Site: AREA 8 – SOLID WASTE LANDFILL

Alias: LCAAP-008

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 8 covers approximately 126-acres in the southwest corner of the Installation and was used for the disposal of wastes associated with the IWTP. Area 8 was used from the mid-1960s until 1988 to dispose of sludge and dewatered oil residue from the IWTP settling basins. Numerous cells were excavated and used for ITWP sludge and IWTP oil and grease disposal. The disposal areas were investigated as six separate areas Area of Interest (AOI) 8A – IWTP Sludge Disposal Area consisted of four unlined cells located in the east-central portion of Area 8. The cells were closed in 1989. This area also contained a septic tank sewage disposal trench. AOI 8B – IWTP Sludge Disposal Area consisted of one unlined cell located in the east central portion of Area 8 and immediately north of AOI 8A. This cell was backfilled in 1983. AOI 8C – IWTP Sludge Disposal Area consisted of two unlined cells. East and West which were located in the north-central portion of Area 8 along the southern side of an Installation drainage ditch. These two cells were closed in the period between 1968 and 1971. AOI 8D – IWTP Sludge Disposal Area consisted of two unlined cells East and West which were located in the north-central portion of Area 8 along the southern side of an Installation drainage ditch. These two cells also were closed in the period between 1968 and 1971. AOI 8E – Resource Conservation and Recovery Act (RCRA) IWTP Oil and Grease Trenches consisted of eight trenches each measuring approximately 15 feet by 50 feet which were used for the disposal of IWTP oil and grease. AOI 8E is located immediately south of AOI 8F. Waste Disposal operations took place in this area between 1981 and 1986. RCRA closure activities began in 1988 with the removal of all contaminated materials and soil from the trenches and backfilled under an approved RCRA closure plan. The Post-Closure Plan for Oil and Grease Waste Storage Surface Impoundments included post-closure care (mowing, erosion control, burrow/nest removal, repair inspections, and groundwater monitoring) requirements for 30 years until April 2019. The USEPA, the US Army, and the State of Missouri signed the FFA Lake City AAP SARA 120 Interagency Agreement in September 1989, deferring the environmental investigation, groundwater monitoring, and cleanup activities at the facility from the RCRA program to the CERCLA program. The deferral from the RCRA program to the CERCLA program is explicitly recognized in the facility's Part I Permit. Groundwater

monitoring, groundwater protection standards, and corrective action for releases of hazardous waste or hazardous constituents from hazardous waste management units subject to post-closure care had been deferred to the CERCLA program. Thirty years of post-closure care has occurred at the site and is currently under request with the state to complete long-term stewardship and strictly be managed under CERCLA. AOI 8F – MDNR permitted Solid Waste and RCRA Waste Landfill consisted of four cells located in the southeast portion of the area immediately south of AOI 8A. Cells 1 and 2 were unlined. In 1982 Cells 1 and 2 received ITWP sludge containing K046 RCRA-listed hazardous waste (lead-based compounds) under a MDNR-approved plan to store the sludge. Cell 4 is visible in the 1990 historic photograph and Cell 3 is visible in the 1991 historic photographs. Both Cells 3 and 4 were constructed with 18-inch compacted clay liners; however, Cell 3 never received waste. Non-hazardous waste was disposed and covered in Cell 4. The primary COCs at Area 8 are uranium, manganese, antimony, arsenic, beryllium, cadmium, chromium, lead, silver, thallium, zinc, dichloromethane, and 2,6-dinitrotoluene. Results of historic sampling indicate these contaminants are not present in soil or groundwater at levels that are above human health or ecological risk levels; therefore, no further response is required. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1009_LCAAP-009_AREA 9 – BUILDING 60 TREATMENT

Env Site ID: LCAAP-009

Cleanup Site: AREA 9 – BUILDING 60 TREATMENT

Alias: LCAAP-009

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	9/30/2006	5/31/2007
IRA:	- -	- -
RA(C):	5/31/2007	9/30/2007
RA(O):	9/30/2007	9/30/2054
LTM:	- -	- -

Site Narrative: Area 9 located in the northeast portion of the installation directly south of Area 18. Cyanide Treatment Facility was associated with the treatment of cyanide and mercurous nitrate wastes. This area contains five in-ground tanks for treatment of mercurous nitrate generated from crack testing of small arms cartridges. The tanks in the Mercurous Nitrate Storage Area were closed in accordance with RCRA guidance as part of the CERCLA process. This area also contains a sludge drying bed for zinc cyanide sludge generated from chromium plating of steel cartridge cases. The primary COCs at Area 9 are TCE and lead. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Lead is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the 100 Percent Remedial Design/Remedial Action Work Plan dated 2008 following three consecutive years of no detections above groundwater cleanup goals in a downgradient well, then sampling from that well shall be suspended. At that time sampling will be discontinued in upgradient wells associated with the same unit.

Cleanup/Exit Strategy – no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA 30-years (due to showing 30-year forecast here) of post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1010_LCAAP-010_AREA 10 – FIRING RANGE WASTE D

Env Site ID: LCAAP-010

Cleanup Site: AREA 10 – FIRING RANGE WASTE D

Alias: LCAAP-010

Regulatory Driver: CERCLA

RIP Date: 9/30/2009

RC Date: 9/30/2009

RC Reason: All Required Cleanup(s) Completed

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	11/30/2007	9/30/2009
RD:	- -	- -
IRA:	10/31/2003	9/30/2009
RA(C):	- -	- -
RA(O):	- -	- -
LTM:	9/30/2009	9/30/2054

Site Narrative: Area 10 the Sand Piles contained waste sand from the backstops at the outdoor firing range. During the 1960s, depleted uranium rounds were demilitarized by firing them into a sand backstop. From the early 1950s through the late 1970s, sand and bullet material were periodically removed from the backstops and disposed of in Area 10. The primary COCs at Area 10 are lead and depleted uranium. In 2008 a removal action was conducted to remove the lead/depleted uranium contaminated sand/soil at Area 10. The results of sampling conducted after completion of this removal indicate that these contaminants are not present above screening levels in the soil. The final Area 10 ROD was completed in 2009.

