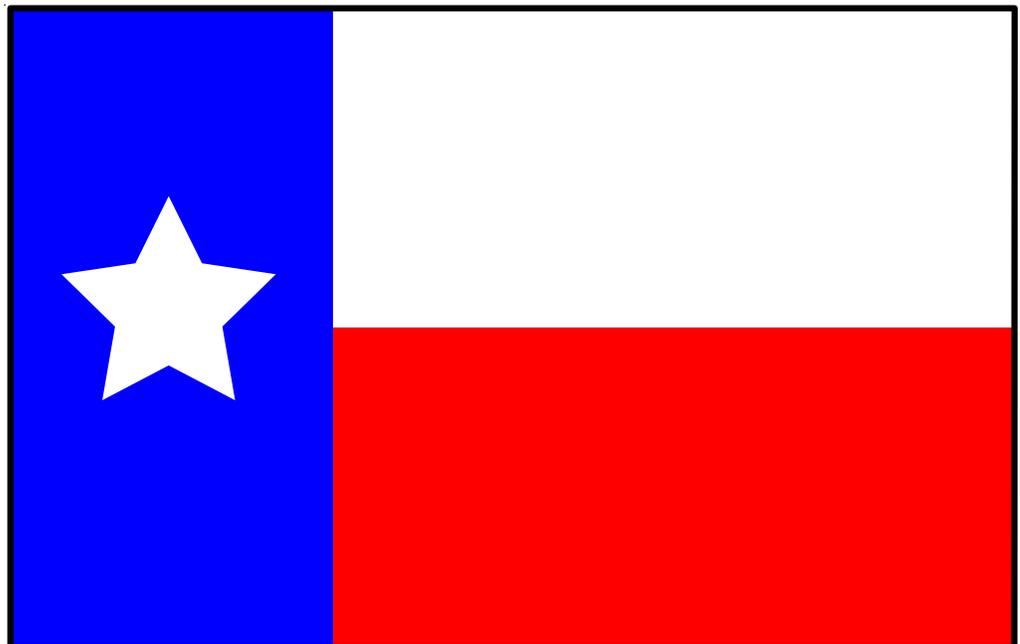


FY 2005 as of April 2004

Longhorn Army Ammunition Plant

Installation Action Plan

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**LONGHORN ARMY
AMMUNITION PLANT
INSTALLATION ACTION PLAN**

FY 2005 as of April 2004

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year restoration program for an installation. The plan will define Installation Restoration Program (IRP) requirements and propose a comprehensive approach and associated costs to conduct future investigations and remedial actions at the installation.

In an effort to coordinate planning, information between the IRP manager, major army commands (MACOMs), installations, executing agencies, regulatory agencies, and the public, an IAP has been completed for the Longhorn Army Ammunition Plant (LHAAP). The IAP is used to track requirements, schedules and tentative budgets for all major Army installation restoration programs.

All site specific funding and schedule information has been prepared according to projected overall Army funding levels and is therefore subject to change during the document's annual review. Under current project funding, all remedies (construction) will be in place or response complete at the LHAAP by the end of 2007. Long-term monitoring and operations will be required after this date.

The follow agencies contributed to the formulation and completion of this Installation Action Plan.

Engineering & Environment Inc.

BRAC Office

Longhorn AAP

Shaw Environmental

Texas Commission of Environmental Quality

U.S. Army Environmental Center

U.S. Army Corps. of Engineers - Tulsa

U.S. EPA, Region VI

USFWS

USFWF

Acronyms & Abbreviations

~	approximate
AEC	(United States) Army Environmental Center
AEDB-R	Army Environmental Database- Restoration
BRAC	Base Realignment and Closure
BRACO	BRAC Office
CERCLA	Comprehensive Environmental, Response, Compensation and Liability Act
CTC	Cost-to-Complete
cy	cubic yards
DOT	Department of Transportation
DSERTS	Defense Site Environmental Restoration Tracking System (now AEDB-R)
EPA	Environmental Protection Agency
ER,A	Environmental Restoration, Army (formerly DERA)
FFA	Federal Facility Agreement
FS	Feasibility Study
ft	foot
FY	Fiscal Year
GW	Groundwater
GWTP	Groundwater Treatment Plant
HMX	type of explosive
HRS	Hazard Ranking Score
IAP	Installation Action Plan
INF	Intermediate-Range Nuclear Force
IRA	Interim Remedial Action
IRP	Installation Restoration Program
K	thousand
LAP	Load, Assemble, and Pack
LHAAP	Longhorn Army Ammunition Plant
LTM	Long-Term Monitoring
LTO	Long-Term Operation
M	million
MACOM	Major Army Command
MEC	Methylene Chloride
NE	Not Evaluated
NFA	No Further Action
NPDES	National Pollution Disposal and Elimination System
NPL	National Priorities List
OB/OD	Open Burn/Open Detonation
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyls
POL	Petroleum, Oil & Lubricants
PP	Proposed Plan
PVC	Polyvinylchloride
RA	Remedial Action
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal
RFA	RCRA Facility Assessment
RI	Remedial Investigation

Acronyms & Abbreviations

RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Investigation
SVOC	Semi-Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
TCEQ	Texas Commission on Environmental Quality (formerly TNRCC)
TMG	Transition Management Group
TNRCC	Texas Natural Resource Conservation Commission (now TCEQ)
TNT	Trinitrotoluene
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
TWC	Texas Water Commission
UEP	Unlined Evaporation Pond
USACE	United States Army Corps of Engineers
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine (changed to USAEC)
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (changed to USACHPPM)
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds

Summary

STATUS:	NPL Installation, HRS - 39.83, listed August 1990. Confirmed Soil and Groundwater Contamination on Installation, Sediment Contaminated Off-Post.		
NUMBER OF AEDB-R SITES:	47 sites 8 Active ER,A Eligible Sites 2 RIP with LTM 37 Response Complete/No Further Action ER,A Eligible 3 Munition Rule		
DIFFERENT AEDB-R SITE TYPES:	3 Burn Areas		2 Disposal Pits/ Dry Wells
	7 Landfills		15 Storage Areas
	2 Surface Impoundments/ Lagoons		8 Spill Site Areas
	1 Above Ground Storage Tank		2 Underground Storage Tanks
	2 Waste Lines		4 Waste Treatment Plants
	1 Other (LHAAP-053)		
CONTAMINANTS OF CONCERN:	Trichloroethene, Methylene Chloride, Explosives, Metals, Perchlorate		
MEDIA OF CONCERN :	Groundwater, Soil, Surface Water, Sediment (Air is funded separately)		
COMPLETED REM/IRA/RA:	UEP Sludge removed and pond capped, 1986, Closed under RCRA Removal Action for waste sumps, 1997, Total Cost: \$1.83 M Landfills 12 & 16 capped, 1997 & 1998, Total Cost: \$5.3 M Removal 30K cy soil at Site 18, 1998, Total Cost: \$6.5 M		
CURRENT IRP PHASES:	RI/FS at 7 sites RA at 3 sites	IRA at 3 sites LTM at 2 sites	RD at 3 sites
PROJECTED IRP PHASES:	RI/FS at 2 sites RA at 5 sites	IRA at 2 sites LTO at 3 sites	RD at 4 sites LTM at 9 sites
CURRENT or FUTURE REM/IRA/RA:	IRA at LHAAP-016, 018, 024 RA at LHAAP-016, 071, 018, 024, 029, 032, 035, 050		
DURATION:	YEAR OF IRP INCEPTION:		1988
	YEAR OF REMOVAL FROM NPL:		2007
	YEAR OF RA COMPLETION		2033

Installation Information

SITE DESCRIPTION:	Longhorn Army Ammunition Plant (LHAAP) is located in central east Texas in the northeast corner of Harrison County, approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. The installation occupies 8,493 acres between State Highway 43 and the western shore of Caddo Lake. The area surrounding LHAAP is primarily rural and consists of forest lands; the small towns of Karnack and Uncertain, Texas; Caddo Lake; and Caddo Lake State Park.
COMMAND ORGANIZATION:	Base Realignment and Closure Office INSTALLATION: Longhorn Army Ammunition Plant
IRP EXECUTING AGENCIES:	INVESTIGATION PHASE: U.S. Army Corps of Engineers, Region VI ACTION PHASE: U.S. Army Corps of Engineers, Tulsa, Fort Worth, and Nashville Districts
REGULATORY PARTICIPATION:	FEDERAL: U.S. Environmental Protection Agency, Region VI STATE: Texas Commission on Environmental Quality
REGULATORY STATUS:	- NPL listing August 1990 - Federal Facility Agreement, 1991
MAJOR CHANGES TO IAP FROM PREVIOUS YEAR (2004):	Major changes to the IAP from 2003 include a change in approach for preparation of feasibility studies. Previously the feasibility studies were prepared on a group basis, one each for Groups 2 and 4. The IAP now includes preparation of separate feasibility studies for individual sites so that each site can progress towards response complete independent of other sites. The other major change is the inclusion of remedial actions at LHAAP-32 (excavation and disposal of soil) and LHAAP-29 (removal of pipe).

