

**FY2012**

**HOLSTON ARMY AMMUNITION PLANT**  
**Army Defense Environmental Restoration Program**  
**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, along with the costs and schedules associated with conducting investigations and taking the necessary remedial actions (RA).

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), the Holston Army Ammunition Plant (HSAAP), the executing agencies, regulatory agencies, and the public, 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

AEDB-R	Army Environmental Database - Restoration
AMC	Army Materiel Command
AOC	Area of Concern
AST	Aboveground Storage Tank
BAE	British Aeronautics Engineering
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CLIN	Contract Line Item Number
CMS	Corrective Measures Study
CR	Compliance Restoration
CS	Confirmatory Sampling
CTC	Cost-to-Complete
cy	cubic yard
DD	Decision Document
EPIC	Environmental Photographic Interpretation Center
ER,A	Environmental Restoration, Army
FRA	Final Remedial Action
ft	feet
FY	Fiscal Year
GW	Groundwater
HMX	Cyclotetramethylene tetranitramine
HSAAP	Holston Army Ammunition Plant
IAP	Installation Action Plan
IM	Interim Measure
IRA	Interim Remedial Action
IRP	Installation Restoration Program
K	thousand
LTM	Long-Term Management
LTO	Long-Term Operations
LUC	Land Use Control
MCL	Maximum Contaminant Level
N/A	Not Applicable
NFA	No Further Action
NPL	National Priorities List
OSI	Ordnance Systems Inc.
PAH	Polynuclear Aromatic Hydrocarbons
PBC	Performance-Based Contract
POL	Petroleum, Oil and Lubricants
RA	Remedial Action
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition eXplosive
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RIP	Remedy-in-Place

## Acronyms

ROD	Record of Decision
SB	Statement of Basis
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TDEC	Tennessee Department of Environment and Conservation
TPH	Total Petroleum Hydrocarbon
TRC	Technical Review Committee
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
USATHAMA	US Army Toxic and Hazardous Materials Agency
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatiles Organic Compound
WWII	World War II

# Installation Information

## Installation Locale

**Installation Size (Acreage):** 6000

**City:** Kingsport

**County:** Sullivan and Hawkins

**State:** Tennessee

## Other Locale Information

The HSAAP is located in the city of Kingsport in Sullivan and Hawkins Counties, Tennessee and is approximately 6,000 acres.

## Installation Mission

The mission of the installation is to produce explosives for the Department of Defense. The primary explosives produced are cyclotrimethylenetrinitramine (RDX) (research department explosive, also referred to as "cyclonite") and cyclotetramethylene tetranitramine (HMX) (high melting explosive, also referred to as "homocyclonite") based explosives. These explosives are boxed or drummed and shipped to other plants to be loaded into munitions. Currently, the HSAAP does not have a storage mission.

## Lead Organization

Army Materiel Command (AMC)

## Lead Executing Agencies for Installation

US Army Corps of Engineers (USACE), Mobile District

BAE SYSTEMS OSI, Inc. (Ordnance Systems, Inc.)

## Regulator Participation

### Federal

US Environmental Protection Agency (USEPA), Region IV

### State

Tennessee Department of Environment and Conservation (TDEC)

## National Priorities List (NPL) Status

HOLSTON 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 199909

## Installation Program Summaries

### IRP

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

**Affected Media of Concern:** Groundwater, Sediment, Soil

### CR

**Primary Contaminants of Concern:** Other (RDX)

**Affected Media of Concern:** Groundwater, Soil

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## 5-Year / Periodic Review Summary

No 5-Year / Periodic Reviews have been scheduled

# Cleanup Program Summary

## Installation Historic Activity

The HSAAP has been an active installation with the exception of the period from 1946 to 1949 when it was inactive. The Holston Defense Corporation operated the installation from its inception until December 1998. BAE/OSI was awarded the facility operations contract and continues to operate the facility. In the fourth quarter of fiscal year (FY)04 a performance-based contract (PBC) was awarded for remediation at sites HSAAP-08, HSAAP-13, HSAAP-26, HSAAP-27, HSAAP-29, HSAAP-30, HSAAP-33, solid waste management unit (SWMU) 103 at HSAAP-37, SWMU 70 and AOCs F and I at HSAAP-38. At the 2006 IAP workshop new AOCs (AOC N and AOC O) were added to HSAAP-01 in the Installation Restoration Program (IRP). There are 130 magazines (referred to as X-magazines) that are used for temporary storage. There are 11 Y magazines, but explosive storage is not allowed in them at the present time due to their wooden structure. Currently, HSAAP does not have a storage mission.

## Installation Program Cleanup Progress

### IRP

- Prior Year Progress:** The PBC continued execution of LTM and LTO at the sites. Eight cubic yards (cy) of coal tar was removed from SWMU 4 (HSAAP-37) as part of LTM activities. Sixty-four monitoring wells were plugged and abandoned. Work began on the new PBC contract.
- Future Plan of Action:** The new PBC will continue execution of LTM/LTO at the sites. Also, approximately 50 IRP groundwater wells that are no longer necessary will be plugged and abandoned. HSAAP-08 has a planned removal action for coal tar to bring the site to no further action (NFA) and close the Army Environmental Database - Restoration (AEDB-R) site out.

### CR

- Prior Year Progress:** Holston AAP has one compliance restoration (CR) site. This site was approved in 2011. The confirmatory sampling (CS) phase for site CCHSAAP-41 was complete in FY 2012. Out of the 65 inactive buildings with catch basins, 10 had soil contamination of RDX concentrations exceeding the industrial risk based cleanup goal, and five buildings had soil contamination exceeding the residential risk based cleanup goal, but were below the industrial risk based cleanup goal.
- Future Plan of Action:** Since the CS shows that a release of explosive waste constituents has occurred above RSLs then further investigation is planned for the contaminated sites. Soil removal is expected at the seven sites where the building has been removed and the soil contamination exceeds industrial cleanup RSLs. LTM is expected at the sites with soil contamination above residential cleanup RSLs and at the three sites that still have buildings. The site will be addressed in the new PBC.

**HOLSTON ARMY AMMUNITION PLANT**  
**Army Defense Environmental Restoration Program**  
**Installation Restoration Program**

# IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 30/23

## Installation Site Types with Future and/or Underway Phases

1	Contaminated Buildings (HSAAP-37)
1	Contaminated Ground Water (PBC at Holston)
1	Landfill (HSAAP-03)
1	Surface Disposal Area (HSAAP-26)
3	Surface Impoundment/Lagoon (HSAAP-08, HSAAP-13, HSAAP-33)

## Most Widespread Contaminants of Concern

Explosives, Metals, Pesticides, Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

## Media of Concern

Groundwater, Sediment, Soil

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

Site ID	Site Name	Action	Remedy	FY
HSAAP-15	BURNING GRND SOUTH OF MFG AREA	IRA	WASTE REMOVAL - SOILS	1986
HSAAP-28	LEAKING UST B-22	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1991
HSAAP-34	HEATING OIL LEAKING UST AT B-12, AREA A	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1993
HSAAP-29	LEAKING UST B-105	IRA	WASTE REMOVAL - SOILS	1994
HSAAP-17	PONDS (SODIUM NITRATE) 3 & 4	IRA	CAPPING	1996
HSAAP-37	GAS PRODUCER CONTAMINATION	IRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	1997
HSAAP-22	LANDFILL AREA A - COAL TAR	FRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	1998
HSAAP-33	FORMER SOLVENT BURN TANK	IRA	CAPPING	1998
HSAAP-29	LEAKING UST B-105	IRA	AIR SPARGING	2001
HSAAP-37	GAS PRODUCER CONTAMINATION	FRA	WASTE REMOVAL - SOILS	2004
HSAAP-23	PRODUCTION AREA B DRAINAGE DITCHES	FRA	REMOVAL	2005
HSAAP-26	PESTICIDE AREAS NEAR B-105,B-148	IRA	WASTE REMOVAL - SOILS	2005
HSAAP-27	SANITARY LANDFILL WEST OF B-155, CLOSED	IRA	WASTE REMOVAL - SOILS	2005
HSAAP-29	LEAKING UST B-105	FRA	AIR SPARGING	2005
HSAAP-30	FIRING RANGES	FRA	OTHER	2006
HSAAP-38	MISC.STORAGE AREAS REQUIRING CONFIRM.	IRA	WASTE REMOVAL - SOILS	2006
HSAAP-33	FORMER SOLVENT BURN TANK	FRA	CAPPING	2007
PBC at Holston	PBC	FRA	OTHER	2007

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## IRP Summary

### Duration of IRP

**Date of IRP Inception:** 198502

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 200709/200709

**Date of IRP completion including Long Term Management (LTM):** 204209

# IRP Contamination Assessment

## Contamination Assessment Overview

The HSAAP has a total of 30 AEDB-R sites of environmental concern. The sites include areas of contamination from removed underground storage tanks (UST), coal tar, sanitary and construction debris landfills, earthen ponds, a pesticide shop, burn areas, weapons and firing ranges, fire training sites, vehicle maintenance areas, former spill areas, and miscellaneous storage areas.