Cleanup/Exit Strategy – no further response for soil to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Area 10 specific LUCs include signage to delineate the area. This cover is inspected annually. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1011_LCAAP-011_AREA 11 – BURNING GROUND

Env Site ID: LCAAP-011

Cleanup Site: AREA 11 – BURNING GROUND

Alias: LCAAP-011

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2056

RC Reason: Not assigned

SC Date: 9/30/2085

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	7/31/2006
RD:	7/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2056
LTM:	9/30/2056	9/30/2085

Site Narrative: Area 11 Burning Ground covers an area of approximately 0.7-acres and is located in the southeastern corner of the NECOU. Beginning in 1957, this area was used for the open burning and open detonation of propellant explosive and pyrotechnic materials produced at LCAAP that either do not comply with specifications or surpass the prescribed shelf-life. The soils in Area 11 were RCRA-closed in 1985 when six burn pads were installed on the site. Since 1985 burning has been conducted on burning pads and the ash has been containerized in drums for disposal off-site as hazardous waste. Historically Area 11 was identified as a potential source of perchlorate and explosives contamination. No exceedances of the preliminary remediation goals (PRG) for industrial soil were observed for either perchlorate or explosives. Both perchlorate and RDX have been detected in groundwater samples collected from monitoring wells associated with the Area 11 Burning Ground. RDX is delineated and limited in extent to the area immediately downgradient of the Area 11 Burning Ground. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Perchlorate is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further response for soil to industrial standards in this area; however, in order to satisfy the groundwater corrective actions per the FFA until 2056, groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs will continue post groundwater sampling via LTM until 2085 due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1012_LCAAP-012_AREA 12 – LABORATORY WASTE LAG

Env Site ID: LCAAP-012

Cleanup Site: AREA 12 – LABORATORY WASTE LAG

Alias: LCAAP-012

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2026

RC Reason: Not assigned

SC Date: 9/30/2055

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	1/31/1989	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2026
LTM:	9/30/2026	9/30/2055

Site Narrative: Area 12 laboratory waste lagoon is located in the western portion of the manufacturing area along the western boundary of the installation. The area includes two lagoons used to dispose of liquid wastes from the plant's chemical and metallurgical laboratories. The primary COCs at Area 12 are arsenic, chromium, TCE, vinyl chloride, 11-DCE, dichloromethane, iron, and manganese. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. VOCs are present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA until 2026, groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1013_LCAAP-013_AREA 13 – BUILDING #35 DRAINAG

Env Site ID: LCAAP-013

Cleanup Site: AREA 13 – BUILDING #35 DRAINAG

Alias: LCAAP-013

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2106

RC Reason: Not assigned

SC Date: 9/30/2135

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2106
LTM:	9/30/2106	9/30/2135

Site Narrative: Area 13 Drainage Area is located in the south-central portion of the installation in the Explosives Area. This area accepted wash water and wastewater containing sodium dichromate from metal parts manufacturing until 1971. The water emptied directly into a drainage ditch. Most of this Area has been disturbed or removed by construction activities. The primary COC at Area 13 is TCE. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. VOCs are present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA until 2106, groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs are inspected annually. These LUCs will continue post groundwater sampling via LTM until 2135 due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1014_LCAAP-014_AREA 14 – TANK FARM

Env Site ID: LCAAP-014

Cleanup Site: AREA 14 – TANK FARM

Alias: LCAAP-014

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 14 Tank Farm approximately 32-acres is located in the north-central portion of the installation and consists of two disposal areas. One area of interest (AOI) 14A contains a burning ground that was used by the installation's fire department to dispose of wooden ammunition boxes. The burning ground operated between 1951 and 1967. The second area (AOI 14B) is a sludge disposal area. The primary COCs at Area 14 are arsenic, dichloromethane, iron, and manganese. Results of historic sampling indicated that the soil and groundwater do not contain these contaminants at levels that are above human health or ecological risk levels; therefore, no response. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further treatment response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1015_LCAAP-015_AREA 15 – TEMPORARY SURFACE IM

Env Site ID: LCAAP-015

Cleanup Site: AREA 15 – TEMPORARY SURFACE IM

Alias: LCAAP-015

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2054
LTM:	- -	- -

Site Narrative: Area 15 is located in the south-central part of the installation due east of Area 13. This area contains a temporary surface impoundment built to temporarily contain wastewater from manufacturing buildings during lift station repairs. The impoundment was constructed in the 1970s and its use was discontinued prior to 1980. The primary COCs at Area 15 are nitrobenzene, aroclor 1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(ah)anthracene, indeno(123-cd)pyrene, antimony, barium, chromium, lead, selenium, and arsenic. A removal action was conducted in 2005 to remove and dispose of RCRA-listed hazardous waste (metals-impacted soil) at Area 15. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Lead is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the 100 Percent Remedial Design/Remedial Action Work Plan dated 2008 following three consecutive years of no detections above groundwater cleanup goals in a downgradient well then sampling from that well shall be suspended. At that time sampling will be discontinued in upgradient wells associated with the same unit.