Installation Description

HISTORIC/CURRENT ACTIVITIES

LHAAP was established in October 1942 with the primary mission of producing 2,4,6-trinitrotoluene (2,4,6-TNT) flake. Monsanto Chemical Company was the first contract operator of the plant. Production of 2,4,6-TNT continued through World War II until August 1945, when the plant went on standby status until February 1952. From 1952 until 1956, Universal Match Corporation was the contracting operator, producing such pyrotechnic ammunition as photoflash bombs, simulators, hand signals, and tracers for 40mm ammunition. Thiokol assumed this responsibility, along with rocket motor production, with the departure of Universal Match Corporation in 1956. Production of rocket motors continued to be the primary mission of LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was re-established.

Prior to 1994, operations consisted of compounding pyrotechnic and propellant mixtures, LAP activities, accommodating receipt and shipment of containerized cargo, and maintenance and/or layaway of standby facilities and equipment as they apply to mobilization planning. The installation was also responsible for static firing and elimination of Pershing I and II rocket motors in compliance with the Intermediate-Range Nuclear Force (INF) Treaty in effect between the United States and the former USSR. In October 1996, approximately 1,435 of the 8,493 acres were leased to the Caddo Lake Institute for biological and ecological studies by local schools and universities.

The plant became inactive and excess to the Army's needs in July 1997. In July 1998, the Army contracted Earth Tech, Inc. to liquidate all personal property and specific installed property. That contract was completed in FY00. In 1999, the Army contracted with Project Development Corp. to demolish specific structurally unsafe buildings. A Memorandum of Agreement between the Army and USFWS was signed on Oct 21, 2000 designating an area consisting of approximately 7,200 acres for establishment of a wildlife refuge overlay at LHAAP. LHAAP was transferred to the Base Realignment and Closure Office (BRACO) in Oct 2002 to manage as an excess property..

REGULATORY STATUS

LHAAP was placed on the National Priorities List (NPL) on Aug 9, 1990. After being listed on the NPL, LHAAP, the U.S. Environmental Protection Agency (EPA), and the Texas Water Commission (TWC) (now called the Texas Commission on Environmental Quality [TCEQ]) entered into a Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) Section 120 Agreement for remedial activities at LHAAP. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective December 30, 1991. The Installation applied for a RCRA Part A Permit. A RCRA Part B Permit was signed February 1992. As a result, a RCRA Facility Assessment (RFA) identified 57 potential sites of concern. Since that time, scrubbing of the list (removal of non-ER,A eligible sites, redundancies, etc.) has resulted in the current Army Environmental Database - Restoration (AEDB-R) list of 47 sites.

While the Army leads the IRP at LHAAP, a close working relationship with the regulatory community has been developed. Remedial Project Managers from TCEQ and EPA Region VI work closely with Army personnel in planning and implementing IRP goals and activities. A cooperative teamwork environment has proven helpful in accelerating IRP activities and focusing energies of all the stakeholders on achieving restoration goals.

Contamination Assessment

Currently, data gap investigations are continuing at Group 2 and Group 4 sites. Also continuing is an installation-wide background study for soil, groundwater, surface water and sediment. Data from these investigations will be used to supplement data collected previously during remedial investigation and to update risk assessments. Feasibility studies are being prepared for LHAAP-12, 32, 67, 04, and 58. Feasibility studies for remaining sites are also planned. Proposed plans and records of decision are planned after feasibility studies are finalized. An installation-wide ecological risk assessment is continuing and is expected to be completed in FY05.

Sediment samples collected from Caddo Lake near the mouths of two branches of Goose Prairie Creek indicated elevated lead and mercury. The sampling locations are outside the installation boundary and, therefore, represent off-site contamination. Contamination by polyaromatic hydrocarbons, dioxins, phthalates, and metals was also detected in fish from Caddo Lake, posing a risk to human health via fish ingestion. The source of the fish contamination is not clear because some of the compounds are ubiquitous in the environment.

There are 3 sites that are in the Military Munitions Response Program (MMRP) – LHAAP 27, 53, and 54. Preliminary investigations for these sites will begin later this summer.

Approximately 6,000 acres of the plant are scheduled for transfer to the Fish and Wildlife Service in May 2004 for a wildlife refuge overlay. Additional acreage outside the production area is projected to be transferred to them in the next two years as investigations and cleanup are completed. The production area, however, will most likely be transferred to a natural resource conservancy group in the future.

Previous Studies

Title	Author	Date
Assessment of Contaminant Migration, Longhorn Army Ammunition Plant	The Robert H. Balter Co.	1-Apr-79
Installation Assessment of Longhorn Army Ammunition Plant, Report No. 150.	U.S. Army Toxic and Hazardous Materials Agency	1-Feb-80
Land Disposal Study No. 38-26-0104-81, LHAAP, 23 January - 8 February 1980.	USAEHA	26-May-80
Wastewater Engineering Special Study No. 32-62-0182-82.	USAEHA, Regional Div., South	1-Sep-81
Phase II, Hazardous Waste Management Special Study No. 39-26-0147-83, DARCOM Open-Burning/Open-Detonation Grounds Evaluation, LHAAP, 31 July - 3 August 1981	USAEHA	1-Sep-83
Closure of Unlined Evaporation Pond	Kindle, Stone and Associates	15-Jun-84
Longhorn Army Ammunition Plant Contamination Survey, Contract # DAAA09-78-C-3004	Environmental Protection Systems, Inc.	1-Jun-84
Closure Report, Unlined Evaporation Pond, Longhorn Army Ammunition Plant	Army Corps of Engineers, Tulsa	1-Jun-86
Interim Risk Assessment for Burning Ground 3 & Unlined Evaporation Pond Sites (18 & 24)	Army Corps of Engineers, Tulsa	18-Jan-94
Soil and Groundwater Background Concentration Study	Army Corps of Engineers, Tulsa	12-May-94
Remedial Investigation /Feasibility Study Report for Areas 13 & 14	Army Corps of Engineers, Tulsa	1-Jun-94
Draft Final Workplan Addendum Soil and Groundwater Background Concentration Study	Army Corps of Engineers, Tulsa	29-Jun-94
Final Soil Background Concentration Report (Revised)	Army Corps of Engineers, Tulsa	30-Mar-95
Groundwater Background Concentration Report	Army Corps of Engineers, Tulsa	9-May-95
Final Hydrogeologic Assessment Report	Army Corps of Engineers, Tulsa	11-May-95
Final Prop Plan of Action for Sites 13 & 14	Army Corps of Engineers, Tulsa	21-Jun-95
Groundwater Sampling Results-May 95, Interim Remedial Action-Phase III, Burning Ground 3 and UEP, LHAAP 18 & 24	Army Corps of Engineers, Tulsa	26-Jun-95
Final Remedial Investigation/Feasibility Study Report for Sites 13 & 14	Army Corps of Engineers, Tulsa	28-Jun-95
Final Record of Decision for Early Interim Remedial Action at Landfill Sites 12 & 16	Army Corps of Engineers, Tulsa	10-Jul-95
Final Work Plan for Phase III Interim Remedial Action at Burning Ground 3	Army Corps of Engineers, Tulsa	3-Jan-96
Group 4 Baseline Risk Assessment Work Plan	Army Corps of Engineers, Tulsa	5-Feb-96
Final Project Work Plans, Interim Remedial Action Landfills 12 & 16 Caps	Army Corps of Engineers, Tulsa	10-Jun-96
Group 4 Sumps Groundwater Monitoring Quarterly Report	Army Corps of Engineers, Tulsa	13-Jun-96
Draft Final Design Analysis Report for the Site 16 Time Critical Removal Action	Army Corps of Engineers, Tulsa	28-Jun-96
Draft Final Comprehensive Chemical Data Acquisition Plan for the RI/FS	Army Corps of Engineers, Tulsa	3-Jul-96
Draft Final Field Summary Report for the Phase II, Group 2 Sites Remedial Investigation	Army Corps of Engineers, Tulsa	17-Jul-96
Treatment Simulation and Toxicity Testing Results of Site 16 Groundwater	Army Corps of Engineers, Tulsa	8-Aug-96
Final Project Construction Drawings, Interim Remedial Action, Landfill 12 & 16 Caps	Army Corps of Engineers, Tulsa	21-Aug-96
Final Remedial Investigation Report Group 1 Sites (Sites 1, 11, 27, and XX) and Vol. 2 Baseline Risk Assessment	Army Corps of Engineers, Tulsa	30-Apr-97

