

FY2012

FORT HUNTER LIGGETT
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 Installation Management Command (IMCOM), the US Army Environmental Command (USAEC), Fort Hunter Liggett (FHL), the executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules, and budgets for all major 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

AI	Active and Inactive
AEDB-R	Army Environmental Database-Restoration
AOC	Area of concern
AST	Aboveground Storage Tank
CAL EPA	California Environmental Protection Agency
CAP	Corrective Action Plan
CMS	Corrective Measures Study
CRWQCB	California Regional Water Quality Control Board
CS	Confirmatory Sampling
CSTC	Combat Support Training Center
CTT	Closed, Transferring and Transferred
CWA	Clean Water Act
DCE	Dichloroethylene
DMM	Discarded Military Munitions
DTSC	Department of Toxic Substances Control
DZ	Drop Zone
ECS	Equipment Concentration Site
ER,A	Environmental Restoration, Army
FHL	Fort Hunter Liggett
FRA	Final Remedial Action
FUDS	Formerly Used Defense Site
FY	Fiscal Year
HLMR	Hunter Liggett Military Reservation
IMCOM	Installation Management Command
IMP(C)	Implementation (Construction)
INV	Investigation
IR	Installation Restoration
ISC	Initial Site Characterization
K	thousand
LTM	Long-Term Management
MRS	Military Response Site
MRSPP	Munitions Response Site Prioritization Protocol
MTBE	Methyl Tert Butyl Ester
NFA	No Further Action
NPL	National Priorities List
ODUSD(I&E)	Office of the Deputy Under Secretary of Defense for Installations and Environment
PA	Preliminary Assessment
PBA	Performance-Based Acquisition
POC	Point of Contact
PX	Post Exchange
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RFI	RCRA Facility Investigation

Acronyms

RIP	Remedy-in-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RTC	Regional Training Center
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TD	Transferred
TMP	Troop Motor Pool
TPH-g	Total Petroleum Hydrocarbons as Gasoline
TRC	Technical Review Committee
TS	Training Support
TSD	Treatment, Storage and Disposal
TTB	Tactical Training Base
TTC	Technical Training Command
ug/L	micrograms per liter
US	United States
USACE	US Army Corps of Engineers
USARC	US Army Reserve Command
VOC	Volatile Organic Compound

Acronym Translation Table

CERCLA

Preliminary Assessment(PA)
Site Inspection(SI)
Remedial Investigation/Feasibility Study(RI/FS)
Remedial Design(RD)
Remedial Action (Construction)(RA(C))
Remedial Action (Operation)(RA(O))
Long Term Management(LTM)
Interim Remedial Action(IRA)

RCRA

= RCRA Facility Assessment(RFA)
= Confirmation Sampling(CS)
= RCRA Facility Investigation/Corrective Measures Study(RFI/CMS)
= Design(DES)
= Corrective Measures Implementation (Construction)(CMI(C))
= Corrective Measures Implementation (Operation)(CMI(O))
= Long Term Management(LTM)
= Interim Measure(IM)

Installation Information

Installation Locale

Installation Size (Acreage): 161900

City: Jolon

County: Monterey

State: California

Other Locale Information

This installation encompasses an area of approximately 161,900 acres located in central California, about 150 miles south of San Francisco, 25 miles southwest of King City and about 86 miles south of Fort Ord, California within the southwestern portion of Monterey County. The installation is situated in the Nacimiento and San Antonio Valleys. It is bounded on the east by the Santa Lucia Range and on the north, south and west by Los Padres National Forest. Adjacent civilian communities include Jolon and Lockwood. The facility is bisected by a government-owned, public-use highway which connects Jolon to Highway 1 along the Pacific coast. The main garrison and support facilities are located on the east side and the artillery ranges are on the west side of the base.

The installation is an active training facility for the US Army Reserve Command (USARC), used principally for training. The installation is the principal training area in the western United States for the Army Reserve and is used for training by all military services. Facility users include the National Guard, the US Coast Guard, the US Navy, the US Air Force, the US Marine Corps, and the US Forest Service.

In 1940, in anticipation of training Soldiers for combat on World War II European fronts, the War Department purchased more than 200,000 acres of local ranch lands between the Salinas River valley divide and the Pacific Ocean. Terrain varying from level valleys bordered by gentle hills to steep, rugged mountains has since provided opportunities for real world training and defense technology testing.