Cleanup/Exit Strategy - no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA 30-years (due to showing 30-year forecast here) of post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1016_LCAAP-016_AREA 16 - ABANDONED LANDFILL

Env Site ID: LCAAP-016

Cleanup Site: AREA 16 - ABANDONED LANDFILL

Alias: LCAAP-016

Regulatory Driver: CERCLA

RIP Date: 10/1/2007

RC Date: 9/30/2148

RC Reason: Not assigned

SC Date: 9/30/2178

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	9/30/2004
RD:	- -	- -
IRA:	8/31/1997	6/30/2005
RA(C):	6/30/2005	9/30/2007
RA(O):	10/1/2007	9/30/2148
LTM:	10/1/2148	9/30/2178

Site Narrative: Area 16 abandoned landfill had an open burning ground small trenches aboveground waste oil and solvents tanks solid waste landfill pistol range and a drum storage area. Construction of a permeable reactive barrier was completed. VOCs SVOCs explosives and metals have been identified as potential constituents of concern for soil in the Area 16A. Results of the RI activities indicate concentrations of these constituents are below applicable screening levels or not associated with the landfill. Bis-2- ethyl(hexyl)phthalate and 14-dioxane are the two SVOCs that exceeded the groundwater cleanup goals in this area. Media of concern is groundwater and soil. Area 16B include Trichloroethene cis-12-dichloroethene and vinyl chloride have been detected at concentrations that exceeded PRGs for soil. The most predominant VOCs in the groundwater plume extending from the Area 16B solvent pits were cis-12-dichloroethene and vinyl chloride. Benzene ethylbenzene and toluene were also present in the source area indicating a continuing source of carbon for chlorinated ethene degradation. Chlorinated VOCs in groundwater extended from the Area 16B solvent pits north to the boundary of the paleochannel. A ROD has been completed for this site. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the ROD monitored natural attenuation (MNA) and groundwater sampling is required. Per the Final Second Five-Year Review Report dated 2011 modeling predicted 71 years of groundwater monitoring for carbon tetrochloride is required. Response completion estimated in 2148.

Cleanup/Exit Strategy - no further response for soil to industrial standards; however, MNA groundwater sampling and LUCs are required until 2078. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. The landfill cover is inspected annually. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1017_LCAAP-017_AREA 17-SANITARY LANDFILL & SO

Env Site ID: LCAAP-017

Cleanup Site: AREA 17-SANITARY LANDFILL & SO

Alias: LCAAP-017

Regulatory Driver: CERCLA

RIP Date: 10/1/2007

RC Date: 9/30/2720

RC Reason: Not assigned

SC Date: 12/31/2750

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	5/31/2005
RD:	8/31/2003	9/30/2005
IRA:	8/31/1997	9/30/2003
RA(C):	9/30/2003	9/30/2007
RA(O):	10/1/2007	9/30/2720
LTM:	10/1/2720	12/31/2750

Site Narrative: Area 17 sanitary landfill/solvent pits and a pistol range. The Area 17B oil and solvent pits used for disposal of IWTP grease and oil waste solvents waste oils demolition waste asbestos-cement (transite) and plant refuse. The 1998 IRA ROD included re-grading for run- on/off control and re-vegetation of the Area 17B oil and solvent pits to minimize the infiltration of water through the pits. In soil the COCs for Area 17B include PAHs and VOCs. Because of the presence of the vegetative cover the pathway for direct contact risk from COCs in surficial soil has been removed. In groundwater COCs for 17B- VOCs SVOCs and metals. The primary COCs for groundwater are cis-12- dichloroethene trichloroethene and vinyl chloride. Media of concern is groundwater and soil. Area 17D was for waste disposal activities and per the 1998 IRA ROD installed a subsurface permeable reactive wall (PRW). In surficial soil Area 17D contains concentrations of lead that exceed the PRGs. In groundwater the COCs for Area 17D include VOCs and metals. The primary COCs for groundwater are cis-12- dichloroethane, trichloroethene, and vinyl chloride. A ROD has been completed for this site. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the ROD MNA and groundwater sampling is required. Per the Final Second Five-Year Review Report dated 2011 modeling predicted 125 years of groundwater monitoring for carbon tetrochloride is required. Response completion estimated in 2720.

Cleanup/Exit Strategy - no further response for soil; however, MNA groundwater sampling and LUCs are required until 2720. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. The vegetative cover is inspected annually. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1018_LCAAP-018_AREA 18-BURNING PITS, LAGOONS

Env Site ID: LCAAP-018

Cleanup Site: AREA 18-BURNING PITS, LAGOONS

Alias: LCAAP-018

Regulatory Driver: CERCLA

RIP Date: 4/1/2008

RC Date: 9/30/2072

RC Reason: Not assigned

SC Date: 9/30/2101

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2004
RD:	6/30/1997	9/30/2004
IRA:	7/31/1993	3/31/2008
RA(C):	9/30/2003	3/31/2008
RA(O):	4/1/2008	9/30/2072
LTM:	9/30/2072	9/30/2101

Site Narrative: Area 18 eight burn pits located along Ditch B. Pits were used to burn plant construction debris and solvents and were operated from 1952 through 1975. There are 15 smaller pits trenches and lagoons surrounding the central burn pit area which accepted solvents IWTP oil and grease and other plant-generated industrial wastes from 1952 through 1975. Lead-containing material has been spread in a thin layer over the ground in the area of the pits. A ROD for Area 18 OU was prepared and finalized in 1999. The ROD identified a remedy involving shallow groundwater extraction wells soil vapor extraction/multi- phase extraction pump and treat for deep groundwater excavation and disposal of lead- contaminated soil vegetative cover institutional controls and long-term monitoring. During the pre-design investigations conducted in 2000 the Army discovered that the extent of soil contamination and source area impacts were greater than it previously believed warranting a reevaluation of the remedy selected for the source area and surface soil at Area 18 OU. A ROD addendum (2007) has been completed for this site. The remedy includes a vegetative cover in situ stabilization and institutional controls for surficial soil focused soil excavation and product recovery within the source area followed by in situ source area treatment via In Situ Reactive Zone (IRZ) in situ treatment in the paleochannel downgradient of the source area a vegetative cover in the source area and institutional controls in the source area and paleochannel groundwater. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the ROD MNA and groundwater sampling is required. Per the Final Second Five-Year Review Report dated 2011 modeling predicted 66-years of groundwater monitoring for carbon tetrochloride is required. Response completion estimated in 2072.