Previous Studies

Title	Author	Date
Final Record of Decision for Early Interim Remedial Action at Group 1 Sites	Army Corps of Engineers, Tulsa	Feb. 1998
Environmental Baseline Study	Army Corps of Engineers, Tulsa	Apr-98
Group 2 Final WorkPlan	Army Corps of Engineers, Tulsa	Mar-98
Group 4 Final WorkPlan	Army Corps of Engineers, Tulsa	Jul-98
Site 16 Risk Assessment	Army Corps of Engineers, Tulsa	Mar-00
Final Site 16 Remedial Investigation Report	Army Corps of Engineers, Tulsa	Oct-00

OPEN AEDB-R SITES

Sites have been evaluated based on potential human exposure, and interim RODs will be pursued to address any human health risks. It is assumed that ecological concerns, once completely evaluated, will not result in significant further action at any site and a Final No Further Action ROD will address ecological risks. Current lack of federal standard for perchlorate prevents publishing final RODs for perchlorate sites.

The RI that was completed in 2002 did not include any perchlorate sampling data. A separate perchlorate investigation report was issued in FY03. This data will be incorporated into the final FS report in FY04.

Extensive additional sampling by the U.S. Fish and Wildlife Service, if recent patterns are followed, is likely to result in a large number of areas identified as having “elevated” contaminant levels, and could require considerable additional non-ER,A cleanup work, if property transfer on USFWS terms is to occur.

LHAAP-12

ACTIVE LANDFILL (SWMU 12)

SITE DESCRIPTION

Landfill 12 (previously called the Active Landfill) was used for disposal of non-hazardous industrial waste. The landfill was used intermittently since 1963. Continuous use of the landfill began in approximately 1978. The front section of the landfill was closed in March 1994; the back section was closed previously.

Groundwater analyses showed that some metals, chlorides, VOCs and explosive compounds were present. Surface water and sediment sample analyses showed similar contamination.

Site investigations conducted in 1993 concluded that an early interim remedial action (landfill cap) was necessary to reduce further contamination to the groundwater. The cap was completed in 1997. Cap maintenance started in 1998.

In 2001, perchlorate was detected in soil and groundwater at low levels.

The RI was completed in 2002 and the FS is in draft form. A 5 year review was completed for the cap in 2002.

Note: It is assumed that ecological concerns, once completely evaluated, will not result in further action at this site.

Note: Treated soil from LHAAP-18 was disposed of at this site.

STATUS

RRSE RATING:

High

CONTAMINANTS OF CONCERN:

VOCs

MEDIA OF CONCERN:

Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS (funded), LTM

FUTURE IRP PHASE:

LTM

PROPOSED PLAN

Complete the PP/ROD in order to resolve land use control issues (FY04). Complete an operation and maintenance plan for the cap. Cap maintenance, institutional controls and long-term (groundwater) monitoring will continue.

Cap maintenance will be funded under LHAAP-016.

Five year review will be funded under LHAAP-18.



LHAAP-16 OLD LANDFILL (SWMU 16)

SITE DESCRIPTION

Landfill 16 (formally called the Old Landfill, ~22 acres) was originally used for disposal of products generated from the TNT Wastewater Treatment Plant. However, a variety of waste was disposed of in the landfill until the 1980s. Waste may have included burned rocket motor casings, substandard TNT, barrels of chemicals, oil, paint, scrap iron and wood. VOCs and metals above action levels have been found in the soil, surface water and groundwater around the site. Low levels of explosive compounds were detected in groundwater.

Site investigations conducted in 1993 concluded that an early interim remedial action (landfill cap) was necessary to reduce further contamination to the groundwater. The cap was completed in 1998. Eight extraction wells were installed in late 1997 to contain contamination that was seeping from groundwater into Harrison Bayou. Groundwater extracted from the Landfill 16 containment system is piped to the LHAAP-18 GWTP.

Perchlorate was detected in groundwater at this site in 2000. VOCs were detected in the surface water.

The RI was completed in 2002 and the FS is in draft form. A 5 year review was completed in 2002. Quarterly surface water sampling of the Harrison Bayou area has not shown significant contamination.

A research and development project for enhanced in situ bioremediation (VOCs, perchlorate and explosives in groundwater) was started in 2003.

Note: It is assumed that ecological concerns, once completely evaluated, will not result in further action at this site.

Note: Treated soil from LHAAP-18 was disposed of at this site.

PROPOSED PLAN

The FS will be completed in FY05. It will include a groundwater to surface water interface model. FS completion hinges on resolution of issues related to surface water compliance point and standards, which will bear on the calculation of an alternate concentration limit. An operation and maintenance plan will be completed.

A groundwater containment action is expected.

Cap maintenance, long-term monitoring (groundwater and Harrison Bayou) and institutional controls will continue.

STATUS

RRSE RATING:

High

CONTAMINANTS OF CONCERN:

VOCs, Perchlorates

MEDIA OF CONCERN:

Groundwater, Surface Water, Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS, IRA

FUTURE IRP PHASE:

RD, RA, RA(O), LTM



NO. 2 FLASHING AREA/BURNING GROUND (SWMU 17)

SITE DESCRIPTION

This site (~500 x 600 ft) was used for burning bulk TNT, photoflash powder, and reject material from Universal Match Corporation's production processes. The site was operated as a burning ground from 1959 until 1980. TNT has been detected in surface soils. This site is situated ~400-500 feet southwest of Burning Ground No. 3.

Waste residues were removed in 1984 and the area grassed over. VOCs and explosive compounds were found in the groundwater. Explosive compounds were found in the soil. Perchlorate was detected at this site in 2000 (groundwater 300 ppm, less in soil).

The RI was completed in 2002 and the FS is in draft form.

A research and development project for enhanced in situ bioremediation (VOCs, perchlorate and explosives in soil and groundwater) was started in 2002 and completed in 2004. Results are pending.

STATUS
RRSE RATING: High
CONTAMINANTS OF CONCERN: Explosives, VOCs, Perchlorates
MEDIA OF CONCERN: Soil, Groundwater
COMPLETED IRP PHASE: PA/SI
CURRENT IRP PHASE: RI/FS
FUTURE IRP PHASE: RI/FS, RD, RA, LTM

PROPOSED PLAN

The FS will be completed in FY05.

Explosive-contaminated soil excavation may be needed.

An installation-wide ecological study and background study will be funded under this site and LHAAP-35.

Long-term monitoring will continue.



BURNING GROUND/WASHOUT POND (SWMU 18)

SITE DESCRIPTION

Burning Ground No. 3 started operation in 1955. It was used for the treatment, storage, and disposal of solid and liquid explosives, pyrotechnics, and combustible solvent wastes by open burning, open detonation and burial. The Unlined Evaporation Pond (UEP) (LHAAP-24) was constructed in 1963 within Burning Ground No. 3. Explosive compounds, VOCs, and metals were detected in soils and groundwater. In addition, perchlorate was detected in groundwater in 1998. In 1986, sludge from the UEP was removed and the area was capped. Quarterly monitoring has been conducted at the site since closure of the UEP.

In May 1995, an IRA ROD was signed. This IRA addressed soil and shallow groundwater contamination. In 1997, 30,000 cy of soil was excavated and treated. The treated soil was used as fill in LHAAP-12 and 16. A Groundwater Treatment Plant (GWTP) with approximately 5,000 feet of interception collection trench has been installed to control migration of contaminated groundwater. The extracted groundwater is discharged into Harrison Bayou after treatment. Perchlorate was detected at this site in 2001 and a fluidized bed reactor treatment system was installed.

