FY2015

SUNFLOWER ARMY AMMUNITION PLANT

Installation Action Plan

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Command (USAEC) and Sunflower Army Ammunition Plant (SFAAP), an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

Acronyms

ACM	Asbestos Containing Material
AEDB-CC	Army Environmental Database-Compliance-related Cleanup
AEDB-R	Army Environmental Database-Restoration
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
AST	Aboveground Storage Tank
BRAC	Base Realignment and Closure
CC	Compliance-related Cleanup
CCC	Calcium Carbonate Cake
CENWK	Corps of Engineers, Northwest Division, Kansas City
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMI	Corrective Measures Implementation
CMI(C)	Corrective Measures Implementation (Construction)
CMS	Corrective Measures Study
CO	Consent Order
CR	Compliance Restoration
CS	Confirmation Sampling
CWP	Contaminated Waste Processor
cy	cubic yard
DD	Decision Document
DDT	Dichloro-Diphenyl-Trichloroethane
DERP	Defense Environmental Restoration Program
DNT	Dinitrotoluene
DoD	Department of Defense
DPT	Direct-Push Technology
DRO	Diesel Range Organics
EBS	Environmental Baseline Survey
ER,A	Environmental Restoration, Army
FRA	Final Remedial Action
FTW	Fluorescent Tube Well
FY	Fiscal Year
GN	Guanidine Nitrate
GRO	Gasoline Range Organics
IAP	Installation Action Plan
ICM	Interim Corrective Measures
IR	Installation Restoration
IRA	Interim Remedial Action
IRP	Installation Restoration Program
K	thousand
KDHE	Kansas Department of Health and Environment
kg	kilogram
KSWQS	Kansas Surface Water Quality Standards
LTM	Long-Term Management
LWTP	Liquid Waste Treatment Plant
M	million

Acronyms

MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
mg	milligrams
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MR	Munitions Response
N/A	Not Applicable
NC	Nitrocellulose
NFA	No Further Action
NG	Nitroglycerine
NPL	National Priorities List
NQ	Nitroguanidine
NSE	Nitroguanidine Support Equipment
PAH	Polycyclic Aromatic Hydrocarbon
PBA	Performance-Based Aquisition
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene
POL	Petroleum, Oil and Lubricants
ppm	parts per million
PRG	Preliminary Remediation Goal
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy-in-place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RWTP	River Water Treatment Plant
SAC	Sulfuric Acid Concentrator
SFAAP	Sunflower Army Ammunition Plant
SOB	Statement of Basis
SRL	Sunflower Redevelopment, LLC
STP	Sewage Treatment Plant
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TCLP	Toxicity Characteristic Leaching Procedure
TEC	Threshold Effects Concentrations

Acronyms

TMCL	Target Media Cleanup Level
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage and Disposal Facilities
USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAEHA	US Army Environmental Hygiene Agency
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

Acronym Translation Table

CERCLA		RCRA
Preliminary Assessment(PA)	=	RCRA Facility Assessment(RFA)
Site Inspection(SI)	=	Confirmation Sampling(CS)
Remedial Investigation/Feasibility Study(RI/FS)	=	RCRA Facility Investigation/Corrective Measures Study(RFI/CMS)
Remedial Design(RD)	=	Design(DES)
Remedial Action (Construction)(RA(C))	=	Corrective Measures Implementation (Construction)(CMI(C))
Remedial Action (Operation)(RA(O))	=	Corrective Measures Implementation (Operation)(CMI(O))
Long Term Management(LTM)	=	Long Term Management(LTM)
Interim Remedial Action(IRA)	=	Interim Measure(IM)

Site Alias List

AEDB-R/AEDB-CC Site ID to Alias List

AEDB-R/AEDB-CC #	Alias
CCSAAP-055	SWMU 55
CCSAAP-061	SWMU 61
CCSAAP-069	SWMU 69
CCSAAP-070	SWMU 70
CCSAAP-103	AOC 3
CCSAAP-113	AOC 13
CCSAAP-126	AOC 26
SAAP-001	SWMU 1
SAAP-002	SWMU 2
SAAP-003	SWMU 3
SAAP-004	SWMU 4
SAAP-005	SWMU 5
SAAP-006	SWMU 6
SAAP-007	SWMU 7
SAAP-008	SWMU 8
SAAP-009	SWMU 9
SAAP-010	SWMU 10
SAAP-011	SWMU 11
SAAP-012	SWMU 12
SAAP-013	SWMU 13
SAAP-014	SWMU 14
SAAP-015	SWMU 15
SAAP-016	SWMU 16
SAAP-017	SWMU 17
SAAP-018	SWMU 18
SAAP-019	SWMU 19
SAAP-020	SWMU 20
SAAP-021	SWMU 21
SAAP-022	SWMU 22
SAAP-024	SWMU 24
SAAP-025	SWMU 25
SAAP-026	SWMU 26
SAAP-027	SWMU 27
SAAP-030	SWMU 30
SAAP-031	SWMU 31
SAAP-032	SWMU 32
SAAP-033	SWMU 33

SAAP-034	SWMU 34
SAAP-035	SWMU 35
SAAP-036	SWMU 36
SAAP-037	SWMU 37
SAAP-038	SWMU 38
SAAP-039	SWMU 39
SAAP-040	SWMU 40
SAAP-041	SWMU 41
SAAP-042	SWMU 42
SAAP-043	SWMU 43
SAAP-044	SWMU 44
SAAP-045	SWMU 45
SAAP-046	SWMU 46
SAAP-047	SWMU 47
SAAP-048	SWMU 48
SAAP-050	SWMU 50
SAAP-051	SWMU 51
SAAP-052	SWMU 52
SAAP-053	SWMU 53
SAAP-054	SWMU 54
SAAP-057	SWMU 57
SAAP-058	SWMU 58
SAAP-059	SWMU 59
SAAP-062	SWMU 62
SAAP-063	SWMU 63
SAAP-064	SWMU 64
SAAP-065	SWMU 65
SAAP-066	SWMU 66
SAAP-067	SWMU 67
SAAP-101	AOC 1
SAAP-102	AOC 2
SAAP-105	AOC 5
SAAP-110	AOC 10
SAAP-111	AOC 11
SAAP-112	AOC 12
SAAP-114	AOC 14
SAAP-115	AOC 15

SAAP-116	AOC 16
SAAP-117	AOC 17
SAAP-118	AOC 18
SAAP-119	AOC 19
SAAP-120	AOC 20
SAAP-121	AOC 21
SAAP-122	AOC 22
SAAP-123	AOC 23
SAAP-124	AOC 24

Installation Information

Installation Locale

Installation Size (Acreage): 9,065.00
City: DeSoto
County: Johnson
State: Kansas
Other Locale Information

SFAAP is located on 9,065 acres in rural northwestern Johnson County, Kansas. It is approximately 3 miles southwest of De Soto, Kansas and 28 miles southwest of Kansas City, Missouri. It is roughly rectangular in shape and about 6 miles long by 3 miles wide, with the long axis oriented in a north to south direction.

Originally known as the Sunflower Ordnance Works, SFAAP was established in 1941 on 10,747 acres as the world's largest powder and propellant plant. Production of propellant began in 1943 and played a significant role in US history by producing munitions for three major military conflicts: World War II, the Korean Conflict, and the Vietnam Conflict. In the 1960s and 1970s, 1,682 acres of the original installation were transferred to various governmental entities via public benefit conveyances. The installation was determined to be in excess of Army mission in 1997. All of the SFAAP property, to include real property, personal property, easements, licenses, rights, etc was transferred to a private entity, Sunflower Redevelopment LLC (SRL), on Aug. 5, 2005. A majority of the transferred property was contaminated at the time of the transfer to SRL. The Army retains the liability for the cleanup of contaminated property and for explosive decontamination.

Installation Mission

Decontaminate explosive facilities, and clean up environmental contamination.

Lead Organization

Base Realignment and Closure Division

Lead Executing Agencies for Installation

Corps of Engineers, Northwest Division, Kansas City (CENWK)

Regulator Participation

Federal	US Environmental Protection Agency (USEPA) Region VII
State	Kansas Department of Health and Environment (KDHE), Bureau of Environmental Remediation

National Priorities List (NPL) Status

SUNFLOWER ARMY AMMUNITION PLANT is not on the NPL

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

RAB established 1998

Installation Program Summaries

IRP

Primary Contaminants of Concern: Asbestos, Dioxins/Dibenzofurans, Explosives, Herbicides, Lead Based Paint, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC), Nitrate/Nitrite, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

CR

Primary Contaminants of Concern: Asbestos, Dioxins/Dibenzofurans, Lead Based Paint, Metals, Nitrate/Nitrite, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

Cleanup Program Summary

Installation Historic Activity

Originally known as the Sunflower Ordnance Works, SFAAP was established in 1941 on 10,747 acres as the world's largest powder and propellant plant. Production of propellant began in 1943 and played a significant role in US history by providing munitions for three major military conflicts: WWII, the Korean Conflict and the Vietnam Conflict. The installation was declared excess of Army needs. All of the Sunflower property was transferred to a private developer, SRL. The entire cleanup program was contracted with SRL under a performance-based acquisition (PBA).

Additional installation operations included the manufacture and regeneration of nitric and sulfuric acids and munitions proving. During the course of its 50-plus years of operation, various hazardous substances were released both inadvertently and intentionally to the environment. These releases, which are not uncommon at major industrial facilities, were from production line areas and various support areas. There are 70 Resource Conservation and Recovery Act (RCRA) solid waste management units (SWMUs), and 27 AOCs. The USEPA proposed listing the installation on the NPL in 1995. The USEPA removed the installation from proposed listing on the NPL in 2005.

Installation Program Cleanup Progress

IRP

Prior Year Progress: Prepared interim corrective measures (ICM) reports at SAAP-003, SAAP-010, SAAP-014, and SAAP-020.

Prepared RFI reports with CMS at SAAP-046, SAAP-115, SAAP-118, SAAP-120, and SAAP-122.

Conducted LTM at SAAP-041 and SAAP- 042.

Future Plan of Action: Prepare/complete ICM reports at SAAP-036 and SAAP-111.

Complete ICM reports at SAAP-003, SAAP-010, SAAP-014, and SAAP-020.

Prepare/complete RFI reports with CMS at SAAP-015, 016, 030, 040, 054, 057, 059, 063, 064, 101, 105, 110, and 114.

Complete RFI reports with CMS at SAAP-046, SAAP-115, SAAP-118, SAAP-120, and SAAP-122.

Prepare/complete RFI work plans for SAAP-050.

Prepare/complete CMI work plans for SAAP-053, 064, 118, 120, and 122.

Conduct LTM at SAAP-041 and SAAP-042.

CR

Prior Year Progress: Prepare/complete RFI work plans for CCSAAP-055, 069.

Future Plan of Action: Complete RFI fieldwork and prepare/complete RFI reports with CMS at CCSAAP-055, 069.

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Begin Date	End Date	End FY
Complete	200310	200409	2004
Planned	201510	201609	2016

Last Completed 5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
SAAP-013 & 027	SAAP-013, SAAP-027
SAAP-041	SAAP-041
SAAP-050	SAAP-050

Results Monitoring is still picking up elevated levels of contaminants above risk levels.

Actions Continue to monitor until contaminants are below risk levels.

Plans Continue to monitor until contaminants are below risk levels.

Recommendations and Implementation Plans:
To be determined (TBD).

Parcel Summary

Summary of Parcel Prioritization and Transfer Strategy

Parcel Name: **All**

Parcel Size: 9,065.00

Associated Sites: SAAP-007, SAAP-117, SAAP-053, SAAP-123, SAAP-043, SAAP-010, SAAP-111, SAAP-045, SAAP-040, SAAP-047, SAAP-035, SAAP-003, SAAP-067, SAAP-058, SAAP-044, SAAP-019, SAAP-032, SAAP-066, SAAP-115, SAAP-026, SAAP-064, SAAP-050, SAAP-052, SAAP-042, SAAP-014, SAAP-057, SAAP-110, SAAP-011, SAAP-022, SAAP-046, SAAP-031, SAAP-118, SAAP-063, SAAP-027, SAAP-009, SAAP-036, SAAP-102, SAAP-012, CCSAAP-055, CCSAAP-061, CCSAAP-113, CCSAAP-126, SAAP-048, SAAP-018, SAAP-020, SAAP-021, SAAP-016, SAAP-124, SAAP-112, SAAP-030, SAAP-101, SAAP-002, SAAP-059, SAAP-051, SAAP-004, SAAP-062, SAAP-120, SAAP-122, SAAP-114, SAAP-006, SAAP-008, SAAP-033, SAAP-005, SAAP-025, SAAP-034, SAAP-037, SAAP-065, SAAP-013, CCSAAP-069, CCSAAP-103, CCSAAP-070, SAAP-001, SAAP-017, SAAP-041, SAAP-015, SAAP-024, SAAP-054, SAAP-105, SAAP-116, SAAP-038, SAAP-039

Transfer Date: 200508

Current Land Use: Other (Mixed Use)

Future Land Use: Other (Mixed Use)

Encumbrances: N/A

Leases/Permits/Licenses: 20050815

Transfer Strategy: Special Legislation

Recipient Organization: Sunflower Redevelopment, LLC.

Other Issues Affecting Transfer: N/A

SUNFLOWER ARMY AMMUNITION PLANT

Non-BRAC Excess
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 88/12

Installation Site Types with Future and/or Underway Phases

2 Above Ground Storage Tank
(SAAP-044, SAAP-065)
4 Burn Area
(SAAP-021, SAAP-022, SAAP-053, SAAP-064)
1 Chemical Disposal
(SAAP-067)
2 Contaminated Buildings
(SAAP-059, SAAP-117)
2 Contaminated Fill
(SAAP-123, SAAP-124)
2 Contaminated Ground Water
(SAAP-048, SAAP-101)
3 Contaminated Sediments
(SAAP-026, SAAP-039, SAAP-047)
6 Contaminated Soil Piles
(SAAP-057, SAAP-115, SAAP-118, SAAP-119, SAAP-120, SAAP-121)
1 Disposal Pit/Dry Well
(SAAP-054)
5 Drainage Ditch
(SAAP-010, SAAP-017, SAAP-025, SAAP-033, SAAP-066)
1 Firing Range
(SAAP-105)
1 Incinerator
(SAAP-046)
5 Landfill
(SAAP-018, SAAP-019, SAAP-040, SAAP-041, SAAP-042)
2 Maintenance Yard
(SAAP-058, SAAP-122)
1 Oil Water Separator
(SAAP-038)
1 Pesticide Shop
(SAAP-030)
1 Sewage Treatment Plant
(SAAP-003)
4 Spill Site Area
(SAAP-024, SAAP-045, SAAP-063, SAAP-102)
7 Storage Area
(SAAP-001, SAAP-015, SAAP-016, SAAP-043, SAAP-051, SAAP-062, SAAP-110)
9 Surface Disposal Area
(SAAP-014, SAAP-032, SAAP-036, SAAP-037, SAAP-050, SAAP-052, SAAP-111, SAAP-112, SAAP-116)
14 Surface Impoundment/Lagoon
(SAAP-002, SAAP-004, SAAP-006, SAAP-008, SAAP-009, SAAP-011, SAAP-012, SAAP-013, SAAP-020, SAAP-027, SAAP-031, SAAP-034, SAAP-035, SAAP-114)
2 Waste Treatment Plant
(SAAP-005, SAAP-007)

Most Widespread Contaminants of Concern

Asbestos, Dioxins/Dibenzofurans, Explosives, Herbicides, Lead Based Paint, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC), Nitrate/Nitrite, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

IRP Summary

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
SAAP-050	Disposal Site East of SAAP-001	IRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	1997	TBD
SAAP-013	South Acid Area LWTP Evap. Lagoons	IRA	BIOREMEDITATION - IN SITU	1999	TBD
SAAP-027	NQ Area SAC & LWTP Evap. Lagoons	IRA	BIOREMEDITATION - IN SITU	1999	TBD
SAAP-041	Calcium Carbonate Cake Landfill	FRA	CAPPING	1999	TBD
SAAP-050	Disposal Site East of SAAP-001	IRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	1999	TBD
SAAP-010	F-Line Area Ditches	IRA	WASTE REMOVAL - SOILS	2001	TBD
SAAP-011	F-Line Area Settling Ponds	FRA	WASTE REMOVAL - SLUDGES	2001	TBD
SAAP-042	Temporary Sanitary Landfill	FRA	NATURAL ATTENUATION	2001	TBD
SAAP-018	Old/New Sanitary Landfill	IRA	WASTE REMOVAL - SOILS	2003	TBD
SAAP-033	Paste Area Half Tanks & Ditches	IRA	WASTE REMOVAL - SOILS	2003	TBD
SAAP-034	Five Corners Settling Ponds	IRA	WASTE REMOVAL - SOILS	2003	TBD
SAAP-035	Nitroglycerine Area Settling Ponds	IRA	WASTE REMOVAL - SOILS	2003	TBD
PBC Sunflower	Site Wide GFPR	FRA	OTHER	2008	TBD
SAAP-001	Classification Yard	IRA	REMOVAL	2008	TBD
SAAP-030	Pesticide Handling Area	IRA	WASTE REMOVAL - SOILS	2009	TBD
SAAP-106	Process Facilities with F-Line Area	FRA	WASTE REMOVAL - SOILS	2010	TBD

Duration of IRP

Year of IRP Inception: 197907

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 202510/204509

Date of IRP completion including Long Term Management (LTM): 204811

IRP Contamination Assessment

Contamination Assessment Overview

Groundwater underlying SFAAP has been shown to be contaminated with nitrates, SVOCs, VOCs, POLs, metals, and pesticides. This groundwater is not used as a source for drinking water. Currently, there is a deed restriction against drilling wells for potable water.

There are six Installation Restoration Program (IRP) sites which include 10 landfills and/or cells. The contents of the abandoned landfills are believed to be solid waste, incinerator ash, asbestos, and/or construction/demolition debris. Typical operation activities at the landfills included the trench and area methods. In the area method the waste is dumped in piles on the ground surface, usually low areas, flattened and compacted and then covered with a thin layer of soil. In the trench method, soil is excavated to create a trench, the wastes are compacted into the trench, and the excavated soil is used to cover the waste. The maximum depths of disposal trenches were usually 15 feet below ground surface. Currently, there is a deed restriction against any ground-disturbing activity that would compromise the integrity of landfill caps.

Nitrocellulose (NC), nitroglycerin (NG), and nitroguanidine (NQ) were the explosives produced at SFAAP as the main ingredients in various propellant formulations. Nitric acid and sulfuric acid were also produced and recycled at SFAAP. These acids were used to produce the explosives. These acids mobilized and concentrated any metals to which they were exposed. Nitrates are also found as a result of the nitric acid and the nitrated compounds produced from the nitric acid.

Propellants produced at SFAAP included single, double and triple base solvent propellant, and double base solventless propellant. The solvents used in solvent propellant were alcohol, ether and acetone. Water was used as the mixing agent in solventless propellant. Burn modifiers and stabilizers included leaded compounds, phthalates, waxes and diphenylamines. The use of base explosives, solvents, burn modifiers and stabilizers resulted in contamination by NC, NG, NQ, lead and phthalates.

Diesel fuel, gasoline, hydraulic oil and motor oil storage, use, and accidental releases (except diesel fuel used to initiate building burns) resulted in contamination by POL, total petroleum hydrocarbons (TPH), SVOCs and VOCs.

Intentional open burning of explosive buildings with asbestos, lead-lined floors and leaded equipment in place resulted in contamination by asbestos and lead.

Certain areas were designated for open burning explosives, explosive contaminated material, used oil/solvents, or building demolition debris. Results of these multiple burns resulted in contamination by dioxins, metals, SVOCs, VOCs, and asbestos.

Preliminary investigations have been conducted on all SWMUs. In addition to studying each SWMU, three SWMUs have received final closure. Studies show that five SWMUs will not require any remedial action for soil. Soil cleanups have been completed at 12 SWMUs/AOCs. Three SWMUs are landfills in post-closure care. Four AOCs are being handled under existing SWMUs. Special work performed on the plant includes a community relations plan, a groundwater investigation, a benthic macro invertebrate study, a grazing study, an ecological risk assessment, a public health assessment (via the Agency for Toxic Substances and Disease Registry), an off-site well survey, and an installation-wide stream study.

Thirteen new SWMUs and 22 AOCs were identified in the 1998 installation-wide environmental baseline survey (EBS). US Army Center for Health Promotion and Preventive Medicine (USACHPPM) performed relative risk site evaluations (RRSE) on those sites that are eligible for Environmental Restoration, Army (ER,A) funding.

Two new AOCs were added for the soil cleanup underneath explosive foundations and explosive sewers. Three new SWMUs and three new AOCs were found and added during the project reset in 2013.

IRP investigations have been conducted at SAAP-001 through 053. Several of these sites have been remediated, or require no further action (NFA). The remaining sites between SAAP-001 and 053 that require further action will have additional investigations to fill data gaps and will be remediated if required. SAAP-054 through 124 will be investigated and remediated if required.

Cleanup Exit Strategy

To attain NFA approval from the regulatory agency some sites require an initial investigation while other will require additional investigation. After soil contamination is remediated the contaminated groundwater will undergo monitored natural attenuation (MNA). Specifics can be found in cleanup exit strategies for each site.