Cleanup/Exit Strategy - no further response for soil; however, MNA groundwater sampling and LUCs are required until 2072. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. The vegetative cover is inspected annually. These LUCs will continue post groundwater sampling via LTM

indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1019_LCAAP-019_AREA 19 - BUILDING 1 VICINITY

Env Site ID: LCAAP-019

Cleanup Site: AREA 19 - BUILDING 1 VICINITY

Alias: LCAAP-019

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2054
LTM:	- -	- -

Site Narrative: Area 19 manufacturing building is located in the north-central portion of the manufacturing area next to Area 7. This area comprises the grounds around where several sumps were previously located. The primary COCs at Area 19 are aroclor 1260, nitrobenzene, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, 11-DCE, TCE, and vinyl chloride. Area 19 was part of the inactive sumps removal action which included removal of sumps and surface soil associated with Polycyclic Aromatic Hydrocarbons (PAH) and explosive contamination in this area. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Lead is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the 100 Percent Remedial Design/Remedial Action Work Plan dated 2008 following three consecutive years of no detections above groundwater cleanup goals in a downgradient well then sampling from that well shall be suspended. At that time sampling will be discontinued in upgradient wells associated with the same unit.

Cleanup/Exit Strategy - no further response for soil to industrial standards in this area; however, in order to satisfy the groundwater corrective actions per the FFA 30-years (due to showing 30-year forecast here) of post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1020_LCAAP-020_AREA 20 - BUILDING 2 VICINITY

Env Site ID: LCAAP-020

Cleanup Site: AREA 20 - BUILDING 2 VICINITY

Alias: LCAAP-020

Regulatory Driver: CERCLA

RIP Date: 7/1/2018

RC Date: 9/30/2025

RC Reason: Not assigned

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	7/1/2018	9/30/2025
LTM:	9/30/2025	9/30/2054

Site Narrative: Area 20 manufacturing facility is located in the northwest portion of the installation in the manufacturing area. An area southeast of the building was identified from aerial photographs as potentially containing buried waste materials. The specific character age or quantities of the potential wastes are unknown. Solvents were reportedly spilled in an area south of garage. The date of the spill and the quantity of material spilled is unknown. The primary COCs at Area 20 are arsenic, nitrobenzene, PCE, and carbon tetrachloride. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. VOCs are present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA until 2025 of post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1021_LCAAP-021_AREA 21 – BUILDING 3 VICINITY

Env Site ID: LCAAP-021

Cleanup Site: AREA 21 – BUILDING 3 VICINITY

Alias: LCAAP-021

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2054
LTM:	- -	- -

Site Narrative: This area is comprised of the grounds around and adjacent to active manufacturing building. These buildings were used during the 1960s for the machining and assembly of depleted uranium-containing 50 caliber and 20 mm ammunition. Subsequent inspection by the NRC indicated that additional cleanup activities were required. In July 2001, the Army conducted a removal action to demolish and dispose of contaminated debris. In addition, three sumps were removed and disposed of at a permitted disposal facility. The primary COCs at Area 21 are arsenic, chromium, lead barium, silver antimony, aroclor 1254, 2,4- dinitrotoluene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(ah)anthracene, indeno(1, 2, 3-cd)pyrene, RDX, TCE, vinyl chloride, and perchlorate. Area 21 was part of the inactive sumps removal action which included removal of sumps and surface soil associated with PAH and perchlorate contamination in this Area. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. Lead is present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the 100 Percent Remedial Design/Remedial Action Work Plan dated 2008 following three consecutive years of no detections above groundwater cleanup goals in a downgradient well then sampling from that well shall be suspended. At that time sampling will be discontinued in upgradient wells associated with the same unit.

Cleanup/Exit Strategy – no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA 30-years (due to showing 30-year forecast here) of post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1022_LCAAP-022_AREA 22 – DEMOLITION-WASTE DUM

Env Site ID: LCAAP-022

Cleanup Site: AREA 22 – DEMOLITION-WASTE DUM

Alias: LCAAP-022

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 22 demolition waste dump approximately 46-acres is located in the north-central portion of the installation. This area contains a demolition waste dump that is thought to have been active during the 1940s and perhaps in the early-1950s. The exact operating dates and the characteristics of the wastes the dump received are unknown. The primary COCs at Area 22 are arsenic, cadmium, lead, and bis(2-ethylhexyl) phthalate. Results of historic sampling indicated that the soil and groundwater do not contain these contaminants at levels that are above human health or ecological risk levels; therefore, no response. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1023_LCAAP-023_AREA 23 - SLUDGE BURIAL PITS

Env Site ID: LCAAP-023

Cleanup Site: AREA 23 - SLUDGE BURIAL PITS

Alias: LCAAP-023

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 23 sludge burial pits approximately 95-acres is located in the center of the installation south of Ditch A. AOI 23A is an area of suspected IWTP sludge burial. This area is thought to contain four IWTP sludge burial pits. The pits were reportedly operated during the mid-1960s and ceased operation in 1967. Results of historic sampling indicated that the groundwater did not contain any contaminants at levels that are above human health or ecological risk levels; therefore, no response. Results of historic sampling indicated that the soil did contain manganese at levels that are above human health levels; however, there is no active remedial action. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. The LUCs are inspected annually. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1024_LCAAP-024_AREA 24-SANITARY WASTEWATER TR