The RI was completed in 2002 and the FS is in draft form.

PROPOSED PLAN

Complete the FS in FY05. Additional investigation to determine the vertical extent and impact of the contamination, and a fate and transport model for perchlorate will be completed. There is a possibility that a responsible case may be eventually made for significantly limiting both the duration of treatment plant operations and the extent of any other active remedial systems.

Operation of the GWTP and cap maintenance will continue.

The current treatment systems will be evaluated by AEC for effectiveness, and replaced or modified if needed.

STATUS

RRSE RATING:

High

CONTAMINANTS OF CONCERN:

VOCs, Heavy Metals, Perchlorates

MEDIA OF CONCERN:

Soil, Groundwater, Surface Water

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS, IRA

FUTURE IRP PHASE:

IRA, RD, RA, RA(O), LTM



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Site Descriptions - Page 5

FORMER UNLINED EVAPORATION POND (SWMU 24)

SITE DESCRIPTION

Burning Ground No. 3 (LHAAP-18) started operation in 1955. It was used for the treatment, storage, and disposal of solid and liquid explosives, pyrotechnics, and combustible solvent wastes by open burning, open detonation and burial. The Unlined Evaporation Pond (UEP) was constructed in 1963 within Burning Ground No. 3. Explosive compounds, VOCs, and metals were detected in soils and groundwater. In addition, perchlorate was detected in groundwater in 1999. In 1986, sludge from the UEP was removed and the area was capped. Quarterly monitoring has been conducted at the site since closure of the UEP.

In May 1995, an IRA ROD was signed. This IRA addressed soil and shallow groundwater contamination. In 1997, 30,000 cy of soil was excavated and treated. The treated soil was used as fill in LHAAP-12 and 16. A Groundwater Treatment Plant (GWTP) with approximately 5,000 feet of interception collection trench has been installed to control migration of contaminated groundwater. The extracted groundwater is discharged into Harrison Bayou after treatment. Perchlorate was detected at this site in 1999 and a fluidized bed reactor treatment system was installed in 2001.

The RI was completed in 2002 and the FS is in draft form.

PROPOSED PLAN

Complete the FS in FY05. Additional investigation to determine the vertical extent and impact of the contamination, and a fate and transport model for perchlorate will be completed. There is a possibility that a responsible case may be eventually made for significantly limiting both the duration of treatment plant operations and the extent of any other active remedial systems.

Operations for the GWTP and cap maintenance will continue.

The current treatment systems will be evaluated for effectiveness and replaced or modified if needed.

STATUS

RRSE RATING:

High

CONTAMINANTS OF CONCERN:

VOCs, Heavy Metals, Perchlorate

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS, IRA

FUTURE IRP PHASE:

IRA, RD, RA, RA(O), LTM



FORMER TNT PRODUCTION AREA (SWMU 29)

SITE DESCRIPTION

The Former TNT Production Area (~ 85 acres) was in operation from April 1943 to August 1945 as a six-line plant with a supporting acid plant. The plant produced 180 million kilograms of TNT throughout the period of operation. A bulk toluene storage area servicing the TNT Production Area was located adjacent to the production area. TNT wastewater (red water) from the production of the TNT was sent through wooden pipelines to a storage tank and pump house, and then to the TNT Wastewater Treatment Plant (LHAAP-32). Cooling water (blue water) from the production area ran through main lines and into an open ditch. The structures, except for the foundations, were demolished and removed in 1959.

In support of the Intermediate Nuclear Forces Treaty, a portion of the site (approximately 2 acres) was used for the washout of Pershing 1 and 2 rocket motor casings.

Explosive compounds have been detected in soil, surface water, sediment and groundwater samples. VOCs have also been detected in groundwater. Perchlorate was detected in soil and groundwater at this site in 2000.

The RI was completed in 2002 and the FS is in draft form.

STATUS

RRSE RATING:

High

CONTAMINANTS OF CONCERN:

VOCs, Perchlorates, TNT

MEDIA OF CONCERN: Groundwater, Soil, Surface Water, Sediment

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS, RD, RA

FUTURE IRP PHASE:

LTM

PROPOSED PLAN

Additional samples of the water and sediment in the ditches are planned in FY04. The FS will be completed in FY05. Pipeline and contaminated soil removal may be needed (addresses both LHAAP-029 & 032).



FORMER TNT WASTEWATER PLANT (SWMU 32)

SITE DESCRIPTION

The TNT Wastewater Treatment Plant was constructed in 1942 to treat and dispose of wastewater generated at the TNT Production Area (LHAAP-29). The plant was in operation from April 1943 until August 1945. In 1959, most of the facilities at the Wastewater Treatment Plant were removed. The suspected contaminants are explosive compounds and metals contained in explosive manufacturing residues.

Surface water, groundwater, soil and sediment samples were collected in the area. Explosive compounds were detected in soils and sediments along with some elevated levels of metals. A surface water sample was collected in 1991, and the analyses detected low levels of explosive compounds. Groundwater has had no detections.

The RI was completed in 2002 and the FS is in draft form. Mercury was detected (fall 2002) in sediment in a building basement. In FY03, the mercury-contaminated soil was removed and the basements were filled.

STATUS

RRSE RATING:

Medium

CONTAMINANTS OF CONCERN:

Explosives, Metals (Mercury)

MEDIA OF CONCERN:

Soil, Sediment

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS (funded), RD, RA

FUTURE IRP PHASE:

RC

PROPOSED PLAN

Complete the FS in FY04. Limited soil removal for explosives is planned.

Subsequently, if residual metals contamination does not exceed ecological screening levels, site closure will follow. Otherwise, closure will necessarily be delayed until completions of an installation-wide background and ecological risk studies. Furthermore metals (primarily mercury) concentrations in surrounding areas will be evaluated with respect to impact on LHAAP-032.



LHAAP-35 SUMPS (145) VARIOUS

SITE DESCRIPTION

This area of approximately 1,500 acres encompasses two major production areas, a maintenance area, two satellite production areas, a chemical laboratory, and an aboveground solvent tank farm. This site also contained 125 industrial wastewater sumps. The sumps were located in different production areas within LHAAP. All of the sumps were removed in 1996. Site LHAAP-035 has been expanded to include LHAAP-2, 3, 4, 6, 7, 8, 36, 37, 58, 60 and 68 (Production Area sites).

VOCs have been detected in groundwater at each area with 9 separate groundwater plumes (~2,500 x 2,000ft) having been identified. Metals contamination in groundwater has also been identified in several of these areas. Surface water and sediments in Goose Prairie Creek have also been impacted by VOCs as a result of inflows of contaminated groundwater. Metals were detected in the sediments in Caddo Lake near the mouth of Goose Prairie Creek.

Several buildings in this site have a history of perchlorate use. Perchlorate contamination has been identified in soil, surface water and groundwater. Interim measures have been implemented to minimize the runoff of perchlorate to Goose Prairie Creek.

The RI was completed in 2002. The initial perchlorate assessment was completed in late FY03.

Any actions that may be needed at LHAAP-2, 3, 4, 6, 7, 8, 36, 37, 58, 60 and 68 will be funded under this site. Closeout actions for LHAAP-46, 47, 48 and 49, not currently listed in AEDB-R, are presently being tracked as part of LHAAP-035. LHAAP-2, 3, 6, 7, 36 and 68 are considered response complete.

PROPOSED PLAN

A soil FS and a groundwater FS will be completed. It will include a groundwater to surface water interface model. FS completion hinges on resolution of issues related to surface water compliance point and standards. Goose Prairie Creek sediment and surface water sampling will be funded under this site.

RD and RA (soil removal and/or soil cover) will be conducted for soil contaminated with perchlorate, to control migration to surface water in the Plant 3 Area and maintenance areas. LTM will be conducted at all areas to confirm that the groundwater does not pose a risk to surface water.

LHAAP-004 = a report on a pilot study (perchlorate bioremediation) will be produced, additional soil samples may be needed; soil removal may be needed.

LHAAP-008 = the perchlorate contamination in soil will be delineated; institutional controls are expected.

LHAAP-035 = continue groundwater monitoring.

LHAAP-037 = a FS will be completed; calculation of an alternate concentration limit followed by groundwater monitoring is the expected remedy.

LHAAP-058 = a FS will be completed; followed by groundwater monitoring.