PAH (contained in coal tar), explosives, pesticides, and benzene, toluene, ethylbenzene, and xylene (BTEX) are the primary contaminants of concern at the HSAAP. The HSAAP has 108 SWMUs and 15 AOCs identified in the Resource Conservation and Recovery Act (RCRA) facility assessment (RFA). In May 1992 the US Army Toxic and Hazardous Materials Agency (USATHAMA) conducted a preliminary site inspection (SI) which confirmed the RFA findings.

Holston has removed all regulated USTs. Three sites were found to be contaminated with POL (HSAAP-28, 29, and 34). A site-specific standard was requested for HSAAP-28 (Building 22), a solvent-vapor extraction system was operated at HSAAP-29 (Building 105) until August 2000, and NFA is required at HSAAP-34, since heating oil contamination was adequately removed during excavation.

Investigations and interim removal actions addressing coal tar have also been completed at several HSAAP sites (primarily at HSAAP-03 and 37).

An extensive suite of chemical analysis has been performed on a site-wide groundwater monitoring network. This monitoring shows no indication of off-post groundwater contamination.

All sites achieved RIP/RC in FY07.

## Cleanup Exit Strategy

LTM will include five-year reviews for the duration of the PBC contract.

## IRP Previous Studies

Year	Title	Author	Date
1975	Installation Assessment, HSAAP, TN. Las Vegas, NV. [Note: Also referred to as Environmental Photographic Interpretation Center (EPIC)]	Environmental Monitoring Systems Laboratory	JUN-1975
1979	Hazardous Waste Survey No. 81-26-8205-81, Phases 1 through 4	USATHAMA	JUL-1979
1980	Installation Assessment of Holston Army Ammunition Plant, Report No. 148	USATHAMA	JAN-1980
	Hazardous Waste Survey No. 81-26-8205-81, Phases 5 through 7	USATHAMA	MAR-1980
1981	Engineering Report on Investigation and Evaluation of Pollution Aspects of Abandoned Coal Tar Disposal Site, Area "A", Holston Army Ammunition Plant for Holston Defense Corporation, Kingsport, TN.	Wegman, Leonard S., Inc	SEP-1981
1983	Phase 1, Hazardous Waste Study No. 37-26-0147-84, Summary of AMC Open-Burning/Open-Detonation Ground Evaluations	AEHA	JUN-1983
	Engineering Study of Hazardous Discharges from Munitions Production Facilities, Holston Army Ammunition Plant	Mason & Hanger-Silas Mason Co., Inc.	AUG-1983
1984	90 Percent Report, Pitch Trap Waste (Coal Tar) Solidification Evaluation	Environmental and Safety Designs, Inc.	AUG-1984
	90 Percent Report, Floodplain Feasibility Analysis Report	Environmental and Safety Designs, Inc.	AUG-1984
1985	Phase 3, Hazardous Waste Study No. 37-26-0147-84, Summary of AMC Open-Burning/Open-Detonation Ground Evaluations	AEHA	JUN-1985
	Miscellaneous Reports Concerning Closing the Tar Disposal Site at Area A [HSAAP-22], the Rock Quarry Landfill [HSAAP-01], and Rock Dam Landfill	Holston AAP	JUN-1985
	Industrial Hygiene Study No. 55-35-0100-85, Evaluation of Health Hazards at the Gas Producer [Applicable to the hazards of the buried tar]	AEHA	JUN-1985
1986	Phase 5, Hazardous Waste Study No. 37-26-0593-86, Summary of AMC Open-Burning/Open-Detonation Ground Evaluations	AEHA	FEB-1986
	Report AMXTH-IR-A-148 (U)	USATHAMA	MAY-1986
	Report AMXTH-IR-A-148 (U)	USATHAMA	MAY-1986
	Update of Initial Installation Assessment of Holston Army Ammunition Plant	Unknown	OCT-1986
1987	Hazardous Waste Study No. 37-26-0779-87, Investigation of Soil Contamination at the Open Burning Area, HSAAP	AEHA	FEB-1987

## IRP Previous Studies

Year	Title	Author	Date
1987	Water Quality Engineering Study No. 32-24-0791-88, Evaluation of Alternative Industrial Wastewater Treatment Plant Sludge Disposal Methods, Holston AAP	AEHA	NOV-1987
1988	POL Contamination in Groundwater near Industrial Landfill	AEHA	APR-1988
	Final Summary of Groundwater Consultation 38-26-0809-87	Unknown	APR-1988
1989	Holston AAP Investigation and Evaluation of Underground Storage Tanks	Corps of Engineers, Omaha District	SEP-1989
1991	Draft RCRA Facility Assessment of Holston AAP	A. T. Kearney, Inc.	AUG-1991
1992	Holston AAP, Bldg. 22, Flashing Facility, Corrective Action Plan	USATHAMA	APR-1992
	Preliminary Site Inspection for Holston AAP, Site Inspection Report No. 91042	Advanced Sciences, Inc.	MAY-1992
	Hazardous Ranking System Score (HRS2) Summary Report for Holston AAP	Advanced Sciences, Inc.	JUL-1992
1993	Holston AAP, Bldg. 105, Service Station, Corrective Action Plan and Environmental Assessment Report	USATHAMA	JAN-1993
	Geohydrologic Study No. 38-26-KT17-93, Former Solvent Burn Tank, Holston Army Ammunition Plant	USAEHA	JUN-1993
	Phase 2, Wastewater Management Study No. 32-24-H13Q-94, Industrial Wastewater Collection System Evaluation, Holston Army Ammunition Plant	USAEHA	NOV-1993
1994	Pre-Final Environmental Assessment Report, Building 22 Area - Flashing Facility	RUST Environment & Infrastructure	OCT-1994
	Groundwater Assessment Nitrate ponds 3 and 4, Holston Army Ammunition Plant	Geraghty & Miller, Inc.	DEC-1994
1995	Corrective Measures Study Report, Holston Army Ammunition Plant	Geraghty & Miller, Inc.	AUG-1995
1996	Survey Phase RCRA Facility Assessment No. 38-EH-5035-96, HSAAP	USACHPPM	JUL-1996
	Pre-final RCRA Facility Investigation Report, HSAAP SWMUs 14 & 15	U.S. Army Corps of Engineers, Savannah District	NOV-1996
1997	HSAAP, Groundwater Assessment Report and Annual Groundwater Monitoring Report	Brown and Root Environmental	FEB-1997
	RFA Release Assessment	USACHPPM	JUN-1997
	Groundwater Consultation No. 38-EH-5601-97, Relative Risk Site Evaluation	USACHPPM	SEP-1997
	Holston Closure Report, Former Solvent Burn Tank Unit	Brown & Root Env	DEC-1997