Env Site ID: LCAAP-024

Cleanup Site: AREA 24-SANITARY WASTEWATER TR

Alias: LCAAP-024

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2026

RC Reason: Not assigned

SC Date: 9/30/2055

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2026
LTM:	9/30/2026	9/30/2055

Site Narrative: Area 24 former sanitary wastewater plant is located north of Area 8 and west of Area 7 in the west-central portion of the installation. This area is the site of the now-inactive Sanitary Wastewater Treatment Plant which operated from 1941 until the industrial wastewater and sanitary wastewater streams were combined to go to the Little Blue Valley Sewer District in 1990. The primary COCs at Area 24 are arsenic, chromium, PCE, TCE, cis-12-DCE, and vinyl chloride. Results of historic sampling indicate that these contaminants are not present in soil above human health or ecological risk levels; therefore, no further response is required. VOCs are present in groundwater above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil to industrial standards in this area; however, in order to satisfy the continued groundwater corrective actions per the FFA until 2026, post-closure groundwater sampling will be completed. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1025_LCAAP-025_AREA 25 - DEMOLITION WASTE DUM

Env Site ID: LCAAP-025

Cleanup Site: AREA 25 - DEMOLITION WASTE DUM

Alias: LCAAP-025

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 25 demolition waste dump approximately 11-acres is located in the western portion of the installation just south of the Big Ditch and adjacent to the western installation boundary. This area contains a disposal area that received transite asbestos wastes from installation construction activities. The transite material was spread out on the ground and was put into a ditch at the dump location. The date when the material was disposed of is unknown. In 2005, a removal action was conducted to remove asbestos at Area 25. The results of sampling conducted after completion of this removal indicate that these contaminants are not present above screening levels in the soil. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1026_LCAAP-026_AREA 26 - DEMOLITION DUMP

Env Site ID: LCAAP-026

Cleanup Site: AREA 26 - DEMOLITION DUMP

Alias: LCAAP-026

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 26 demolition dump approximately 4-acres is located in the south-central portion of the facility adjacent to the southern property boundary. This area contains a disposal area that received roofing material from installation construction activities. The history of the site is largely unknown. The roofing materials waste disposal area is located on the east side of the access road 150 yards from the intersection of the access road and the south perimeter road. The waste consisted of mounds of tar-like material interspersed with a covering of coarse-grained sand and fine gravel. In 2005, a removal action was conducted to remove waste material at Area 26. The results of sampling conducted after completion of this removal indicate that no contaminants are present above screening levels in the soil. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1028_LCAAP-028_AREA 28 - PIPELINE LEAKS

Env Site ID: LCAAP-028

Cleanup Site: AREA 28 - PIPELINE LEAKS

Alias: LCAAP-028

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 28 encompasses a pipeline leak approximately 7-acres that was reported to have occurred during the 1950s. The pipeline runs from the northeast to the southwest in the southeast corner of the installation. The primary COC at Area 28 is benzene. Results of historic sampling indicated that the soil and groundwater do not contain these contaminants at levels that are above human health or ecological risk levels; therefore, no response. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1029_LCAAP-029_AREA 29 - WESTERN BORDER DUMPS

Env Site ID: LCAAP-029

Cleanup Site: AREA 29 - WESTERN BORDER DUMPS

Alias: LCAAP-029

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 29 western border dumps approximately 66-acres is located along the western side of the facility next to State Highway 7. This area contains two dumps situated along the western boundary of the installation. The northern dump reportedly received debris from the original installation construction activities in the 1940s. The southern dump was used during construction of the Big Ditch (between 1984 and 1987). The primary COCs at Area 29 are chromium, beryllium, arsenic, iron, and manganese. Results of historic sampling indicated that the soil and groundwater do not contain these contaminants at levels that are above human health or ecological risk levels; therefore, no response. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1030_LCAAP-030_AREA 30 - BURNING PITS ASH DIS

Env Site ID: LCAAP-030

Cleanup Site: AREA 30 - BURNING PITS ASH DIS

Alias: LCAAP-030

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2009

RC Reason: All Required Cleanup(s) Completed

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	8/31/2006	5/31/2007
IRA:	- -	- -
RA(C):	9/30/2003	9/30/2007
RA(O):	9/30/2007	9/30/2009
LTM:	10/31/2009	9/30/2054

Site Narrative: Area 30 burning pit ash disposal approximately 34-acres adjacent to the northern installation boundary and west of Area 14. This area was used by the installation Fire Department to burn wooden ammunition boxes from 1951 to 1967. The area has also been used to dispose of burning ground fly ash and disposal of laboratory glassware and other lab related waste. The primary COC at Area 30 is lead. Lead is present in soil at Area 30 above the risk-based action level of 1197 milligram (mg)/kilogram (kg). The Final IWOU ROD was completed in 2008. A vegetative cover was placed over the contaminated area and groundwater sampling was required for an estimated two-years to ensure that waste had not impacted groundwater (per the 100 percent remedial design (RD)/remedial action work plan (RAWP) dated 2008). Sampling discontinued in 2009 at Area 30 after two consecutive sampling events were below cleanup goals.