IRP Previous Studies

	Title	Author	Date
1974			
	Water Quality Monitoring, Consultation No. 24-044-74/75, Sunflower AAP, 11-15 February 1974	US Army Environmental Hygiene Agency	FEB-1974
	Preliminary Environmental Survey for SFAAP	Aberdeen Proving Ground, MD and Dugway Proving Ground, UT	AUG-1974
1976			
	Aquatic Ecological Surveys at SFAAP	US Army, Edgewood Arsenal	AUG-1976
1977			
	Pollution Status Report - SFAAP	Picatinny Arsenal, NJ	JAN-1977
	Environmental Impact Assessment of NC Acid Wastewater Treatment Facility	Hercules	AUG-1977
	Environmental Impact Assessment of SFAAP Environmental Hazards from Activating Inactive Facilities	Hercules	NOV-1977
1978			
	Water Quality Biological Study No. 32-24-0134-79, Sunflower AAP, 10-21 July 1978.	US Army Environmental Hygiene Agency	JUL-1978
	Environmental Assessment/Master Plan for SFAAP	Hercules	SEP-1978
	Environmental Impact Assessment Statement (Revised)	Hercules	DEC-1978
1979			
	Army Pollution Abatement Program Feasibility Study for Acid Waste Treatment Area, SFAAP	Clark-Dietz Eng, Inc.	MAY-1979
	Water Management Study of the Nitroguanidine Production Facility - SFAAP	Aberdeen Proving Ground, MD	JUL-1979
	Ambient Air Quality Impact Analysis, Nitroguanidine Facility, Sunflower AAP, June-November 1979.	US Army Environmental Hygiene Agency	NOV-1979
1980			
	Installation Assessment of Sunflower AAP, Report No. 163.	US Army Toxic and Hazardous Materials Agency	MAR-1980
	Water Quality Monitoring Consultation (WM) No. 32-66-0141-80, Sunflower AAP, 21-25 July 1980.	US Army Environmental Hygiene Agency	JUL-1980
	Army Pollution Abatement Program Study No. D-1473-W, Landfill Disposal Study, Sunflower AAP, September 1978-September 1980.	US Army Environmental Hygiene Agency	SEP-1980
	Hazardous Waste Management Survey No. 39-26-0131-82, Sunflower AAP, 18-21 November 1980.	US Army Environmental Hygiene Agency	NOV-1980
	Acoustical Engineering Noise Reduction Special Study No.51-34-0457-81, Ball Mill and Boiler House Noise, Sunflower AAP, 1-4 December 1980.	US Army Environmental Hygiene Agency	DEC-1980
1981			
	Landfill Disposal Study # D-1473-W, SFAAP (Sep 1978 - Sep 1980)	US Army Environmental Hygiene Agency	MAR-1981
1982			
	Water Quality Engineering Consultation No. 32-24-0340-83, Sunflower AAP, 1-5 February 1982.	US Army Environmental Hygiene Agency	FEB-1982
	Potable/Recreational Water Quality Survey No. 31-66-0141-83, Sunflower AAP, 20-24 September 1982.	US Army Environmental Hygiene Agency	SEP-1982
	Phase I Land Treatment Feasibility Study No. 32-24-0410-83, Sunflower AAP, December 1982.	US Army Environmental Hygiene Agency	DEC-1982

IRP Previous Studies

	Title	Author	Date
1983			
	Phase 2, Hazardous Waste Management Special Study No. 37-26-0147-84, DARCOM Open-Burning/Open-Detonation Grounds Evaluation, Sunflower AAP, 9-19 May 1983.	US Army Environmental Hygiene Agency	MAY-1983
	Alternative Methods of Fines Removal from Coal Pile Run-Off at SFAAP	Eugene A. Hickock & Associates	OCT-1983
1984			
	Land Treatment Feasibility Study No. 32-24-0419-84, Sunflower AAP, 9-13 April 1984.	US Army Environmental Hygiene Agency	APR-1984
1985			
	Exposure Information Report Powerhouse Industrial Waste Treatment Lagoon, USAEHA Project No. 37-26-1342-86.	US Army Environmental Hygiene Agency	JAN-1985
	Hazardous Waste Study No. 37-26-0710-86, Investigation of Possible Soil Contamination from Propellant and Explosive Production.	US Army Environmental Hygiene Agency	JAN-1985
	Archaeological Overview and Management Plan for SFAAP, Johnson County, KS	Nickens and Associates for Army and National Parks Service, US Dept of Interior	JAN-1985
	NQ Wastewater Pollution Control Engineering Study	Hercules	FEB-1985
	Hazardous Waste Study No. 37-26-0710-86, Investigation of Possible Soil Contamination from Propellant and Explosive Production, 22 October - 8 November 1985.	US Army Environmental Hygiene Agency	OCT-1985
	Hazardous Waste Study No. 37-26-0709-87, Investigation of Pond and Ditch Sediments, Sunflower AAP, 21 October - 8 November 1985.	US Army Environmental Hygiene Agency	OCT-1985
1986			
	Biological Treatment of SFAAP Wastewater Proposed Pilot Test Program	PolyBac Corp.	JAN-1986
	Environmental Risk Identification and Assessment of Nitroguanidine Manufacturing at SFAAP	US Army - SFAAP	FEB-1986
	Short-Term Extension of Wastewater Lagoons Life at SFAAP	Arthur D. Little, Inc. for US Army Toxic and Hazardous Materials Agency	MAY-1986
	Wastewater Hazards Analysis Assessment of SFAAP Nitroguanidine Wastewater GAC/IE Pilot Plant	Arthur D. Little, Inc. for US Army Toxic and Hazardous Materials Agency	MAY-1986
	Memorandum from R. M. Thompson, Rd: Treatment of Roberts Lake	Hercules	AUG-1986
1987			
	Spill Containment Structures Evaluation Committee Report	US Army - SFAAP	APR-1987
	Evaluation of the Suitability of the River Water Treatment Plant Lagoons for Treating NQ Wastewater	US Army - SFAAP	MAY-1987
	Characterization of Nitroguanidine Wastewater, Final Report	US Army - SFAAP	JUN-1987
	Evaluation of the Adequacy of Existing Non-Discharging Lagoons for Current and Long-Term Uses, Sunflower AAP, September 1986, revised June, 1987.	US Army - SFAAP	JUN-1987
	Engineering Study Report, Sunflower AAP	US Army - SFAAP	JUN-1987
	Federal Facilities Compliance Agreement Final	US Army and USEPA	JUN-1987

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1987			
	Engineering Report Between Army/SFAAP and EPA		
	Ground-Water Contamination Survey No. 38-26-0856-89, Final Report, Evaluation of Solid Waste Management Units, Sunflower AAP, 21-25 September 1987.	US Army Environmental Hygiene Agency	SEP-1987
	Solid Waste Disposal Study # 38-26-0824-88, Landfill Site Selection - SFAAP (18-21 May and 15-20 Jun 87)	US Army Environmental Hygiene Agency	DEC-1987
1988			
	Water Quality Engineering Study No. 32-24-0820-89, Final Report, Land Treatment System Evaluation	US Army Environmental Hygiene Agency	JAN-1988
	Geohydrologic Study No. 38-26-0316-89, SAC Evaporation Lagoons and Building 9042 Area, 9-24 May and 11-21 October.	US Army Environmental Hygiene Agency	MAY-1988
	SFAAP Sequence Batch Reactor Denitrification Project (Bench Scale)	James M. Montgomery Consulting Eng, Inc.	JUN-1988
	Asbestos Survey at SFAAP	Foster-Wheeler	JUL-1988
	Report of an Environmental Baseline Study, Koch Sulfur Products Company	Wilson and Company	NOV-1988
1989			
	Preliminary Endangerment Assessment (Draft) Task Order No. 12	Dames and Moore	JAN-1989
	US Army Response to Clearview City Environmental Screening by Environmental Audit Inc., Crestwood, KS	US Army - SFAAP	MAY-1989
	Remedial Investigation Findings for SFAAP	US Army Toxic and Hazardous Materials Agency	AUG-1989
	Investigation and Evaluation of Underground Storage Tanks, SFAAP	US Army Corps of Engineers - Omaha District	SEP-1989
	Remedial Investigation Report for SFAAP	Dames and Moore	SEP-1989
1990			
	RCRA Preliminary Review/Visual Site Investigation Report, Sunflower AAP	Black & Veatch Waste Science and Technology Corp.	JAN-1990
	Koch Sulfur Products, Environmental Baseline Study, Supplement 1, Additional Soil Investigation	Wilson and Company	APR-1990
	Geohydrologic Study No. 38-26-8813-90, Nitroguanidine Production Area, 11-21 October 1988, 24 April - 12 May 1989, 31 May-11 June 1989, 4-7 December 1989.	US Army Environmental Hygiene Agency	JUL-1990
	RCRA Preliminary Review/Visual Site Investigation Report, SFAAP	PRC Environmental Management Inc. for EPA	SEP-1990
	Environmental Assessment - Disposal Batch Nitroglycerin (NG) Building by Open Burning	US Army - SFAAP	NOV-1990
1991			
	Geohydrologic Study No. 38-26-K952-91, Old Nitroguanidine Support Equipment Facility, Sunflower AAP, 1-9 April	US Army Environmental Hygiene Agency	APR-1991
	Kansas Department of Health and Environment: Letter concerning the land farming results of the contaminated soils for total petroleum hydrocarbon levels	Jack Slade	DEC-1991
1992			

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1992			
	Phase 2, Geohydrolic Study No. 38-26-KF69-93, Subsurface Fuel Release, Building 6866 N-Line Trailer and Jeep Shop, SFAAP	US Army Environmental Hygiene Agency	JAN-1992
	Report of Environmental Compliance Program Review at SFAAP	US Army Materiel Command - Installation & Services Activity	MAY-1992
	Environmental Assessment for Proposed Inactivation of SFAAP with 14 Aug 1992 Finding of No Significant Impact (FONSI) Cover Letter	Corps of Engineers for Army Materiel Command	JUL-1992
	General Operating Procedure, Maintenance Unit, Decontaminating, Preserving and Storage of General Equipment at Sunflower Army Ammunition Plant"	Hercules	AUG-1992
	Preliminary Assessment Screening, Koch Sulfur Products Company	SCS Engineers	SEP-1992
1993			
	Aerial Photo Analysis	USEPA	APR-1993
	Preliminary Assessment of Record of Environmental Consideration for Corridor 10 Commerce Park to Connect to Government Rail Line	Hercules	MAY-1993
	Environmental Assessment / PAS - Kill Creek Corridor Land-Lease for Public Park	Hercules	MAY-1993
	Groundwater Quality Consultation- Nitroguanidine Production	US Army Environmental Hygiene Agency	AUG-1993
	Kansas State Proposal for Development of a Horticulture Forestry Research/Education Center on Specific Lands on SFAAP	Kansas State University	AUG-1993
	Memorandum from J.C. Betteken, regarding the Depainting Sand Debris Found Non-Hazardous	Hercules	AUG-1993
1994			
	Environmental Assessment for SFAAP Operations and Maintenance Activities	Hercules	JAN-1994
	Analytical Data from Kansas University Medical Center Landfill Upgradient Monitoring Wells	University of Kansas Medical Center Safety Office	MAR-1994
	General Operating Procedure - Asbestos Materials Handling/Disposal	Hercules	JUN-1994
1995			
	Sub-surface Investigation of Proposed Lease Property	Koch Sulfur Products	JAN-1995
	Initial Public Health Assessment	Agency for Toxic Substances and Disease Registry	JAN-1995
	Contamination Evaluation Report for the Water Line Construction Corridor, SFAAP	Law	JUN-1995
	RCRA General RFI QCSR for SFAAP (Volume I)	Law	AUG-1995
	Benthic Macroinvertebrate Survey - Final Report, RFI	Law	SEP-1995
	Annual Report - Army Radon Reduction Program Implementation Progress.	Hercules	OCT-1995
	RCRA General RFI QCSR for SFAAP (Volume II)	Law	OCT-1995
	Site Summary of SFAAP	Agency for Toxic Substances and Disease Registry	DEC-1995

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1996			
	Receiving Water Biological Study No. 32-24-1174-94, Environmental Sampling of Robert¿s Lake, SFAAP	US Army Environmental Hygiene Agency	MAR-1996
	Layaway of Industrial Facilities (LIF) Project 5968612 - Disposal of Polychlorinated Biphenyl Contaminated Transformers SFAAP	U.S. Army - SFAAP	MAY-1996
	Risk Analysis and Environmental Stabilization Plan for Excess Personal Property (SFAAP)	Plexus Scientific	JUL-1996
	SFAAP Environmental Compliance Audit	Huntsville District Corps of Engineers for U.S. Army Materiel Command	OCT-1996
	Background Investigation Report and QCSR for Ecological Risk Assessment, Surface Water/Sediment Sampling and De Soto Park Sampling	Law	NOV-1996
	Background Investigation Report and QCSR	Law	NOV-1996
1997			
	Community Relations Plan and Community Relations Plan Addendum for the Non-Time Critical Removal Action of Explosives-Contaminated Buildings, SFAAP	Burns & McDonnell	JAN-1997
	Community Relations Plan and Addenda	Burns & McDonnell	JAN-1997
	RFI Report for SFAAP - General	Law	FEB-1997
	RFI Report and QCSR Addendum for SWMU 50 - Disposal Site East of Classification Yard	Law	FEB-1997
	RFI Report and QCSR Addendum for SWMUs 10 - F-Line Ditches and 11 - F-Line Settling Ponds	Law	MAR-1997
	RFI Report Addendum and QCSR for SWMUs 22 - Old Explosive Waste Burning Ground and 32 - Lead Decontamination and Recovery Unit	Law	MAR-1997
	SFAAP, First Non-Time Critical Burn, 13 February 1997, Aerial Plume Emissions Measurement Report	Envirovisions, Inc.	APR-1997
	RFI Report and QCSR Addendum for SWMU 14 - Rocket Static Test Area	Law	APR-1997
	RFI Report Addendum and QCSR for SWMU 21 - Contaminated Material Burning Area	Law	MAY-1997
	RFI Report Addendum and QCSR for SWMUs 18 - Old/New Sanitary Landfills and 19 - Ash Landfills	Law	JUN-1997
	RFI Report Addendum and QCSR for SWMU 51 - Battery Handling Area	Burns & McDonnell	JUN-1997
	Environmental Baseline Study - Transfer of SFAAP to US Army Corps of Engineers	US Army Corps of Engineers	DEC-1997
	Groundwater Monitoring Report for the former Underground Storage Tank Site at the N-Line Jeep and Trailer Shop, Building 6866	Hercules	DEC-1997
1998			
	Environmental Baseline Survey - Oz Entertainment Company	Hercules	APR-1998
	Greenhouse Study - Phytoextraction of Lead from Contaminated Soils at SFAAP	For USAEC by Tennessee Valley Authority	AUG-1998
	Ecological Risk Assessment, RFI, Volume 1 - Text; Volume II - Tables/Figures; Volume III - Appendices	Law	AUG-1998
	Ecological Risk Assessment QCSR	Law	AUG-1998
	Sunflower Army Ammunition Plant, Kansas, Environmental Baseline Survey Report	Aguirre Engineers, Inc.	AUG-1998

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1998			
	Hazardous and Medical Waste Study No. 37-EF-9063-99, Relative Risk Site Evaluation - SWMUs 53 and 54	US Army Center for Health Promotion and Preventive Medicine	NOV-1998
1999			
	Environmental Assessment Regarding GSA Disposal of SFAAP	For GSA by Louis Berger & Assoc and Dames & Moore	FEB-1999
	Corrective Measures Study - SWMUs 10/11 and 22/32	Burns & McDonnell	FEB-1999
	RFI Report Addendum and QCSR for SWMU 1 - Classification Yard	Law	FEB-1999
	Facility Investigation and Final QCSR Addendum - SWMUs 4 - Pond A and 5 - Acid Sewage Disposal Plant	Law	MAR-1999
	Decision Logic Criteria for Environmental Stabilization Plan (ESP) Burns - Buildings with Asbestos-Containing Materials (ACM) - 1999	Alliant Tech Systems	MAR-1999
	RFI Report Addendum and QCSR for SWMU 24 - Nitroglycerine Area	Law	MAR-1999
	RFI Report Addendum and QCSR for SWMU 3 - Main Sewage Treatment Plant	Law	MAR-1999
	Dioxin Background Study Report	EPA/Tetra Tech	APR-1999
	RFI Report Addendum and QCSR for SWMU 13 - South Acid Area LWTP and Evaporative Lagoons	Law	APR-1999
	RFI Report Addendum and QCSR for SWMU 36 - N-Line Area	Law	APR-1999
	RFI Report Addendum and QCSR for SWMU 2 - River Water Treatment Plant Lagoons	Law	MAY-1999
	RFI Report Addendum and QCSR for SWMU 27 - NQ SAC & LWTP Evaporative Lagoons	Law	MAY-1999
	RFI Report Addendum and QCSR for SWMU 31 - Contaminated Waste Processor Evaporative Lagoons	Law	MAY-1999
	RFI Report Addendum and QCSR for SWMU 47 - Nitroguanidine Area 25 Sumps	Law	MAY-1999
	RFI Report Addendum and QCSR for SWMU 48 - Nitroguanidine Support Area	Lay	MAY-1999
	RFI Report Addendum and QCSR for SWMU 12 - Pyotts Pond	Law	MAY-1999
	RFI Report Addendum and QCSR for SWMU 6 - Pond B and Sludge Disposal Area	Law	MAY-1999
	Geology, Hydrogeology and Groundwater Quality Study	Burns & McDonnell	JUN-1999
	Finding of Suitability for Early Transfer (FOSET) - SFAAP	US Army - SFAAP	AUG-1999
	Off-Site Well Inventory Report	Burns & McDonnell	AUG-1999
	Flocculation and Clarification Treatability Study Report - SWMUs 10 / 11	IT Corporation	NOV-1999
	Stabilization Treatability Study Report, SWMUs 10 / 11	IT Corporation	NOV-1999
2000			
	Explosives Safety Submission Ordnance, Explosives Remedial Actions - SFAAP	IT Corporation	JAN-2000
	Geology, Hydrogeology and Groundwater Quality Study	Burns & McDonnell	FEB-2000
	RFI Report Addendum and QCSR for SWMU 37 - Sandblast Area	Burns & McDonnell	MAR-2000

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	Title	Author	Date
2000			
	RFI Report Addendum and QCSR for SWMU 38 - Oil Separator	Burns & McDonnell	MAR-2000
	RFI Report Addendum and QCSR for SWMU 52 - Paint Bay, Bldg 542 and Tire Shop	Burns & McDonnell	MAR-2000
	RFI Report; Addendum and QCSR for SWMU 15 - Waste Storage Magazine	Burns & McDonnell	APR-2000
	RFI Report; Addendum and QCSR for SWMU 39 - South Acid Area Drainage Ditch	Burns & McDonnell	APR-2000
	RFI Report; Addendum and QCSR for SWMU 46 - Decontamination Oven	Burns & McDonnell	APR-2000
	RFI Report; Addendum and QCSR for SWMU 20 - Ash Lagoons & Sludge Disposal Area	Burns & McDonnell	MAY-2000
	RFI Report; Addendum and QCSR for SWMU 40 - Calcium Carbide Disposal Area	Burns & McDonnell	MAY-2000
	RFI Report; Addendum and QCSR for SWMU 43 - Tunnel Dryers	Burns & McDonnell	MAY-2000
	RFI Report Addendum and QCSR for SWMU 44 - Tank T784	Burns & McDonnell	JUN-2000
	RFI Report Addendum and QCSR for SWMU 17 - G-Line Area Ditches	Burns & McDonnell	OCT-2000
	RFI Report Addendum and QCSR for SWMU 17 - G-Line Area Ditches	Terracon	OCT-2000
	RFI Report Addendum and QCSR for SWMU 49 - Road Just Southeast of the Sanitary Landfill	Burns & McDonnell	OCT-2000
	RFI Report Addendum for SWMU 16 - Temporary Waste Storage Magazines	Burns & McDonnell	OCT-2000
	RFI Report Addendum and QCSR for SWMU 25 - Nitrocellulose Area Ditches	Burns & McDonnell	NOV-2000
	RFI Report Addendum and QCSR for SWMU 45 - Building 9040 Calcium Cyanamide Conveyors and Storage Units	Burns & McDonnell	NOV-2000
	RFI Report Addendum and QCSR for SWMUs 41 and 42 - Calcium Carbonate Cake and Temporary Sanitary Landfills	Burns & McDonnell	NOV-2000
2001			
	Treatability Planning & Reporting Documents, SWMUs 10 & 11	IT Corporation	FEB-2001
	Project Closure Report for SWMU 50 Interim Removal, Volumes I & II	Environmental Chemical Corporation	MAR-2001
	RFI Report Addendum and QCSR for SWMU 26 - Single Base Area Wastewater Settling Pumps	Burns & McDonnell	JUN-2001
	RFI Report Addendum and QCSR for SWMU 30 - Pesticide Handling Area	Burns & McDonnell	JUN-2001
	RFI Report Addendum and QCSR for SWMUs 7, 8, and 9 - North Acid Area	Burns & McDonnell	JUN-2001
	Characterization of Explosively Contaminated Sewer Lines	MKM Engineers	AUG-2001
	Remedial Action Summary Report for SWMUs 10 & 11	IT Corporation	OCT-2001
2002			
	Grazing Study Report - Sunflower AAP, Volume I	Burns & McDonnell	JAN-2002
	Grazing Study Report - Sunflower AAP, Volume II	Burns & McDonnell	JAN-2002
	Annual Landfill Inspection Report for SWMU 50	Environmental Chemical	MAR-2002

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	Title	Author	Date
2002			
		Corporation	
	Public Health Assessment for Sunflower AAP	Agency for Toxic Substances and Disease Registry	MAR-2002
	Supplemental RFI Addendum and QCSR for SWMU 14 - the Static Rocket Test Area	Burns & McDonnel	APR-2002
	Supplemental RFI Addendum and QCSR for SWMU 21 - The Contaminated Materials Burning Ground, Volume I	Burns & McDonnel	APR-2002
	Supplemental RFI Addendum and QCSR for SWMU 21 - The Contaminated Materials Burning Ground, Volume II	Burns & McDonnell	APR-2002
	Supplemental RFI Addendum and QCSR for SWMUs 33, 34, & 35 - Half Tanks and Settling Ponds - Volume I	Burns & McDonnell	APR-2002
	Supplemental RFI Addendum and QCSR for SWMUs 33, 34, & 35 - Half Tanks and Settling Ponds - Volume II	Burns & McDonnell	APR-2002
	Lead Analysis Project for SWMUs 32, 33, 34, and 35 (File)	IT Corporation	MAY-2002
2003			
	QCSR May-June 2003 Sampling Report	US Army Corps of Engineers	JUL-2003
	QCSR for Initial Sampling Event for SWMUs 13, 27, and 41	Environmental Chemical Corporation	AUG-2003
	Interim Remedial Action Report for SWMUs 18, 32, 33, 34, and 35	Shaw Environmental	SEP-2003
	Data Summary Report for SWMUs 13, 27, and 48, May 2002 Initial Sampling Event and Fall 2002 Subsurface Investigation	Environmental Chemical Corporation	SEP-2003
	LTM Report for SWMUs 11 and 41	Environmental Chemical Corporation	SEP-2003
	QCSR and Subsurface Investigation for SWMUs 11, 13, 27, 41, and 48	Environmental Chemical Corporation	SEP-2003
	Annual Waste Disposal Area Inspection for SWMU 50	US Army Corps of Engineers	OCT-2003
	QCSR September 2003 Sampling Event	US Army Corps of Engineers	OCT-2003
	USACHPPM Relative Risk Site Evaluations for SWMUs 56 - 67, and AOCs 1 - 22	US Army Center for Health Promotion and Preventive Medicine	NOV-2003
2004			
	LTM Report and QCSRs SWMU 11	US Army Corps of Engineers	JAN-2004
	LTM Report SWMU 11 2003	US Army Corps of Engineers	JAN-2004
	Engineering Evaluation and Cost Analysis for On-Site and Off-Site Disposal of Nonhazardous Contaminated Soils at SFAAP (CAMU Study)	Shaw Environmental	JUN-2004
	LTM Report and QCSRs SWMUs 33 and 34 and SWMUs 33 and 35	US Army Corps of Engineers	JUL-2004
	LTM Report SWMUs 33and 34 And SWMUs 33 and 35 3003	US Army Corps of Engineers	JUL-2004
	QCSR SWMU 11,33 and 35 June 2004 Sampling Event	US Army Corps of Engineers	AUG-2004
	Annual Waste Disposal Area Inspection for SWMU 50	US Army Corps of Engineers	NOV-2004

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	Title	Author	Date
2004			
	QCSR September 2004 Sampling Event for SWMUs 11, 33 and 35	US Army Corps of Engineers	NOV-2004
	Corrective Measures Study for SWMU 21	Shaw Environmental	NOV-2004
	Additional Characterization Investigation Report and Corrective Measures Work Plan, SWMU 10 - F-Line Uplands Building Foundations, Old Mechanized Roll Area, and New Mechanized Roll Area	Shaw Environmental	DEC-2004
2005			
	Final Finding of Suitability for Early Transfer of all of SFAAP	US Army - SFAAP	FEB-2005
	RFI Report Addendum and QCSR for SWMU 52 - Paint Bay, Building 542 and Tire Shop	Shaw Environmental	FEB-2005
	RFI Report Addendum and QCSR 20 - Ash Lagoons	Shaw Environmental	FEB-2005
	Annual Waste Disposal Areas Inspection for SWMU 50	Shaw Environmental	MAR-2005
	Volume II Investigation Report, Corrective Measures Work Plan and QCSR for SWMUs 60 and 61, and AOCs 3 and 13	Shaw Environmental	APR-2005
	Volume I Investigation Report, Corrective Measures Work Plan and QCSR for SWMUs 60 and 61, and AOCs 3 and 13	Shaw Environmental	APR-2005
	Supplemental Investigation Report and QCSR for SWMU 14 - Static Rocket Test Area	Shaw Environmental	APR-2005
	RFI Report Addendum and QCSR for SWMU 44 -Tank T784	Shaw Environmental	JUN-2005
	RFI Report Addendum and QCSR for SWMU 1 - Classification Yard	Shaw Environmental	JUN-2005
	Sitewide Stabilization Treatability Study Report	Shaw Environmental	JUN-2005
	Relative Risk Site Evaluation AOCs 1, 18,19,20,21 and SWMU 66	US Army Corps of Engineers	JUL-2005
	Explosive Safety Assessment Report	Shaw Environmental	AUG-2005
	RFI Report Addendum and QCSR for SWMU 45 - Bldg 9040 and Conveyors/Storage Units	Shaw Environmental	AUG-2005
	RFI Report Addendum and QCSR for SWMU 38 - Oil Separator	Shaw Environmental	SEP-2005
	RFI Report Addendum and QCSR for SWMU 39 - South Acid Drainage Ditches	Shaw Environmental	SEP-2005
	FI Report Addendum and QCSR for SWMU 3 - Main Sewage Treatment Plant	Shaw Environmental	OCT-2005
2006			
	Corrective Measures Completion Report for SWMU 22 - Old Explosive Waste Burning Ground	Shaw Environmental	JAN-2006
	Five-year Review Report	US Army Corps of Engineers	MAR-2006
	RFI Report and QCSR for SWMU 53, Burn and Debris Area North of Sewage Treatment Plant	Shaw Environmental	MAY-2006
	LTM Report and QCSR for SWMU 41, Calcium Carbonate Cake Landfill	Shaw Environmental	MAY-2006
	RFI Report Addendum and QCSR for SWMU 18, Old and New Sanitary Landfills	Shaw Environmental	MAY-2006
	Corrective Measures Completion Report, SWMU 60, Old Photographic Laboratory and AOC 13, Warehouses	Shaw Environmental	MAY-2006

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	Title	Author	Date
2006			
	8073-1 through 8037- 8		
	RFI Report Addendum and QCSR for SWMU 25, Nitrocellulose Area Ditches	Shaw Environmental	JUN-2006
	Data Submittal For Groundwater Operable Unit No. 1	Shaw Environmental	AUG-2006
	RFI Report and QCSR for the Stream Study - SWMU 66 Shaw Environmental	Shaw Environmental	AUG-2006
	RCRA Permit Application for Staging Piles at SWMUs 22/32	Tetra Tech	DEC-2006
2007			
	LTM Report for SWMUs 41, 42 and 48	Tetra Tech	MAY-2007
	Focused Corrective Measures Study for SWMU 1 - Classification Yard	Tetra Tech	JUL-2007
	PCB Sites Cleanup Report	Shaw Environmental	SEP-2007
	CMS/CMS Work Plan for SWMU 53 Soils Burn and Debris Area North of the STP	Tetra Tech	OCT-2007
	Coal and/or Coal Fines Removal at SWMU 1 - Classification Yard	Tetra Tech	OCT-2007
2008			
	Annual Waste Disposal Areas Inspection for SWMU 50	Tetra Tech	MAR-2008
	LTM Report for AOC 1 - Monitoring Well West of Old Administration Building	Tetra Tech	APR-2008
	LTM Report for 2008 for SWMUs 11, 33, 34, and 35	Tetra Tech	MAY-2008
	LTM Report for 2007 for SWMU 56	Tetra Tech	MAY-2008
2009			
	Annual Waste Disposal Areas Inspection for SWMU 50	Tetra Tech	JUN-2009
2010			
	Addendum to RFI Report for SWMU 61 - Environmental Laboratory Bldg 232 [Groundwater]	Tetra Tech	JAN-2010
	Waste Disposal Areas 2010 Inspection for SWMU 50	Tetra Tech	APR-2010
	LTM Report for 2008 & 2009 for SWMUs 11, 33, 34, and 35	Tetra Tech	JUN-2010
	LTM Report for 2008 & 2009 for SWMUs 41, 42 and 48	Tetra Tech	JUN-2010
	CMS for Groundwater for SWMU 21 - Contaminated Materials Burning Ground	Tetra Tech	AUG-2010
	RFI Report For Soil And Groundwater for AOC 4 - Disposal Area Southeast of STP	Tetra Tech	SEP-2010
	LTM Report for 2008 & 2009 for SWMU 56	Tetra Tech	OCT-2010
	LTM Report for 2010 for SWMUs 41, 42 and 48	Tetra Tech	DEC-2010
2011			
	CMS for Groundwater for SWMU 1 - Classification Yard	Tetra Tech	MAR-2011
	LTM Report for 2010 for SWMUs 11, 33, 34, and 35	Tetra Tech	MAR-2011
	Waste Disposal Areas 2011 Inspection for SWMU 50	Tetra Tech	MAY-2011
2012			
	Waste Disposal Areas 2012 Inspection of SWMU 50	Burns & McDonnell	NOV-2012
2013			

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	Title	Author	Date
2013			
	Waste Disposal Areas 2013 Inspection of SWMU 50	Burns & McDonnell	NOV-2013
2014			
	LTM Report for 2012 at SWMUs 11, 33, 34, 35, 41, 42, 48	Burns & McDonnell	MAR-2014
	LTM Report for 2013 at SWMUs 11, 33, 34, 35, 41, 42, 48	Burns & McDonnell	MAY-2014

SUNFLOWER ARMY AMMUNITION PLANT

Non-BRAC Excess

Installation Restoration Program
Site Descriptions

Site ID: SAAP-001
Site Name: Classification Yard
Alias: SWMU 1

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Asbestos

Media of Concern: Soil

Phases	Start	End
RFA	199307	199311
CS	199408	199805
RFI/CMS	199510	201710
IRA	200710	201610

RIP Date: N/A

RC Date: 201710

SITE DESCRIPTION

This site comprises 64 acres in the northeast portion of the installation. This area was used as a railroad switchyard where incoming raw materials were staged for further distribution to the appropriate receiving facility within SFAAP. The area operated from 1942-1991. Rail operations through the area stopped in 2001. This area produced no hazardous wastes; however, as a result of handling incoming raw materials which may be classified as hazardous, the area had the potential for contamination. Although no spills were reported, the Classification Yard was identified as an area of potential contamination in the 1980 installation assessment because of the materials handled and the length of time the area had been in use. A February 1999 RFI found no contamination above industrial land use standards.