## IRP Previous Studies

Year	Title	Author	Date
1998	Site Status Monitoring Report, Building 105 Service Station, HSAAP, Facility I.D. No. 0-370050	LAW	FEB-1998
1999	RCRA Facility Assessment Addendum	TDEC	JAN-1999
	CS Work Plan	USACHPPM	JUN-1999
2000	RCRA Facility Investigation (RFI) Work Plan	USACHPPM	JUN-2000
	CS Report	USACHPPM	JUN-2000
2001	Additional Confirmatory Sampling Report for HSAAP	USACHPPM	APR-2001
	Draft RFI Report for SWMUs 004, 014, 103	USACHPPM	JUN-2001
2002	RCRA Facility Investigation Report for SWMU 026	USACHPPM	FEB-2002
	Final RCRA Facility Investigation Report for SWMUs 004, 014, 103	USACHPPM	FEB-2002
	Additional Confirmatory Sampling Report for HSAAP	USACHPPM	MAR-2002
	RCRA Facility Investigation Report for Site-Wide Groundwater, April-June 2001 and January 2002,	USACHPPM	MAY-2002
	RCRA Facility Investigation Report for SWMU 096, Producer Gas Building, Coal Tar Liquor Storage Tanks	USACHPPM	AUG-2002
	Draft RCRA Facility Investigation Report for SWMU 043, Burning Ground	USACHPPM	SEP-2002
	Second Semi-Annual Report	USACHPPM	OCT-2002
	Interim Measures Work Plan SWMU-096	USACHPPM	OCT-2002
2003	IM Report SWMU HSAAP-096 Producer Gas Building, Coal Tar Liquor Storage Tanks	USACHPPM	JAN-2003
	Additional IM Report for Site-wide GW	USACHPPM	AUG-2003
	Additional IM Report Solid Waste management Unit6 HSAAP-96 Producer Gas Building, Coal Tar Liquor Storage Tanks	USACHPPM	AUG-2003
2004	IM Report Site-Wide Groundwater Area B (Explosives Production Area)	USACHPPM	JAN-2004
	Additional IM Work Plan Site-Wide Groundwater Area B (Explosives Production Area)	USACHPPM	APR-2004
	RFI Work Plan SWMU HSAAP-020 Rock Quarry landfill	USACHPPM	MAY-2004
	RFI Report Site-Wide Ground Water 2-13 February	USACHPPM	MAY-2004
	RFI Work Plan SWMU HSAAP-088 WWII Pesticide Rinsate Washdown Area	USACHPPM	JUL-2004
	RFI Work Plan SWMU HSAAP-052 (Vehicle Wash Pad inside Building 105) and AOC-C Leaking UST B-105, Service Station	USACHPPM	AUG-2004
2005			

## IRP Previous Studies

2005

Title	Author	Date
Site Safety and Health Plan	Bay West	FEB-2005
Site Contractor Quality Control Plan	Bay West	FEB-2005
Site Sampling and Analysis Plan	Bay West	FEB-2005
Site Quality Assurance Project Plan	Bay West	FEB-2005
Site Investigation-Derived Waste Management Plan	Bay West	FEB-2005
Well Plugging and Abandonment Plan	Bay West	FEB-2005
Storm Water Management Plan	Bay West	FEB-2005
Environmental Protection Plan	Bay West	FEB-2005
Soil Erosion and Sediment Control Plan	Bay West	FEB-2005
Interim Measures Field Work Order, SWMU 88 - Pesticide Washdown Area	Bay West	MAY-2005
Project Management Plan, Rev. 02	Bay West	JUL-2005
RFI Report, SWMU 51/52 - Drainage Ditch behind Vehicle Wash Pad Areas	Bay West	SEP-2005
Interim Measures Report, SWMU 70 - Production Yard 12, Storage Area/Welding Pad (HSAAP-38), Bay West	Bay West	SEP-2005
Interim Measures Report, SWMU 83 - Waste Thermal Treatment Units (HSAAP-27)	Bay West	SEP-2005
RFI Report, SWMU 97 - Coal Tar along Rail Corridor from Area A to Area B (HSAAP-08)	Bay West	SEP-2005
RFI Report, SWMUs 22,28,38,and 39 - Flyash Landfill, Sedimentation Pond, and Sodium Nitrate Ponds 1 and 2	Bay West/SAIC, Inc.	SEP-2005

2006

RFI/IM Report, AOC-I - Building 8 Explosives Testing Area	Bay West	JAN-2006
RFI/IM Report, AOC-I - Building 8 Explosives Testing Area	Bay West	JAN-2006
Interim Measures Report, SWMU 97, Coal Tar along Rail Corridor from Area A to Area B (HSAAP-08)	Bay West	JAN-2006
RFI Report, SWMU 25 - Area B Tar Burial Site	Bay West/SAIC	FEB-2006
IM Report, AOC-F - TPH in Soil near Manganese Ore Piles	Bay West	FEB-2006
RFI/IM Report, HSAAP 30 - SWMUs 104, 105, and 206, Firing Ranges	Bay West	FEB-2006
IM Report, SWMU 103 - Coal Tar Site, Ditch at Gas Producer Building	Bay West	FEB-2006
RFI/IM Report, SWMU 98 - Coal Tar South of Sanitary Landfill	Bay West	FEB-2006
RFI/IM Report for SWMUs 104, 105, and 106 - Firing Ranges	Bay West	FEB-2006
IM Report, SWMUs 77/78/86/87 - Pesticide Areas near Building 148	Bay West	APR-2006
RFI/IM Report, SWMU 88 - WWII Pesticide Wash down Area	Bay West	APR-2006
RFI Addendum Report, SWMU 20 - Rock Quarry Landfill	Bay West	JUN-2006
IM Report, AOC-C - Former Underground Storage	Bay West/SAIC	SEP-2006

## IRP Previous Studies

2006	Title	Author	Date
	Tank at Building 105		
	RFI Report, SWMU 19/29 - Construction Debris Landfill and Sedimentation Pond	Bay West/SAIC	SEP-2006
	Fiscal Year 2005 Long-Term Monitoring/Long-Term Operations Report	Bay West/SAIC	SEP-2006
	RFI/IM Report, AOC-O - Coal Tar near Building 20	Bay West	OCT-2006
2007			
	RFI Report, AOC-GW - Site-Wide Groundwater	Bay West	MAR-2007
	Fiscal Year 2006 Long-Term Monitoring/Long-Term Operations Report	Bay West/SAIC	JUN-2007
	RFI Addendum Report, AOC-GW - Site-Wide Groundwater, Well at SWMU 25	Bay West	JUN-2007
	Summary Report, Inspections of SWMU 4 - Coal Tar Tanks behind Building 8	Bay West	AUG-2007
	CM Report, AOC-GW - Site-Wide Groundwater	Bay West	AUG-2007
	RFI Addendum, AOC-C - Former Underground Storage Tank at Building 105	Bay West/SAIC	AUG-2007
	Revised RFI/IM Report, AOC-O, Coal Tar near Building 20	Bay West	SEP-2007
2008			
	Fiscal Year 2007 Long-Term Monitoring/Long-Term Operations Report	Bay West/SAIC	APR-2008
	Summary Report - Inspections of SWMU 4 - Coal Tar Tanks behind Building 8	Bay West	JUN-2008
2009			
	Final Ramp-Down Plan for Holston Army Ammunition Plant	Bay West	FEB-2009
	FY 2008 Inspection Summary Report SWMU 4, Coal Tar Tanks behind Building 8	Bay West	MAY-2009
	FY 2008 Long-Term Monitoring/Long-Term Operations Report	Bay West	MAY-2009
	Final SWMU 108 Assessment Report for the AFRC Maintenance Shop Construction Area	Holston Army Ammunition Plant	JUN-2009
2010			
	FY 2009 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	MAY-2010
	FY 2009 Summary Report for SWMU 4, Coal Tar Tanks Behind Building 8	Bay West	JUN-2010
	SWMU 4, Coal Tar Behind Building 8, Coal Tar Removal Report	Bay West	DEC-2010
2011			
	FY 2010 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	APR-2011
	April 2011 Coal Tar Inspection and Test Pit Completion Report, SWMU 4, Coal Tar Behind Building 8	Bay West	JUL-2011
	First Periodic Review Report for Holston Army Ammunition Plant	Corps of Enrineers, Mobile	SEP-2011
2012			
	FY 2011 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	MAR-2012

**HOLSTON ARMY AMMUNITION PLANT**  
**Installation Restoration Program**  
**Site Descriptions**

Site Name: TAR (WWII) NEAR POND 3, AREA B TAR

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	199102.....	199108
RFI/CMS.....	200101.....	200505
LTM.....	200506.....	204209

RIP Date: N/A

RC Date: 200505

SITE DESCRIPTION

SWMU 14 was removed from HSAAP-22 to be included in this site. SWMU 14 is located just across Wilcox Dr. to the west of Area A's main production area. The landfill is 40 to 50 feet north of the South Fork of the Holston River. The site is approximately three acres, with depths of 10 to 15 feet, and was used from 1949 to 1978. Discrete coal tar masses have been observed on the bank of the South Fork of the Holston River, along the northwest side of this landfill. A RCRA Facility Investigation (RFI) was conducted in FY01 to determine the amount of coal tar along the bank and assess the potential for migration of coal tar from the landfill to the river. The report confirmed the location of the coal tar masses and concluded that migration has not occurred from buried coal tar.