Cleanup/Exit Strategy - site will be inspected (vegetative cover) and maintained with LUCs. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Area 30 specific LUCs also prohibit disturbance of the vegetative cover. This vegetative cover is inspected annually. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1031_LCAAP-031_AREA 31 - FIREBREAK LANDFILLS

Env Site ID: LCAAP-031

Cleanup Site: AREA 31 - FIREBREAK LANDFILLS

Alias: LCAAP-031

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 31 firebreak landfills approximately 9-acres is located in the northeast portion of the facility just south of the Perimeter North Road. This area contains the remnants of two shallow open pit dumps. The waste is assorted household debris empty drums and empty ammunition boxes. There is also evidence of some burning in the area. The area was probably sporadically active between the 1940s and 1960s. Some material also may have been added after that time. In 2005 and 2006, a removal action was conducted to remove the waste material at this area. The results of sampling conducted after completion of this removal indicate that no contaminants are present above screening levels in the soil. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1032_LCAAP-032_AREA 32 - HOUSE BASEMENT

Env Site ID: LCAAP-032

Cleanup Site: AREA 32 - HOUSE BASEMENT

Alias: LCAAP-032

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 32 house basement is scattered throughout the eastern wooded area of the installation are the remnants of several houses that were there prior to 1940 when the installation was founded. A survey of the area revealed five intact houses or house basements. One of the basements contained empty drums and a tar-like residue. Another one had a domestic waste dump adjacent to the foundation. The primary COCs at Area 32 are arsenic, chromium, and lead. Results of historic sampling indicated that the soil and groundwater do not contain these contaminants at levels that are above human health or ecological risk levels; therefore, no response. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy – no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1033_LCAAP-033_Area 33 – Blending Pelletizing

Env Site ID: LCAAP-033

Cleanup Site: Area 33 – Blending Pelletizing

Alias: LCAAP-033

Regulatory Driver: CERCLA

RIP Date: 9/30/2007

RC Date: 9/30/2007

RC Reason: Study Completed, No Cleanup Required

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 33 blending pelletizing approximately 19-acres is located in the center of the facility and contains a series of small buildings with blast deflector berms. Some of these structures were used in powder pouring operations which were conducted to scale down bulk quantities of propellant. The primary COCs at Area 33 are arsenic, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenze(ah) anthracene, indeno(123-cd) pyrene, carbazole, nitrobenzene, n-nitrosodiphenylamine, iron, manganese, and RDX. Results of historic sampling indicated that the soil and groundwater do not contain these contaminants at levels that are above human health or ecological risk levels; therefore, no response. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1034_LCAAP-034_Area 34, Site Ditches

Env Site ID: LCAAP-034

Cleanup Site: Area 34, Site Ditches

Alias: LCAAP-034

Regulatory Driver: CERCLA

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: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	8/31/2006
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2006	9/30/2007
RA(O):	- -	- -
LTM:	9/30/2007	9/30/2054

Site Narrative: Area 34 Site Ditches consists of the surface water bodies and drainages across the central and northern portions of the installation. Specifically, Area 34 includes the Ditch A system which consists of two minor ditches (Ditch 2 and Ditch 3) that flow into Ditch A. Ditch 3 is located on the southern border of Area 12 and Ditch 2 is located in the northwestern portion of Area 7. Also included in this group is the Ditch B system which consists of all channelized ditches that flow into it. Ditch A is the channelized remnant of West Fire Prairie Creek. It provides storm water drainage for the western half of the installation. Prior to 1990 Ditch A was the outfall receiver for the IWTP and the sanitary sewage plant. Ditch B is the channelized remnant of East Fire Prairie Creek. It provides storm water drainage for the eastern half of the installation. Ditch B received runoff from the firing range the manufacturing area and from several of the installation's main production and warehouse buildings. The primary COC at Area 34 was lead. Results of historic sampling indicated that the soil and groundwater do not contain this contaminant at levels that are above human health or ecological risk levels; therefore, no response. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1035_LCAAP-035_AREA 35 -- SUMPS

Env Site ID: LCAAP-035

Cleanup Site: AREA 35 -- SUMPS

Alias: LCAAP-035

Regulatory Driver: CERCLA

RIP Date: 9/30/2006

RC Date: 9/30/2006

RC Reason: All Required Cleanup(s) Completed

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	6/30/1979	1/31/1989
SI:	6/30/1979	1/31/1989
RI/FS:	8/31/1987	9/30/2004
RD:	- -	- -
IRA:	5/31/2004	9/30/2006
RA(C):	5/31/2004	9/30/2006
RA(O):	- -	- -
LTM:	9/30/2006	9/30/2054

Site Narrative: Area 35 includes 123 sumps that have been identified across the Plant. Of those 19 are connected to storm sewers 64 discharge to surface drainage 27 drain into the Industrial Wastewater System 4 are pumped regularly and 5 are under building floors. The original processes associated with the sumps were related to tracers (34 sumps) primers (34 sumps) igniters (5 sumps) incendiaries (5 sumps) high explosive incendiaries (5 sumps) indoor firing range (15 sumps) maintenance areas (10 sumps) and miscellaneous activities (12 sumps). A removal action was completed in 2007; however, the following sumps require future work and will be addressed as they become available through maintenance or construction activities or at installation closure or transfer- 1SU2 3SU3 33CSU1 33DSU1 34BSU1 34DSU1 52ASU1 52BSU1 97ASU2 and 136ASU1. The final IWOU ROD was completed in 2008.

Cleanup/Exit Strategy - no further response for soil and groundwater to industrial standards. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Area 35 specific LUCS also prohibit activities that will disturb soil beneath the inactive sump. There is not a future plan for removal at this time. The LUCs signs are inspected annually. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1037_LCAAP-000_AREA 00 - Pyrotechnics Area

Env Site ID: LCAAP-000

Cleanup Site: AREA 00 - Pyrotechnics Area

Alias: LCAAP-000

Regulatory Driver: CERCLA

RIP Date: 9/30/2008

RC Date: 9/30/2068

RC Reason: Not assigned

SC Date: 9/30/2097

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	5/31/2006	4/30/2007
SI:	5/31/2007	7/31/2007
RI/FS:	- -	- -
RD:	- -	- -
IRA:	- -	- -
RA(C):	8/31/2007	9/30/2008
RA(O):	8/31/2007	9/30/2068
LTM:	9/30/2068	9/30/2097