The KDHE requested additional groundwater data downgradient of this site. Surface soil sampling was conducted at the bare spots and other locations to characterize the areas. The RFI report addendum in June 2005 found no soil contamination above residential levels.

ICMs were conducted in May 2007. 7,500 tons of coal-impacted soil were excavated and hauled to the Old Landfill (SAAP-018) to be used as fill material to get proper grade to close the landfill.

A CMS for soil was prepared in July 2007 with the recommended alternative of no action, which is awaiting approval from the KDHE. After KDHE approval of this CMS a statement of basis (SOB) for no further corrective action planned will be prepared.

Ten groundwater samples were collected which showed no target media cleanup level (TMCL) exceedances. A CMS for groundwater was prepared in March 2011 and recommended alternative of no action, which the KDHE approved.

Asbestos from a burned building was found during the final site walk in 2013. This asbestos in soil must be cleaned up.

CLEANUP/EXIT STRATEGY

An asbestos removal will be performed followed by a no further corrective action document.

Site ID: SAAP-002
Site Name: River Water Treatment Plant Lagoons
Alias: SWMU 2

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199611	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 19 acres in the northeast portion of the installation. This area was used as the River Water Treatment Plant (RWTP) which was built in 1942 and started operations in 1943. Water from the Kansas River was treated by lime addition, sedimentation, carbon filtration and chlorination. Two unlined lagoons were constructed south of the plant (upper lagoon 9.5 million (M) gallons, lower lagoon 1.5M gallons). Lime sludge was flushed from the RWTP flocculation basins into the lagoons. Water treatment operations at the RWTP ceased in 1971, thus eliminating the effluent of lime sludge from the RWTP into the lagoons. In the late 1970s, because of the start-up of NQ production, the lagoons received about 200,000 gallons per day of discharge from the NQ Area. This wastewater included discharges from tank T784 (SAAP-044) which stored noncontact cooling water, steam condensate, cooling tower blowdown, and ammonia stripper discharge from the NQ production process. The RWTP was leased to a private firm for commercial aquaculture purposes in 1998. The lease was terminated in September 2001.

The May 1999 RFI results indicated the need for additional groundwater and sediment sampling. The March 2002 RFI data indicated elevated levels of arsenic in deep subsurface soils at the bedrock interface. A draft revised baseline risk assessment for surface and subsurface soil at SAAP-002 was prepared in February 2007, which the KDHE rejected. The KDHE stated that the consent order (CO) between KDHE and SRL did not allow SRL to use a risk assessment in order to "risk away" a cleanup. KDHE stated that SRL is required per the CO to use the cleanup levels in the Tier 2 risk-based standards for KDHE. A wastewater lagoon closure and verification sampling work plan was prepared in March 2011 and comments have been received from KDHE.

CLEANUP/EXIT STRATEGY

A CMS will be prepared which will be used to determine future action(s) for this site.

Site ID: SAAP-003
Site Name: Sewage Treatment Plant Drying Beds
Alias: SWMU 3

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Metals, Pesticides, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199511	201810
IRA	200802	201610

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 10 acres in the northeast portion of the installation. This area was used as the main sewage treatment plant (STP). The STP was built in 1942. The STP stopped receiving human waste in 2002. The plant treated sanitary wastewater from the installation. Following treatment, water from the plant was discharged into Kill Creek. During the 1950s and 1960s, solids (sludge) from the STP were placed in drying beds east of the Imhoff tank. The digester was last emptied in 1974. Wastewater from various non-explosive production facilities and laboratories, including a photographic laboratory, processed at the plant may have contained hazardous constituents. According to a 1974 report, no chlorination was performed at the STP.

Areas of contamination were found during the initial RFI in March 1999. Further soil investigation was conducted to fully delineate the site in October 2005.

Corrective measures were conducted for the sludge drying beds and the STP was decommissioned in 2008. Excavation of 4,309 tons of contaminated soil/sludge was conducted and disposed of off-site. A draft corrective measures completion report was submitted in fiscal year (FY) 14.

CLEANUP/EXIT STRATEGY

After KDHE approval of the corrective measures completion report, a request for no further corrective action planned will be submitted.

Site ID: SAAP-004
Site Name: Pond A and Sludge Disposal Area
Alias: SWMU 4

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite, Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199610	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 3 acres in the north central portion of the installation. This area was used for the sedimentation of solids and equalization of wastewater from the NC production area prior to lime treatment and subsequent discharge to Pond B (SAAP-006). Pond A was constructed in 1942 with a surface area of 86,200 square feet, and received wastewater from NC production during periods of 1943-1946, 1951-1960 and 1965-1971. In addition, Pond A received wastes from many other areas of SFAAP, including the NQ Pilot Plant from 1980-1984. The pond now functions as part of the natural drainage system receiving storm sewer outfall from various parts of SFAAP, including drainage from the industrial wastewater treatment facility area. Pond A receives storm water runoff from SAAP-025 (NC Ditches) and shares a geographical boundary with SAAP-005 (Acid Sewage Disposal Plant). All underground piping that is associated with the Acid Sewage Disposal Plant will be handled under SAAP-005.

The March 2000 RFI results indicated elevated levels of NC. An RFI work plan was prepared in July 2010, which was approved by KDHE. Fieldwork was never started due to insufficient funding. Additional RFI activities are required to complete site characterization and identify the lateral and vertical extent of contaminated sediment requiring removal in the pond, the sludge disposal area and the tributary between Ponds A and B. Two bedrock wells will be installed. Anticipated samples taken as part of the additional RFI activities include soil, sediment, surface water, and groundwater samples analyzed for RCRA metals, antimony, cobalt, copper, hexavalent chromium, iron, manganese, nickel, thallium, explosives, NC, NG, NQ, guanidine nitrate (GN), SVOCs, VOCs, PCBs, TPH-diesel range organics (DRO), TPH-gasoline range organics (GRO), ammonia, cyanide, nitrate/nitrite, sulfate, pesticides, fluoride, chloride, and pH.

CLEANUP/EXIT STRATEGY

An RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-005
Site Name: Acid Sewage Disposal Plant
Alias: SWMU 5

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite

Media of Concern: Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199610	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used to treat the acidic wastewater flowing into Pond A from the NC Production Area and had three periods of operation: 1943-1946, 1951-1960 and 1965-1971. The water from Pond A was diverted into the neutralization unit and pH was adjusted by adding burned lime slurry. The neutralized water and unsettled flocculent were then discharged from the unit into an underground drainage pipe which emptied into a tributary ditch to Pond B (SAAP-006). The underground piping and the initial portion of the connecting ditch to Pond B will be remediated under this site.

The March 2000 RFI results indicated elevated levels of NC. An RFI work plan was prepared in July 2010, which was approved by the KDHE. Fieldwork was never started due to insufficient funding. RFI activities are required to delineate areas of contamination, complete site groundwater characterization, and to further define the volume of soils requiring removal. Groundwater monitoring wells will be installed. Anticipated samples taken as part of the additional RFI activities include groundwater, soil, sediment, and surface water samples analyzed for RCRA metals, antimony, cobalt, copper, hexavalent chromium, iron, manganese, nickel, thallium, explosives, NC, NG, NQ, GN, SVOCs, VOCs, PCBs, TPH- DRO, TPH-GRO, ammonia, cyanide, nitrate, sulfate, pesticides, fluoride, chloride, and pH.

CLEANUP/EXIT STRATEGY

An RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-006
Site Name: Pond B and Sludge Disposal Area
Alias: SWMU 6

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197907	199009
CS	199405	199805
RFI/CMS	199611	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 38 acres in the east central portion of the installation. This area was used for sedimentation of solids from the neutralized wastewater discharged from the Acid Sewage Disposal Plant (SAAP-005). Unknown quantities of sludge were occasionally dredged from Pond B and landfilled west of the pond. Pond B discharges into Kill Creek. Pond B was a farm pond constructed prior to purchase of farmland for building the installation. Pond B is an unlined impoundment situated upon limestone bedrock with a surface area of 9 acres and a capacity of 16.5M gallons.

The May 1999 RFI results indicated elevated levels of manganese in groundwater. An RFI work plan was prepared in July 2010, which was approved by KDHE. Fieldwork was started but put on hold due to insufficient funds. To finish the RFI there will be groundwater monitoring wells installed and groundwater samples taken. Samples will be analyzed for RCRA Metals, antimony, cobalt, copper, hexavalent chromium, iron, manganese, nickel, thallium, explosives, NG, NQ, GN, SVOCs, VOCs, PCBs, TPH-DRO, TPH-GRO, ammonia, cyanide, nitrate/nitrite, sulfate, pesticides, fluoride, chloride, and pH.

CLEANUP/EXIT STRATEGY

An RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-007
Site Name: North Acid Area - Chromate Area
Alias: SWMU 7

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Metals, Nitrate/Nitrite, Pesticides, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197907	199201
CS	199610	199805
RFI/CMS	199807	202510

RIP Date: N/A

RC Date: 202510

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used for production and recycling of nitric acid and sulfuric acid, and production of ammonia and ammonium nitrate. The Chromate Area is the location of the former cooling water treatment unit, including a cooling tower in which chromium-contaminated wastewater was reportedly generated through the use of corrosion inhibitors on the tower. Chromate liquid may have been disposed in pipes subsequently left buried in the area, and the potential is present for heavy metal contamination. When the site was dismantled in 1958, the two wastewater collection basins were left in place. In 1982 and 1983 chromium-contaminated water was removed from the basins. Water continues to accumulate in the basins.

The North Acid Area operated during World War II (1943-1946), producing nitric acid and recycling sulfuric acid. After propellant production ceased in 1946 an ammonium nitrate facility was constructed and 324M pounds of ammonium nitrate liquor were produced during the period of 1946-1948. In 1952 Food Machinery and Chemical Corporation built a nitrogen fixation plant at the north end of the North Acid Area, and operated it from 1953-1954. This is the location where chromate contamination was found.

As a result of the 1998 EBS the single boundary for SAAP-007, 008, and 009 was expanded to include all of the North Acid Area. To better define the geographic areas of contamination/production processes, the three sites were changed to define three different areas within the North Acid Area. The entire Chromate Area will be covered in SAAP-007. The soil around explosive buildings in the North Acid Area will be covered in SAAP-008. The non-explosive buildings, ditches, and areas away from the explosive buildings in the North Acid Area, excluding the Chromate Area, will be included in SAAP-009.

The data from the 2001 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). Therefore, another RFI was initiated in 2008. The fieldwork was started but put on hold due to insufficient funds. Finishing the RFI entails taking subsurface soil samples for vertical delineation of contaminated soil, surface soil samples for horizontal delineation of contaminated soil, and groundwater grab samples using direct-push technology (DPT). Groundwater monitoring wells will be installed and groundwater samples will be taken.

CLEANUP/EXIT STRATEGY

An RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-008
Site Name: N. Acid Area - Chromate Conc. Pond
Alias: SWMU 8

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	197907	199009
CS	199608	199805
RFI/CMS	200001	201810
IRA	201502	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used for production and recycling of nitric acid and sulfuric acid, and production of ammonia and ammonium nitrate. The Chromate Area is the location of the former cooling water treatment unit, including a cooling tower in which chromium-contaminated wastewater was reportedly generated through the use of corrosion inhibitors on the tower. Chromate liquid may have been disposed in pipes subsequently left buried in the area, and the potential is present for heavy metal contamination. When the site was dismantled in 1958, the two wastewater collection basins were left in place. In 1982 and 1983 chromium-contaminated water was removed from the basins. Water continues to accumulate in the basins.

The North Acid Area operated during World War II (1943-1946), producing nitric acid and recycling sulfuric acid. After propellant production ceased in 1946 an ammonium nitrate facility was constructed and 324M pounds of ammonium nitrate liquor were produced during the period of 1946-1948. In 1952 Food Machinery and Chemical Corporation built a nitrogen fixation plant at the north end of the North Acid Area, and operated it from 1953-1954. This is the location where chromate contamination was found.

As a result of the 1998 EBS the boundary for SAAP-007, 008, and 009 was expanded to include all of the North Acid Area. The entire Chromate Area will be covered in SAAP-007. The ICM for the soil around explosive buildings in the North Acid Area is covered in the work plan for SAAP-008. The non-explosive buildings, ditches, and areas away from the explosive buildings in the North Acid Area, excluding the Chromate Area, will be included in the RFI and corrective measures for SAAP-009. An RFI for SAAP-008 will be initiated in 2015.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-009
Site Name: N. Acid Area - WW Treatment Lagoon
Alias: SWMU 9

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197907	199009
CS	199610	199805
RFI/CMS	200001	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used for production and recycling of nitric acid and sulfuric acid, and production of ammonia and ammonium nitrate. The Chromate Area is the location of the former cooling water treatment unit, including a cooling tower in which chromium-contaminated wastewater was reportedly generated through the use of corrosion inhibitors on the tower. Chromate liquid may have been disposed in pipes subsequently left buried in the area, and the potential is present for heavy metal contamination. When the site was dismantled in 1958, the two wastewater collection basins were left in place. In 1982 and 1983 chromium-contaminated water was removed from the basins. Water continues to accumulate in the basins.

The North Acid Area operated during World War II (1943-1946), producing nitric acid and recycling sulfuric acid. After propellant production ceased in 1946 an ammonium nitrate facility was constructed and 324M pounds of ammonium nitrate liquor were produced during the period of 1946-1948. In 1952 Food Machinery and Chemical Corporation built a nitrogen fixation plant at the north end of the North Acid Area, and operated it from 1953-1954. This is the location where chromate contamination was found.

As a result of the 1998 EBS the single boundary for SAAP-007, 008, and 009 was expanded to include all of the North Acid Area. To better define the geographic areas of contamination/production processes, the three sites were changed to define three different areas within the North Acid Area. The entire Chromate Area will be covered in SAAP-007. The soil around explosive buildings in the North Acid Area will be covered in SAAP-008. The non-explosive buildings, ditches, and areas away from the explosive buildings in the North Acid Area, excluding the Chromate Area, will be included in SAAP-009.

The data from the 2001 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). Therefore another RFI was initiated in 2008. The fieldwork was started but put on hold due to insufficient funds. Finishing the RFI of the North Acid Area excluding the Chromate Area and Explosive Foundations entails taking subsurface soil samples for vertical delineation of contaminated soil, surface soil samples (stepouts) for horizontal delineation of contaminated soil, and groundwater grab samples using DPT. Groundwater monitoring wells will be installed and groundwater samples taken. Samples will be analyzed for SVOC-PAHs, TPH-POL, lead, ammonia, nitrate and sulfate.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-010
Site Name: F-Line Area Ditches
Alias: SWMU 10

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite, Pesticides, Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199806	200410
DES	200410	200501
IRA	199905	200106
CMI(C)	200410	201708

RIP Date: N/A

RC Date: 201708

SITE DESCRIPTION

This site comprises 217 acres in the east central portion of the installation. This area was used for production of 2.75-inch rocket grains. This site was built in 1942 and consisted of sumps, troughs, pipes and other conveyances and ditches used for the management of wastewater from operations in the F-Line Area. F-Line included a blender house where explosive propellant was received and blended with lead salicylate; rolled into sheets; slit and wound into carpet rolls; and extruded by large hydraulic presses into solid propellant grains. Any propellant that was on the floor was washed into the drain with the wastewater. Most of the effluents were then discharged, via unlined ditches, to settling ponds and eventually to Spoon and Kill Creeks; however, one group of the ditches discharged directly to a field adjacent to Spoon Creek. The F-line ditches were located on the east side of the F-Line press houses. Occasionally, propellant solids settled in these ditches before reaching the ponds. The ditches were used periodically from 1943 to 1971.

The February 1999 RFI indicated NG in soil at concentrations that exceed USEPA's target risk range for carcinogenic risk. Lead was found at concentrations exceeding USEPA and KDHE guidance values. The CMS and SOB were completed in February 1999 and recommended soil remediation by excavation, stabilization and disposal. As a result of the 1998 EBS the size of this site was expanded by 25 acres to a total area of 128 acres and includes 56 building foundations. A surface soil removal of 47,000 tons of contaminated soil was completed in 2001. SAAP-106 is being handled under SAAP-010. Investigation of 10 additional acres in SAAP-010, and all of SAAP-106 was completed in 2004. A total of 4,945 tons of contaminated soil from SAAP-106 and part of SAAP-010 were excavated and disposed of in March 2005.

ICM for contaminated soil underneath explosive buildings and sewers in the F-Line was completed under sites SAAP-123/124 and included in the ICM report for SAAP-010. SAAP-106 represents the western portion of F-line and is incorporated into ICM report for SAAP-010. A total of 76,964 tons of contaminated soil from underneath explosive foundations and sewers in F-line were excavated and disposed of, and was completed in 2008. A draft ICM report was prepared and submitted to KDHE. The ICM is captured under the CMI(C) phase and is considered the final action for the site.

CLEANUP/EXIT STRATEGY

A request for no further corrective action planned will be submitted.

Site ID: SAAP-011
Site Name: F-Line Area Settling Ponds
Alias: SWMU 11

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199601	199907
DES	199907	199908
CMI(C)	199906	200109
CMI(O)	200110	204509

RIP Date: 200110

RC Date: 204509

SITE DESCRIPTION

This site comprises 5 acres in the east central portion of the installation. This area was used for settling ponds for removing explosive solids from F-Line wastewater. Wastewater from the F-Line production facilities drained into ditches, which led to the six F-Line Area settling ponds (1A, 1B, 2A, 2B, 3A, and 3B) and two blender ponds (4A and 4B). The six settling ponds were unlined earthen ponds equipped with stand pipes to permit settling of solids and decantation of water. The northernmost settling ponds (3A and 3B) were constructed in 1942 and abandoned in 1971. The remaining ponds were operational from 1943 to 1969. These ponds were used to settle propellant solids from wastewater generated during production of propellants. The ponds were also part of the natural drainage system, ultimately discharging into Spoon and Kill Creeks. During past operations, SFAAP occasionally removed the propellant solids which had accumulated in the ponds and burned them at the burning grounds (SAAP-022). The pond sediments were contaminated with propellant containing lead salts, phthalates, NG and NC.

The February 1999 RFI indicated NG in the soil at concentrations that exceed USEPA's target risk range for carcinogenic risk. Lead was also found at concentrations exceeding USEPA and KDHE guidance values.

The CMS and SOB was completed in February 1999 and recommended soil remediation by excavation, stabilization and disposal. Excavated and disposed of 6,750 tons of contaminated sediment and underlying soil. The CMI was completed in 2001.

Groundwater monitoring was initiated in 2001. KDHE has approved a hiatus in the groundwater sampling requirements until the upgradient sites are remediated.

CLEANUP/EXIT STRATEGY

RA(O) groundwater sampling will resume when upgradient cleanup is complete.

Site ID: SAAP-012
Site Name: Pyotts Pond & Sludge Disposal Area
Alias: SWMU 12

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals, Pesticides, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199606	202510

RIP Date: N/A

RC Date: 202510

SITE DESCRIPTION

This site comprises 12 acres in the east central portion of the installation. This area was used as an acidic water retention basin to regulate the pH prior to discharge off-post. Pyotts Pond is an unlined, earthen impoundment with a surface area of 1.7 acres and a capacity of 5.2M gallons. The pond was constructed in 1968 to aide in pollution control. The pond received drainage from the South Acid Area, the Paste Mix Area, the NC Area, the Solvent Area and the NG Area. Neutralization of water entering the pond resulted in an accumulation of calcium sulfate sludge, which was periodically dredged and landfilled adjacent to the pond to the north. Effluent from the pond drains northeast to Kill Creek, and was monitored by National Pollutant Discharge Elimination System Outfall 004.

The May 1999 RFI results indicated elevated levels of mercury and NQ in the surface water. Groundwater contained NQ and sediments contained elevated levels of PAHs, PCBs and NC. An RFI work plan was prepared in June 2010, which was approved by KDHE. Fieldwork was started but put on hold due to insufficient funds. Finishing the RFI entails installing groundwater monitoring wells and taking groundwater samples. Samples will be analyzed for RCRA metals, antimony, beryllium, cobalt, copper, hexavalent chromium, manganese, iron, nickel, vanadium, zinc, explosives, NG, NQ, GN, SVOCs, VOCs, PCBs, TPH-DRO, TPH-GRO, ammonia, cyanide, nitrate/nitrite, pesticides, and sulfate.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-013
Site Name: South Acid Area LWTP Evap. Lagoons
Alias: SWMU 13

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197907	199009
CS	199408	199508
RFI/CMS	199704	201810
IRA	199810	199909

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 32 acres in the east central portion of the installation. This area was used as evaporative lagoons for NQ production wastewater after treatment at the liquid waste treatment plant (LWTP). The LWTP consisted of five aboveground tanks: three for treating wastewater, one for slurrying lime, and one for feeding wastewater to be treated. In addition, there were four unlined, earthen cells used as evaporative lagoons associated with the LWTP. Use of the LWTP and lagoons began in 1979. Volumes of waste treated at the LWTP varied with the need of production operations. The plant treated up to 1.5M gallons of corrosive wastewater each month. In the summer of 1986, the lagoons were reportedly nearing their effective capacity, and the wastewater from the lagoons was being applied to land within the plant boundaries.

In a letter dated March 11, 1996, the KDHE approved a schedule of work for remediation of the lagoon sludge and dismantlement of the lagoons. This action partially fulfilled KDHE requirements for lagoon closure. This ICM work was completed in August 1999. Groundwater monitoring until contaminants are below risk levels will complete the closure of the lagoons. Groundwater monitoring is on hold pending completion of soil cleanup of all upgradient sites. ICM for contaminated soil underneath explosive foundations is covered under site SAAP-123/124.