The discrete coal tar masses on the riverbank are likely discards from dumping. The RFI report was submitted to the TDEC and was approved.

In August 2003, tar that had breached the SWMU 14 landfill cap was removed and the cap was repaired. Under the PBC awarded in 2004 an annual inspection program was performed in through 2011. In 2005, 10 tons of coal tar was removed, and in 2008, six tons of coal tar was removed. In 2010, three-cy of coal tar was removed.

SWMU 26 is located between Sodium Nitrate Ponds 3 and 4 at Area B. When or for how long the site was used as a dumping ground is unknown. The RCRA Part B application states that during World War II (WWII) approximately 178 cy of coal tar was dumped down the railroad embankment and covered with either clay or mixed soil and railroad ballast. Small trees and undergrowth covered the site. The buried coal tar at SWMU 26 was discovered in the mid 1980s during replacement of a 36-inch water main. At that time, the excavated tar was removed, solidified, and disposed of in the sanitary landfill. The initial discovery revealed a site referred to as the WWII Tar Site, which is approximately 300 feet by 100 feet; however, as the actual dumping area could have extended throughout the length of the railroad track (about two miles at Area B and six miles in the corridor), the size or number of sites is unknown. Tar has also been found inside Pond 3 (considered part of the same material) and in the area behind Building 200 (HSAAP 01). All of these sites are off the embankment of the same rail line. An RFI report was written in 1996 prior to issuance of corrective action order. A follow-up RFI was conducted to define the limits of the SWMU and assess release potential. The report identified the presence of one large mass (73,000 square feet) and one small mass (9,300 square feet) of coal tar buried at the site, to a maximum depth of four feet. Soil contamination is limited to the area that contains buried coal tar. Groundwater data does not indicate a release of hazardous constituents from these coal tar masses. The RFI report was submitted to the TDEC and was approved.

At SWMU 26, 75 cy of coal tar was removed in 2003, and in 2007, eight cy of coal tar was removed under the PBC.

This site formerly included the Area B Tar Burial Site (SWMU 25), SWMUs 97, 98, and 102. In 2002 SWMUs 25, 97 and 98 were moved from this site to HSAAP-08, because of their proximity to one another. In 2002, SWMU 102 was moved to HSAAP-22, because of its close proximity to the other and its NFA status.

A statement of basis (SB) support document was revised and resubmitted to the TDEC for SWMUs 14 and 26 in April 2009.

**Site ID: HSAAP-03**

**Site Name: TAR (WWII) NEAR POND 3, AREA B TAR**

## **CLEANUP/EXIT STRATEGY**

The final remedy for SWMU 14 is LUCs, cap maintenance, and semiannual inspections to insure cap integrity. An SB support document acceptance is pending.

The final remedy for SWMU 26 is LUCs, cap maintenance, and semiannual inspections to insure cap integrity. An SB support document acceptance is pending.

Site Name: SURFACE IMPOUNDMENTS REQUIRING CONF

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA.....	199102.....	199108
CS.....	199709.....	200101
RFI/CMS.....	200409.....	200703
LTM.....	200710.....	201309

RIP Date: N/A

RC Date: 200703

SITE DESCRIPTION

This site was formerly titled 'Surface Impoundments Requiring Confirmation'. The funding for this site was placed in the PBC site in 2004. The area includes:

- Area B Tar Burial Site (SWMU 25),
- coal tar along the Area A-Area B Corridor (SWMU 97) and
- coal tar contamination south of the recently closed sanitary landfill (SWMU 98).

In 2002, SWMUs 25, 97 and 98 were placed in HSAAP-08 because of their proximity to one another.

HSAAP-08 formerly included the Area B Coal Pile sedimentation pond (SWMU 27), the Fly Ash Landfill Sedimentation Pond (SWMU 28), the former nitric acid neutralization basin (SWMU 30), the former nitric acid neutralization basin (SWMU 33), an unlined spill pond (SWMU 35), a lined spill pond (SWMU 36), and the A-1 equalization basin (SWMU 42).

In 2002:

- SWMU 27 was moved to HSAAP-036 because it is an active site and is not eligible for Environmental Restoration, Army (ER,A) funding.
- SWMU 28 was moved to HSAAP-20 because it is regulated under the RCRA Solid Waste Program.
- SWMU 35 was moved to HSAAP-33 because of the consolidation of site-wide groundwater investigation. TDEC approved the NFA in June 2008 for SWMU 35. The RDX contamination in the associated well is part of AOC-GW.
- SWMUs 30, 33, 36, and 42 were moved to HSAAP-11 because they are classified as NFA.

The Area B Tar Burial Site (SWMU 25) is located on the west end of Area B, just to the east of the closed industrial landfill (HSAAP04/SWMU 17) off Road 1932. The closed site is 15 feet wide, 75 feet long and about 10 feet deep. This site contains approximately 60 cy of coal tar from Area A gas producers. The pit received coal tar from 1978 to 1980 when it was closed and covered with clay. Another two feet of clay was added in 1985. Grass is growing as a final cover at the site. The tar is considered a solid waste with hazardous constituents. RFI activities were soil sampling and soil borings initiated in 2005. Subsequent to an inspection, an interim measure (IM) resulted in the removal of 24 tons of coal tar and clay cap repair. An RFI Report was completed in February 2006. The TDEC approved the RFI in March 2006. An SB support document was accepted by the TDEC in July 2007. Under LTM/LTO three-cy of coal tar was removed in 2007 and five-cy was removed in 2010. The cap was repaired after each removal.

In 1999 coal tar along the Area A-Area B Corridor (SWMU 97) was identified by the TDEC as coal tar contamination along the Area A -Area B corridor. This unit covers the potential areas where coal tar may have been indiscriminately dumped in the past. No specific areas have been located and a visual SI will be performed to address an RFI requirement. An RFI consisting primarily of a visual inspection was conducted in FY05. An IM removed two yards of tar. In 2005 the RFI Report was submitted and approved. An IM report was submitted to the TDEC in January 2006 and approved in February 2006. An SB support document for NFA was accepted by the TDEC in July 2007.

Coal tar contamination south of the recently closed sanitary landfill (SWMU 98) was identified by the TDEC in 1999 as coal tar contamination south of the recently closed sanitary landfill, SWMU 17. This unit consists of individual small coal tar waste that was

**Site ID: HSAAP-08**

**Site Name: SURFACE IMPOUNDMENTS REQUIRING CONF**

indiscriminately dumped on the ground surface on the south side of the road leading to the rock quarry. An RFI consisting primarily of a visual inspection was initiated in FY05. An IM was performed in May 2005. An RFI/IM report was submitted to the TDEC in February 2006. The TDEC approved RFI/IM report in March 2006. An SB document for NFA was accepted by the TDEC in July 2007.

## **CLEANUP/EXIT STRATEGY**

The final remedy for Area B Tar Burial Site (SWMU 25) requires periodic inspections and LUCs. The site is funded through the PBC site.

**Site ID: HSAAP-13**

**Site Name: FLYASH LF,POND 1&2 SWMU 22,28,38,39**

**STATUS**

**Regulatory Driver:** RCRA

**RRSE:** MEDIUM

Contaminants of Concern: Explosives

Media of Concern: Sediment

<b>Phases</b>	<b>Start</b>	<b>End</b>
RFA.....	199102.....	199108
RFI/CMS.....	200301.....	200609
LTM.....	200710.....	204209

**RIP Date:** N/A

**RC Date:** 200709

**SITE DESCRIPTION**

This site is located north of Building D-10 in Area B and lies south of Road 1921 and just north of the main line railroad. The site contained two ponds (SWMUs 38 and 39) and was initially used from 1969 to 1972 for liquid sodium nitrate storage. The ponds had a storage volume of 11.1 million gallons, and nine million gallons. They were closed in the 1970s. Overlying these SWMUs is a sedimentation pond for the fly ash landfill (SWMU 28), and a RCRA closed fly ash landfill (SWMU 22) (5.5 acres, 182,410 cy capacity). The Fly Ash Landfill (SWMU 22) and the Sedimentation Pond (SWMU 28), which are located on top of SWMUs 38 and 39, are regulated under the TDEC's solid waste division. In fall 1997 the landfill was closed.