LHAAP-060 = a request for no further action will be submitted in FY04.

STATUS

RRSE RATING:

High

CONTAMINANTS OF CONCERN:

Heavy Metals, VOCs, Perchlorates, TNT

MEDIA OF CONCERN: Soil, Sediment, Surface Water, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS

FUTURE IRP PHASE:

RI/FS, RA, LTM

LHAAP-2 AS PART OF LHAAP-35 VACUUM TRUCK OVERNIGHT PARKING LOT

SITE DESCRIPTION

This site was used as overnight parking for a vacuum truck. Tanker trucks containing industrial wastewater were sometimes left at this location overnight. This parking lot is located next to Building 704D (inside the LHAAP-35 area) and use was discontinued in 1995. Record searches indicated no spills occurred at this site. This site was identified as a Solid Waste Management Unit (SWMU) in the RFA. USACHPPM sampling in 2000 indicated the presence of elevated levels of cadmium, copper and lead in the soil.

USAHPPM results will be compared to soil background data. Depending upon the results of the comparison, the site may not require any further action. This area is being monitored under LHAAP-35.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

Metals

MEDIA OF CONCERN:

Groundwater, Soil

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

LHAAP-3 AS PART OF LHAAP-35 BUILDING 722 - PAINT SHOP

SITE DESCRIPTION

This site was used for collection of waste (may have included paint thinner, paints, and kerosene) produced from the paint shop. The Paint Shop was located in Building 722, within the LHAAP-35 area. The site consisted of one 55-gallon drum set on a gravel pad in an open-sided shed, with a galvanized metal roof. Waste was put into the 55-gallon drum until the drum was full. The drum was then taken to Building 31-W (Hazardous Waste Storage). This site is no longer active. This site was identified as a SWMU in the RFA.

This site requires no further action.

This area is being monitored under LHAAP-35.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

Metals, Solvents

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

LHAAP-4 AS PART OF LHAAP-35 LHAAP PILOT WASTEWATER TREATMENT PLANT

SITE DESCRIPTION

This plant, which began operation in 1984, received all the wastewater from all sumps on the installation. After settlement, the wastewater was transferred to one of two storage tanks, and then pumped through a heat exchanger to an evaporation tower. Solids were shipped off-site, and sludges from the settling tank were blown down and drummed on a weekly basis, and burned at Burning Ground No. 3. The Pilot Wastewater Treatment Plant was removed and closed in 1998 under an Agreed Order with TNRCC.

Soil and groundwater contamination are being addressed under LHAAP-35

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

Metals, VOCs

MEDIA OF CONCERN:

Groundwater

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

LHAAP-6 AS PART OF LHAAP-35 BUILDING 54F SOLVENT

SITE DESCRIPTION

This site consisted of a rack outside of Building 54F (within the LHAAP-35 area). The site consisted of a single 55-gallon drum stored in a three-sided shed, approximately 8 by 10 feet in size, with fiberglass siding and a roof of galvanized metal and fiberglass. The shed was set on a curbside concrete pad. Full drums were taken to Building 31-W. This site was in operation until mid-1985.

No future actions are necessary at LHAAP-6.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

Solvents, Acid

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

LHAAP-7 AS PART OF LHAAP-35 BUILDING 50G - DRUM PROCESSING

SITE DESCRIPTION

This site was a washdown area for empty drums used in production (within the LHAAP-35 area). The site consisted of a wooden frame building 30 x 100 feet in size, set on concrete and having transite walls. Main washdown took place in a separate bay, 20 x 30 feet in size. All washdown water drained to a 3,000 gallon sump outside, Sump No. 70. This sump has been removed. Empty drums were either reused or flashed at the Air Curtain Destructor and sent to Building 49-W for disposal as scrap. This site ceased operation in 1995. TCE and perchlorate groundwater plumes are present beneath the site.

This area is being monitored and is being incorporated as part of the LHAAP-35 remediation.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

VOCs

MEDIA OF CONCERN:

Groundwater, Soil

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

LHAAP-8 AS PART OF LHAAP-35 SEWAGE TREATMENT PLANT

SITE DESCRIPTION

This site is not eligible for ER,A funding.

This site is a sewage treatment plant consisting of an Imhoff tank, a sand filter, and three inactive sludge beds. Sludge was dried on sand beds then shipped to Landfill 16. This site has been active from 1942. Although this site was identified as a SWMU in the RFA, the TNRCC determined that there were no additional investigations required at this site.

The site was closed in 1999 under the requirements of the closure plan approved by TNRCC.

No further action is needed.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

Residues from production material

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

LHAAP-36 AS PART OF LHAAP-35 EXPLOSIVE WASTE PADS (27)

SITE DESCRIPTION

This site is a compilation of 20 waste pads within the LHAAP-35 area. These waste pads consist of a galvanized metal roof set over a concrete 4- by 8-foot pad with a 6-inch curb. The waste pads were drained by concrete troughs into sumps. Explosive waste was desensitized with diesel fuel and placed in 5 gallon, galvanized, lidded, metal garbage pails with plastic bag liners. Full garbage pails were stored in a metal rack ~1.5 feet above the ground. The site was in operation from 1985 until the early 1990s.

No further action is required for this site.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

Heavy Metals

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1987

LHAAP-37 AS PART OF LHAAP-35 CHEMICAL LABORATORY WASTE PAD

SITE DESCRIPTION

This site served as a collection point for spent solvents from the Chemical Laboratory from 1985 to 1997. This site is within the LHAAP-35. The site held one 55 gallon, plastic, DOT approved drum set on a concrete pad. Each full drum was sent to Building 31-W (Hazardous Waste Storage) for disposal. Groundwater contamination from 1,1-dichloroethene and trichloroethene is present at the site.

This area is being monitored under LHAAP-35. This area is being incorporated as part of the LHAAP-35 remediation.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

VOCs

MEDIA OF CONCERN:

Soil, Groundwater, Surface Water

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

LHAAP-58 AS PART OF LHAAP-35 MAINTENANCE COMPLEX

SITE DESCRIPTION

This site is a maintenance complex with concrete floors and no curbs at the doorways. Floor drains are connected to the sanitary sewer. Lubricants are stored on drum racks outside over a gravel surface. No curbing or other containment is present. Waste oil and solvents are transferred to Building 31-W. The area is still being used by the company that is exiting the plant. A TCE groundwater plume is present beneath LHAAP-58.”

This site is totally included in the Group 4 RI/FS study (LHAAP-35). Soil and groundwater are being addressed under LHAAP-35.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

POL, Solvents

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1995

LHAAP-60 AS PART OF LHAAP-35 FORMER STORAGE BUILDING 411 & 714

SITE DESCRIPTION

This site is comprised of Buildings 411, 411A and 714, formerly used for storage of pesticides and herbicides. Pesticides were originally stored in Building 714, but were moved to Buildings 411 and 411A in 1970. Buildings 411 and 714 have concrete floors. Building 411A has a dirt floor. None of the buildings have a curb at the doorways.

Pesticides were detected in soils at all three buildings.

The RI was completed in 2002 and the FS is in draft form. No human health risk was detected for industrial use. The FS will be completed in FY04. Institutional controls are planned.

Groundwater will be addressed under LHAAP-35.

STATUS

RRSE RATING:

Medium- included in LHAAP-35

CONTAMINANTS OF CONCERN:

Pesticides

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS (funded)

FUTURE IRP PHASE:

RC

LHAAP-68 AS PART OF LHAAP-35 MOBILE STORAGE TANK PARKING AREA

SITE DESCRIPTION

This site contains two mobile storage tank (600 gallon) compartments on tank trucks used prior to 1985. These vehicles were used throughout the facility and were parked on the asphalt surface at the maintenance complex. No curb or other containment is present at the parking facility. Mobile storage tanks contain Number 2 diesel and gasoline.

Findings from the Army's preliminary assessment conducted in 1988 concluded that no further action is necessary at this site.

Regulators did not agree to NFA, so this site has been included in the Group 4 RI/FS, LHAAP-35.

RRSE RATING:

NE- included in LHAAP-35

CONTAMINANTS OF CONCERN:

POL

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

SITE DESCRIPTION

This site was used for the storage of munitions. The total enclosed area is over 800 acres; within this area are 58 bunkers, 3 magazine buildings in the northeast corner, and 2 buildings. Each bunker consisted of three concrete walls and a concrete-floored structure 26 x 60 x 10 feet, with a wooden roof and doors. Operations began in 1942 and ceased in 1995. The roof and doors have been removed in preparation for property transfer.