CLEANUP/EXIT STRATEGY

An RFI work plan and fieldwork will be completed. A CMS will be prepared which will be used to determine future action(s) for this site.

Site ID: SAAP-014
Site Name: Rocket Static Test Area
Alias: SWMU 14

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199810	202212
IRA	200803	202112

RIP Date: N/A

RC Date: 202212

SITE DESCRIPTION

This site comprises 7 acres in the east central portion of the installation. This area was used to ballistically test 2.75-inch rocket grains. The site includes four firing platforms. Two outdoor firing platforms are located immediately north of each of the two rocket static buildings. The April 1997 and April 2002 RFI sampling indicated lead, NG and phthalates in surface soil above action levels. Lead and NG were found in the groundwater above action levels.

Additional soil and surface water sampling was completed in the April 2005 RFI to delineate the areas of contamination. ICMs were conducted in 2008. A total of 1,847 tons of contaminated soil were excavated and disposed. A draft ICM report was prepared and submitted to KDHE. The ICM report needs to be finalized. ICMs for contaminated soil underneath explosive foundations will be covered in the SAAP-123/124 ICM. The work plan for SAAP-123/124 ICM at SAAP-014 was prepared in March 2011, and is awaiting approval by KDHE.

CLEANUP/EXIT STRATEGY

An ICM for soil removal associated with the explosive slabs and sewers will be completed. A request for no further action planned will be prepared.

Site ID: SAAP-015
Site Name: Waste Storage Magazines
Alias: SWMU 15

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals, Pesticides

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199509	199805
RFI/CMS	200001	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 57 acres in the southeast portion of the installation. This area was used for RCRA permitted temporary storage of hazardous waste from 1985-2001. Before being RCRA permitted storage units these magazines were used to store produced propellant prior to shipping off-site. The buildings included in this site are: J-117, J-118, J-119, J-120, J-121, J-122, J-124, J-127, and J-128. All magazines used natural lighting to preclude accidental detonation of explosives, are secured with locking doors, and have concrete floors with secondary containment. Materials designated to be stored in each magazine included production waste from propellant manufacturing, spent solvents, and other explosive and hazardous waste.

All of the RCRA permitted hazardous waste storage units (buildings) in SAAP-015 have completed the normal RCRA treatment, storage and disposal facility (TSDF) closure activities under Section I of the RCRA Part B Permit; however, KDHE demands that the applied pesticides underneath the foundation slab and directly around the outside of the foundation must be excavated and disposed before they will certify that the buildings are clean closed. The Army does not agree with the regulators because applied pesticides are not a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) release and therefore no cleanup is required.

The data from the April 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). Therefore another RFI was initiated in 2008. Fieldwork was completed. There were no soil or sediment samples exceeding industrial TMCLs for all investigations at SAAP-015. Exceedances for pesticides in soil were excluded because the Army does not clean up applied pesticides. An RFI report will be prepared. After KDHE approval of this RFI report with a CMS, a request for no further corrective action planned will be prepared.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS. It is anticipated that NFA will be required at this site.

Site ID: SAAP-016
Site Name: Temporary Waste Storage Magazines
Alias: SWMU 16

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Pesticides, Semi-volatiles (SVOC)

Media of Concern: Soil

Phases	Start	End
RFA	197907	199009
CS	199610	199805
RFI/CMS	200001	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 79 acres in the south central portion of the installation. This area was used as a RCRA interim permitted hazardous waste storage area. This area includes the B-Area storage buildings B-14, B-16, B-20, B-21 and B-22. Also included are J-125 and Building 181-2 which is located in the central portion of SFAAP. Building 181-2 is an inactive 12 by 15 ft metal structure that was used to store spent degreasing solvents. The building has a concrete floor and is surrounded by an earthen dike. The solvents which were stored in 181-2 were transferred in 1984 to Building J-125, where temporary spill containment was provided. When the upgrading of J-124 was complete, the solvents were then transferred from J-125 to J-124. Over time, 181-2 contained 550 gallons of spent degreasing solvents.

The data from the April 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). Therefore another RFI was initiated in 2008. Fieldwork was completed. There were no soil or sediment samples exceeding industrial TMCLs for all investigations at SAAP-016. Exceedances for pesticides in the soil were excluded because the Army does not clean up applied pesticides. An RFI report with a CMS will be prepared. After KDHE approval of this RFI report a request for no further corrective action planned will be prepared.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS. It is anticipated that NFA will be required at this site.

Site ID: SAAP-017
Site Name: G-Line Area Ditches
Alias: SWMU 17

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Asbestos, Explosives, Metals, Nitrate/Nitrite

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197907	199009
CS	199610	199805
RFI/CMS	200001	202112
IRA	201502	202110

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 284 acres in the south central portion of the installation. This area was used for production of multi-base solvent propellant. The G-Line operated from 1943-1948, and 1953-1960. It was reported that during the 1940s, the G-line NC wringers (Building 5026-1) overflowed, and NC fines had been observed along drainage ditches from the area leading to Kill Creek. It is likely that G-Line Area Ditches received the same types of materials and followed the same historical wastewater treatment practices as the F-Line Area. The G-Line area is situated close to the basin divide between flow westward to Captain Creek and flow eastward to Spoon and Kill Creeks. Consequently, it is possible for contamination to migrate in either direction depending on the location of the source of contamination in the G-Line area. It is possible that small amounts of propellant solids may have settled in these ditches.

As a result of the 1998 EBS SAAP-017 was expanded to include all of G-Line. The ICM for the soil underneath explosive buildings in G-Line is covered under site SAAP-123. The non-explosive buildings, ditches, and areas away from the explosive buildings are included in the RFI and corrective measures for SAAP-017. The data from the October 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). An RFI work plan was prepared in June 2009, which was approved by the KDHE. Fieldwork was never started due to insufficient funding.

CLEANUP/EXIT STRATEGY

An IRA will be conducted for soil removal in the rind area. The RFI will be completed and will include a CMS which will be used to determine future action(s) for this site.

Site ID: SAAP-018
Site Name: Old/New Sanitary Landfill
Alias: SWMU 18

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Nitrate/Nitrite, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199810	201810
IRA	200010	200210

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 50 acres in the west central portion of the installation. This area was used for disposal of solid waste. The landfills employed a trench-type operation. Several types of landfills are included in the landfill area: the sanitary landfill (31 acres); the asbestos landfill (1 acre) and the ash landfill (19 acres, SAAP-019). This landfill area began operation in 1943. Prior to the designation of the New Sanitary Landfill in 1967, refuse of all types was buried at a site just south of the new landfill. No records from the old landfill were available. SFAAP no longer uses the New Sanitary Landfill; currently, waste is disposed off-site. There is no record of hazardous waste being placed in either landfill.

The 1997 RFI report states that the primary concerns at SAAP-018 and 019 are the constituents detected in groundwater (sulfide; cis-1,3-dichloropropene and ammonia nitrogen), and dioxins/furans in the shallow soil. Institutional controls have been implemented (fencing) to control site access. An ICM for eroded areas was completed in September 2003. Shallow groundwater flowing through a sand lens within the site complicates the final corrective measures.

A May 2006 RFI delineated the exact boundaries of the disposal cells, and also a hydrogeological investigation was conducted. A large trackhoe was used to delineate the boundaries of SAAP-018, 019, and 049. No waste was found in SAAP-049. Delineated areas of SAAP-018 and 019 were surveyed and show that SAAP-018 is 19.8 acres, and SAAP-019 is 1.2 acres for a total of 21 acres. The SAAP-018 landfill was no longer used after June 1988. The new part of the SAAP-018 landfill was properly closed. Per a KDHE letter dated November 22, 2000 they state that the old area of the SAAP-018 landfill has insufficient cover and was not properly closed. Therefore a typical landfill cap has to be installed over the SAAP-018 landfill. There currently is no groundwater monitoring. Monitoring and maintenance of the landfill cover is ongoing.

CLEANUP/EXIT STRATEGY

The CMS will be completed and will be used to determine future action(s) for this site.

Site ID: SAAP-019
Site Name: Ash Landfills
Alias: SWMU 19

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Other (Sulfates)

Media of Concern: Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199605
RFI/CMS	199606	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises two areas, 19 acres in the west central portion of the installation and 1 acre in the central portion of the installation. This area was used for the disposal of fly ash and coal fines. There are two, unlined ash landfills. SAAP-019 West is located north of SAAP-018 and will be addressed under SAAP-018. SAAP-019 East is located southeast of Power House No. 1. It has been reported that SAAP-019 West was used prior to 1966. The ash landfills contain unknown quantities of fly ash from the ash-sluice system and coal fines from the coal pile. Fly ash may contain heavy metals.

A May 2006 RFI delineated the exact boundaries of the disposal cells. A large trackhoe was used to delineate the boundaries of SAAP-019 West, which was surveyed and is 1.2 acres. This landfill is closed. Currently, there is no groundwater monitoring. Monitoring and maintenance of the landfill cover is ongoing.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-020
Site Name: Ash Lagoons
Alias: SWMU 20

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Metals, Other (Sulfates)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197907	199009
CS	199509	199805
RFI/CMS	199604	201810
IRA	200507	201610

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 15 acres in the north central portion of the installation. This area was used for settling out fly ash from Power House No. 1 via an ash-sluice system. There are four ash lagoons, all are 15 feet deep. Lagoon 165-1 was 103,600 square feet, Lagoon 165-2 was 118,900 square feet, Lagoon 165-3 was 95,000 square feet, Lagoon 165-4 was 10,000 square feet. These lagoons began operation in 1979 to collect fly ash and bottom ash from the coal fired boilers in Power House No. 1 via an ash-sluice system. The ash wastes (which may contain heavy metals) were allowed to settle out in the lagoons and the slightly alkaline wastewater was filtered and recycled back to the boiler house. Lagoons 165-1, 165-2, and 165-3 were periodically dredged and the sludge was landfilled in the Ash Landfill (SAAP-019).

The data from the May 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). The 2005 RFI found no ash sludge in Lagoons 165-2, 165-3, or 165-4. Ash sludge was found to be an average of 12.5 feet deep in lagoon 165-1. Therefore, the excavation total was estimated to be 55,500 cubic yards (cy).

A wastewater lagoon closure and verification sampling work plan was approved by KDHE in April 2008. The lagoons berms were breached for passive dewatering of the ash sludge. Once the sludge dried out enough for landfill acceptance the sludge was loaded for transportation and off-site disposal at a Subtitle D landfill. A total of 121,619 tons of sludge from SAAP-020 was excavated and disposed of. Post-excavation confirmation samples are below residential risk levels. The area was graded to allow for drainage and revegetated. A draft ICM report was prepared and submitted to KDHE. The ICM report needs to be finalized. After KDHE approval of this report a request for no further corrective action planned will be prepared.

The wastewater lagoon closure completion report will be finalized. All future actions beyond a CMS were removed from AEDB-R and the IAP for this site because a CMS had not yet been prepared, and therefore the future actions were deemed not supportable for an audit.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-021
Site Name: Contaminated Materials Burn Ground
Alias: SWMU 21

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Dioxins/Dibenzofurans, Explosives, Metals, Nitrate/Nitrite, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Building Decontamination, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199601	200411
DES	200505	200601
CMI(C)	200505	201810
LTM	201811	204811

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 10 acres in the west central portion of the installation. This area was used for open burning combustible material contaminated with explosive residues, and flashing non-combustible material contaminated with explosive residues. Used oil was also open burned in this area. The site was built in 1942. Prior to 1970, burning of contaminated materials occurred in two open trenches; however, in about 1970, the two trenches were filled and two unlined 30 feet by 300 feet pads were installed where the trenches were located. The pads were separated by an earthen berm. Contaminated material accumulated at the site until the pad was full, which generally took one to two months. Burning was initiated using diesel fuel, waste oils, and scrap wood (including telephone poles). SFAAP randomly sampled the remaining residue for toxicity characteristic leaching procedure (TCLP) metals (leachable), and upon negative results disposed the ash in the sanitary landfill (SAAP-018). After one pad was burned, the other pad began receiving materials for the next burn. During a site visit in 1990, burn areas were observed away from the main burn pads.

Also located on the site was an open top tank, 8 feet in diameter, which was used to burn waste solvent and used oil. Adjacent to the tank was an elevated platform which appeared to have been used as an unloading dock for containers of liquids to be emptied into the tank. At the time of a 2001 site visit, the tank contained water. Groundwater and surface water runoff from the burn area flows northwest to Captain Creek or the adjacent oxbow.

The May 1997 and April 2002 RFI results indicated the presence of dioxins, metals, solvents, and petroleum hydrocarbons in soil. Petroleum hydrocarbons and VOCs were detected in groundwater and surface water. Additional delineation sampling was completed in spring 2003. Due to the detected ongoing release of POLs from POL-contaminated soil to Captain Creek an ex situ bioremediation pilot test for TPH, and sampling for VOCs and PAHs in the soil was conducted 2004. Approximately 5,000 cy of POL-contaminated soil was excavated and bioremediated in 2004 (from Area D).

A CMS for soil was completed in November 2004. Corrective measures were implemented in November 2007. A total of 66,381 tons of contaminated soil was excavated and disposed of. It was also necessary to pump and haul to the local publicly-owned treatment works (POTW) 320,000 gallons of groundwater from the deep excavations in Areas D, E, and F in order to complete the deep soil excavations. A corrective measures completion report was submitted to KDHE and comments have been received.

A CMS for groundwater at SAAP-021 was prepared and approved by KDHE. Three new groundwater monitoring wells were installed. Monitoring of contaminated groundwater will continue. Soil remediation at this site is complete. The corrective measures completion report needs to be finalized.

Site ID: SAAP-021
Site Name: Contaminated Materials Burn Ground
Alias: SWMU 21

CLEANUP/EXIT STRATEGY

The corrective measure completion report will be completed. LTM will continue for 30 years and will include groundwater monitoring.

Site ID: SAAP-022
Site Name: Old Explosive Waste Burning Ground
Alias: SWMU 22

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199403	199805
RFI/CMS	199601	199910
DES	200303	201610
CMI(C)	200403	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 30 acres in the west central portion of the installation. This area was used to open burn waste explosives on designated pads. The waste explosive included NG slums (i.e., NG mixed with sawdust for stabilization) and various propellant formulations from the production area sumps, filters, settling ponds, and drains. The site was in operation from 1943 to 1980. SAAP-022 includes 7 acres containing 5 burning pads, and a NG slums burning area. During a groundwater contamination survey in 1987, it was reported that the site was a grass-covered field showing no signs of vegetative stress.

The March 1997 RFI detected lead and NG in surface soil above action levels. A CMS was completed in February 1999. Corrective measures were implemented in 2004-2005. A total of 46,997 tons of contaminated soil was excavated and disposed. All remaining soil in SAAP-022 was below unrestricted levels as reported in the corrective measures completion report in January 2006. One round of groundwater sampling was conducted. No contaminants above action levels were detected in the groundwater, therefore LTM is not planned.

A request for NFA was written by the Army and sent to KDHE in March 2008. In a letter dated April 20, 2009 the KDHE denied the NFA request based on data gaps KDHE found in the corrective measures completion report for SAAP-022. Additional sampling and cleanup is required to fill these data gaps. The areas requiring sampling are very well defined because of the characterization sampling during the CMI, and therefore an additional RFI is not necessary. Confirmation soil samples will be collected and sent to an off-site laboratory for analysis. Contaminated soils that exceed industrial TMCLs will be excavated and properly disposed.

CLEANUP/EXIT STRATEGY

A work plan for the additional CMI(C) will be completed followed by the excavation and disposal of soils. NFA is anticipated.

Site ID: SAAP-024
Site Name: Nitroglycerine and Paste Mix Areas
Alias: SWMU 24

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199806	202112
IRA	201502	202110

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 149 acres in the central portion of the installation. This area was used as an area to produce NG, mix pastes for double-base solventless propellant and multi-base solvent propellant. The NG area includes four NG nitrator, neutralization and storehouse complexes with sumps, and drainage ditches that extend from the production buildings to Pyotts Pond (SAAP-012) and had three periods of operation: 1943-1946, 1951-1960 and 1965-1971. The F-Line and N-Line Paste Mix Area is located northeast of the NG Area and produced double-base solventless propellant paste for the 2.75 rocket grains. The G-Line Paste Mix Area is located southwest of the NG Area and produced multi-base solvent propellant paste for cannon propellant grains. As a result of the 1998 EBS the boundary of this site was expanded from just the NG Production Area to include the F-Line, G-Line and N-Line Paste Mix areas.

During the March 1998 RFI the downgradient ditch areas of SAAP-024 were investigated. The RFI was deemed incomplete by USEPA and KDHE. Sampling was not conducted in NG nitrator areas due to the potential explosive hazards associated with NG in soils at concentrations that may exceed 10 percent. The data from the initial RFI identified eighteen metals, nitrates, sulfates, PAHs, SVOCs and NC above background concentrations at SAAP-024. Metals, PAHs and SVOCs were detected in all media (surface water, groundwater, sediment and surface soil), nitrates and sulfate were detected in surface water and groundwater, and NC was detected in surface soil and sediment.

Due to the potential presence of reactive levels of NG in the NG production area of SAAP-024, an explosive safety assessment was conducted in 2004 to determine if there was an explosive hazard requiring an explosive safety submission before RFI or CMI work could be performed. A remotely operated Geoprobe® was used to take soil borings from zero to four feet in all of the NG sumps, the ditches downgradient of the sumps, and two recorded spill areas. The highest concentration detected was 485 milligrams (mg)/kilogram (kg), which is well below the explosive level (less than 10 percent). Therefore remote investigation and cleanup is not required, i.e. the standard investigation and cleanup methods are safe from explosive hazards.

An RFI work plan was prepared in December 2008, which was approved by KDHE. The fieldwork was started, but was stopped due to insufficient funds. ICM for contaminated soil underneath explosive foundations and sewers is covered under site SAAP-123/124. The work plan for AOCs SAAP-123/124 ICM included the rind soil area around the F-Line Paste Mix Area of SAAP-024. The work plan was prepared in March 2011 and is awaiting approval by KDHE.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-025
Site Name: Nitrocellulose Area Ditches
Alias: SWMU 25

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199610	199805
RFI/CMS	200001	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 244 acres in the north central portion of the installation. This area was used to convey acidic wastewater and other wastewater from the NC Production Area (SAAP-116) to Pond A (SAAP-004). SAAP-025 consists of 41,000 linear feet of ditch leading from the edge of the NC Production Area to Pond A. NC production involved the use of significant amounts NC fibers, acids and wash/rinse water. There were two types of wastewater: acid wastewater was directly discharged through baffled settling tanks; NC wastewater resulted from boiling, screening and blending, after which the water passed through a NC fines settling pit. Wastewaters were reported as milky in color, containing suspended NC fibers. All wastewater was conveyed via an underground sewer system that discharged to an open drainage ditch leading to Pond A for sedimentation of solids and equalization of wastewater. NC production ceased in 1971. NC has little vertical migration potential, but may exist in sediment layers below the surface. NC has no toxic properties but a TMCL of 1,000 mg/kg was established by the regulators for the site (1% of the explosive concentration).

The data from the November 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). The June 2006 RFI baseline screening risk assessment determined that metals pose an unacceptable risk to human health. Therefore, a cleanup is required.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-026
Site Name: Single Base Propellant Area Sumps
Alias: SWMU 26

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Pesticides, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197907	199009
CS	199610	199808
RFI/CMS	200001	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 501 acres in the north central portion of the installation. This area was used to produce single-, double-, and triple-base solvent propellant grains. Site SAAP-026 consists of three single base propellant lines (B-Line, C- Line, and D-Line). The base explosive, NC, in single base propellant was mixed with dinitrotoluene (DNT), stabilizers, and burn modifiers using an ether-alcohol mix as the mixing solvent. The propellant paste was extruded by presses and then the grains were cut to length. The propellant grain manufacturing process was completed in the Finishing Area located within SAAP-026 to the west of the mixing lines. SAAP-026 also includes a multi-base propellant line (E-Line) where double base (NC and NG), and triple base (NC, NG, NQ) propellants were produced. The mixing solvent for multi-base propellant was an acetone-alcohol mix. The finishing area for E-Line is not included in SAAP-026, but was instead made a separate site, SAAP-111, which is SAAP-111. Production was documented during the period of 1943-1948 for B-Line and C-Line. Production was documented during the periods of 1943-1948 and 1951-1960 for D-Line and E-Line.

As a result of the 1998 EBS the boundary of this site was expanded from just the Single Base Solvent Propellant finishing area to include the B-, C-, D-, and E-Line paste mix and grain production areas. A hazardous waste study of SAAP-026 was completed in 1985. An RI report was completed in September 1989. An RFI was completed in May 2001. An RRSE of the paste mixing, pressing and cutting area of B-Line, C-Line, D-Line, and E-Line was completed in 2003. The results from these reports indicate that SAAP-026 contains contaminants above risk levels, and includes ammonia, arsenic, chromium, 2,4-DNT, lead and mercury.

The data from the May 2001 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). Therefore another RFI was prepared in 2009, which was approved by KDHE. The fieldwork was started, but was stopped due to insufficient funds. ICM for contaminated soil underneath explosive foundations and sewers is covered under site SAAP-123/124. The ICM work plan was prepared in September 2009, and was approved by KDHE. Fieldwork was started, but was also stopped due to insufficient funds.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-027
Site Name: NQ Area SAC & LWTP Evap. Lagoons
Alias: SWMU 27

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199705
RFI/CMS	199510	202112
IRA	199901	199905

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 10 acres in the northwest portion of the installation. This area was used for evaporative lagoons to hold wastewater from the NQ Production Area. The sulfuric acid concentrator (SAC) LWTP went into operation in 1984. It consisted of a 45,000-gallon tank for distillate and a 17,000-gallon tank for other corrosives. It received corrosive distillate from the SAC and some corrosive wastewater from the NQ production processes. Lime neutralizers were added to the acidic wastewater, which then flowed into the two evaporative lagoons located south of the LWTP. The wastewater transfer line from the LWTP to the evaporative lagoons had documented releases. The lagoons were constructed in 1984. In 1987 the lining of the lagoons appeared damaged. Observations of higher soil moisture and occasional small amounts of water at the base of the berm on the west side of the southern lagoon indicated releases were occurring. The lining was replaced. It was reported that when the liner was replaced in one of the lagoons the breaks in the old liner indicated that releases to the underlying soil did occur.

The May 1999 RFI indicated that the wastewater and sludge in the evaporative lagoons was causing groundwater contamination with NQ, GN, nitrates and sulfates. In a letter dated March 11, 1996, KDHE approved a schedule of work for remediation of the lagoon sludge and dismantlement of the lagoons. This action partially fulfilled KDHE requirements for lagoon closure. This ICM work was completed in August 1999. In 2004 the underground LWTP transfer line from the SAC to the evaporative lagoons was removed, and confirmation soil samples were collected.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-030
Site Name: Pesticide Handling Area
Alias: SWMU 30

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Pesticides, Petroleum, Oil and Lubricants (POL)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197907	199009
CS	199610	199805
RFI/CMS	200001	201810
IRA	200905	200908

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 20 acres in the north central portion of the installation. This area was used for storing and mixing herbicides and pesticides. The pesticide storage and mixing building was constructed in 1943. A new building was erected a short distance from the old structure that it replaced. The old facility and its surrounding area were reportedly cleaned of pesticide residues. The new facility met US Army Environmental Hygiene Agency's (USAEHA) criteria for design of a pest control shop, pesticide storage and mixing facility. It was in operation from 1984 to 2001. The facility contains four sumps, one in each room: the pesticide storage room, the herbicide storage room, the inside mixing room and the outside mixing area. All liquid within the sumps was recycled into formulations, and there is no discharge from the sumps. No spills or releases have been recorded for this site.

During a preliminary review site visit to the Pesticide Handling Area in 1990, an aqua-blue stain was evident at the outside sump and outside the pesticide building. It was identified as a dibromide solution which is sprayed as an indicator dye in areas where herbicides/pesticides were used. Any contamination is assumed to have resulted from operations at the former Pesticide Mixing Shop and not the new Pesticide Mixing Shop. It was also noted that stressed vegetation was observed leading from the shop and following a newly constructed road; however, SFAAP personnel indicated an underground steam line in the area may have impacted the vegetation.

The data from the May 2001 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). Therefore another RFI was prepared in October 2008, which was approved by KDHE. The fieldwork was completed. There were five soil samples at five sample locations with industrial TMCL exceedances. An RFI report with CMS will be prepared.