Site Narrative: Area 00 the Manufacturing Area is located in the south portion of the installation. The area was historically and is currently used for storage and support of pyrotechnic manufacture. The suspected sources of contamination were the building sumps. The primary COCs at Area 00 are nitrobenzene benzo(a)anthracene, benzo(a)pyrene, benzo(b)flouoranthene, dibenz(ah)anthracene, and indeno(123-cd) pyrene, perchlorate, carbon tetrachloride, chloroform, aluminum, arsenic, barium, beryllium, cadmium, iron, lead, manganese, and vanadium. Sumps were removed and soil was sampled (Final Sump Completion Report May 2007) which indicated that these contaminants were not present in soil above human health or ecological risk levels; therefore, no further response is required. Carbon tetrachloride chloroform TCE benzo(a)anthracene ben zo(b)fluoranthene dibenz(ah)anthracene benzo(a)pyrene and indeno (123-cd) pyrene are present in groundwater at concentrations above screening levels. Groundwater sampling is being addressed as part of the IWOU Groundwater program. The Final IWOU ROD was completed in 2008. Per the ROD (MNA and groundwater sampling is required. Per the Final Second Five-Year Review Report dated 2011 modeling predicted 61-years of groundwater monitoring for carbon tetrochloride is required. Response completion estimated in 2068.

Cleanup/Exit Strategy - no further response for soil to industrial standards; however, MNA groundwater sampling and LUCs are required until 2068. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. These LUCs will continue post groundwater sampling via LTM indefinitely due to the site not achieving UU/UE. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, a five-year review will occur.

29405.1038_CC-LCAAP-083_BUILDING 83-TNR

Env Site ID: CC-LCAAP-083

Cleanup Site: BUILDING 83-TNR

Alias: #

Regulatory Driver: CERCLA

RIP Date: 12/15/2019

RC Date: 12/15/2019

RC Reason: All Required Cleanup(s) Completed

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE: Not Evaluated

MRSPP: N/A

Phase	Start	End
PA:	1/15/2007	5/15/2007
SI:	6/15/2007	2/15/2016
RI/FS:	- -	- -
RD:	- -	- -
IRA:	- -	- -
RA(C):	7/30/2015	12/15/2019
RA(O):	- -	- -
LTM:	12/15/2019	9/30/2054

Site Narrative: Trinitroresorcinol (TNR) area was a 1,567 square foot wood-frame split-level building constructed with asbestos siding (used 1942 to 1997). The process completed at TNR and the final product of lead styphnate was not actually produced in this facility. TNR is an explosive that is extremely sensitive to heat shock or friction and is a Class A high explosive with the following characteristics. It is- - 1) Insoluble in water 2) Unstable and deflagrates at 425 degrees Fahrenheit 3) Soluble in acids and it 4) Condenses to form crystals which are more sensitive to heat shock or friction than when in its liquid form. The manufacturing process conducted in TNR building used large quantities of concentrated sulfuric acid and red fuming nitric acid in a nitrating process for the primary explosive lead styphnate. The chemical process involved the sulfonation and the nitration of resorcinol which results in the formation of solids known as styphnic acid or TNR. Oxides appear to have contaminated surfaces and penetrated porous interior materials that existed within the structure of the TNR building. Explosives residue was apparent based on the visual observation of staining in the building on the floor equipment panels porous interior materials and other building structures. The building was visibly deteriorating and in disrepair with detached doors and missing windows. A removal action occurred in 2017. Results of the removal action confirmatory soil sampling were compared to the USEPA industrial regional screening level (RSLs) and background concentrations for arsenic and chromium. All results were below the industrial RSL or background concentrations; however, the site has not achieved UU/UE because concentrations of the Polychlorinated Biphenyl (PCB) mixture Aroclor 1254 remain at the site at concentrations exceeding the USEPA residential RSLs; therefore, LUCs are necessary at the TNR building to restrict land use until residual soil contaminant concentrations are at levels that allow UU/UE and to ensure that the remedy is implemented and completed with the goal of protecting human health and the environment. The TNR building falls within the boundaries of Area 1 in the Land Use Control Implementation Plan (LUCIP). Area 1 has existing LUCs in the form of a deed restriction which maintains industrial land use on the property. An Explanation of Significant Differences was completed in 2019 to

include this site into Area 1 LUCIP which is also part of the Final IWOU ROD dated 2008. Changed pages to incorporate the TNR building into the Area 1 description were included in the LUCIP.

Cleanup/Exit Strategy - no further response for soil and groundwater. LUCs are required at this site under the IWOU LUCs, which include annual inspections as well as prohibition of access to untreated contaminated groundwater, damage to monitoring infrastructure, and development of residential housing/child care facilities/playgrounds. Guidance requires a remedy review every five years when hazardous substances pollutants or contamination remains at the site above levels that allow for UU/UE; therefore, five-year reviews will occur indefinitely.

29405.1039_LCAAP-PFAS_PFAS

Env Site ID: LCAAP-PFAS

Cleanup Site: PFAS

Alias: #

Regulatory Driver: CERCLA

RIP Date: 9/30/2027

RC Date: 9/30/2027

RC Reason: Not assigned

SC Date: 9/30/2027

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: Yes

Hazardous Ranking Score: 33.6

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	9/30/2017	9/27/2018
SI:	9/28/2018	9/30/2022
RI/FS:	6/1/2022	9/30/2027
RD:	- -	- -
IRA:	- -	- -
RA(C):	- -	- -
RA(O):	- -	- -
LTM:	- -	- -