In 2000, PA sampling by USACHPPM found pentachlorophenol, metals, and perchlorate. This site was rated and now requires remedial investigations.

U.S. Fish and Wildlife soil sampling results (using non-IRP funds) were compared to background values. The comparison indicated that levels of detected compounds were within background values.

A decision document is expected to be completed in FY04.

LHAAP-45 MAGAZINE AREA

STATUS

RRSE RATING:

Medium

CONTAMINANTS OF CONCERN:

Pentachlorophenol, Metals, Perchlorate

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS (funded)

FUTURE IRP PHASE:

RC

FORMER WASTE DISPOSAL FACILITY

SITE DESCRIPTION

This site (~1 acre) received wastewater from the sumps at Plants 2 and 3 from 1955 to the early 1970s. Washout of ammonium perchlorate containers was also performed on site.

VOCs and perchlorate were detected in the soil samples. VOCs, metals and perchlorate were detected in groundwater.

The RI was completed in 2002 and the FS is in draft form. The VOCs in groundwater pose an unacceptable risk.

PROPOSED PLAN

Complete the FS in FY05. With current information, soil removal, institutional controls and LTM are expected.

STATUS

RRSE RATING:

High

CONTAMINANTS OF CONCERN:

Heavy Metals, Perchlorates, Chlorinated Solvents

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS, RD, RA

FUTURE IRP PHASE:

LTM



ABOVE GROUND STORAGE TANK(S)

SITE DESCRIPTION

This site consists of seven above ground storage tanks (ASTs) containing Number 2 fuel oil, kerosene or solvents. The ASTs have earthen dikes sufficient to contain potential spill. Motor fuel tanks were registered with the state and have been removed. Central Creek runs just to the south of this site.

In 2001, TCE was detected in groundwater. Preliminary data indicates that the impact is limited

The RI was completed in 2002 and the FS is in draft form.

PROPOSED PLAN

The FS will be completed in FY04. Institutional controls and LTM are expected.

STATUS

RRSE RATING:

Medium

CONTAMINANTS OF CONCERN:

POL, Solvents

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RI/FS (funded), LTM

FUTURE IRP PHASE:

LTM

RESPONSE COMPLETE AEDB-R SITES

LHAAP-1, SWMU 1 INERT BURNING GROUNDS (SWMU 1)

SITE DESCRIPTION

This site was used for the burning of trash, ashes, scrap lumber, and waste from burned TNT. Universal Match Corporation used this site during the 1950s for burning photoflash powder and other discarded materials. In 1982, investigations at this site included completion and sampling of one groundwater well and three surface soil samples. Contamination by metals, chloride, sulfate, and two explosive compounds was detected. Trace explosive concentrations were detected in a down gradient well in 1988. This site is included in the FFA.

A No Action ROD was signed in January 1998.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

Explosive Chemicals/Inert Materials

MEDIA OF CONCERN:

Groundwater, Soil

COMPLETED IRP PHASE:

PA/SI, RI/FS

CURRENT IRP PHASE:

RC - 1998

LHAAP-5 POWER HOUSE BOILER POND

SITE DESCRIPTION

This site is not eligible for ER,A funding.

This site was in operation from 1978 to 1999. It consisted of a 4-foot-deep earthen lagoon lined with a polyvinylchloride (PVC) liner. The lagoon received approximately 3,000 gallons per day of backwash water from zeolite treatment units at the Building 401 Powerhouse. Water was either evaporated from the lagoon or discharged to the sewage treatment plant.

The site was closed in 1999, by removing the liner, filling with soil and seeding under the NPDES permit closure plan requirements. RCRA closure was completed and no further action is required. A decision document is needed.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

None

MEDIA OF CONCERN:

None

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

BUILDING 31-W DRUM STORAGE

SITE DESCRIPTION

This site is not eligible for ER,A funding.

Building 31-W was a storage area for containers of liquid hazardous waste, PCBs and various chemicals from the early 1950s to 1995. This site was closed in 1999.

Although this site was identified as a SWMU in the RFA, the TNRCC determined that there were no additional investigations required at this site.

This site was closed under the current RCRA permit. A decision document is required.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

None

MEDIA OF CONCERN:

None

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

SUSPECTED TNT BURIAL SITE AT AVE P&Q

SITE DESCRIPTION

Burial of contaminated wastes occurred in the general area just north of Avenue Q, bounded by Avenue P on the west and the explosive burning ground on the east. An area near the intersection of Avenues Q and P was identified as a possible TNT disposal site in use during the 1940s.

A concrete block was discovered in this area during an assessment conducted in 1980, but its purpose was unknown. There is an area a few hectares in size located just west of the intersection of track 3-A and Avenue Q. This area was used during the late 1940s and early 1950s for the disposal of acids, building rubble, and other trash.

Surface and subsurface soil samples were collected in 1984 and 1988. Low levels of explosive contamination were detected in both soil sampling events. This site is included in the FFA.

A No Action ROD was signed in January 1998.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

TNT

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RI/FS

CURRENT IRP PHASE:

RC - 1998

LHAAP-13 SUSPECTED TNT (BURIAL SITE) BETWEEN ACTIVE & OLD LANDFILL

SITE DESCRIPTION

The Suspected TNT Burial Site/Acid Dump is an undocumented location where it is suspected that TNT or waste acids may have been disposed, sometime during the history of the installation. Other than this suspected one-time disposal, no other activities have taken place at this site. Evidence of possible TNT burial or acid waste disposal at the site consisted of several areas of little or no vegetation, that is consistent with the suspicion that some form of waste disposal has occurred at this location.

Examination of aerial photographs dated 1963, show these same locations stripped of vegetation with some type of activity being performed at the site. These locations were not evident in 1954 photos, and most of the area appears to be re-vegetated and inactive in 1970 photos. This site is included in the FFA. Completion of the remedial investigation fieldwork conducted in 1993 concluded that no further investigation was needed at this site.

The final RI/FS report was submitted June 1995, and the No Action ROD was signed by EPA in February 1996.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

Waste Acid

MEDIA OF CONCERN:

Groundwater, Soil

COMPLETED IRP PHASE:

PA/SI, RI

CURRENT IRP PHASE:

RC - 1995

LHAAP-14 AREA 54 BURIAL GROUND (SWMU 14)

SITE DESCRIPTION

The Area 54 Burial Ground is an undocumented location where it was suspected that demolition debris, building rubble, explosives, and acidic wastes were disposed during the 1940s and early 1950s. The disposal site is reportedly beneath the asphalt parking area adjacent to Building 49-W. Other than this period of operation, no other waste disposal activities have taken place at the site. This site is included in the FFA. Completion of remedial investigation fieldwork conducted in 1993 concluded that no further investigation was needed at this site.

The final RI/FS report was submitted June 1995 and the No Action ROD was signed by EPA in February 1996.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

Oil

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RI

CURRENT IRP PHASE:

RC - 1995

LHAAP-15

AREA 49W DRUM STORAGE

SITE DESCRIPTION

This site is not eligible for ER,A funding.

This site is a drummed waste storage shed containing solid and hazardous waste. It consists of a metal building 50 feet by 100 feet by 10/16 feet (sloped), with a concrete floor. This site was in operation from 1984 to 1999. Although this site was identified as a SWMU in the RFA, LHAAP, with TNRCC concurrence, determined that there were no additional investigations required at this site.

This site is being closed under the current RCRA permit.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

None

MEDIA OF CONCERN:

None

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1987

LHAAP-19

CONSTRUCTION MATERIALS LANDFILL

SITE DESCRIPTION

This is an active site, and therefore not eligible for ER,A funding.

This site is a fenced 400 x 800 feet landfill. The site began operations in 1985 for the disposal of construction debris.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

None

MEDIA OF CONCERN:

None

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1987

BUILDING 707-STORAGE AREA FOR PCBs

SITE DESCRIPTION

This site is not eligible for ER,A funds.

This site consisted of a 30 x 150 feet, wooden, storage building, with shingle siding and a concrete floor. Drums or transformers containing PCB-contaminated oil were stored in galvanized steel cattle watering troughs inside the building. The building is empty except for the used cattle troughs. This site was in operation from 1980 until March 1986.