ICMs were conducted in 2009 to clear an area of pesticide contaminated soil found during the RFI so that a leaking underground water line could be repaired. A total of 40 tons of contaminated soil as nonhazardous waste was excavated and disposed of. An ICM report letter was submitted to KDHE.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-031
Site Name: Contaminated Waste Processor
Alias: SWMU 31

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Dioxins/Dibenzofurans, Explosives, Metals, Nitrate/Nitrite

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	200001	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 7 acres in the west central portion of the installation. This area was used to decontaminate material containing explosive residues. The Contaminated Waste Processor (CWP) operated between 1982 and 1996. The CWP is an incinerator measuring 14.5 feet by 25 feet. The CWP was designed to incinerate materials contaminated or suspected of being contaminated with explosives, and to decontaminate (flash) explosive-contaminated metal prior to salvage. Because the CWP could only handle materials with residual amounts of explosives, the waste materials to be incinerated were checked to insure they did not contain pockets of explosives. Lab analysis was conducted after the burn to verify the ash debris could be disposed in the on-site landfill. If the ash debris exceeded any TCLPs it was disposed off-site as hazardous waste.

The April 1999 RFI results indicated the presence of phthalates in the soil samples. No contamination was found in the groundwater. Kansas Surface Water Quality Standards and USEPA identified several significant data gaps in the 1999 RFI that had to be addressed. Because of insufficient data, KDHE and USEPA requested that the Army conduct a more extensive investigation to fully characterize the extent of contamination by selectively sampling for RCRA metals, manganese, explosives (including NC, NG, NQ, and GN), SVOCs TPH-DRO, PCBs, and dioxins, in soil, surface water, sediment, and groundwater.

An RFI work plan was prepared in March 2009, and was approved by KDHE. Fieldwork was started but put on hold due to insufficient funds. ICM for contaminated soil underneath explosive foundations is covered under site SAAP-123/124.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-032
Site Name: Lead Decon. and Recovery Unit
Alias: SWMU 32

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Pesticides, Polychlorinated Biphenyls (PCB)

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199408	199805
RFI/CMS	199601	200010
DES	200101	200108
CMI(C)	200109	201908

RIP Date: N/A

RC Date: 201908

SITE DESCRIPTION

This site comprises 1 acre in the west central portion of the installation. This area was used to explosively decontaminate lead, and melt the lead to form ingots for recycling. The site borders the Captain Creek flood plain. Surface drainage is toward a southwest drainage ditch which subsequently drains west near the Old Explosive Waste Burning Ground (SAAP-022) to Captain Creek. Some runoff also eventually drains into an oxbow near Captain Creek. The site formerly contained a small building and melting rack within a paved area. The Recovery Unit was in operation from 1943 to 1970. Contaminated lead recovered from routine maintenance activities in the acid, NG, and propellant manufacturing buildings was placed on a rack and suspended over a tank. An overhead heater melted the lead, which then dropped into the tank. The lead was drained into molds and made available for salvage/recycling. Lead solids had been observed scattered throughout the site. Lead was the primary constituent of concern at this site. It is somewhat soluble under acidic conditions.

An RI report was completed September 1989. An RFI was completed in March 1997. A CMS was completed in February 1999. The results from these reports indicated lead in the soil above action levels. A leaking underground storage tank (UST) was removed from this site under the UST program. The ICM was implemented in 2002, and 803 cy of lead contaminated soil was excavated, treated and disposed off-site. In addition to the ICM a leaking UST soil removal has been completed and the site was clean closed. The groundwater at this site was sampled under SAAP-022. No contaminants were detected above action levels in the groundwater. Therefore NFA was planned for this site. A request for NFA was written by the Army and sent to KDHE in March 2007. In a letter dated April 16, 2009 KDHE denied the NFA request based on data gaps KDHE found in the ICM completion report for SAAP-032.

The data gaps were addressed by the following actions: A staging pile permit was obtained under USEPA's RCRA permit for SFAAP, and was built in 2009 in the area of all of SAAP-032 and some of SAAP-022. The staging piles were used for contaminated soil excavated at SAAP-021 because SAAP-021 is in a flood plain. After completing the cleanup of SAAP-021, closure of the staging piles was performed by removing the liners and scraping the soil under the liners, followed by gridded sampling. The July 2010 Staging Piles Closure Report's sample results show that all of the area of SAAP-032 is below TMCLs; however, the report was not approved by USEPA. After USEPA approves this report a site closeout document will be prepared.

CLEANUP/EXIT STRATEGY

The draft request for NFA based on the sampling data in the closure report for USEPA RCRA-permitted staging piles will be finalized.

Site ID: SAAP-033
Site Name: Paste Area Half Tanks & Ditches
Alias: SWMU 33

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197907	199009
CS	199610	199805
RFI/CMS	199810	202112
IRA	200010	200309

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 1 acre in the central portion of the installation. This area was used to settle out propellant solids from the wastewater discharged from the F-Line and N-Line paste mix area. The half tanks in this area received wastewater from wash down of propellant processing equipment and buildings in the paste mix area. They were used from 1965 to 1971. The half tanks discharged into two unlined settling ponds, then to Pyotts Pond. There were two steel half tanks located upgradient from each of the settling ponds and are designated half tank 33/34 and 33/35. The 33/34 tank was located southeast of the paste mix area between the Five Corners Settling Ponds and the Paste Sumps, and the 33/35 tank was located northwest of the paste mix area near the F-Line Paste Mix Settling Ponds. Reportedly, overflowing of the metal flumes and half tanks occurred. There was no secondary containment around the half tanks.

The April 2002 RFI results indicated the presence of lead, NG, NC, and SVOCs in the soil. ICM occurred in 2002 and consisted of removal and decontamination of the half tanks, removal of 60 cy of impacted soils from around the half tanks and 700 cy of contaminated soil from drainage ditches extending from the half tanks to their stream discharge point. Confirmation samples were collected to verify that remaining soils met KDHE residential requirements. The ditches extending from the half tanks upgradient to the source area will be remediated as part of the SAAP-024 cleanup. Groundwater monitoring at SAAP-033 detected metals, SVOCs, and sulfate above industrial risk levels.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-034
Site Name: Five Corners Settling Ponds
Alias: SWMU 34

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197909	199009
CS	199610	199805
RFI/CMS	199810	202112
IRA	200010	200309

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 1 acre in the central portion of the installation. This area was used to settle out propellant solids from the wastewater discharged from the F-Line and N-Line paste mix area. There were two earthen, unlined ponds (5A, 5B), each 40 ft in diameter. The ponds were used periodically from 1953 to 1971. There were no secondary containment berms surrounding these ponds. The settling ponds received paste mix wastewater resulting from the wash down of equipment and buildings and from sprinkler trips.

The April 2002 RFI results indicated the presence of lead, NG, NC, and SVOCs in soil. ICM occurred in 2002 and consisted of removal of 900 cy of contaminated soil. Post-excavation confirmation sampling found no contaminants above unrestricted levels. Groundwater monitoring at SAAP-034 detected metals, SVOCs, and sulfate above industrial risk levels. Therefore groundwater monitoring will continue to be conducted at SAAP-034.

A request for NFA was written by the Army and sent to KDHE in December 2007. In a letter dated March 23, 2009 KDHE denied the NFA request based on data gaps KDHE found in the ICM completion report for SAAP-034. Additional investigation and cleanup is required to fill these data gaps. The areas requiring sampling are very well defined because of the characterization sampling during the previous ICM, and therefore an additional RFI is not necessary.

All future actions beyond a CMS were removed from AEDB-R and the IAP for this site because a CMS had not yet been prepared, and therefore the future actions were deemed not supportable for an audit.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-035
Site Name: Nitroglycerine Area Settling Ponds
Alias: SWMU 35

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197909	199009
CS	199610	199805
RFI/CMS	199810	202112
IRA	200010	200309

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 1 acre in the central portion of the installation. This area was used to settle out propellant solids from the wastewater discharged from the F-Line and N-Line paste mix area. The NG Production Area did not discharge to these settling ponds. There were two earthen, unlined ponds (6A, 6B), each 40 feet in diameter. The ponds were used periodically from 1953 to 1971. There were no secondary containment berms surrounding these ponds. The settling ponds received paste mix wastewater resulting from the wash down of equipment and buildings and from sprinkler trips. During site visits in both 1985 and 1987, Pond 6A was reported to contain approximately 16 inches of standing water, while Pond 6B was dry. Both ponds contained 12-18 inches of sediment which appeared to be soil.

The April 2002 RFI results indicated the presence of lead, NG, NC, and SVOCs in the soil. ICM occurred in 2002 and consisted of removal of 1,300 cy of contaminated soil. Post-excavation confirmation sampling found no contaminants above unrestricted levels. Groundwater monitoring at SAAP-035 detected metals and SVOCs above industrial risk levels.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-036
Site Name: N-Line Area
Alias: SWMU 36

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Dioxins/Dibenzofurans, Explosives, Metals, Pesticides, Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197909	199009
CS	199408	199805
RFI/CMS	199810	202108
IRA	200707	201810

RIP Date: N/A

RC Date: 202108

SITE DESCRIPTION

This site comprises 301 acres in the south central portion of the installation. This area was used as to produce 2.75-inch rocket grains. The N-Line press and roll house area operated from 1943 to 1946. The N-Line finishing area operated from 1943 to 1971 and was where the Army completed final machining and inspection of extruded and cut propellant grains. Off-spec materials and trimmings were sent to a grinding mill and then back to the north end of N-Line Area for re-blending. Wastewater originated primarily from floor and equipment washing and from deluge events (water used for fire suppression), and flowed through floor drains into underground sewer which discharged to unlined ditches that lead to Spoon Creek. There were 20 eastwardly trending ditches and six concrete settling sumps. Propellant solids containing NC and NG settled in these sumps, and trace amounts settled in the ditches. The propellant formulations processed in this area were double base and were generally reactive.

The April 1999 RFI identified propellant and lead in soil. Lead, NG, and TPH-GRO were found in groundwater. In 2001, subsequent to the initial RFI this site was increased by 248 acres due to a site-wide EBS in 1998. Another RFI was required to investigate the additional 248 acres in the production area, and the area around monitoring well 008 in an attempt to identify the source of NG in that well. Visible propellant was observed in the production area. Also need to determine the extent of contamination in the two tunnel dryers used for calcium carbonate cake (CCC) storage, and the Jeep Shop leaking UST site (incorporated into SAAP-036 in 2002). A total of 52,833 tons of contaminated soil under the SAAP-123/124 explosive foundations and sewers in N-line were excavated and disposed. An interim ICM completion report will be prepared. An RFI work plan was prepared in October 2012, which was approved by KDHE. Fieldwork for the RFI was delayed due to contracting issues.

CLEANUP/EXIT STRATEGY

Prepare and finalize the interim corrective measures completion report. The RFI fieldwork and report will be completed. The CMS will be used to determine future action(s) for this site.

Site ID: SAAP-037
Site Name: Sandblast Areas
Alias: SWMU 37

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	197909	199009
CS	199509	199805
RFI/CMS	200001	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 3 acres in the north central portion of the installation. This area was used for sandblasting metal. SAAP-037 is comprised of three separate areas. Sandblasting has reportedly occurred in an area around each of Buildings 245-3, 504, and 566-1. At Building 566-1 sandblasting was used to prepare equipment such as motors, pumps, pipes, trailers, and heavy equipment for painting and preservation. At Building 504 sandblasting was used to prepare metal signs for painting. The bulk of the sand recovered from sandblasting operations was disposed in the sanitary landfill after it was tested and was below TMCLs; however, residual sand was left on the ground in each area. In addition, sand was not contained during the sandblasting operations and was therefore able to migrate through the air. The primary concerns at these sites are paint waste constituents, in particular metals such as arsenic, barium, chromium, cadmium, iron, lead, manganese, mercury, selenium and silver. PCBs were sometimes detected in some paints at low levels. Painting and de-painting solvents include VOCs.

The data from the March 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). An RFI work plan was prepared in April 2010, which was approved by KDHE. Fieldwork was never started due to insufficient funds.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-038
Site Name: Oil Water Separator
Alias: SWMU 38

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Metals, Pesticides

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197909	199009
CS	199509	199805
RFI/CMS	200001	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used to remove oil from Building 541 car wash wastewater prior to discharge to the STP. The Oil Water Separator began operation in 1971 to service the auto maintenance shop located in Building 541. A majority of the flow to the separator was derived from the floor drain in the car wash bay. Additional wastewater sources include rainwater and condensate from steam radiators used to heat the building. Although no oil or grease was reportedly dumped into the drains leading to the separator, a small quantity of sludge collected in the tank. Sludge was removed from the tank in 1987 and tested for TCLP prior to transfer to the Sanitary Landfill (SAAP-018). This was the first recorded removal of sludge. During a site visit in 1990, the integrity of the tank was questioned because there was influent to the separator, but the tank did not appear to be filling. Oil stains and bare ground were noted under and downgradient of the half tank. It was also indicated that there was visual evidence of potential release to the surface water and soil. In 1991 the half tank was cleaned up and removed. The contaminated soil underneath and surrounding the half tank was excavated and disposed. A new oil water separator (A541) was built and operated until 2001.

The March 2000 RFI yielded evidence of surface releases and potential tank leaks; however, the data from the March 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). The September 2005 RFI characterized surface soils around the previous tank location (400 square feet), below piping and concrete manifold (100 linear feet). The RFI also characterized the groundwater at discharge locations and within the migration pathway from the site. Minor impacts to soil, groundwater, surface water and sediment were confirmed.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-039
Site Name: South Acid Area Ditches
Alias: SWMU 39

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Dioxins/Dibenzofurans, Herbicides, Metals, Nitrate/Nitrite, Pesticides, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	197909	199009
CS	199509	199805
RFI/CMS	199602	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the east central portion of the installation. This area was used to convey contaminated wastewater from the South Acid Area. The primary central drainage ditch originates near the Calcium Cyanamide Disposal Area (SAAP-040). A second ditch originates from the northeast corner of the South Acid Area. A third influent ditch from the NG and paste mix areas joins the central ditch. All three ditches discharge into Pyotts Pond. During a site visit in 1990, the surface water observed in the central ditch was tinted orange; a white precipitate was observed along both the east and central ditches. Reportedly the orange color was caused by the neutralization of acidic ferrous sulfate and sulfuric acid with hydrated lime. The sediment was reported to contain ferrous sulfate and calcium sulfate. Wastes handled at this site include sulfuric and nitric acids, NC, and NG.

The data from the April 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). The September 2005 RFI found contamination in the drainage soil, sediment, surface water, and groundwater. Removal of contaminated drainage soil and sediment in the drainage ditches was recommended in the RFI report.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-040
Site Name: Calcium Cyanimide Disposal Area
Alias: SWMU 40

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals, Nitrate/Nitrite

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	197909	199009
CS	199408	199805
RFI/CMS	200001	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 2 acres in the east central portion of the installation. This area was used for disposal of waste calcium cyanamide. During prove out of the of NG production process, calcium cyanamide sludge waste was disposed of within this fenced landfill. Aerial photographs identified that a 180 by 50 by 15 feet disposal area (located in the northeastern portion of the site), was actually used for disposal of the waste. An evaporation pond located in the southwest portion of the site eventually drains leachate and surface water runoff to Pyotts Pond, via the South Acid Area Drainage Ditch (SAAP-039). White and black stains have been observed along the edges of the evaporation pond. The data from the May 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). An RFI work plan was prepared in January 2009, and was approved by KDHE. The RFI fieldwork is completed and the RFI report will be prepared.

CLEANUP/EXIT STRATEGY

The RFI report will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-041
Site Name: Calcium Carbonate Cake Landfill
Alias: SWMU 41

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Nitrate/Nitrite, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	197909	199009
CS	199610	199805
RFI/CMS	199704	199808
DES	199810	199812
CMI(C)	199901	199905
CMI(O)	200107	204509

RIP Date: 200107

RC Date: 204509

SITE DESCRIPTION

This site comprises 2 acres in the west central portion of the installation. This area was used for disposal of CCC. The CCC Landfill measures 350 feet by 315 feet and was operated from May 1986 to June 1988. Between May 1988 and December 1991 the CCC was provided to farmers rather than landfilled. This practice was discontinued in December 1991 due to market saturation. Initially, containerized CCC was disposed of at this site, but later uncontainerized CCC was deposited. CCC is a byproduct of GN manufacturing. GN is an intermediate product of NQ. A leachate collection system was installed in the CCC Landfill at the time of construction. The leachate in the collection system tank is monitored. During a site visit in 1990 it was noted that the landfill cap was cracked, vegetative cover was sparse, and erosional features had developed. In 1998 the landfill cap was repaired and graded to minimize infiltration. Also, new ground cover was established to minimize erosion. All work was inspected and accepted by KDHE representatives.

Per KDHE's requirement additional wells were installed in 2002 to delineate the contaminated groundwater plume. Nitrates and sulfates are decreasing in the groundwater plume. Groundwater monitoring will continue. RA(O) is planned and involves sampling four wells once a year for 30 years. Contaminants to analyze for in the groundwater samples are nitrate, sulfate, and GN. The landfill cap will be monitored and maintained. The landfill leachate will be monitored and disposed.

CLEANUP/EXIT STRATEGY

RA(O) will continue with annual monitoring.

Site ID: SAAP-042
Site Name: Temporary Sanitary Landfill
Alias: SWMU 42

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Nitrate/Nitrite, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	197909	199009
CS	199610	199805
RFI/CMS	199602	200109
CMI(C)	200109	200109
CMI(O)	200110	204509

RIP Date: 200110

RC Date: 204509

SITE DESCRIPTION

This site comprises 3 acres in the south central portion of the installation. This area was used for disposal of sanitary waste. SAAP-042 is adjacent to (south of) SAAP-041, and was used to manage nonhazardous solid waste consisting of general trash and sanitary waste. CCC was initially landfilled in the first cell. However, that practice was discontinued. During the site visit in 1992 it appeared that the landfill consisted of three cells. Inspection and maintenance of the landfill cap is ongoing.

Since SAAP-041 and SAAP-042 landfills were contiguous there was one work plan and report for groundwater monitoring; however, KDHE stated in a comment letter to the 2010 LTM report for SAAP-041 and 042 that a separate groundwater sampling and analysis plan be submitted for SAAP-042 that includes monitoring for routine landfill analytes and site-specific potential groundwater contaminants. Nitrates and sulfates are decreasing in the groundwater plume. RA(O) of groundwater is ongoing.

A groundwater sampling and analysis plan must be submitted to KDHE for SAAP-042 that includes monitoring for routine landfill analytes and site-specific potential groundwater contaminants. Contaminants to analyze for in the groundwater samples are RCRA metals, manganese, SVOCs, VOCs, pesticides, and herbicides. Existing monitoring wells that would adequately work for SAAP-042 landfill groundwater monitoring are 042MW001 for the upgradient well, and 041MW001 for the downgradient well. The landfill cap will be monitored and maintained.

CLEANUP/EXIT STRATEGY

Groundwater monitoring will continue for 30 years.

Site ID: SAAP-043
Site Name: Tunnel Dryers (CCC Storage)
Alias: SWMU 43

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Nitrate/Nitrite

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197909	199009
CS	199509	199805
RFI/CMS	199604	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 8 acres in the west central and southeast portion of the installation. This area was used to temporarily store CCC. There are six former tunnel dryers used for CCC storage. Four of the dryers are located in the west central portion of SFAAP. The two remaining dryers are located in the southeast portion of SFAAP and were handled under SAAP-123 at SAAP-036. The dryers began operation in 1986. Each dryer measures 125 feet by 18 feet, with six foot high walls, and each has a leachate collection system. CCC was a byproduct of the GN step of the NQ production process. The CCC was loaded into dump trucks via conveyor in the NQ area and transported to the tunnel dryers. The CCC was dumped into the dryer and arranged using a front end loader. The product was ultimately off loaded from the tunnel dryers by vendors for use by local farmers. The tunnel dryers were not enclosed. During a site visit in 1990, it was observed that CCC had been tracked beyond the walls of the tunnel dryers by the trucks loading and unloading at the site.

The data from the May 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). An RFI work plan was prepared in June 2010 and comments have been received from KDHE. ICM for contaminated soil underneath explosive foundations is covered under sites SAAP-123/124.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-044
Site Name: Tank T784
Alias: SWMU 44

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197909	199009
CS	199509	199805
RFI/CMS	199604	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the northwest portion of the installation. This area was used to store NQ wastewater prior to discharge at SAAP-002. SAAP-044 consists of Tank T784. Limited production began in the NQ Area in 1981. Full production occurred from 1984 to 1992. Tank T784, also known as Account 9049, was a vertical steel aboveground wastewater collection tank which held cooling tower blowdown water, NQ crystallizer condensate, GN evaporator condensate, and non-contact cooling water.

A pipe discharged the wastewater from Tank T784 into the RWTP Lagoons (SAAP-002), via an underground transfer line. This pipe follows the north plant boundary before turning directly north towards the lagoons. Several releases had occurred as a result of breaks in the RWTP Lagoon transfer line. Tank overflows had also occurred. There were no spill containment structures for the tank. The data from the June 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). The March 2005 RFI found no contamination in the soil above industrial TMCLs. The RFI report recommended NFA for soil, and was approved by KDHE.

A request for NFA was written by the Army and sent to KDHE in June 2007. In a letter dated Feb. 5, 2009 KDHE denied the NFA request. KDHE requested action on two subsurface arsenic exceedances of the residential TMCL, but both are below the industrial TMCL. One groundwater sample exceeded the industrial TMCL for arsenic. Sampling of the underground discharge line may be required due to reported spills.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-045
Site Name: Bldg 9040 & Ca. Cyanamide Conveyor
Alias: SWMU 45

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197909	199009
CS	199610	199805
RFI/CMS	200001	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 2 acres in the northwest portion of the installation. This area was used for moving and storing calcium cyanamide, and production of GN. The NQ Area had limited production in 1981 (proveout), and full production from 1984 to 1992. Calcium cyanamide was produced in Building 9004 and transferred via belt conveyor to Building 9040 for use in the GN production process. The belt conveyor, which lead to storage bins located on the east side of Building 9040, was enclosed in an elevated, sheet metal galley way. There were four 175-ton storage bins. Calcium cyanamide was released at the bins because of problems with the screw conveyors used to transport material from Building 9004. A concrete pad was constructed in a small portion of the area under the storage bins; however, the pad was too small to effectively contain the spillage, especially in windy conditions. Bare spots were observed in areas near the storage bins. A drainage divide is located in the NQ Area running north of Building 9040. It separates the Captain Creek drainage area from the area drained by unnamed creeks flowing northward toward the Kansas River.

The data from the November 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). The August 2005 RFI indicates that the nitrate groundwater plume is not leaving SFAAP. A baseline screening risk assessment was performed to evaluate the risk from soil contamination. The results indicate that the soil under and around the conveyors and bins does not contain any contaminants above unrestricted levels. Contaminated soil was found around the sumps at building 9040, but the sumps will be remediated under SAAP-047. After the source is removed (Building 9040 sumps) groundwater monitoring is anticipated.

CLEANUP/EXIT STRATEGY

A CMS will be prepared and will be used to determine future action(s) for this site.

Site ID: SAAP-046
Site Name: Decontamination Oven
Alias: SWMU 46

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Dioxins/Dibenzofurans, Metals

Media of Concern: Soil

Phases	Start	End
RFA	197909	199201
CS	199509	199805
RFI/CMS	200001	202212
IRA	201502	202112

RIP Date: N/A

RC Date: 202212

SITE DESCRIPTION

This site comprises 2 acres in the northeast portion of the installation. This area was used to decontaminate oversized equipment/materials contaminated with trace explosives. The oven was constructed in 1970 and was used until 2001. There were no secondary containment features at this site. Only trace explosives were treated in this area. It may have been possible for VOCs to be released via the exhaust fan during heating. Lead may have been released from the equipment and vehicles decontaminated at this site.

The data from the April 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). An RFI work plan was prepared in February 2008, and was approved by KDHE. Fieldwork is complete. Dioxin and lead were found in surface soil above industrial levels. An RFI report was prepared in January 2011 and comments have been received from KDHE. Contaminated soil underneath explosive foundations will be covered in the SAAP-123/124 ICM.

CLEANUP/EXIT STRATEGY

The installation will perform the ICM for removal of rind soils associated with the explosive foundation. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-047
Site Name: Nitroguanidine Area (25) Sumps
Alias: SWMU 47

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197909	199009
CS	199408	199805
RFI/CMS	199810	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 1 acre in the northwest portion of the installation. This area was used to collect wastewater from each of the NQ Production Area buildings/tanks. SAAP-047 consists of 25 sumps. Construction of the NQ Production facilities began in the late-1970s with limited production during 1981 (proveout). In August 1984, the plant began bulk production of NQ, producing 63M pounds through August 1992. Each of the production buildings had dedicated sumps outside the buildings which received wastewater generated by operations in the NQ Area. The wastewater resulted from equipment wash downs and spills. The wastewater may have been acidic and may potentially have contained contaminants such as NQ and GN, as well as raw process materials or intermediates of the NQ production process.