An RFI was completed and submitted to the TDEC in September 2005. In October 2005, the TDEC approved the RFI. An SB support document was accepted by the TDEC in September 2007.

**CLEANUP/EXIT STRATEGY**

The final remedy for SWMUs 22, 28, 38, and 39 requires periodic inspections and LUCs. SWMUs 22 and 28 are regulated under Tennessee Solid Waste Rules.

Site Name: PESTICIDE AREAS NEAR B-105,B-148

STATUS

Regulatory Driver: RCRA
RRSE: HIGH
Contaminants of Concern: Pesticides
Media of Concern: Groundwater, Soil

Table with 3 columns: Phases, Start, End. Rows include RFA, CS, RFI/CMS, IRA, and LTM with corresponding dates.

RIP Date: N/A
RC Date: 200709

SITE DESCRIPTION

The following SWMUs are adjacent to Building 148:
- Pesticide Rinsate Pre-filter Tank (SWMU 77),
- Pesticide Rinsate Septic Tank (SWMU 78),
- Pesticide Drain Field (SWMU 86),
- Pesticide Wash down Area (SWMU 87).

After the mid-1970s, HSAAP began the practice of using pesticide container diluents for additional spray work the next day or disposing of it on the same sites where the original material was used (reference letter, Dept of Army, HSAAP, Kingsport, TN S: Installation Pest Management Program Survey No.61-0505-17, HSAAP, Kingsport, TN,6-10 December 1976, for Commander, US Army Material Development and Readiness Command, ATTN: DRCSG, 5001 Eisenhower Ave., Alexandria, VA., Oct 3, 1977.)

The Pesticide Drain Field (SWMU 86) is 50 feet wide and 50 feet long and is now vegetated. The drain field and septic system (Pesticide Rinsate Septic Tank - SWMU 78) were constructed during the early- to mid-1970s. The floor drain inside Building 148 was plugged prior to 1980 and the drain in the concrete catch basin outside of the building was plugged in 1984. The only waste the drain field received was from hand washing in the sink inside Building 148. Pesticide fluid was not disposed of in the sink. There were approximately 1,050 gallons of pesticide-contaminated water remaining in the septic tanks.

Pesticides and herbicides associated with Building 148 were detected in soil and groundwater samples collected from SWMUs 77, 78, 86, and 87. The groundwater is addressed in site-wide groundwater, AOC-GW (HSAAP-33).

The RFI was conducted in 2003 at SWMUs 77, 78, and 86. Pesticide contamination appears confined to the immediate area of the site. There is no off-site contaminant migration in the groundwater.

In 2004 a source removal was conducted; the residual tank liquids, the tanks and associated piping were removed. IMs were performed in 2005; they included limited drain field soil removal. IM drain field soil was excavated to below industrial and above residential action levels. A total of 325 cy of contaminated soil were removed and 37,000 gallons of contaminated water was treated at the Kingsport Wastewater Plant (the water consisted of runoff and rainfall).

An IM report was submitted to the TDEC in April 2006. In May 2006 the TDEC approved the IM report. An SB support document was accepted by the TDEC in July 2007.

The WWII Pesticide Equipment Wash down Area (SWMU 88) is located in the Area B shop area, south of Road 1966, and southwest of the Service Station (Building 105). The unit consists of a pit filled with 6-inch cobbles. The depth of the pit is approximately 2.5 feet and the surface dimensions are about 20 feet wide by 35 feet long. Between the 1940s and the early-1970s the unit was used to rinse off pesticide dispersing equipment.

Four soil samples were collected from two soil borings conducted at SWMU 88 as part of the FY1999 confirmatory sampling at

**Site ID: HSAAP-26**

**Site Name: PESTICIDE AREAS NEAR B-105,B-148**

HSAAP. Pesticides and herbicides were detected in all four samples. Petroleum hydrocarbons were detected in one sample. The results of this sampling, as reported in the November 1999 confirmatory sampling (CS) work plan, indicate that pesticides, herbicides, and petroleum product have been released to the subsurface soils at the unit and may impact groundwater quality. An RFI report was completed in FY2005. Additional contamination was found; approximately 310 cy of soil which was pesticide and total petroleum hydrocarbons (TPH) contaminated were removed.

An RFI/IM report was submitted to the TDEC in April 2006, and approved by TDEC approved in May 2006. An SB support document was accepted by the TDEC in July 2007. The funding for these SWMU sites are covered by the PBC site.

## **CLEANUP/EXIT STRATEGY**

The final remedy for SWMUs 77, 78, 86, 87, and 88 requires LUCs.

Site Name: FORMER SOLVENT BURN TANK

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Petroleum, Oil and Lubricants (POL), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	199102.....	199108
CS.....	199306.....	199306
RFI/CMS.....	199509.....	200609
IRA.....	199801.....	199802
CMI(C).....	200409.....	200709
LTM.....	200710.....	204209

RIP Date: N/A

RC Date: 200709

SITE DESCRIPTION

The groundwater RFI work for all SWMUs has been combined into this AEDB-R Site. In 2002 the Closed Sanitary Landfill West of B-155 (SWMU 18), the Construction Debris Landfill (SWMU 19), the Rock Quarry Landfill (SWMU 20), a sedimentation pond for the sanitary landfill (SWMU 29), and the unlined spill pond (SWMU 35) were incorporated with the former solvent burn tank (SWMU 50) in HSAAP-33 because of the consolidation of a site-wide groundwater. The site-wide groundwater monitoring program consists of semiannual monitoring of 51 wells across the installation.

Multiple data collected over seven-years generally show no unexpected results with the exception of a high level of explosives detected in monitoring well MW-99. An additional investigation was done in the vicinity of this well and at other similar structures (H Buildings) in the explosives production area.

In March 2007 an RFI Report was submitted and was approved by the TDEC in June 2007. An RFI Addendum (SWMU 25-groundwater investigation) was submitted and approved by the TDEC in June 2007. A corrective measures report was submitted in August 2007 and was approved in September 2007. The final remedy of institutional controls and monitoring was recommended. An SB support document conditional acceptance was received from the TDEC in September 2007. Final acceptance was received from the TDEC in September 2008.

The Closed Sanitary Landfill west of B-155 (SWMU 18) is located in Area B. The three acre area is registered with the county and was used from 1967 to 1984; it was closed on Aug. 27, 1984. Approximately 2,160 cy of trash, garbage, bagged asbestos, empty pesticide containers, and fluorescent light bulbs were landfilled at this site. Groundwater monitoring results indicate mercury levels above action levels. The landfill cover will be maintained as necessary. Results of sampling indicate mercury in MW-70 above the maximum contaminant level (MCL). LTM will continue on well MW-70 as part of the AOC-Groundwater final remedy.

The Construction Debris Landfill (SWMU 19) unit is located in Area B, south of the existing Sanitary Landfill (SWMU 17). It was placed upon the former site of the Sedimentation Pond for the Sanitary Landfill (SWMU 29). In 1984 the base of the pond collapsed due to flooding. TDEC allowed the facility to fill the area with uncontaminated construction debris. At the time of the visual SI, the area was covered with a large pile of wood. An RFI was approved by the TDEC in December 2006. A SB support document was accepted by the TDEC in September 2007. The recommended final remedy is institutional controls and cap maintenance.

The Rock Quarry Landfill (SWMU 20) is a two-acre, limestone quarry located at the west end of Area B, adjacent to the Holston River. The site was used as a demolition landfill in the 1940s during construction of the installation. It was closed in 1983 and is registered in Hawkins County as a closed landfill. This site contains six-cy of concrete containing explosives from a production building. Other material disposed of in the landfill includes construction and demolition (C&D) wastes. An RFI was submitted in October 2005 and approved by the TDEC in December 2005. An RFI Addendum was approved by the TDEC in August 2006. An SB support document was accepted by the TDEC in September 2007. The recommended final remedy is institutional controls and cap maintenance.