The building is being closed under minor project funding.

The site was closed under RCRA permit. A decision document is required.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

PCBs

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1987

LHAAP-27 & LHAAP-001-R-01

SOUTH TEST AREA/BOMB TEST AREA (SWMU 27)

SITE DESCRIPTION

The South Test Area was constructed in 1954 for testing of photoflash bombs. During the late 1950s, illuminating signal devices were also demilitarized within pits at the site. Until the early 1980s, photoflash cartridges were demilitarized in the area.

In 1982, investigations included installation and sampling of two wells and three shallow soil samples. Metals, explosives, chloride and sulfate were detected above background levels in the soil samples. Metals, chloride and sulfate were detected above background, but below action levels in the groundwater.

This site is included in the FFA. A No Action ROD was signed in January 1998.

This site was opened as MMRP site LHAAP-001-R-01. There are craters on the southwest side of the site.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

Ordnance Components

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RI/FS

CURRENT IRP PHASE:

RC - 1998

LHAAP-34

BUILDING 701 PCB STORAGE

SITE DESCRIPTION

This site is not eligible for ER,A funds.

This site consists of Building 701 that was used for storage of PCB-contaminated material from 1980 to 1984. The contaminated material from the cleanup of transformer spills was stored in 30- and 55-gallon drums in the north end of the building. The storage area was a wooden framed building with shingles and a concrete floor, approximately 25 x 110 feet in dimension. The building is currently not used.

Soil samples found no contamination.

The site was closed under RCRA permit. A decision document is required.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

PCBs

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1987

LHAAP-39

25X WASHOUT PAD

SITE DESCRIPTION

This site is located within Burning Ground No. 3 which is under IRA and RI/FS phases. VOC and perchlorate groundwater plumes occur beneath the site.

This site was combined with sites LHAAP-18 & 24, therefore it requires NFA under the IRP.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

POL, Solvents, Heavy Metals

MEDIA OF CONCERN:

Soil, Groundwater, Surface Water

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

PHOTOGRAPHIC LAB - BUILDING 60B

SITE DESCRIPTION

Building 60B was the location for processing of x-ray film. The building has a concrete floor without a floor drain. Spent developing waste was drummed and transferred to Building 31-W for disposal. Findings from the Army's preliminary assessment conducted in 1988 concluded that no further action is necessary.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

Acid, Base

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

MAGAZINE WASHOUT AREA

SITE DESCRIPTION

The Plant 1 Magazine Area contains 58 Richmond-type magazines and two aboveground magazines, all of which had been used for the storage of TNT. A standpipe near the intersection of Avenue E and 19th Street was used to wash out trucks used for the transport of TNT. Wastewater from this operation may have flowed onto the ground.

Findings from the Army's preliminary assessment and recent re-evaluation concluded that a site investigation should be performed. The site investigation was conducted in FY96. Findings from the Army's site investigation concluded that no further action is necessary. EPA and TNRCC concurred with this conclusion.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

Explosive Chemicals

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1998

LHAAP-53 & LHAAP-002-R-01 STATIC TEST AREA

SITE DESCRIPTION

The site was formerly used for rocket motor, red phosphorus smoke wedge, and illuminating candle testing. This static test area also has a candle test area. This site is located next to the HMX Area and approximately one mile behind LHAAP-16. The last activity of this site was demilitarization by ignition of Pershing rocket motors performed on test stands in 1991.

Findings from the Army's preliminary assessment concluded that no further action is necessary.

Elevated metal concentrations in groundwater will be compared to background levels. LHAAP-53 could be a no further action site.

This site was opened as MMRP site LHAAP-002-R-01.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

Propellant, Explosives

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

LHAAP-54 & LHAAP-003-R-01 GROUND SIGNAL TEST AREA

SITE DESCRIPTION

The Ground Signal Test Area is currently used for aerial and on-ground testing of pyrotechnic, illuminators, and signal devices manufactured at the facility. Since 1988, burnout of Pershing missiles has been conducted at this site in accordance with the Intermediate-Range Nuclear Forces (INF) Treaty. The site has been used intermittently since 1963 for various types of testing and destruction of many explosive devices.

In 1982, investigations included installation and sampling of two groundwater wells and three surface samples. Elevated levels of some metals were detected in the soil and groundwater. Elevated levels (above background, but below action levels) of chloride and sulfate were detected in the groundwater. This site is included in the FFA.

A No Action ROD was signed in January 1998.

This site was opened as MMRP site LHAAP-003-R-01. "Button bombs" were tested and disposed of on the eastern side of this site.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

Propellant, Explosives

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RI

CURRENT IRP PHASE:

RC - 1998

LHAAP-55 SEPTIC TANK (10)

SITE DESCRIPTION

This site contains ten septic tanks with outfalls to ditches, which serve outlying areas of the installation. Contents of septic tanks are pumped out and transferred to the sewage treatment plant as needed. The effluent is chlorinated prior to discharge. There is no history of industrial waste being put into these septic tanks.

Findings from the Army's preliminary assessment conducted in 1988 concluded that no further action is necessary and the regulators agreed. A decision document is required.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

Non-Hazardous Waste

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

LHAAP-57 RUBBLE BURIAL SITE

SITE DESCRIPTION

This site is used for burial of inert materials that were cleared from property after acquisition.

Findings from the Army's preliminary assessment conducted in 1988 concluded that no further action is necessary and the regulators agreed. A decision document is required.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

None

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

LHAAP-61 POTABLE WTP SEDIMENT POND

SITE DESCRIPTION

This facility consists of two adjacent ponds each 0.1 hectare by 1.5 meters deep. The ponds are located just north of the shops area. Synthetic waterproof sheeting with soil cover constitutes the pond liner. The purpose of the facility is to settle out solids from the backwashing water treatment sand filters. Drainage is to Goose Prairie Bayou.

Findings from the Army's preliminary assessment concluded that no further action is necessary at this site. A decision document is required.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

Industrial Sludge

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1990

LHAAP-63 BURIAL PITS

SITE DESCRIPTION

Pits are located along Bobby Jones Road, approximately 30 meters north of Long Point Road, and east of the explosive burning ground. These pits were used in the late 1950s for the detonation of Plant 3 reject materials of unknown composition. The site investigation was conducted in FY96. Based on analytical results, no further action is required at this site. Regulators concurred with the conclusion. A decision document is required.

RRSE RATING:

Low

CONTAMINANTS OF CONCERN:

Explosives

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1998

LHAAP-64 TRANSFORMER STORAGE

SITE DESCRIPTION

This site is used for storage of transformer oil. Approximately 20 out-of-service non-PCB transformers were stored on pallets outside, with no curb or other containment.

Findings from the Army's preliminary assessment conducted in 1988 concluded that no further action is necessary at this site.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

POL, PCBs

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1995

LHAAP-66 TRANSFORMER AT BUILDING 401

SITE DESCRIPTION

A transformer at Building 401 dripped oil continuously for approximately 1 year. The transformer did not contain any polychlorinated biphenyls.

Findings from the Army's preliminary assessment conducted in 1988 concluded that no action is necessary at this site.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

Oil

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1995

LHAAP-69 SERVICE STATION USTs

SITE DESCRIPTION

This site consisted of six leaking gasoline underground storage tanks (USTs) that were leak tested in 1989. The tanks were replaced in 1993, and the site has been remediated.

Since this site was still active at the time of the PA, it was not eligible for ER,A funds. All action was addressed under RCRA guidelines.

The building is being closed under minor project funding.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

POL

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA

CURRENT IRP PHASE:

RC - 1993

LHAAP-70 LOADING DOCK - MAGAZINE AREA

SITE DESCRIPTION

On December 18, 1952, improperly stacked 23-kilogram fiberboard boxes of TNT fell in magazine area 811-50, resulting in the spill of a large quantity of TNT and the injury of a workman. Findings from the Army's preliminary assessment conducted in 1988 concluded that no action is necessary at this site.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

TNT, Explosives

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1995

SITE DESCRIPTION

RC in 1995.

RRSE RATING:

NE

CONTAMINANTS OF CONCERN:

TNT, Explosives

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI

CURRENT IRP PHASE:

RC - 1995

PAST MILESTONES

Various environmental investigations, studies, and reports have been conducted since 1980 to address possible contamination at LHAAP. LHAAP was progressing towards a RCRA permit when the installation was listed on the National Priority List (NPL). A FFA was signed in December 1991, and the RCRA permit was signed in February 1992. A summary of the current project milestones, based on funding availability, for the remedial activities is given below. Approved regulatory schedules, which are part of the FFA, are included on the following pages to summarize submittal dates for primary and secondary documents.