The May 1999 RFI results indicate elevated levels of nitrates in groundwater and the soil around the sumps in the NQ Production Area. Another RFI is required to confirm vertical and horizontal extent of contamination. RFI work plan was prepared in May 2010 and comments have been received from KDHE. ICM for contaminated soil underneath explosive foundations is covered under sites SAAP-123/124.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-048
Site Name: Nitroguanidine Support Area
Alias: SWMU 48

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Explosives, Nitrate/Nitrite

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	197909	199009
CS	199408	199805
RFI/CMS	199609	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 6 acres in the north central portion of the installation. This area was used to proveout the NQ production process. SAAP-048 consists of the NQ Support Equipment (NSE) Area located in the in buildings 2000 and 2012. The equipment included dryer bays, aboveground storage tanks (AST), and half tanks. The NSE was a NQ pilot-scale production plant that was constructed during 1977-1980 and operated periodically as a partial proveout of the NQ production process from May 1979 to June 1984. In August 1984, the main NQ plant began production. The majority of the pilot plant was demolished sometime following shut down. This site was formerly the location of the 2000 series NC production facility, used from 1943 to 1946. The NC production equipment was removed and the NSE was built in the empty buildings.

The May 1999 RFI was approved by KDHE and the results indicated the presence of elevated levels of nitrates, NQ, GN and sulfates in the soil and groundwater. ICM for contaminated soil underneath explosive foundations is covered under sites SAAP-123/124.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The CMS will be completed and will be used to determine future action(s) for this site.

Site ID: SAAP-050
Site Name: Disposal Site East of SAAP-001
Alias: SWMU 50

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Asbestos, Metals

Media of Concern: Soil

Phases	Start	End
RFA	197909	199009
CS	199408	199805
RFI/CMS	199910	201810
IRA	199703	199907

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 10 acres in the northeast portion of the installation. This area was used for disposal of building demolition debris. SAAP-050 consists of two areas. The first area (SAAP-050 north) is an abandoned dump site (6.5 acres) that was discovered just inside the eastern boundary of SFAAP near Kill Creek. The second area (SAAP-050 south) consists of another abandoned dump site (3.2 acres) south of the other area. The debris scattered about both sites included broken asbestos (transite) siding, shingles, asbestos pipe insulation, bricks, vitrified clay pipe, drums and metal slag.

The February 1997 RFI indicated that the abandoned dump site did not exhibit unacceptable carcinogenic or toxic risks for the projected future land use of a trail through the area for Johnson County Parks and Recreation. Because the exposed friable asbestos posseses a health risk to recreational visitors, and that both dump sites are located in a flood plain, KDHE and USEPA requested that interim measures be taken to remove the debris including all visible ACM.

In 1997 an IRA was executed. SAAP-050 south had 790 tons of ACM, and 11 cy on nonhazardous lead-impacted soil excavated and disposed of off-site. The stream bank was stabilized with rock riprap for 100 feet to prevent further erosion of the disposal area.

In 1999 another IRA was executed. SAAP-050 north had 1,790 tons of ACM and nonhazardous debris excavated and disposed of off-site. The stream bank was stabilized with rock riprap for 140 feet to prevent further erosion of the disposal area. In 2004 limited debris removal and cover stabilization (riprap) occurred. Small quantities of exposed ACM have been found each year from stream bank erosion.

CLEANUP/EXIT STRATEGY

The installation will perform the RFI fieldwork. The RFI report will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-051
Site Name: New Reclamation Yard
Alias: SWMU 51

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	197909	199009
CS	199408	199805
RFI/CMS	200001	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 8 acres in the north central portion of the installation. This area was used to stage scrap materials and excess equipment. SAAP-051 consists of the New Reclamation Yard, commonly referred to as the Salvage Yard. This site also includes the battery handling area. Scrap was flash (explosive) decontaminated at the Contaminated Materials Burning Ground (SAAP-021) and then temporarily stored in the Salvage Yard prior to disposition. In the battery handling area, battery parts were observed on the ground. Typical wastes associated with batteries include acids and metals (mercury, lead and cadmium). Historically SAAP-051 was just the battery handling area, but was expanded to include all of the Salvage Yard due to the 1998 site-wide EBS which identified the remainder of the Salvage Yard as an AOC. The data from the June 1997 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). An RFI work plan was prepared in October 2009, and was approved by KDHE. Fieldwork was started but was stopped due to insufficient funds.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-052
Site Name: Paint Bay Building 542
Alias: SWMU 52

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	197909	199201
CS	199201	199805
RFI/CMS	199602	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used to paint vehicles. SAAP-052 consists of the paint bay within Building 542. Fumes and overspray were vented through the east side of the building where stressed vegetation has been observed. Wastes typically associated with paint bays include VOCs and metals such as chromium, cadmium and lead.

The data from the March 2000 RFI were determined by the regulators to be unreliable (Intertek Testing Services Data). The February 2005 RFI indicated no detections of contamination above residential TMCLs. The RFI recommended NFA and was approved by KDHE. A request for NFA was written by the Army and sent to KDHE in April 2007. In a letter dated Jan. 23, 2009 KDHE denied the NFA request based on data gaps KDHE found in the RFI report. To fill the data gap two groundwater monitoring wells will be installed and groundwater samples analyzed for RCRA metals, manganese, SVOC-phthalates, and VOCs.

CLEANUP/EXIT STRATEGY

The RFI will be completed. NFA is anticipated.

Site ID: SAAP-053
Site Name: Burn and Debris Area North of STP
Alias: SWMU 53

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Dioxins/Dibenzofurans, Metals

Media of Concern: Soil

Phases	Start	End
RFA	199601	199604
CS	199704	199811
RFI/CMS	200310	201412
DES	201506	201605
CMI(C)	201506	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 5 acres in the northeast portion of the installation. This area was used for open burning non-explosive debris. Aerial photographs taken of SFAAP from 1948 to 1991 show the old burn and debris area. An inspection was done on Sept. 18, 1997. A wood pile is still present, but the road is covered over with vegetation. The debris begins at the fence line near the main road by the STP. SAAP-053 is comprised of construction debris including heavy duty concrete rubble, rusted out 55-gallon steel drums, glass rubble, broken insulators, pipe debris, wood scraps, telephone poles, wire fencing, concrete pipe pieces, iron scraps and asbestos materials. The debris covers 1 acre and extends from the fence line, following the ditch until reaching the open area where a quarry existed. Debris is on both sides of the ditch and in the ditch.

In November 1998, an RRSE was completed. The May 2006 RFI results indicated there were 10 soil sample exceedances of industrial TMCLs at eight sampling locations. A CMS for SAAP-053 was approved by KDHE in December 2014. The CMS includes excavation and disposal of soils.

CLEANUP/EXIT STRATEGY

A final soil excavation and disposal will be completed, and a construction completion report will be submitted to KDHE.

Site ID: SAAP-054
Site Name: Fluorescent Tube Wells
Alias: SWMU 54

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199601	199604
CS	199704	199811
RFI/CMS	200310	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in three areas of the installation. These areas were used for disposal of fluorescent light bulbs. The sites consisted of two hand dug water wells and one cistern that were part of old pre-SFAAP homesteads. It is uncertain when the disposal occurred, but is suspected to have taken place prior to 1976. Fluorescent tubes contain mercury. The broken fluorescent tubes and contaminated soil were removed from all three wells. All three wells were closed in accordance with KDHE well abandonment requirements in 1998. The following is a description of each fluorescent tube well (FTW) and the actions taken at each well.

FTW-1 was located in the east central part of SFAAP, south of SAAP-105, 1,000 feet east of Spoon Creek. The former FTW-1 was a rectangular rock-lined well with interior dimensions of four feet by three feet and a depth of 15 feet. FTW-1 was closed in 1998 in accordance with KDHE well-abandonment requirements. Prior to closure two 55-gallon drums of fluorescent light tubes, incandescent light bulbs, and debris were removed from the well and disposed off-site as hazardous waste. During closure a pit of eight feet by 11 feet at the surface tapering down to six feet by five feet at a depth of 16 feet below ground surface was excavated. A total of 8.9 cy of soil, rock, and debris was excavated and disposed off-site at the Johnson County Landfill as nonhazardous special waste.

FTW-2 was located in the northeast part of SFAAP, southeast of SAAP-056, 2,300 feet east of Kill Creek. The former FTW-2 was a round rock-lined six-foot diameter round well eight feet deep. FTW-2 was closed in 1998 in accordance with KDHE well abandonment requirements. Prior to closure half of a 55-gallon drum of fluorescent light tubes, incandescent light bulbs, and debris were removed from the well and disposed offsite as hazardous waste. During closure a pit of 15 feet by 15 feet at the surface tapering down to six feet by five feet at a depth of 11 feet below ground surface was excavated. A total of 8.5 cy of soil, rock, and debris was excavated and disposed off-site at the Johnson County Landfill as nonhazardous special waste.

FTW-3 is located in the north central part of SFAAP, west of SAAP-065. FTW-3 is a round brick and concrete-lined five foot diameter round cistern 14 feet deep. Six and one half 55-gallon drums of fluorescent light tubes, incandescent light bulbs, and soil/water slurry were removed from the cistern and disposed off-site as hazardous waste.

In November 1998 an RRSE was completed. An RFI work plan was prepared in April 2009, and was approved by KDHE. Tetra Tech took 23 soil samples and analyzed for beryllium, lead, and mercury. Soil samples did not exceed residential TMCLs. Three groundwater monitoring wells were installed at FTW-3 and five groundwater samples were collected. Groundwater samples did not exceed residential TMCLs. Attempts were made to install groundwater monitoring wells at FTW-1 and FTW-2, but groundwater was not present. An RFI report will be prepared. The ICM work to close these farmstead wells was funded by non-ER,A funds and therefore is not shown in the phase schedule. Since the homestead wells were closed in accordance with KDHE well abandonment requirements, and no impact to soil or groundwater was found, NFA is required. After KDHE approval of the RFI report, a request for no further corrective action will be submitted.

Site ID: SAAP-054
Site Name: Fluorescent Tube Wells
Alias: SWMU 54

CLEANUP/EXIT STRATEGY

The RFI report will be completed. It is anticipated that NFA will be required.

Site ID: SAAP-057
Site Name: Chemical Preparation House
Alias: SWMU 57

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals, Pesticides

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	199808	200303
CS	200303	200309
RFI/CMS	200904	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used for storing and preparing non-explosive chemicals for mixing with explosive to make propellant paste. SAAP-057 consists of the Chemical Preparation House (Facility 507-2). Chemicals may have been spilled on the ground outside of this building.

This site is located in Parcel 1-27(7)HR(P) as shown in the 1998 site-wide EBS. The March 2003 RRSE results showed that there were no exceedances of background levels. The RRSE report recommended NFA at this site. However, KDHE wrote a letter recommending the Army conduct additional soil and groundwater sampling.

An RFI work plan was prepared in April 2009, and was approved by KDHE. Field sampling is complete. Sampling results showed one soil exceedance of the industrial TMCL for lead, and two exceedances of groundwater samples at one monitoring well of the industrial TMCL for dieldrin. An RFI report will be prepared.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-058
Site Name: Combined Shops Area
Alias: SWMU 58

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 14 acres in the north central portion of the installation. This area was used for maintenance activities and repairs. There are a total of 30 facilities in the area. The facilities include: three offices, the fuel unloading station, storage and distribution center, 12 storehouses, and nine shops. There was a tram repair shop that was converted into a heating plant. Shops in this area include: paint and sign, paint, tool control/millwright, forge and weld, lead burning, heavy equipment repair, area oil house, locomotive repair, and tram repair shops. Building 500 contained the following shops: carpenter, electrical instrument, refrigeration air conditioner, pipe, and machine shops.

This site is located in Parcel 1-28(7)HR(P) shown in the 1998 site-wide EBS. The results from the March 2003 RRSE report indicate that perchloroethylene (PCE) in the groundwater exceeded the USEPA Region IX Preliminary Remediation Goals (PRG). PCE, PAHs, lead, arsenic and manganese results from soil exceeded the USEPA Region IX PRGs. An RFI work plan was prepared in April 2010, and was approved by KDHE. Fieldwork was not started due to insufficient funds.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-059
Site Name: Laundry Facility
Alias: SWMU 59

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Explosives, Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	200303	200309
RFI/CMS	200912	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 55 acres in the north central portion of the installation. This area was used to launder worker clothing to remove process wastes and propellant residues. SAAP-059 consists of the Laundry Facility (Building 4562) which was a single-story facility with a concrete floor containing several sumps and drains. There were two fuel oil tanks located outside of the facility.

This site is located in Parcel 1-30(7)HR(P) shown in the 1998 site-wide EBS. The results from the March 2003 RRSE report indicate that all the soil samples were below USEPA Region IX PRGs. The RRSE report recommended NFA at this site; however, KDHE wrote a letter recommending the Army conduct additional soil and groundwater sampling.

An RFI work plan was prepared in December 2009, and was approved by KDHE in December 2009. Fieldwork is complete. There were three soil exceedances of the industrial TMCL for GN. There were no exceedances of groundwater samples at two monitoring wells at SAAP-059. An RFI report will be prepared. ICM for contaminated soil underneath explosive foundations is covered in sites SAAP 123/124.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-062
Site Name: Transformer Storage Warehouse 566-5
Alias: SWMU 62

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used for temporary storage of non-Toxic Substances Control Act (TSCA) regulated, i.e. less than 50 parts per million (ppm) PCB transformers. This site is located in Parcel 1-34(7)HR(P)/PR(P) shown in the 1998 site-wide EBS. At the time of the EBS, this facility stored 149 replacement transformers. Based on visual inspections, several stains were observed on the concrete floor, and some of the transformers that were currently stored in the facility were observed to be leaking. The facility was considered a potential AOC. All of the transformers stored were tested for PCB content and all were below 50 ppm; however, labels were lacking on some of the transformers. It was impossible to determine if all the stains noted were caused by the transformers currently stored or by transformers previously stored at the facility.

An RRSE was conducted in March 2003 for the area outside of Building 566-5. A CERCLA remediation using TSCA as an applicable or relevant and appropriate requirement (ARAR) was conducted in 2004. The investigation and cleanup was done under TSCA regulations. SAAP-062 measures 101 feet by 39 feet for an area of 3,939 square feet. A total of 490 tons of PCB-contaminated concrete, gravel, and soil was excavated and disposed. All remaining soil in SAAP-102 was below unrestricted levels for PCBs (1 mg/kg) as reported in the Polychlorinated Biphenyl Sites Cleanup Report (September 2007). This ICM work was funded with non-ER,A funds and therefore is not shown in the phase schedule.

A request for NFA was written by the Army and sent to KDHE in February 2008. In a letter dated March 12, 2009 KDHE denied the NFA request based on data gaps KDHE found in the Polychlorinated Biphenyl Sites Cleanup Report (September 2007). Additional investigation and cleanup is required to close the data gaps identified in KDHE's letter dated March 12, 2009.

All future actions beyond a CMS were removed from AEDB-R and the IAP for this site because a CMS had not yet been prepared, and therefore the future actions were deemed not supportable for an audit.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-063
Site Name: Water Towers
Alias: SWMU 63

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 7 acres in several areas of the installation. This area was used to store water. SAAP-063 consists of the two sets of water towers: north towers and south towers. The north towers consist of towers 127- 1, 127- 2, 127- 3 and 127- 4 positioned in a row (north to south), located at the plant main entrance, at the north center boundary of the facility. The south towers consist of four independent towers located independent of one another within the central manufacturing area of the plant. The south towers are 127-5, 128-3, 128-8, and 130-4. Water towers 129-3 and 130-4 are being handled under SAAP-116 since they both are within SAAP-116 boundary. All of the towers have undergone substantial surface sandblasting and restoration actions, which have resulted in lead contamination of surrounding surface soils from sandblasting lead-based paint.

This site is located in Parcel 1-35(7)HR(P) shown in the 1998 site-wide EBS. In the March 2003 RRSE, arsenic and lead results exceeded USEPA Region IX PRGs. An RFI work plan was prepared in February 2009, and was approved by KDHE. Fieldwork is complete. There were 28 soil exceedances of the industrial TMCL for lead. There were no exceedances of residential TCMLs for sediment, surface water, and groundwater at SAAP-063. An RFI report will be prepared.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-064
Site Name: Paper Burning Ground
Alias: SWMU 64

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Volatiles (VOC)

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 3 acres in the east central portion of the installation. This area was used to burn paper. A trench was observed on aerial photographs encompassing approximately 200 feet by 30 feet. Contaminants may have extended to a depth of five feet below ground surface (depth to bedrock).

This site is located in Parcel 1-38(7)HR(P) shown in the 1998 site-wide EBS. In the March 2003 RRSE, arsenic results in the soil exceeded the USEPA Region IX PRGs. The soil results were used to estimate the potential levels of compounds in groundwater. Arsenic, chromium and lead were estimated for groundwater as exceeding the USEPA Region IX PRGs.

An RFI work plan was prepared in February 2009, and was approved by KDHE. Fieldwork is complete. There were 24 soil exceedances of TMCLs at 10 sample locations. There were no exceedances of residential TCMLs for sediment, surface water, and groundwater at SAAP-064. An RFI with CMS report will be prepared.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-065
Site Name: Tank Farm
Alias: SWMU 65

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 22 acres in the north central portion of the installation. This area was used for storing and recycling ether and alcohol. The Tank Farm consists of three contiguous areas: South Tank Farm (which includes the 600-2, 600-3, and 600-4 Tanks, and Still Houses 3502 and 4502); the North Tank Farm (which includes the 600-1 Tanks) and the loading stations; and the area containing the compressor buildings and tanks (Building 1991). The Tank Farm received and processed recycled solvents which included alcohol and ether. Numerous releases have been documented from within the Tank Farm. Although the tanks were removed, the foundations and saddles remain. This site has not been used for solvent storage and recycling since 1960. The 600-1 Tanks were used for storing diesel fuel starting in the mid-1970s. The east 600-3 Tank was used for storing gasoline starting in the mid-1970s.

This site is located in Parcel 8-2(7)HR(P) shown in the 1998 site-wide EBS. In the March 2003 RRSE, arsenic and benzo(a)pyrene results in the soil, and arsenic and lead results in groundwater exceeded the USEPA Region IX PRGs. An RFI work plan was prepared and comments have been received from KDHE. ICM for contaminated soil underneath explosive foundations is covered under sites SAAP-123/124.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-066
Site Name: Installation-wide Stream Study
Alias: SWMU 66

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Dioxins/Dibenzofurans, Explosives, Metals, Pesticides, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Sediment, Surface Water

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	202506

RIP Date: N/A

RC Date: 202506

SITE DESCRIPTION

This site comprises 8.6 miles of streams across the installation. This area was used for disposal of wastewater. In February 2000 USEPA ordered SFAAP to conduct stream monitoring. This site is designated for sampling the installation-wide surface waters of Captain Creek (10,861 linear feet), Hanson Creek (6,900 linear feet), Kill Creek (9,097 linear feet), and Spoon Creek (18,506 linear feet). An RRSE was conducted in July 2005.

In August 2003 an RFI was initiated. Phase I included sediment and surface sampling. Sediment sampling results were compared to the threshold effect concentrations (TEC) provided in the document, Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al., 2000). There were 21 sediment samples that exceeded the TECs at 16 sample locations. Surface water sample results were compared to the Acute Aquatic Life Screening Values in the Kansas Surface Water Quality Standards (KSWQS) (KDHE, 2004). There were five surface water samples that exceeded the KSWQS at three sample locations. In July 2005 the RFI was completed. Phase II and Phase III results indicated that arsenic, chromium, cobalt, iron, lead and NG in sediment samples were above the TECs. Surface water sample contaminants above the KSWQS were dieldrin and 4,4-dicholoro-diphenyl-trichloroethane (DDT).

KDHE's comment letter on the RFI report stated: There is significant potential that in-drainage sediment samples [contamination] will be transported by fluvial action into the in-stream areas. The sediment sampling will take place after the upgradient remediation is completed.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-067
Site Name: South Acid Area
Alias: SWMU 67

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals, Nitrate/Nitrite, Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 26 acres in the east central portion of the installation. This area was used for production and recycling of nitric acid and sulfuric acid. The South Acid Area was operated from 1943 to 1998. This area contains numerous buildings and tanks (Building 700 and 900 series). The conditions of these buildings range from being intact to total disrepair requiring demolition. Drainage ditches in the area were used for managing spills and wastewater discharges. Areas of discolored soil were noted during inspections in 2001. This area also includes SAAP-107 (Building 719-2; Former Truck Maintenance Shop), SAAP-108 (Former Fuel Oil Storage Tank), and SAAP-109 (Building 554-6; Oil and Paint House).

This site is shown as an area needing investigation in the 1998 site-wide EBS. In the March 2003 RRSE benzo(a)pyrene, lead and arsenic in surface soils exceeded the USEPA Region IX PRGs. An RFI work plan was prepared in November 2008, and was approved by KDHE. Fieldwork was started, but was stopped due to insufficient funds. ICM for contaminated soil underneath explosive foundations is covered under sites SAAP-123/124 ICM for SAAP-067.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-101
Site Name: Monitoring Well West of Old Admin B
Alias: AOC 1

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals, Nitrate/Nitrite

Media of Concern: Groundwater

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200304	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 32 acres in the northeast portion of the installation. This area was used as green space and barracks for soldiers. Nitrate contamination has been documented in a monitoring well pair (overburden-bedrock nested pair) in this area. This site is located in Parcel 1-26(7)HR(P) shown in the 1998 site-wide EBS.

The February 2004 RRSE revealed that nitrate concentrations in groundwater exceeded risk levels. Source of the nitrates was unknown. In a letter dated May 7, 2007 KDHE requested an investigation for SAAP-101 to determine the nitrate contaminant source area and to delineate the groundwater contaminant plume. An RFI work plan was prepared in November 2009, and was approved by KDHE. Fieldwork was completed. There were no soil (surface and subsurface) exceedances of residential TMCLs at seven sampling locations. There were two groundwater sample exceedances of the industrial TMCL for antimony at two new monitoring wells. The RFI sampling shows that there is no nitrate groundwater plume, and that the source of nitrate in groundwater is localized to the original two monitoring wells (002MW005 and 002MW006). An RFI report will be prepared.

CLEANUP/EXIT STRATEGY

Based on the result of the RFI, NFA for soils is anticipated. A CMS will be used to determine future action(s) for this site.

Site ID: SAAP-102
Site Name: Main Electrical Switch Yard
Alias: AOC 2

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Dioxins/Dibenzofurans, Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	201410	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 2 acres in the central portion of the installation. This area was used to transform electricity coming on plant at 115,000 volts to 12,000 volts and lower voltage. SAAP-102 measures 360 feet by 185 feet for an area of 66,600 square feet. Based on interviews with a former employee, a transformer fire resulting from a lightning strike occurred around 1945. The majority of the transformers (assumed to contain PCBs based on that time period) were said to have been destroyed by the fire. This site was active until 2003, at which time the transformers were removed. This site is located in Parcel 1-29(7)HR(P) shown in the 1998 site-wide EBS.

A CERCLA remediation using TSCA as an ARAR was conducted in 2004. The investigation and cleanup was done under TSCA regulations using non-ER,A funds. Therefore this ICM work is not shown in the phase schedule. A total of 5,060 tons of PCB-contaminated soil were excavated and disposed of. All remaining soil in SAAP-102 was below unrestricted levels for PCBs (one mg/kg) as reported in the Polychlorinated Biphenyl Sites Cleanup Report by Shaw Environmental (September 2007). In a letter dated Jan. 29, 2008 KDHE approved, with conditions, the referenced the PCB sites cleanup report. Additional investigation and cleanup is required to close the data gaps identified in KDHE's referenced letter.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-105
Site Name: Canon Range Tunnels (Facility 303)
Alias: AOC 5

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Explosives, Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200801	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 3 acres in the eastern portion of the installation. This area was used for test firing 2.75-inch inert rockets. The Army fired 2.75-inch inert rockets into the two tunnels at this site. The greatest potential for surface soil contamination was anticipated to be at the firing pads, along the firing line leading from the firing pads to the tunnels, and within the tunnels.

Results in the September 1989 RI report indicated that explosives and metals were present in the soil at negligible levels. This site is located in Parcel 2-11(7)HR(P) shown in the 1998 site-wide EBS. In the March 2003 RRSE arsenic was the only compound exceeding the USEPA Region IX PRG value, but was below background level. The RRSE report recommended NFA at this site; however, KDHE wrote a letter recommending the Army conduct additional soil sampling. An RFI work plan was prepared in January 2008, and was approved by KDHE. Fieldwork is complete. There were 59 soil sample exceedances of industrial TMCLs at 28 sampling locations. There were no groundwater sample exceedances of industrial TMCLs. An RFI report will be prepared.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-110
Site Name: Storage Magazines Not in SAAP-15,16
Alias: AOC 10

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals, Pesticides

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 541 acres in the southern portion of the installation. This area was used to store produced propellants. There are 81 magazines, 32 magazine foundations, and 15 igloos in this area. It is located in Parcel 4-1(1) shown in the 1998 site-wide EBS. In the March 2003 RRSE arsenic was the only compound to exceed its respective Region IX PRG value, but was below background level.