**Site ID: HSAAP-33**

**Site Name: FORMER SOLVENT BURN TANK**

Soil at SWMUs 77, 78, 86, and 87 are addressed under HSAAP-026; groundwater is addressed under the AOC-GW final remedy.

Soil at SWMU 4, and SWMU 96 are addressed under HSAAP-037; groundwater is addressed under the AOC-GW final remedy.

The PBC provides for annual LTM/LTO at all sites.

## **CLEANUP/EXIT STRATEGY**

The final remedy for site-wide groundwater is institutional controls and monitoring.

The final remedy for SWMU 18, SWMU 19/29, and SWMU 20 requires landfill cover maintenance and inspection.

The groundwater for SWMU 50 is addressed under the AOC-GW. The final remedy for SWMU 50 soil is NFA and an SB support document acceptance is pending.

Site Name: GAS PRODUCER CONTAMINATION

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	199101.....	199108
CS.....	199507.....	199712
RFI/CMS.....	200101.....	200312
IRA.....	199612.....	199702
CMI(C).....	200407.....	200409
LTM.....	200509.....	204209

RIP Date: N/A

RC Date: 200509

SITE DESCRIPTION

SWMU 96 was the location of the producer gas bldg coal tar liquor storage tanks located between Bldg 10 and the cooling coils in Area A. The unit consisted of aboveground storage tanks and was closed when the producer gas building ceased operations. The tanks and concrete wall structure were removed in 1996. A soil removal action was completed in 1997.

Soil samples collected in 2002 showed concentrations of benzo[a]pyrene and other SVOCs exceeded remediation goals. The groundwater samples showed arsenic and benzene concentrations slightly exceeded the MCLs for drinking water.

On June 2002 TDEC issued an IM order. In October 2002 four monitoring wells were installed as an IM to address concerns over potential migration to the nearby Holston River. A delay in the Army's initial response resulted in the issuance of a notice of violation. In spring 2003 a geophysical survey was conducted in the area between the producer gas building and the Holston River that identified bedrock fractures and degraded groundwater. In August 2003, three monitoring wells were installed in the bedrock fractures. At the same time, additional soil data was collected. This soil data confirmed the presence of coal tar/liquor mass in the soil beneath a portion of the exhauster building and the decanter building on the north side of the facility.

In 2004 an IM was conducted in which the former exhauster building and decanter structures were demolished, and 719 cy of contaminated soil was removed. The soil was excavated down to the top of bedrock at 8-10 feet below ground surface (BGS). Soil samples showed that SVOC contamination, exceeding industrial based RALs, remains along the north sidewall and at the northeast bottom corner of the excavation. The railroad line (north) and the footers of Building 10 (east) hindered further excavation. LTM/LTO is underway. A revised SB support document was submitted to TDEC in April 2009.

The coal tar tanks (SWMU 4) consisted of aboveground steel tanks that were located behind Bldg 8 in Area A. The tanks stored coal tar and coal tar liquor which was generated at Building 10. The tanks were removed from the site in 1996. Coal tar waste spillage from the tanks has contaminated the soil at the site. An RFI was completed in February 2002. The report determined that there is a buried discrete coal tar mass in place, and it is exposed at the surface. In August 2003, the buried coal tar mass and associated concrete retaining basin were removed 2004. A revised SB support document was submitted to TDEC in April 2009. In 2009, coal tar was discovered adjacent to Building 8. In 2010, 17 cy of coal tar was removed and eight test pits were dug revealing further Coal Tar contamination at the site. In 2011, 12 addition test pits were dug to delineate the coal tar. eight-cy of coal tar were removed. Coal Tar remains in the SWMU approximately three feet BGS. The tar is at least two feet thick in some places. The tar does not appear to exceed the delineated perimeter of the SWMU. SWMU-4 is RC with LUCs for the areas that are inaccessible.

The coal tar site (SWMU 103) is located on the south side of the Area A steam plant. The unit consisted of a ditch that extended from the rear of Building 8, originating at SWMU 4, to the Holston River. In the 1970s, an aboveground storage tank (AST) for filtered water was moved over a portion of the unit. An IM for SWMU 103 was performed in FY05 and six-cy of coal tar was removed. A final SB support document was approved in March 2007.

**Site ID: HSAAP-37**

**Site Name: GAS PRODUCER CONTAMINATION**

## **CLEANUP/EXIT STRATEGY**

The final remedy for SWMU 4 requires LUCs and periodic inspections. An SB support document acceptance is pending.

The final remedy for SWMU 96 requires LUCs and periodic inspections. The groundwater monitoring of this SWMU is addressed under HSAAP-33. An SB support document acceptance is pending.

The final remedy for SWMU 103 requires LUCs and periodic inspections.

These activities will be covered in the new PBC scheduled to begin in 2012.

**Site ID: PBC at Holston**  
**Site Name: PBC**

**STATUS**

**Regulatory Driver:** RCRA

**RRSE:** LOW

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

Media of Concern: Groundwater, Sediment, Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
RFA.....	199809.....	200008
RFI/CMS.....	200409.....	200409
CMI(C).....	200409.....	200709
LTM.....	200709.....	204209

**RIP Date:** N/A

**RC Date:** 200709

**SITE DESCRIPTION**

This site was created to consolidate the PBC effort at Holston (for funding purposes). The sites included under the PBC are HSAAP-03, 08, 13, 26, 33, and 37.

**CLEANUP/EXIT STRATEGY**

The PBC covers miscellaneous support to Holston AAP, review of remedies, and evaluation of ramp-down strategies. Optional CLIN 6h is scheduled for award in FY11 and provides the basis for the cost-to-complete (CTC).

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
HSAAAP-AOCO	Area of Concern O - Coal Tar Burial	200709	Revised RFI/IM recommending NFA was submitted and approved by TDEC in September 2007. Statement of Basis Support Document accepted by TDEC.
HSAAP-01	MISC. LANDFILLS	200507	SWMUs 19 and 20 were moved from this site to HSAAP-033 in 2003 because of the consolidation of the RFI for site-wide GW. SWMU 21 was moved from this site to HSAAP-027 in 2002 because of its close proximity. AOC-H was moved to HSAAP-020 in 2002 because of its close proximity and NFA status
HSAAP-04	ACTIVE SANITARY LANDFILL	199108	Not Eligible for ER,A/BRAC Funding
HSAAP-11	NITRIC ACID SPILL POND	199102	Not Eligible for ER,A/BRAC Funding
HSAAP-12	TAR BURIAL PIT AREA B	200001	Not Eligible for ER,A/BRAC Funding
HSAAP-15	BURNING GRND SOUTH OF MFG AREA	200304	Not Eligible for ER,A/BRAC Funding
HSAAP-16	BUILDING 8 EXPLOSIVES TESTING AREA	199108	Not Eligible for ER,A/BRAC Funding
HSAAP-17	PONDS (SODIUM NITRATE) 3 & 4	199606	Not Eligible for ER,A/BRAC Funding
HSAAP-19	STP E OF MFG AREA	199108	Not Eligible for ER,A/BRAC Funding
HSAAP-20	FLY ASH LANDFILL, AREA B, CLOSED,	200001	NFA approved by the State Jan 2001
HSAAP-21	AERATION POND AREA A	199803	Not Eligible for ER,A/BRAC Funding
HSAAP-22	LANDFILL AREA A - COAL TAR	199803	TDEC approved the site for NFA in February 2000
HSAAP-23	PRODUCTION AREA B DRAINAGE DITCHES	200509	Not Eligible for ER,A/BRAC Funding
HSAAP-25	PESTICIDE DRAIN FIELD NEAR BLDG 148	199812	All SWMUs have been moved into HSAAP-026.
HSAAP-27	SANITARY LANDFILL WEST OF B-155, CLOSED	200609	NFA letter from State dated Oct 13 2005
HSAAP-28	LEAKING UST B-22	199612	This site has an approved site-specific standard.
HSAAP-29	LEAKING UST B-105	200709	State approved NFA in FY07
HSAAP-30	FIRING RANGES	200609	NFA letter received from State dated 28 Apr 2006
HSAAP-34	HEATING OIL LEAKING UST AT B-12, AREA A	199604	Not Eligible for ER,A/BRAC Funding
HSAAP-36	ACTIVE COAL PILE SOUTH OF B-200, STM PLT	199108	Not Eligible for ER,A/BRAC Funding
HSAAP-38	MISC.STORAGE AREAS REQUIRING CONFIRM.	200609	March 2002 additional CS Report
HSAAP-39	PAST SPILL SITES /LOADING SITES	199108	Not Eligible for ER,A/BRAC Funding
HSAAP-40	SANDBLASTING/LOADING AREAS	200012	Not Eligible for ER,A/BRAC Funding