1986	IRA - Capping LHAAP-18 IRA - Soil Removal and Capping LHAAP-24	
1988	RFA Installation	APR
1989	LTM - Groundwater Monitoring System installed at LHAAP 18 & 24	
1992	PA - Initiation at all sites	MAY
1993	RI/FS - Initiated - Group 1 (LHAAP-1, 11, 27, 54)	
1994	IRA - 18 & 24 Design Initiated	OCT
1995	SI - Initiated - Group 5 (LHAAP-50, 52, 60, 63) ROD - Early Interim Action, LHAAP 18 & 24 ROD - Interim Action LHAAP 12 & 16 RI/FS - completed - Group 3 (LHAAP-13, 14)	JAN MAR JUL JUL
1996	ROD - Group 3, NFA	FEB
1997	SI - Completed - Group 5 (LHAAP-50, 52, 60, 63) RI/FS - Completed - Group 1 ROD - Group 1	JAN JUL OCT
1998	IRA 12 & 16 Completed	DEC
1999	RI Completed - Site 16	OCT
2000	RA Completed - Site 16	MAR
2001	RI Completed - Group 2	MAY
2002	RI Completed - Group 4	

PROJECTED MILESTONES

2007

RIP for all sites

NO FURTHER ACTION SITES

The following sites currently require no further action under the ER,A program:

LHAAP-01	INERT BURNING GROUNDS (SWMU 1)
LHAAP-02	VACUUM TRUCK OVERNIGHT PARKING LOT
LHAAP-03	BUILDING 722- PAINT SHOP
LHAAP-04	LHAAP PILOT WASTEWATER TREATMENT PLANT
LHAAP-05	POWER HOUSE BOILER POND
LHAAP-06	BUILDING 54F SOLVENT
LHAAP-07	BUILDING 50G DRUM PROCESSING
LHAAP-08	SEWAGE TREATMENT PLANT
LHAAP-09	BUILDING 31-W DRUM STORAGE
LHAAP-11	SUS TNT BURIAL SITE AT AVE P & Q (SWMU 11)
LHAAP-13	SUS TNT BET ACTIVE & OLD LANDFILL (SWMU 13)
LHAAP-14	AREA-54 BURIAL GROUND (SWMU 14)
LHAAP-15	AREA 49W DRUM STORAGE
LHAAP-19	CONSTRUCTION MATERIALS LANDFILL
LHAAP-23	BUILDING 707-STORAGE AREA PCBS
LHAAP-27	SOUTH TEST AREA/BOMB TEST AREA (SWMU 27)
LHAAP-34	BUILDING 701 PCB STORAGE
LHAAP-36	EXPLOSIVE WASTE PADS (27)
LHAAP-37	CHEMICAL LABORATORY WASTE PAD
LHAAP-39	25X WASHOUT PAD
LHAAP-45	MAGAZINE AREA
LHAAP-51	PHOTOGRAPHIC LABORATORY/BLDG #60B
LHAAP-52	MAGAZINE AREA WASHOUT
LHAAP-53	STATIC TEST AREA
LHAAP-54	GRD SIGNAL TEST AREA (LHAAP-XX)
LHAAP-55	SEPTIC TANK (10)
LHAAP-57	RUBBLE BURIAL SITE
LHAAP-58	MAINTENANCE COMPLEX
LHAAP-60	FORMER STORAGE BUILDING 411 & 714
LHAAP-61	POTABLE WTP SEDIMENT POND
LHAAP-63	BURIAL PITS
LHAAP-64	TRANSFORMER STORAGE
LHAAP-66	TRANSFORMER AT BLDG 401
LHAAP-68	MOBILE STORAGE TANK PARKING AREA
LHAAP-69	SERVICE STATION USTS
LHAAP-70	LOADING DOCK-MAGAZINE AREA
LHAAP-71	OIL SPILL, BUILDING 813

Longhorn AAP IRP Schedule

(Based on current funding constraints)

#	PHASE	FY05	FY06	FY07	FY08	FY09	FY10+
LHAAP-12	LTM						
LHAAP-16	RI/FS						
	IRA						
	RD						
	RA						
	LTO						
	LTM						
LHAAP-17	RI/FS						
	RD						
	RA						
	LTM						
LHAAP-18	RI/FS						
	IRA						
	RD						
	RA						
	LTO						
	LTM						
LHAAP-24	RI/FS						
	IRA						
	RD						
	RA						
	LTO						
	LTM						
LHAAP-29	RI/FS						
	RD						
	RA						
	LTM						
LHAAP-32	RD						
	RA						
LHAAP-35	RI/FS						
	RA						
	LTM						
LHAAP-50	RI/FS						
	RD						
	RA						
	LTM						
LHAAP-67	LTM						

Remedial Activities

Past REM/IRA/RA

- LHAAP 18 & 24 - Burning Ground/Washout Ponds & Former Unlined Evaporation Pond Long-term Monitoring (LTM) System installed in 1989.
- LHAAP 18 & 24 - Burning Ground/Washout Ponds & Former Unlined Evaporation Pond Interim Remedial Action, Waste Removal and Capping accomplished in 1986.
- LHAAP 18 & 24 - Burning Ground/Washout Ponds & Former Unlined Evaporation Pond LTM System installed in 1989.
- LHAAP 18 & 24 - Burning Ground/Washout Ponds & Former Unlined Evaporation Pond Installed Groundwater Treatment System for organic contamination and excavated soil. Construction began March 1995.
- LHAAP 12 & 16 – Active and Old Landfill Landfills were capped, treated soil from Inert Burning Ground (LHAAP-001) was placed on landfills prior to cap construction. Caps are to mitigate groundwater contamination from landfill leachate.
- LHAAP 035 - Sumps (145) Various Waste sumps and their contents were sampled, removed as necessary, and disposed of in accordance with regulatory standards.

Current REM/IRA/RA

- LHAAP 12- IRA Landfill Cap
- LHAAP 16- RD/RA for groundwater for this site will begin in FY02. Perchlorate sampling for this site is funded under LHAAP-35. Cap maintenance will continue.
- LHAAP 18 & 24- IRA Groundwater Treatment Plant (GWTP) with approximately 5,000 feet of interception collection trench has been installed to control migration of contaminated groundwater.
- Treatment system in place for the removal of VOCs and perchlorate.

Future REM/IRA/RA

- IRA at LHAAP-016, 018, 024
- RA at LHAAP-016, 071, 018, 024, 029, 032, 035, 050

COMMUNITY INVOLVEMENT

While the Army leads the IRP at LHAAP, a close working relationship with the regulatory community has been developed. The local community has been involved through the Technical Review Committee (TRC) process. The TRC has quarterly meetings at LHAAP that are regularly attended by the public. Executive Summaries are provided monthly to the LHAAP environmental team members and at each TRC meeting in an effort to keep the public informed.

A Technical Assistance Grant has been awarded to the Caddo Lake Institute, a local group, and they have sought the assistance of Subra and Associates, Inc. under the grant. Wilma Subra has become a regular attendee of the Monthly Managers' Meetings in which the Army, EPA, and TNRCC discuss issues and make decisions regarding the environmental activities at LHAAP. Training and consensus process conducted by the Army (IAP Workshop, Independent Technical Review, Exit Strategy Planning, Data Quality Objectives on Perchlorate) have been attended by Ms. Subra. Ms. Subra also receives copies of all documents sent to EPA and TNRCC.

Public meetings were held periodically to advise the community on various issues on the facility. These will continue as needed.

Formation of a Restoration Advisory Board (RAB) was attempted in April 1996 and 1998. The community involvement in the Technical Review Committee process was determined sufficient for community needs.

Technical Assistance for Public Participation application was originally submitted to higher headquarters May 1998. Contracts have been awarded to B. Jones Environmental, Inc.

A Memorandum of Agreement between the Army and USFWS was signed on 21 October 2000, designating an overlay consisting of approximately 7,100 acres for establishment of a wildlife refuge at LHAAP. A Transition Management Group (TMG) is formed to facilitate transition of LHAAP to USFWS. The TMG consists of the Army, USFWS, and Caddo Lake Institute.