An RFI was prepared in October 2008, and was approved by KDHE. Fieldwork was completed. There were no soil samples exceeding industrial TMCLs for all investigations at SAAP-110. Exceedances for pesticides in soil were excluded because the Army does not clean up applied pesticides. Groundwater samples exceeded TMCLs for arsenic, dieldrin, and manganese. An RFI report with a CMS will be prepared.

All future actions beyond a CMS were removed from AEDB-R and the IAP for this site because a CMS had not yet been prepared, and therefore the future actions were deemed not supportable for an audit.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-111
Site Name: Forced Air Dryers
Alias: AOC 11

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	201009	202108

RIP Date: N/A

RC Date: 202108

SITE DESCRIPTION

This site comprises 278 acres in the west central portion of the installation. This area was used for drying multi-base solvent propellant. SAAP-111 consists of over 50 buildings designated as forced air dryers, rest houses, screen houses, and can pack houses. This site is in Parcel 5-10(7)HR shown in the site-wide EBS. In the March 2003 RRSE arsenic was the only compound to exceed the USEPA Region IX PRG value and local background. The RRSE report recommended NFA at this site; however, KDHE wrote a letter requesting additional soil and groundwater sampling.

ICM for contaminated soil underneath explosive foundations and sewers is covered in the ICM for SAAP-123/124. Fieldwork was completed and a total of 75,864 tons of contaminated soil was excavated and disposed from this site as part of the SAAP-123/124 ICM. An ICM completion report for SAAP-111 area will be prepared. KDHE has provided comments to the RFI work plan.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CM,S which will be used to determine future action(s) for this site.

Site ID: SAAP-112
Site Name: Paste Air Dry Facilities
Alias: AOC 12

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Explosives, Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 36 acres in the central portion of the installation. SAAP-112 consists of 16 buildings that were part of the F-Line and N-Line operations. All of the buildings have been intentionally burned down with only foundations remaining. It is in Parcel 5-13(7)HR(P) shown in the 1998 site-wide EBS. In the March 2003 RRSE arsenic and lead exceeded the USEPA Region IX PRGs. An RFI work plan was prepared in March 2011, and was approved by KDHE in February 2015. ICM for contaminated soil underneath explosive foundations and sewers is covered under SAAP-123/124.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-114
Site Name: Robert's Lake
Alias: AOC 14

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Sediment, Surface Water

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the west central portion of the installation. This area was used as a recreational fishing lake. SAAP-114 is located south of the Old Sanitary Landfill (SAAP-018) and west (downgradient) of G-line (SAAP-017). Robert's Lake current and future use is for recreation. The site is in Parcel 6-7(7)HR(P) shown in the 1998 site-wide EBS.

In 1994 a receiving waters biological study was conducted, and sampled for SVOCs, metals and explosives. Arsenic and lead were the only compounds in surface water to exceed USEPA Region IX PRGs. Arsenic in sediment exceeded USEPA Region IX PRGs. In the March 2003 RRSE the 1994 data were used to run the RRSE calculations. The RRSE recommended further action at this site due to recreational use (fishing) with the risk exceeded for arsenic and lead in surface water. An RFI work plan was prepared in March 2009, and was approved by KDHE. Fieldwork was completed.

CLEANUP/EXIT STRATEGY

The RFI will be completed, and NFA is anticipated.

Site ID: SAAP-115
Site Name: Hazard Analysis Testing Lab
Alias: AOC 15

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used as an indoor firing range, and for ballistics testing of explosives and propellant. This area consists of Building 300 which includes an indoor firing range which used sand to catch expended small-caliber test projectiles. Some of the sand was disposed in piles just outside a door on the south side of the building and a door on the north side of the building. Both sand piles measure 60 feet by 30 feet.

This site is in Parcel 7-2(5)HR shown in the 1998 site-wide EBS. In the March 2003 RRSE lead and arsenic in the soil were the only contaminants to exceed Region IX PRGs. An RFI work plan was prepared in March 2009, and was approved by KDHE. Fieldwork is complete. There were four soil sample exceedances of the industrial TMCL for lead at three sampling locations. There were no groundwater sample exceedances of industrial TMCLs. An RFI report was prepared and KDHE provided a comment.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-116
Site Name: Nitrocellulose Production Lines
Alias: AOC 16

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 107 acres in the north central portion of the installation. This area was used to produce NC. Each of the four production lines is approximately 22 acres in size and contains 10 or more buildings. The majority of the buildings have been intentionally burned down and all that remains are the explosive concrete foundations and underground explosive sewers. The NC Production Lines produced NC during the periods of 1943-1946, 1951-1960, and 1965-1971. Cotton fibers and wood pulp were nitrated using a mixture of nitric acid and sulfuric acid. Nitric acid and sulfuric acid was produced and recycled in the North and South Acid Areas. NC and other hazardous constituents were released to the soil and potentially the groundwater in the proximity of the production facilities.

This site is in Segment 8 shown in the 1998 site-wide EBS. In the March 2003 RRSE arsenic and lead were above their respective TMCLs, and SVOCs were detected in the soil above the USEPA Region IX PRGs. An RFI work plan prepared in November 2008, and was approved by KDHE. Fieldwork was started, but was stopped due to insufficient funds. ICM for contaminated soil underneath explosive foundations and sewers is covered under sites SAAP-123/124. The ICM work plan was prepared in September 2009, and was approved by KDHE. Fieldwork was started, but was also stopped due to insufficient funds.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-117
Site Name: Nitroguanidine Production Buildings
Alias: AOC 17

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Explosives, Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	201005	202112
IRA	201502	201810

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 139 acres in the northwest portion of the installation. This area was used for producing NQ. SAAP-117 includes all buildings which have been identified as being potentially contaminated with explosives located in the NQ production area. NQ is a major constituent of multi-base propellants. The NQ production process starts with the conversion of calcium carbide to calcium cyanamide. Purchased calcium carbide is ground and mixed in a ball mill with calcium fluoride. This material is aspirated into a rotary kiln where, under a blanket of nitrogen gas, the conversion to calcium cyanamide takes place. The calcium cyanamide is converted into GN by the reaction of calcium cyanamide with ammonium nitrate, nitric acid, and anhydrous ammonia. GN is converted to NQ by reaction of GN with oleum and nitric acid. Crystallization of NQ followed by drying and packaging complete the process.

This site is in Parcel 9-5(6)HR shown in the 1998 site-wide EBS. Based on a review of the documents, visual inspections and interviews, there is evidence that NQ and GN contamination was observed leaching out of walls and floors during the 1998 EBS visual inspection. In the March 2003 RRSE the site was sampled for NQ and nitrates/nitrites with no detections above USEPA Region IX PRG values. The RRSE report recommended NFA at this site; however, KDHE wrote a letter requesting the Army conduct additional soil sampling. An RFI work plan was prepared in May 2010. Comments have been received from KDHE. ICM for contaminated soil underneath explosive foundations and sewers is covered under sites SAAP-123/124.

CLEANUP/EXIT STRATEGY

The IRA for the rind soil removal will be conducted. The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-118
Site Name: Trench Disposal Area A3
Alias: AOC 18

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200711	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 34 acres in the northeast portion of the installation. This area was used for staging building material during construction of SFAAP. This site was identified by USEPA in 1994 as A3 in a 1948 aerial photograph from disturbed ground west of SAAP-001. In the July 2005 RRSE lead was detected above the industrial risk level.

An RFI work plan was prepared in November 2007, and was approved by KDHE. Fieldwork is complete. There was one soil sample that exceeded the industrial TMCL for lead. The groundwater samples did not exceed residential TMCLs at SAAP-118. An RFI report was prepared, and KDHE provided comments.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-119
Site Name: Trench Disposal Area A4
Alias: AOC 19

STATUS

Parcel: NONE

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200508
RFI/CMS	200711	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the northeast portion of the installation. This area was used as a borrow source for building the railroad during construction of SFAAP. This site was identified by USEPA in 1994 as A4 in a 1948 aerial photograph from disturbed ground southwest of SAAP-001.

In the July 2005 RRSE there were no contaminants detected above regulatory limits. The RRSE report recommended NFA; however, KDHE wrote letter requesting additional soil and groundwater samples, and conduct trenching with backhoe to verify that no disposal of waste occurred in historic trenches.

An RFI work plan was prepared in November 2007, and was approved by KDHE. Fieldwork is complete. Trenching was conducted for 250 feet and no evidence of disposal activities was found. There were no soil or groundwater samples that exceeded residential TMCLs at SAAP-119. An RFI report was prepared and comments were received from KDHE.

CLEANUP/EXIT STRATEGY

NFA is anticipated.

Site ID: SAAP-120
Site Name: Trench Disposal Area A5
Alias: AOC 20

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200508
RFI/CMS	200711	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the northeast portion of the installation. This area was a farmstead prior to construction of SFAAP. This site was identified by USEPA in 1994 as A5 in a 1948 aerial photograph from disturbed ground east of SAAP-001.

In the July 2005 RRSE there were no contaminants detected above regulatory limits. The RRSE report recommended NFA; however, KDHE wrote a letter requesting additional soil and groundwater samples, and conduct trenching with backhoe to verify that no disposal of waste occurred in historic trenches.

An RFI work plan was prepared in November 2007, and was approved by KDHE. Fieldwork is complete. Trenching was conducted for 857 feet and no evidence of disposal activities was found. There were four soil samples at three sample locations that exceeded industrial TMCLs. The groundwater samples did not exceed residential TMCLs at SAAP-120. An RFI report was prepared and KDHE has provided comments.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-121
Site Name: Trench Disposal Area A6
Alias: AOC 21

STATUS

Parcel: NONE

Regulatory Driver: RCRA
RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200508
RFI/CMS	200711	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the northeast portion of the installation. This area was used as a borrow source for building the railroad during construction of SFAAP. This site was identified by USEPA in 1994 as A6 in a 1948 aerial photograph from disturbed ground south of SAAP-001.

In the July 2005 RRSE there were no contaminants detected above regulatory limits. The RRSE report recommended NFA; however, KDHE wrote a letter requesting additional soil and groundwater samples, and conduct trenching with backhoe to verify that no disposal of waste occurred in historic trenches.

An RFI work plan was prepared in November 2007, and was approved by KDHE. Fieldwork is complete. Trenching was conducted for 416 feet and no evidence of disposal activities was found. There were no soil or groundwater samples that exceeded residential TMCLs at SAAP-119. An RFI report was prepared and comments were received from KDHE.

CLEANUP/EXIT STRATEGY

NFA is anticipated.

Site ID: SAAP-122
Site Name: Old Reclamation Yard
Alias: AOC 22

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: HIGH

Contaminants of Concern: Asbestos, Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	199808	200303
CS	199808	200303
RFI/CMS	200303	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 13 acres in the northeast portion of the installation. This area was used to stage scrap materials. This site was identified by USEPA in 1994 as A8 in a 1948 aerial photograph from disturbed ground in a fenced area south of SAAP-001. A site walk was conducted in February 2003. The following was observed: metal debris, stressed vegetation and bare spots. In the July 2005 RRSE six compounds exceeded their respective Region IX PRG values, including PCBs, SVOCs and metals.

An RFI work plan was prepared in June 2008, and was approved by KDHE. Fieldwork is complete. There were 19 surface soil sample exceedances of industrial TMCLs at 13 sampling locations. There were no subsurface soil sample exceedances of industrial TMCLs. Groundwater was not found at SAAP-122. An RFI report was prepared and KDHE has provided comments.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: SAAP-123
Site Name: Cleanup Under Explosive Foundations
Alias: AOC 23

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC), Nitrate/Nitrite, Pesticides, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC)

Media of Concern: Soil

Phases	Start	End
RFA	199505	199808
CS	199809	199810
RFI/CMS	200508	202506
IRA	200610	202112

RIP Date: N/A

RC Date: 202506

SITE DESCRIPTION

This site does not comprise any defined acres in the installation, but instead lies within the boundaries of several SMWUs and AOCs. This area was used to produce explosives and propellant. Site SAAP-123 involves the investigation and cleanup underneath explosive buildings' foundation slabs. This site includes explosive foundations within the following: SAAP-008, 013, 014, 017, 024, 026, 031, 043, 046, 047, 048, 059, 065, 067, 112, 116, and 117. The explosive foundation slabs will be removed and any soil containing greater than 10 percent explosives will be decontaminated per the February 2012 Department of Defense (DoD) Explosive Safety Board approved explosive safety submission using non-ER,A funds. After explosive decontamination is completed, ER,A funds will pay for investigation and cleanup of contaminated soil underneath the explosive foundation slabs. The soil immediately surrounding the explosive foundations, which is locally called "rind soil," is investigated and cleaned up under each SWMU/AOC in which each explosive foundation exists.

Investigatory sampling cannot be done until the explosive foundation slabs are removed. The soil under the slab must be sampled and excavated immediately after the slab is removed to prevent migration of contamination. Therefore there is no funding under the RFI/CMS phase schedule because the characterization sampling is done during the ICM. The ICM fieldwork was completed for SAAP-123/124 at F-Line (SAAP-010 and SAAP-106), and N-Line (SAAP-036), and Forced Air Dryers (SAAP-111). A total of 74,375 tons, 37,676 tons, and 44,791 tons, respectively, of contaminated soil was excavated and disposed. The ICM completion reports for these sites are being prepared.

CLEANUP/EXIT STRATEGY

The ICM will be completed, and closure documentation will be developed.

Site ID: SAAP-124
Site Name: Cleanup Under Explosive Sewers
Alias: AOC 24

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC), Nitrate/Nitrite

Media of Concern: Soil

Phases	Start	End
RFA	199505	199808
CS	199809	199810
RFI/CMS	200508	202506
IRA	200610	202112

RIP Date: N/A

RC Date: 202506

SITE DESCRIPTION

This site does not comprise any defined acres in the installation, but instead lies within the boundaries of several SMWUs and AOCs. This area was used to produce explosives and propellant. SAAP-124 involves the investigation and cleanup underneath explosive sewer lines. This site includes explosive sewer lines within SAAP-008, 014, 017, 024, 026, 065, 067, 116, and 117. The explosive sewer lines will be removed and any soil where the sewer pipe was removed which contains greater than 10 percent explosives will be decontaminated using non-ER,A funds. After explosive decontamination is completed, ER,A funds will pay for investigation and cleanup of any potentially contaminated soil. Some pesticide containing soil (from pesticides applied at wooden buildings) will need to be excavated to expose explosive sewers that must be removed per the explosive safety submission approved by the DoD Explosive Safety Board (February 2012).

Investigatory sampling cannot be done until the explosive sewers are removed. The soil under the sewer must be sampled and excavated immediately after the sewer is removed to prevent migration of contamination. Therefore there is no funding under the RFI/CMS phase schedule because the characterization sampling is done during the ICM. The ICM fieldwork was completed for SAAP-123/124 at F-Line (SAAP-010 and SAAP-106), and N-Line (SAAP-036). A total of 2,589 tons and 4,952 tons, respectively, of contaminated soil was excavated and disposed of. The ICM completion reports for these sites are being prepared.

CLEANUP/EXIT STRATEGY

The ICM will be completed, and closure documentation will be developed.

IRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PBC Sunflower	Site Wide GFPR	200801	The final advanced payment was made on Jan. 31, 2008. The site-wide GFPR expired on Aug. 5, 2010.
SAAP-023	New Explosive Waste Burning Ground	199909	Not eligible for ER,A funds. The KDHE issued a letter on May 25, 2000 to SFAAP stating that SWMU 23 - New Explosive Waste Burning Ground has met all clean closure requirements and is now considered closed. The USEPA removed the SAAP-023 area from their RCRA corrective action permit by modification on Feb. 3, 2006.
SAAP-028	Waste Calcium Carbide Treatment	198004	Not eligible for ER,A funds. The KDHE issued a letter on Oct. 21, 1993 to SFAAP stating that SWMU 28 - Waste Calcium Carbide Treatment Area, and SWMU 29 - Industrial Wastewater Treatment Lagoons were closed under the state hazardous waste regulations, and that KDHE considered these units to be clean closed. The USEPA removed the SAAP-028 area from their RCRA corrective action permit by modification on Feb. 3, 2006.
SAAP-029	Industrial Wastewater Lagoons	198004	Not eligible for ER,A funds. The KDHE issued a letter on Oct. 21, 1993 to SFAAP stating that SWMU 28 - Waste Calcium Carbide Treatment Area and SWMU 29 - Industrial Wastewater Treatment Lagoons were closed under the state hazardous waste regulations and that KDHE considered these units to be clean closed. The USEPA removed the SAAP-023 area from their RCRA corrective action permit by modification on Feb. 3, 2006.
SAAP-049	Road Southeast Of Sanitary Landfill	200804	Site closeout not yet approved by KDHE or USEPA.
SAAP-056	Well South of Facility 211	201108	Site closeout not yet approved by KDHE or USEPA.
SAAP-060	Old Photographic Laboratory	201008	Site closeout not yet approved by KDHE or USEPA.
SAAP-104	Disposal Area Southeast of STP	200804	Site closeout not yet approved by KDHE or USEPA.
SAAP-106	Process Facilities with F-Line Area	201109	This site has been integrated under site SAAP-010.
SAAP-107	Truck Maintenance Shop, South Acid	201108	This site has been integrated under site SAAP-067.
SAAP-108	Fuel Oil Storage Tank, South Acid	201108	This site has been integrated under site SAAP-067.

IRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
SAAP-109	Oil & Paint House, South Acid	201108	This site has been integrated under site SAAP-067.

IRP Schedule

Date of IRP Inception: 197907

Past Phase Completion Milestones

1980	
CS	(SAAP-028 - Waste Calcium Carbide Treatment, SAAP-029 - Industrial Wastewater Lagoons)
RFA	(SAAP-028 - Waste Calcium Carbide Treatment, SAAP-029 - Industrial Wastewater Lagoons)
1990	
RFA	(SAAP-002 - River Water Treatment Plant Lagoons, SAAP-003 - Sewage Treatment Plant Drying Beds, SAAP-004 - Pond A and Sludge Disposal Area, SAAP-005 - Acid Sewage Disposal Plant, SAAP-006 - Pond B and Sludge Disposal Area, SAAP-008 - N. Acid Area - Chromate Conc. Pond, SAAP-009 - N. Acid Area - WW Treatment Lagoon, SAAP-010 - F-Line Area Ditches, SAAP-011 - F-Line Area Settling Ponds, SAAP-012 - Pyotts Pond & Sludge Disposal Area, SAAP-013 - South Acid Area LWTP Evap. Lagoons, SAAP-014 - Rocket Static Test Area, SAAP-015 - Waste Storage Magazines, SAAP-016 - Temporary Waste Storage Magazines, SAAP-017 - G-Line Area Ditches, SAAP-018 - Old/New Sanitary Landfill, SAAP-019 - Ash Landfills, SAAP-020 - Ash Lagoons, SAAP-021 - Contaminated Materials Burn Ground, SAAP-022 - Old Explosive Waste Burning Ground, SAAP-023 - New Explosive Waste Burning Ground, SAAP-024 - Nitroglycerine and Paste Mix Areas, SAAP-025 - Nitrocellulose Area Ditches, SAAP-026 - Single Base Propellant Area Sumps, SAAP-027 - NQ Area SAC & LWTP Evap. Lagoons, SAAP-030 - Pesticide Handling Area, SAAP-031 - Contaminated Waste Processor, SAAP-032 - Lead Decon. and Recovery Unit, SAAP-033 - Paste Area Half Tanks & Ditches, SAAP-034 - Five Corners Settling Ponds, SAAP-035 - Nitroglycerine Area Settling Ponds, SAAP-036 - N-Line Area, SAAP-037 - Sandblast Areas, SAAP-038 - Oil Water Separator, SAAP-039 - South Acid Area Ditches, SAAP-040 - Calcium Cyanimide Disposal Area, SAAP-041 - Calcium Carbonate Cake Landfill, SAAP-042 - Temporary Sanitary Landfill, SAAP-043 - Tunnel Dryers (CCC Storage), SAAP-044 - Tank T784, SAAP-045 - Bldg 9040 & Ca. Cyanamide Conveyor, SAAP-047 - Nitroguanidine Area (25) Sumps, SAAP-048 - Nitroguanidine Support Area, SAAP-049 - Road Southeast Of Sanitary Landfill, SAAP-050 - Disposal Site East of SAAP-001, SAAP-051 - New Reclamation Yard)
1992	
RFA	(SAAP-007 - North Acid Area - Chromate Area, SAAP-046 - Decontamination Oven, SAAP-052 - Paint Bay Building 542)
1994	
RFA	(SAAP-001 - Classification Yard)
1995	
CS	(SAAP-013 - South Acid Area LWTP Evap. Lagoons)
1996	
CS	(SAAP-019 - Ash Landfills)
RFA	(SAAP-053 - Burn and Debris Area North of STP, SAAP-054 - Fluorescent Tube Wells)
1997	
CS	(SAAP-027 - NQ Area SAC & LWTP Evap. Lagoons)
1998	
RFI/CMS	(SAAP-041 - Calcium Carbonate Cake Landfill)

1998	
CS	(SAAP-001 - Classification Yard, SAAP-002 - River Water Treatment Plant Lagoons, SAAP-003 - Sewage Treatment Plant Drying Beds, SAAP-004 - Pond A and Sludge Disposal Area, SAAP-005 - Acid Sewage Disposal Plant, SAAP-006 - Pond B and Sludge Disposal Area, SAAP-007 - North Acid Area - Chromate Area, SAAP-008 - N. Acid Area - Chromate Conc. Pond, SAAP-009 - N. Acid Area - WW Treatment Lagoon, SAAP-010 - F-Line Area Ditches, SAAP-011 - F-Line Area Settling Ponds, SAAP-012 - Pyotts Pond & Sludge Disposal Area, SAAP-014 - Rocket Static Test Area, SAAP-015 - Waste Storage Magazines, SAAP-016 - Temporary Waste Storage Magazines, SAAP-017 - G-Line Area Ditches, SAAP-018 - Old/New Sanitary Landfill, SAAP-020 - Ash Lagoons, SAAP-021 - Contaminated Materials Burn Ground, SAAP-022 - Old Explosive Waste Burning Ground, SAAP-023 - New Explosive Waste Burning Ground, SAAP-024 - Nitroglycerine and Paste Mix Areas, SAAP-025 - Nitrocellulose Area Ditches, SAAP-026 - Single Base Propellant Area Sumps, SAAP-030 - Pesticide Handling Area, SAAP-031 - Contaminated Waste Processor, SAAP-032 - Lead Decon. and Recovery Unit, SAAP-033 - Paste Area Half Tanks & Ditches, SAAP-034 - Five Corners Settling Ponds, SAAP-035 - Nitroglycerine Area Settling Ponds, SAAP-036 - N-Line Area, SAAP-037 - Sandblast Areas, SAAP-038 - Oil Water Separator, SAAP-039 - South Acid Area Ditches, SAAP-040 - Calcium Cyanimide Disposal Area, SAAP-041 - Calcium Carbonate Cake Landfill, SAAP-042 - Temporary Sanitary Landfill, SAAP-043 - Tunnel Dryers (CCC Storage), SAAP-044 - Tank T784, SAAP-045 - Bldg 9040 & Ca. Cyanamide Conveyor, SAAP-046 - Decontamination Oven, SAAP-047 - Nitroguanidine Area (25) Sumps, SAAP-048 - Nitroguanidine Support Area, SAAP-049 - Road Southeast Of Sanitary Landfill, SAAP-050 - Disposal Site East of SAAP-001, SAAP-051 - New Reclamation Yard, SAAP-052 - Paint Bay Building 542)
RFA	(SAAP-123 - Cleanup Under Explosive Foundations, SAAP-124 - Cleanup Under Explosive Sewers)
1999	
RFI/CMS	(SAAP-011 - F-Line Area Settling Ponds)
IRA	(SAAP-013 - South Acid Area LWTP Evap. Lagoons, SAAP-027 - NQ Area SAC & LWTP Evap. Lagoons, SAAP-050 - Disposal Site East of SAAP-001)
CS	(SAAP-053 - Burn and Debris Area North of STP, SAAP-054 - Fluorescent Tube Wells, SAAP-123 - Cleanup Under Explosive Foundations, SAAP-124 - Cleanup Under Explosive Sewers)
DES	(SAAP-011 - F-Line Area Settling Ponds, SAAP-041 - Calcium Carbonate Cake Landfill)
CMI(C)	(SAAP-041 - Calcium Carbonate Cake Landfill)
2000	
RFI/CMS	(SAAP-022 - Old Explosive Waste Burning Ground)
2001	
RFI/CMS	(SAAP-032 - Lead Decon. and Recovery Unit, SAAP-042 - Temporary Sanitary Landfill)
DES	(SAAP-032 - Lead Decon. and Recovery Unit)
CMI(C)	(SAAP-011 - F-Line Area Settling Ponds, SAAP-042 - Temporary Sanitary Landfill)
IRA	(SAAP-010 - F-Line Area Ditches)
2003	