# IRP Schedule

**Date of IRP Inception:** 198502

## Past Phase Completion Milestones

### 1986

IRA (HSAAP-15 - BURNING GRND SOUTH OF MFG AREA)

### 1991

INV (HSAAP-28 - LEAKING UST B-22)

ISC (HSAAP-28 - LEAKING UST B-22)

RFA (HSAAP-01 - MISC. LANDFILLS, HSAAP-03 - TAR (WWII) NEAR POND 3, AREA B TAR, HSAAP-04 - ACTIVE SANITARY LANDFILL, HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF, HSAAP-11 - NITRIC ACID SPILL POND, HSAAP-12 - TAR BURIAL PIT AREA B, HSAAP-13 - FLYASH LF, POND 1&2 SWMU 22,28,38,39, HSAAP-15 - BURNING GRND SOUTH OF MFG AREA, HSAAP-16 - BUILDING 8 EXPLOSIVES TESTING AREA, HSAAP-17 - PONDS (SODIUM NITRATE) 3 & 4, HSAAP-19 - STP E OF MFG AREA, HSAAP-20 - FLY ASH LANDFILL, AREA B, CLOSED,, HSAAP-21 - AERATION POND AREA A, HSAAP-22 - LANDFILL AREA A - COAL TAR, HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES, HSAAP-25 - PESTICIDE DRAIN FIELD NEAR BLDG 148, HSAAP-26 - PESTICIDE AREAS NEAR B-105,B-148, HSAAP-27 - SANITARY LANDFILL WEST OF B-155, CLOSED, HSAAP-29 - LEAKING UST B-105, HSAAP-33 - FORMER SOLVENT BURN TANK, HSAAP-36 - ACTIVE COAL PILE SOUTH OF B-200, STM PLT, HSAAP-37 - GAS PRODUCER CONTAMINATION, HSAAP-38 - MISC STORAGE AREAS REQUIRING CONFIRM., HSAAP-39 - PAST SPILL SITES /LOADING SITES, HSAAP-40 - SANDBLASTING/LOADING AREAS)

CS (HSAAP-29 - LEAKING UST B-105)

IRA (HSAAP-28 - LEAKING UST B-22)

### 1992

RFA (HSAAP-30 - FIRING RANGES)

### 1993

IRA (HSAAP-34 - HEATING OIL LEAKING UST AT B-12, AREA A)

CS (HSAAP-33 - FORMER SOLVENT BURN TANK)

CAP (HSAAP-28 - LEAKING UST B-22)

### 1995

ISC (HSAAP-34 - HEATING OIL LEAKING UST AT B-12, AREA A)

### 1996

INV (HSAAP-34 - HEATING OIL LEAKING UST AT B-12, AREA A)

RFI/CMS (HSAAP-22 - LANDFILL AREA A - COAL TAR)

DES (HSAAP-22 - LANDFILL AREA A - COAL TAR)

IRA (HSAAP-17 - PONDS (SODIUM NITRATE) 3 & 4)

### 1997

IRA (HSAAP-37 - GAS PRODUCER CONTAMINATION)

### 1998

IRA (HSAAP-33 - FORMER SOLVENT BURN TANK)

CMI(C) (HSAAP-22 - LANDFILL AREA A - COAL TAR)

CS (HSAAP-21 - AERATION POND AREA A, HSAAP-30 - FIRING RANGES, HSAAP-37 - GAS PRODUCER CONTAMINATION)

### 1999

CS (HSAAP-25 - PESTICIDE DRAIN FIELD NEAR BLDG 148, HSAAP-26 - PESTICIDE AREAS NEAR B-105,B-148)

### 2000

RFA (PBC at Holston - PBC)

CS (HSAAP-01 - MISC. LANDFILLS, HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES)

**2001**

- RFI/CMS (HSAAP-40 - SANDBLASTING/LOADING AREAS)
- IRA (HSAAP-29 - LEAKING UST B-105)
- CS (HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF)

**2003**

- RFI/CMS (HSAAP-15 - BURNING GRND SOUTH OF MFG AREA)

**2004**

- RFI/CMS (HSAAP-37 - GAS PRODUCER CONTAMINATION, PBC at Holston - PBC)
- CMI(C) (HSAAP-37 - GAS PRODUCER CONTAMINATION)

**2005**

- IRA (HSAAP-26 - PESTICIDE AREAS NEAR B-105,B-148, HSAAP-27 - SANITARY LANDFILL WEST OF B-155, CLOSED)
- CMI(C) (HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES, HSAAP-29 - LEAKING UST B-105)
- RFI/CMS (HSAAP-01 - MISC. LANDFILLS, HSAAP-03 - TAR (WWII) NEAR POND 3,AREA B TAR, HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES, HSAAP-29 - LEAKING UST B-105)

**2006**

- RFI/CMS (HSAAP-AOCO - Area of Concern O - Coal Tar Burial, HSAAP-13 - FLYASH LF,POND 1&2 SWMU 22,28,38,39, HSAAP-26 - PESTICIDE AREAS NEAR B-105,B-148, HSAAP-27 - SANITARY LANDFILL WEST OF B-155, CLOSED, HSAAP-30 - FIRING RANGES, HSAAP-33 - FORMER SOLVENT BURN TANK, HSAAP-38 - MISC.STORAGE AREAS REQUIRING CONFIRM.)
- RFA (HSAAP-AOCO - Area of Concern O - Coal Tar Burial)
- IRA (HSAAP-38 - MISC.STORAGE AREAS REQUIRING CONFIRM.)
- CMI(C) (HSAAP-30 - FIRING RANGES)

**2007**

- CMI(O) (HSAAP-29 - LEAKING UST B-105)
- RFI/CMS (HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF)
- CMI(C) (HSAAP-33 - FORMER SOLVENT BURN TANK, PBC at Holston - PBC)
- LTM (HSAAP-AOCO - Area of Concern O - Coal Tar Burial)

**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
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**Final RA(C) Completion Date:** 200709

**Schedule for Next Five-Year Review:** N/A

**Estimated Completion Date of IRP at Installation (including LTM phase):** 204209

## HOLSTON ARMY AMMUNITION PLANT IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
HSAAP-03	TAR (WWII) NEAR POND 3,AREA B TAR	LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
HSAAP-08	SURFACE IMPOUNDMENTS REQUIRING CONF	LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
HSAAP-13	FLYASH LF,POND 1&2 SWMU 22,28,38,39	LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
HSAAP-26	PESTICIDE AREAS NEAR B-105,B- 148	LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
HSAAP-33	FORMER SOLVENT BURN TANK	LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
HSAAP-37	GAS PRODUCER CONTAMINATION	LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
PBC at Holston	PBC	LTM						

**HOLSTON ARMY AMMUNITION PLANT**  
**Army Defense Environmental Restoration Program**  
**Compliance Restoration**

# CR Summary

**Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count:** 1/0

**Installation Site Types with Future and/or Underway Phases**

1 Surface Impoundment/Lagoon  
(CCHSAAP-41)

**Most Widespread Contaminants of Concern**

Other (RDX)

**Media of Concern**

Groundwater, Soil

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

Site ID	Site Name	Action	Remedy	FY
N/A				

**Duration of CR**

**Date of CR Inception:** 199504

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 201406/201406

**Date of CR completion including Long Term Management (LTM):** 204309

## CR Contamination Assessment

### Contamination Assessment Overview

At CCHSAAP-41, 10 catch basin units had RDX soil contamination above Industrial RSL (RSL=24 milligrams per kilogram (mg/kg)) and five catch basin units had RDX soil contamination above Residential RSL (RSL=5.6 mg/kg), but below Industrial RSL. The 10 catch basins with soil contamination above Industrial RSL were D-1, 8, E-1, 5, H-1, 2, 3, 8, 9, 10. The five catch basins with RDX above Residential RSL were D-2, E-2, 9, G-9, and J-3.