Site Narrative: In May 2016 the USEPA issued a PFOS + PFOA drinking water Health Advisory (HA) of 70 nanograms per liter (ng/L). Subsequently in June 2016 the Army issued a guidance publication for PFAS contamination assessments. In response to these actions along with the third Unregulated Contaminant Monitoring Rule and US Army Installation Management Command (IMCOM) Operations Order 16-088 LCAAP began initial PFAS sampling in 2016. Results from the initial and confirmatory sampling events indicate PFOS and/or PFOA concentrations in excess of the health advisories. A preliminary assessment / site inspection (PA/SI) was completed in April 2021 identified 7 areas of potential interest (AOPIs) to assess during the RI. The PFAS source types identified include the following- Former Fire Station (Area 20) Area 8 Solid Waste Landfill Area 16A Abandoned Landfill Area 17B Industrial Wastewater Treatment Plant (IWTP) Oil and Solvent Pits Area 18 IWTP Oil and Grease Pits Area 14B IWTP Sludge Disposal Area and Area 3A IWTP Sludge Burial Area. The PFAS PA/SI included two distinct efforts. The PA identified AOPIs at LCAAP based on the use storage and/or disposal of PFAS-containing materials in accordance with the 2018 Army Guidance for Addressing Releases of Per-and Polyfluoroalkyl Substances (Army 2018). The SI included multi-media sampling at AOPIs to determine whether a release of PFOS PFOA and PFBS to the environment occurred. Drinking water is supplied from 13 active on-installation production wells; groundwater is drawn from the base of the Lake City aquifer and combined in a 500,000-gallon holding tank prior to treatment at the water treatment facility. PFOS, PFOA, and PFBS were not detected in any of the active production wells (except production well 17CC) nor in the drinking water sample collected (GW-93). PFOA was detected at production well 17CC (2.6 ng/L) at a concentration less than the Office of the Secretary of Defense (OSD) residential tap water risk screening level (40 ng/L). PFOS and PFBS were not detected at well 17CC. All AOPIs were sampled during the SI at LCAAP to identify presence or absence of PFOS, PFOA, and PFBS. The SI scope of work was completed in accordance with the Final Programmatic-Quality Assurance Project Plan (P-QAPP) and the LCAAP Quality Assurance Project Plan (QAPP) Addendum. Ten AOPIs had detections of PFOS, PFOA, and PFBS in groundwater and soil and 3 AOPIs exceeded OSD risk screening levels. The maximum concentrations of PFOS, PFOA, and PFBS

detected in groundwater and soil from LCAAP were- Soil. PFOS and PFOA were not detected at concentrations above the OSD risk screening level for soil (0.13 mg/kg) at any of the AOPIs. PFBS was not detected in soil at any of the AOPIs. Groundwater. PFOS was detected at 86 ng/L above the OSD risk screening level for tap water (40 ng/L) in sample LCAAP-08-MW-011 at the Area 8 Solid Waste Landfill AOPI. PFOA was detected at 190 ng/L above the OSD risk screening level for tap water (40 ng/L) in sample LCAAP-B57-SB-03-(24.5)-GW at the Gravel Area within Area 20 AOPI. PFBS was not detected at concentrations above the OSD risk screening level for tap water (600 ng/L) at any of the AOPIs. Following the SI sampling 11 out of the 12 AOPIs with confirmed PFOS, PFOA, and PFBS presence were considered to have complete or potentially complete exposure pathways. Soil exposure pathways for on-installation site workers were complete at two AOPIs where PFOS, PFOA, and/or PFBS presence was confirmed in soil. Groundwater exposure pathways for on-installation site workers and residents and off-installation receptors were potentially complete at 11 AOPIs where PFOS, PFOA, and/or PFBS was detected in groundwater. Surface water and sediment were not sampled during the SI but were determined to have potentially complete pathways for on-installation recreational users and off-installation receptors at 11 AOPIs where PFOS, PFOA, and/or PFBS were detected in groundwater and have the potential to migrate to surface water and sediment. Further investigation is ongoing under Remedial Investigation.

SITE SUMMARY

SITE CLOSEOUT SUMMARY

CRL ID	Site Name	Site Closeout Date
29405.1027	LCAAP-027_AREA 27 - FIRING RANGE	1/31/1989
29405.1036	LCAAP-036_PBC Site at LCAAP	9/30/2012

COMMUNITY INVOLVEMENT

Community Involvement Plan (Date Last Reviewed):	4/1/2022
Technical Review Committee Establishment Date:	N/A
Restoration Advisory Board (RAB) Establishment Date:	3/31/1997
RAB Adjournment Date:	N/A
RAB Adjournment Reason:	N/A
Reasons for Not Establishing RAB:	N/A
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:	Mid Continent Library-North Independence Branch, 317 W. US Hwy. 24 Independence, MO 64050-2747
Information Repository Location:	Bldg 6, LCAAP 7 and 78 highway Independence, MO 64056

FIVE-YEAR / PERIODIC REVIEW SUMMARY

Status	Review Type	Start Date	End Date	Plans Narrative	Actions Narrative	Results Narrative
Completed	FYR	10/1/2015	9/30/2020	Continue with the FFA approved schedule to optimize system and improve any remedial measures.	IWOU - Mn soil Cleanup Goal (CUG), Groundwater (GW) trends, napthalene exp scenarios, PFAS cont Area 18 - timeframe projections, phthalates and naphthalene GW CUGs Northeast Corner Operable Unit (NECOU) - Area 11 timeframe, PFAS, 1-4 diox/Mn GW CUG, res mass, PRW breakthru.	IWOU - Areas 2,9,13,23,24&OU-Wide GW remedies protect. of human health & envrn. Area 18&10 Operable Unit (OU) - Remedy protect. of human health & envrn. NECOU - Former RCRA Areas, Areas 11,16B,16C,17B downgrad. plume,17C&17D protect. of human health & envrn.
Underway	FYR	10/1/2020	9/30/2025	Continue with the FFA approved schedule to optimize system and improve any remedial measures.	N/A	N/A