2003	
CS	(SAAP-056 - Well South of Facility 211, SAAP-057 - Chemical Preparation House, SAAP-058 - Combined Shops Area, SAAP-059 - Laundry Facility, SAAP-060 - Old Photographic Laboratory, SAAP-063 - Water Towers, SAAP-064 - Paper Burning Ground, SAAP-065 - Tank Farm, SAAP-066 - Installation-wide Stream Study, SAAP-067 - South Acid Area, SAAP-101 - Monitoring Well West of Old Admin B, SAAP-104 - Disposal Area Southeast of STP, SAAP-105 - Canon Range Tunnels (Facility 303), SAAP-106 - Process Facilities with F-Line Area, SAAP-107 - Truck Maintenance Shop, South Acid, SAAP-109 - Oil & Paint House, South Acid, SAAP-108 - Fuel Oil Storage Tank, South Acid, SAAP-062 - Transformer Storage Warehouse 566-5, SAAP-102 - Main Electrical Switch Yard, SAAP-110 - Storage Magazines Not in SAAP-15,16, SAAP-111 - Forced Air Dryers, SAAP-112 - Paste Air Dry Facilities, SAAP-114 - Robert's Lake, SAAP-115 - Hazard Analysis Testing Lab, SAAP-116 - Nitrocellulose Production Lines, SAAP-117 - Nitroguanidine Production Buildings, SAAP-118 - Trench Disposal Area A3, SAAP-122 - Old Reclamation Yard)
RFA	(SAAP-056 - Well South of Facility 211, SAAP-057 - Chemical Preparation House, SAAP-058 - Combined Shops Area, SAAP-059 - Laundry Facility, SAAP-060 - Old Photographic Laboratory, SAAP-063 - Water Towers, SAAP-064 - Paper Burning Ground, SAAP-065 - Tank Farm, SAAP-066 - Installation-wide Stream Study, SAAP-067 - South Acid Area, SAAP-101 - Monitoring Well West of Old Admin B, SAAP-104 - Disposal Area Southeast of STP, SAAP-105 - Canon Range Tunnels (Facility 303), SAAP-106 - Process Facilities with F-Line Area, SAAP-107 - Truck Maintenance Shop, South Acid, SAAP-109 - Oil & Paint House, South Acid, SAAP-108 - Fuel Oil Storage Tank, South Acid, SAAP-062 - Transformer Storage Warehouse 566-5, SAAP-102 - Main Electrical Switch Yard, SAAP-110 - Storage Magazines Not in SAAP-15,16, SAAP-111 - Forced Air Dryers, SAAP-112 - Paste Air Dry Facilities, SAAP-114 - Robert's Lake, SAAP-115 - Hazard Analysis Testing Lab, SAAP-116 - Nitrocellulose Production Lines, SAAP-117 - Nitroguanidine Production Buildings, SAAP-118 - Trench Disposal Area A3, SAAP-119 - Trench Disposal Area A4, SAAP-120 - Trench Disposal Area A5, SAAP-121 - Trench Disposal Area A6, SAAP-122 - Old Reclamation Yard)
IRA	(SAAP-018 - Old/New Sanitary Landfill, SAAP-033 - Paste Area Half Tanks & Ditches, SAAP-034 - Five Corners Settling Ponds, SAAP-035 - Nitroglycerine Area Settling Ponds)
2005	
CS	(SAAP-119 - Trench Disposal Area A4, SAAP-120 - Trench Disposal Area A5, SAAP-121 - Trench Disposal Area A6)
DES	(SAAP-010 - F-Line Area Ditches)
RFA	(PBC Sunflower - Site Wide GFPR)
RFI/CMS	(SAAP-010 - F-Line Area Ditches, SAAP-021 - Contaminated Materials Burn Ground)
2006	
DES	(SAAP-021 - Contaminated Materials Burn Ground)
RFI/CMS	(SAAP-106 - Process Facilities with F-Line Area)
2007	
DES	(SAAP-106 - Process Facilities with F-Line Area, PBC Sunflower - Site Wide GFPR)
2008	
CMI(C)	(PBC Sunflower - Site Wide GFPR)
RFI/CMS	(SAAP-049 - Road Southeast Of Sanitary Landfill, SAAP-104 - Disposal Area Southeast of STP)
2009	
IRA	(SAAP-030 - Pesticide Handling Area)
2010	
RFI/CMS	(SAAP-060 - Old Photographic Laboratory)

IRP Schedule

2010

CMI(C)	(SAAP-106 - Process Facilities with F-Line Area)

2011

RFI/CMS	(SAAP-107 - Truck Maintenance Shop, South Acid, SAAP-109 - Oil & Paint House, South Acid, SAAP-108 - Fuel Oil Storage Tank, South Acid)
LTM	(SAAP-056 - Well South of Facility 211)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

Site ID	Site Name	ROD/DD Title	ROD/DD Date

Final RA(C) Completion Date: 202112

Schedule for Next Five-Year Review: 2016

Estimated Completion Date of IRP at Installation (including LTM phase): 204811

SUNFLOWER ARMY AMMUNITION PLANT IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
SAAP-001	Classification Yard	RFI/CMS						
		IRA						
SAAP-002	River Water Treatment Plant Lagoons	RFI/CMS						
SAAP-003	Sewage Treatment Plant Drying Beds	RFI/CMS						
		IRA						
SAAP-004	Pond A and Sludge Disposal Area	RFI/CMS						
SAAP-005	Acid Sewage Disposal Plant	RFI/CMS						
SAAP-006	Pond B and Sludge Disposal Area	RFI/CMS						
SAAP-007	North Acid Area - Chromate Area	RFI/CMS						
SAAP-008	N. Acid Area - Chromate Conc. Pond	RFI/CMS						
		IRA						
SAAP-009	N. Acid Area - WW Treatment Lagoon	RFI/CMS						
SAAP-010	F-Line Area Ditches	CMI(C)						
SAAP-011	F-Line Area Settling Ponds	CMI(O)						
SAAP-012	Pyotts Pond & Sludge Disposal Area	RFI/CMS						
SAAP-013	South Acid Area LWTP Evap. Lagoons	RFI/CMS						
SAAP-014	Rocket Static Test Area	RFI/CMS						
		IRA						
SAAP-015	Waste Storage Magazines	RFI/CMS						
SAAP-016	Temporary Waste Storage Magazines	RFI/CMS						
SAAP-017	G-Line Area Ditches	RFI/CMS						
		IRA						
SAAP-018	Old/New Sanitary Landfill	RFI/CMS						
SAAP-019	Ash Landfills	RFI/CMS						

SUNFLOWER ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
SAAP-020	Ash Lagoons	RFI/CMS						
		IRA						
SAAP-021	Contaminated Materials Burn Ground	CMI(C)						
		LTM						
SAAP-022	Old Explosive Waste Burning Ground	DES						
		CMI(C)						
SAAP-024	Nitroglycerine and Paste Mix Areas	RFI/CMS						
		IRA						
SAAP-025	Nitrocellulose Area Ditches	RFI/CMS						
SAAP-026	Single Base Propellant Area Sumps	RFI/CMS						
		IRA						
SAAP-027	NQ Area SAC & LWTP Evap. Lagoons	RFI/CMS						
SAAP-030	Pesticide Handling Area	RFI/CMS						
SAAP-031	Contaminated Waste Processor	RFI/CMS						
		IRA						
SAAP-032	Lead Decon. and Recovery Unit	CMI(C)						
SAAP-033	Paste Area Half Tanks & Ditches	RFI/CMS						
SAAP-034	Five Corners Settling Ponds	RFI/CMS						
SAAP-035	Nitroglycerine Area Settling Ponds	RFI/CMS						
SAAP-036	N-Line Area	RFI/CMS						
		IRA						
SAAP-037	Sandblast Areas	RFI/CMS						
SAAP-038	Oil Water Separator	RFI/CMS						
SAAP-039	South Acid Area Ditches	RFI/CMS						
SAAP-040	Calcium Cyanimide Disposal Area	RFI/CMS						
SAAP-041	Calcium Carbonate Cake Landfill	CMI(O)						

SUNFLOWER ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
SAAP-042	Temporary Sanitary Landfill	CMI(O)						
SAAP-043	Tunnel Dryers (CCC Storage)	RFI/CMS						
		IRA						
SAAP-044	Tank T784	RFI/CMS						
SAAP-045	Bldg 9040 & Ca. Cyanamide Conveyor	RFI/CMS						
SAAP-046	Decontamination Oven	RFI/CMS						
		IRA						
SAAP-047	Nitroguanidine Area (25) Sumps	RFI/CMS						
		IRA						
SAAP-048	Nitroguanidine Support Area	RFI/CMS						
		IRA						
SAAP-050	Disposal Site East of SAAP-001	RFI/CMS						
SAAP-051	New Reclamation Yard	RFI/CMS						
SAAP-052	Paint Bay Building 542	RFI/CMS						
SAAP-053	Burn and Debris Area North of STP	DES						
		CMI(C)						
SAAP-054	Fluorescent Tube Wells	RFI/CMS						
SAAP-057	Chemical Preparation House	RFI/CMS						
SAAP-058	Combined Shops Area	RFI/CMS						
SAAP-059	Laundry Facility	RFI/CMS						
SAAP-062	Transformer Storage Warehouse 566-5	RFI/CMS						
SAAP-063	Water Towers	RFI/CMS						
SAAP-064	Paper Burning Ground	RFI/CMS						
SAAP-065	Tank Farm	RFI/CMS						
		IRA						
SAAP-066	Installation-wide Stream Study	RFI/CMS						

SUNFLOWER ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
SAAP-067	South Acid Area	RFI/CMS						
		IRA						
SAAP-101	Monitoring Well West of Old Admin B	RFI/CMS						
SAAP-102	Main Electrical Switch Yard	RFI/CMS						
SAAP-105	Canon Range Tunnels (Facility 303)	RFI/CMS						
SAAP-110	Storage Magazines Not in SAAP-15,16	RFI/CMS						
SAAP-111	Forced Air Dryers	RFI/CMS						
SAAP-112	Paste Air Dry Facilities	RFI/CMS						
		IRA						
SAAP-114	Robert's Lake	RFI/CMS						
SAAP-115	Hazard Analysis Testing Lab	RFI/CMS						
SAAP-116	Nitrocellulose Production Lines	RFI/CMS						
		IRA						
SAAP-117	Nitroguanidine Production Buildings	RFI/CMS						
		IRA						
SAAP-118	Trench Disposal Area A3	RFI/CMS						
SAAP-119	Trench Disposal Area A4	RFI/CMS						
SAAP-120	Trench Disposal Area A5	RFI/CMS						
SAAP-121	Trench Disposal Area A6	RFI/CMS						
SAAP-122	Old Reclamation Yard	RFI/CMS						
SAAP-123	Cleanup Under Explosive Foundations	RFI/CMS						
		IRA						
SAAP-124	Cleanup Under Explosive Sewers	RFI/CMS						
		IRA						

SUNFLOWER ARMY AMMUNITION PLANT

Non-BRAC Excess
Compliance Restoration

CR Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 7/0

Installation Site Types with Future and/or Underway Phases

2 Above Ground Storage Tank
(CCSAAP-103, CCSAAP-126)
3 Contaminated Soil Piles
(CCSAAP-055, CCSAAP-061, CCSAAP-113)
1 Landfill
(CCSAAP-069)
1 Spill Site Area
(CCSAAP-070)

Most Widespread Contaminants of Concern

Asbestos, Dioxins/Dibenzofurans, Lead Based Paint, Metals, Nitrate/Nitrite, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
N/A					

Duration of CR

Year of CR Inception: 199701

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 202512/202512

Date of CR completion including Long Term Management (LTM): 202512

CR Contamination Assessment

Contamination Assessment Overview

Initially, sites requiring cleanup that were contaminated prior to Oct. 17, 1986 were not eligible for funding under the Defense Environmental Restoration Program (DERP). On Dec. 29, 2008, the Office of the Deputy Under Secretary of Defense for Installations and Environment issued an interim policy for DERP eligibility that rescinded the 1986 eligibility date for the IRP and the 2002 eligibility date for the Military Munitions Response Program (MMRP). Environmental restoration activities now include the IRP and MMRP.This made many sites previously addressed in the Army's Compliance-related Cleanup (CC) program eligible for the DERP. Sites that are now eligible for the Munitions Response (MR) program have been migrated from Army Environmental Database-Compliance-related Cleanup (AEDB-CC) and given the naming convention of other MR sites. The newly eligible non-MR type sites are considered to be Installation Restoration (IR) sites; however, the newly eligible sites are being coded as CR in AEDB-R to distinguish them from the original IR sites and IR metrics. See IR Contamination Assessment Overview for more information.

Cleanup Exit Strategy

In order for SFAAP to get NFA approved by the regulators, many sites require an initial investigation while other sites require further investigations. Sites that contain contaminants in the soil/sediments above risk levels will be remediated. After soil contamination is remediated the contaminated groundwater will undergo MNA. Specifics can be found in cleanup exit strategies for each site.

CR Previous Studies

	Title	Author	Date
2005			
	Volume I Investigation Report, Corrective Measures Work Plan and QCSR for SWMUs 60 and 61, and AOCs 3 and 13	Shaw Environmental	APR-2005
	Volume II Investigation Report, Corrective Measures Work Plan and QCSR for SWMUs 60 and 61, and AOCs 3 and 13	Shaw Environmental	APR-2005
2006			
	Corrective Measures Completion Report, SWMU 60, Old Photographic Laboratory and AOC 13, Warehouses 8073-1 through 8037- 8	Shaw Environmental	MAY-2006

SUNFLOWER ARMY AMMUNITION PLANT

Non-BRAC Excess

Compliance Restoration

Site Descriptions

Site ID: CCSAAP-055
Site Name: Old Administration Buildings
Alias: SWMU 55

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

Contaminants of Concern: Asbestos, Lead Based Paint

Media of Concern: Soil

Phases	Start	End
RFA	199701	199810
CS	199903	199908
RFI/CMS	201410	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 7 acres in the northeast portion of the installation. This area was used for offices for administrative personnel. Two large (156,114 square feet each) buildings were built in 1942. These buildings were covered with transite siding in 1952. Asbestos fragments are in the soil surrounding these buildings. Also commingled with the asbestos in the soil are flakes of lead-based paint. The buildings are still standing. The buildings were no longer used after 1976. In the 1998 EBS this area was listed as an area where there were possible releases or disposal of hazardous substances. This site is in USEPA's RCRA corrective action permit as SWMU 55 due to flaking lead-based paint. The Old Photographic Laboratory within Building 214 is SAAP-060 and is being handled separately.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine if future action(s) for this site are required. It is anticipated there will be NFA at the site.

Site ID: CCSAAP-061
Site Name: Environmental Laboratory Bldg 232
Alias: SWMU 61

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

Contaminants of Concern: Nitrate/Nitrite

Media of Concern: Soil

Phases	Start	End
RFA	199710	199810
CS	199901	199909
RFI/CMS	200408	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used as an Environmental Laboratory. This 4,424 square feet building (Building 232) was constructed in 1943 and was initially used as a change house. In 1982 the building was modified into a laboratory and was used to analyze environmental samples. This laboratory was active until 2003. Past waste disposal practices are not documented. In the 1998 EBS this area was listed as an area where there were possible releases or disposal of hazardous substances. An RFI was performed in 2004. Releases of nitrated compounds and ammonia leaked through the floor slab and caused ammonia concentrations in the soil under the slab to exceed risk level. A groundwater investigation was conducted in 2008. Groundwater samples indicated no contaminants above risk levels. This site is in USEPA's RCRA corrective action permit as SWMU 61.

CLEANUP/EXIT STRATEGY

The CMS will be completed and will be used to determine future action(s) for this site.

Site ID: CCSAAP-069
Site Name: Disposal Area North of Old Quarry
Alias: SWMU 69

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

Contaminants of Concern: Asbestos, Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	201211	201211
CS	201212	201212
RFI/CMS	201410	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the northeast portion of the installation. This area was used as a disposal area prior to and during construction of SFAAP. This disposal area contains asbestos (broken transite, pipe insulation), rusted drums containing unidentified material, glass, metal and other debris. This is an unpermitted disposal area on a long steep slope with exposed asbestos and other possible contaminants. This area was discovered in December 2012 by the Army during a site walk. Animals have dug holes exposing these materials. The slope of the disposal area is very steep and in most of the area exceeds 45 degrees (one-to-one).

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: CCSAAP-070
Site Name: Diesel Fuel Spill at Bldg 129-2
Alias: SWMU 70

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	201211	201211
CS	201212	201212
RFI/CMS	201410	202512

RIP Date: N/A

RC Date: 202512

SITE DESCRIPTION

This site comprises 26 acres in the north central portion of the installation. This area is the drainage ditch contaminated from a diesel fuel spill at Building 129-2. This site includes Building 129-2 and the drainage from 129-2 to the installation's north boundary. The treated river water storage tank (Building 129-1) holds 12M gallons of water and was built in 1943. The Booster Station and Pump House (Building 129-2) is 7,503 square feet built in 1943 and contains multiple motors and pumps. There were three ASTs, two diesel fuel and one gasoline. This area was no longer used after 1992. An oil water separator was installed north of building 129-2 in 1969. A documented spill occurred in 1984. The spill occurred as a result of a failure in an underground line leading from the two aboveground diesel fuel tanks. The two diesel fuel tanks were used to supply fuel to run the diesel motors that powered the water pumps associated with the 12M gallon reservoir. Approximately 1,400 gallons of diesel fuel leaked from the tanks over a span of 24 days. The underground pipe exiting the concrete tank containment basins broke loose. The piping and contaminated soil was excavated. The soil was cleaned to visual level, i.e. no soil samples were taken. According to the spill records straw, hay, sorbent pads and sorbent booms were used to absorb the fuel and prevent further flow from the area. Visually impacted soil in the area was excavated and the bottom and banks of the downgradient ditch were burned off with a portable propane burner. The diesel fuel collected in the oil water separator and was burned off and absorbed with sorbent booms. A site walk in December 2012 identified an oily black sheen in the oil water separator.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: CCSAAP-103
Site Name: New Photographic Laboratory 227-18
Alias: AOC 3

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	199701	199810
CS	199901	199909
RFI/CMS	200408	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

This site comprises 1 acre in the north central portion of the installation. This area was used as a photographic laboratory, blueprint printer and engineering drafting office. This 3,511 square foot building (Building 227-18) was constructed in 1943 and was initially used as a change house. In 1990 the building was modified into a photographic laboratory, blueprint printer and engineering drafting office. This building was active until 1998. Based on interviews a common waste disposal practice in the photographic laboratory was to dispose of the waste in the sinks. The location of the sink drain outfall has been identified. The large blueprint machine used ammonia in the printing process. In the 1998 EBS this area was listed as an area where there were possible releases or disposal of hazardous substances. An RFI was conducted in 2004. Soil sampling results indicated no contaminants above risk levels. A request for NFA was submitted to KDHE in 2008. KDHE denied the NFA request with comments that identified data gaps requiring more soil samples. This site is in USEPA's RCRA corrective action permit as AOC 3.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

Site ID: CCSAAP-113
Site Name: General Warehouses (8037 Series)
Alias: AOC 13

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	199701	199810
CS	199901	199909
RFI/CMS	200408	202112

RIP Date: N/A

RC Date: 202112

SITE DESCRIPTION

This site comprises 15 acres in the east central portion of the installation. This area was used for storing plant parts, an assortment of supplies, process equipment taken out of commission for reuse or disposal, unused packing drums for NQ, and unused packing containers for 2.75-inch rocket grains. Two 10,400 square foot buildings were constructed in 1945, and six more were constructed in 1952. Each warehouse has 12 overhead doors and four wooden unloading/loading ramps. All eight buildings are still standing. The warehouses are currently empty except for an estimated 700,000 of the 2.75-inch rocket grain packing containers. Located within this area is Building 309, the Cannon Unloading Station. The 1,720 square feet unloading station was built in 1943. In the 1998 EBS the warehouse area was listed as an area where there were possible releases or disposal of hazardous substances. An RFI was conducted in 2004. Soil samples had exceedances for lead and indeno(1,2,3-cd)pyrene. The sample locations with exceedances were excavated in 2005. This ICM work was funded by non-ER,A funds and therefore is not shown in the phase schedule. A request for NFA was submitted to KDHE in 2008. KDHE denied the NFA request with comments that identified data gaps requiring more soil samples. Historic exceedance of cobalt and a hydraulic oil spill require further characterization and cleanup. In meetings with KDHE they stated that after the 700,000 rocket grain packing containers are removed from these warehouses and properly disposed they will consider site closure. This site is in USEPA's RCRA corrective action permit as AOC 13 and requires closure documentation.

CLEANUP/EXIT STRATEGY

Closure documentation will be submitted when the storage tubes are removed and disposed of properly.

Site ID: CCSAAP-126
Site Name: Power Houses
Alias: AOC 26

STATUS

Parcel: All (9065 acres)

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	201210	201211
CS	201211	201212
RFI/CMS	201410	202512

RIP Date: N/A

RC Date: 202512

SITE DESCRIPTION

This site comprises 66 acres in the central portion of the installation. This area was used for steam production by burning coal. There were three Power Houses (Buildings 154-1 thru 3), with various subaccounts: thaw sheds, shakeout houses, pump houses, control houses, electrostatic precipitators, coal unloading shelters, boiler shelter houses, fuel oil storage tanks. These structures were built in 1943. In the 1998 EBS this area was listed as a Category 2 area, which is any area where only release or disposal of petroleum products has occurred. Fuel oil spills were reported. ACM and lead-based paint may be present in soil. Power House 154-1 is still standing. Power Houses 154-2 and 154-3 have been demolished.

CLEANUP/EXIT STRATEGY

The RFI will be completed and will include a CMS, which will be used to determine future action(s) for this site.

CR Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
There are no NFA sites			

CR Schedule

Date of CR Inception: 199701

Past Phase Completion Milestones

1999

RFA	(CCSAAP-055 - Old Administration Buildings, CCSAAP-061 - Environmental Laboratory Bldg 232, CCSAAP-103 - New Photographic Laboratory 227-18, CCSAAP-113 - General Warehouses (8037 Series))
CS	(CCSAAP-055 - Old Administration Buildings, CCSAAP-061 - Environmental Laboratory Bldg 232, CCSAAP-103 - New Photographic Laboratory 227-18, CCSAAP-113 - General Warehouses (8037 Series))

2013

RFA	(CCSAAP-069 - Disposal Area North of Old Quarry, CCSAAP-070 - Diesel Fuel Spill at Bldg 129-2, CCSAAP-126 - Power Houses)
CS	(CCSAAP-069 - Disposal Area North of Old Quarry, CCSAAP-070 - Diesel Fuel Spill at Bldg 129-2, CCSAAP-126 - Power Houses)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

To Be Determined

Final RA(C) Completion Date:

Schedule for Next Five-Year Review: 2016

Estimated Completion Date of CR at Installation (including LTM phase): 202512

SUNFLOWER ARMY AMMUNITION PLANT CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSAAP-055	Old Administration Buildings	RFI/CMS						
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
CCSAAP-061	Environmental Laboratory Bldg 232	RFI/CMS						
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
CCSAAP-069	Disposal Area North of Old Quarry	RFI/CMS						
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
CCSAAP-070	Diesel Fuel Spill at Bldg 129-2	RFI/CMS						
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
CCSAAP-103	New Photographic Laboratory 227-18	RFI/CMS						
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
CCSAAP-113	General Warehouses (8037 Series)	RFI/CMS						
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
CCSAAP-126	Power Houses	RFI/CMS						

Community Involvement

Technical Review Committee (TRC): None

Community Involvement Plan (Date Published): 199703

Restoration Advisory Board (RAB): RAB established 1998

RAB Adjournment Date: 200701

RAB Adjournment Reason: Installation Commander determined RAB should be adjourned.

Additional Community Involvement Information

On May 6, 1998, SFAAP conducted the first RAB meeting with 17 community members attending. Six additional positions were created as follows: two for the Army and one each for the operating contractor, USEPA, KDHE and US Army Corps of Engineers (USACE). RAB meetings were conducted monthly for the first six months and then bimonthly. The Installation Commander determined that the Army RAB should be adjourned because the cleanup of SFAAP was being performed by SRL under a CO with KDHE. The non-Army RAB continued to meet bimonthly and is co-chaired by a member of SRL. The Army is a member of SFAAP's non-Army RAB. SFAAP's non-Army RAB meetings were suspended in May 2011 because all work on SFAAP's restoration program was put on hold due to insufficient funds.

Previous meetings included activities such as:
- An installation tour
- Individual site briefings (including discussion of past practices and existing contamination)
- Educational presentations (risk assessment, how investigations are conducted, explanation of technical documents, etc.)
- Land use plan briefings presented by Johnson County
- Presentation by potential developer on the property to explain their proposal for potential site remediation

The Army RAB will resume meetings when fieldwork resumes.

Administrative Record is located at

Sunflower Army Ammunition Plant
35425 West 103rd St.
DeSoto, KS, 66018-0640
913-948-9615

Information Repository is located at

Johnson County Public Library
9875 W. 87th St.
Overland Park, KS, 66212
913-826-4600

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

TAPP Title: N/A

Potential TAPP: N/A