The H-series buildings had the highest concentrations; H-8 had 70,000 mg/kg, H-1 had 2100 mg/kg, H-3 had 690 mg/kg, H-2 had 680 mg/kg, H-9 had 310 mg/kg, and H-10 had 75 mg/kg.

There are groundwater plumes with RDX concentrations within the production area located around H-8 (1700 parts per billion (ppb)), H-2 (540 ppb), and H-3 (260 ppb). The groundwater is monitored under AOC-GW. These plumes are relatively stationary and are estimated to remain within the boundary of HSAAP for more than 500 years. The groundwater flows toward the Holston River. Forty-nine of the buildings with catch basins had either non-detects or concentrations of RDX below the residential RSL.

### Cleanup Exit Strategy

An RFI is planned for the 15 buildings with catch basins that showed RDX soil concentrations above residential risk based screening levels (RBSLs). A corrective measures study (CMS) is expected to determine whether soil removal or LUCs will be the final remedy for the catch basins.

The remaining active catch basins are planned for CS when they are scheduled for demolition or at time of plant closure.

## CR Previous Studies

**Title**

**Author**

**Date**

There are no Previous Studies

# **HOLSTON ARMY AMMUNITION PLANT**

## **Compliance Restoration**

### **Site Descriptions**

# Site ID: CCHSAAP-41

## Site Name: Catch Basins and Aprons

### STATUS

**Regulatory Driver:** RCRA  
 Contaminants of Concern: Other (RDX)  
 Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	199504.....	199609
CS.....	201103.....	201205
RFI/CMS.....	201205.....	201306
CMI(C).....	201307.....	201406
LTM.....	201407.....	204309
<b>RIP Date:</b>	N/A	
<b>RC Date:</b>	201406	

### SITE DESCRIPTION

A catch basin as defined by the 1996 RFA, includes the apron, channels and settling basis for explosive waste at each explosives manufacturing building. It is a concrete pad that generally has a four inch curb used to capture any waste explosives around the explosives production buildings. The Catch Basin apron, trenches and settling pits vary in size. They are listed as SWMU 3 in the Corrective Action Order issued by TDEC. The RFA states there were approximately 252 catch basins, with approximately 212 inactive and 40 active. They are stated to have been in Area A and Area B of Holston Army Ammunition Plant. The characteristic of the waste was stated to be explosives waste. There were no catch basins in Area A that captured waste explosives. Therefore none of the Area A secondary containment areas can be classified as catch basins. Some buildings have up to six catch basins while others production buildings have only none. For simplification of nomenclature and counting catch basins one explosive waste collection unit should be assigned to each production building that handled or produced explosives and has a catch basin structure. The waste collection unit includes the apron channels, and catch basins at each building.

There are 103 buildings with catch basins in Area B that captured and collected waste explosives. These buildings are D-1, 2, 3, 5, 6, 7, 8, 9, 10; E-1 through 10; G-1 through 10, H-1 through 10; I-1 through 10; J-1 through 10; K- 1, 3, 5, 7, 9, 10; L-1m through 10; M-1 through 10; N-1 through 10; O-1, 2, 5, 7, 9; B-3, 5, and 11. Of these 103 catch basin units 38 are still active, and 65 are inactive. The active catch basins are D-5,10; E-3, 4, 6, 7, 10; G-4, 5, 6, 7, 10; H-4, 5, 6, 7; I-5, 6; J-3 ; K-3, 5; L-1M, 3, 4, 5, 6, 8; M-3, 5, 6; N-3, 4, 5, 6, 7, 8; O-3, B-3. The inactive catch basins are D-1,2,3,6,7,8,9; E-1,2,5,8,9; G-1,2,3,8,9; H-1,2,3,8,9,10; I-1,2,3,4,7,8,9,10; J-1, 2, 4 through 10; K-1,7,9,10; L-2,7,9,10; M-1,2,4,7,8,9,10; N-1,2,9,10; O-1,5,7,9; B-5,11. The inactive catch basins have been inactive since at least the 1970's. There are plans to reactivate G-3 or G-8 and J-3.

Fourteen buildings scheduled for demolition have catch basins: B-5, E-1, E-5, H-1, 3, 8, 10, I-10, J-6, 10, K-7, L-10, O-1, and O-7. Buildings H-10, I-10, J-10, and L-10 were demolished in 2011. H-2 and H-9 are planned for demolition in FY 13.

The potentially impacted soil near the inactive catch basin units was sampled in 2011 for potential explosives contamination. Ten catch basin units had RDX soil contamination above Industrial RSL (=24mg/kg) D-1, 8, E-1, 5, H-1, 2, 3, 8, 9, 10 and five catch basin units had RDX soil contamination above Residential RSL(=5.6 mg/kg) but below the Industrial RSL D-2, E-2, 9, G-9, and J-3.

Since the CS showed that a release of explosive waste constituents has occurred above RBSL then further investigation will be planned for the contaminated sites. The seven buildings that will be removed and have concentrations above industrial cleanup criteria may undergo corrective measures. The remaining eight buildings may have LUCs.

NFA will be proposed for the catch basin units where the CS showed no soil contamination above the residential RSL (D-3, 6, 7, 9, E-8, G-1, 2, 3, 8, I-1, 2, 3, 4, 7, 8, 9, 10, J-1, 2, 4 through 10, K-1, 7, 9, L-2,7,9,10, M1, 2, 7, 8, 9, 10, N-1, 2, 9, 10, O-1, 5, 7, 9, B-5, 11).

The remaining active catch basins are planned for CS when they are scheduled for demolition or at time of plant closure.

**Site ID: CCHSAAP-41**  
**Site Name: Catch Basins and Aprons**

## **CLEANUP/EXIT STRATEGY**

An RFI is planned for the 15 buildings with catch basins that showed RDX soil concentrations above residential RBSLs. A corrective measures study is expected to determine whether soil removal or LUCs will be the final remedy for the catch basins.

## Site Closeout (No Further Action) Summary

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

## CR Schedule

**Date of CR Inception:** 199504

### **Past Phase Completion Milestones**

**1996**

RFA (CCHSAAP-41 - Catch Basins and Aprons)

### **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:** 201406

**Schedule for Next Five-Year Review:** N/A

**Estimated Completion Date of CR at Installation (including LTM phase):** 204309

## HOLSTON ARMY AMMUNITION PLANT CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCHSAAP-41	Catch Basins and Aprons	RFI/CMS						
		CMI(C)						
		LTM						

## Community Involvement

**Technical Review Committee (TRC):** None

**Community Involvement Plan (Date Published):** 200708

**Restoration Advisory Board (RAB):** RAB established 199909

**RAB Adjournment Date:** 200505

**RAB Adjournment Reason:** There is no longer sufficient, sustained community interest.

### Additional Community Involvement Information

The first meeting of the RAB was held on Oct. 18, 1999. Some 15 to 25 people representing the Army, the state, and local citizens attended.

The RAB met once a year and on an as-needed basis. Past activities have included installation tours, training and corrective action discussions, video presentation of one of the SWMU sites, and an update from the US Army Center for Health Promotion and Preventive Medicine (USACHPPM). RAB members attended IAP workshops conducted in December 1999, September 2000, August 2001, April 2002, November 2002, September 2003, December 2004, and May 2005.

In FY03 a community relations/involvement plan was prepared by the USACHPPM. The plan was finalized in the summer of 2007. The RAB has not met since May 2005 and is considered to be inactive.

### Administrative Record is located at

4509 West Stone Drive, B159  
Kingsport, Tennessee 37660  
Phone # 423-578-6257

### Information Repository is located at

Kingsport City Library  
400 Broad Street  
Kingsport, Tennessee 37660  
Phone # 423-224-2539

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

**TAPP Title:** N/A

**Potential TAPP:** N/A