In 1941 FHL was established as Hunter-Liggett Military Reservation (HLMR). The Military Reservation was especially active in training combat, maneuver, and artillery troops during World War II and the Korean War. In 1952 HLMR became a sub installation of Fort Ord. In 1956 the installation mission was modified to include a field laboratory site for specialized experimental weapons training. In 1975 HLMR was renamed FHL Military Reservation and in 1993 it came under USARC and was made a sub installation of Fort McCoy, and was operated primarily as an USARC Western Reserve Training Center.

The US Army Combat Support Training Center (CSTC) was established October 2005, as the Army's newest training center dedicated to providing premier training sites for combat support and combat service support units.

At present, the installation encompasses approximately 161,900 acres and provides a vast array of training ranges and other facilities year-round for the US Army Reserve (USAR), and training opportunities for other branches of the US military and government agencies. The installation includes more than 150,000 acres of training area, an airfield capable of handling C-17 aircraft, more than 20 drop zones (DZ), widely varied terrain, convoy live-fire areas, tactical training bases (TTB), firing ranges servicing up to Tank Table 12, training classrooms, barracks, dining facilities, and other billeting.

The installation is also home to the Regional Training Center (RTC) West; HQ 91st Training Division; the 31st Seabee Readiness Group; the 3-356th Logistical Support Battalion, 3rd Brigade, 91st Division (TS); the 80th Training Command [Technical Training Command (TTC)]; an Equipment Concentration Site (ECS) 170, 63rd Regional Readiness Command (RRC); and the RTC West.

Installation Mission

The mission of FHL is to maintain and allocate training areas.

Lead Organization

Installation Information

Lead Executing Agencies for Installation

US Army Corps of Engineers (USACE), Sacramento District

Regulator Participation

Federal	US Fish and Wildlife Service
State	Department of Toxic Substances Control (DTSC) California Regional Water Quality Control Board (CRWQCB) Central Coast Region California Department of Fish and Game State Historic Preservation Office
Local	Monterey County Department of Health Monterey Bay Unified Air Pollution Control District

National Priorities List (NPL) Status

FORT HUNTER LIGGETT is not on the NPL

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

The community has expressed no sufficient, sustained interest in a RAB.

Installation Program Summaries

IRP

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

Affected Media of Concern: Groundwater, Soil

MMRP

Primary Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Affected Media of Concern: Soil

CR

Primary Contaminants of Concern: Other (Free-product, Benzene)

Affected Media of Concern:

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Start Date	End Date	End FY
Planned	201410	201510	2016

5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
DD for FTHE-02	FTHE-03
DD for FTHE-03	FTHE-03
DD for FTHE-20 FRA	FTHE-20
DD for FTHE-24 FRA	FTHE-24
DD for FTHE-26	FTHE-26
DD for FTHE-27B	FTHE-27B
DD for FTHE-29	FTHE-29
DD for FTHE-30	FTHE-30
DD for FTHE-32	FTHE-32
DD for FTHE-39	FTHE-39
DD for FTHE-29 FRA	FTHE-29
FTHL-16 Former Pesticide Storage	FTHE-16
Post Closure Plan for FTHL Landfill	FTHE-01

Cleanup Program Summary

Installation Historic Activity

The installation comprises approximately 161,900 acres in the coastal mountains of Monterey County, California. It occupies property that was purchased by the United States government in 1941 in conjunction with land that is part of the Los Padres National Forest.

In 1941 FHL was established as HLMR. The military reservation was active in training combat, maneuver, and artillery troops especially during World War II and later during the Korean War. In 1952 HLMR became a sub installation of Fort Ord. In 1956 the installation became the field laboratory site for specialized experimental weapons training. In 1975 HLMR was renamed Fort Hunter Liggett Military Reservation. In 1993 HLMR came under USARC and was made a sub installation of Fort McCoy, and was operated primarily as an USARC Western Reserve Training Center.

The US Army CSTC was established October 2005, and is the Army's newest training center dedicated to providing premier training sites for Combat Support and Combat Service Support units.

Installation Program Cleanup Progress

IRP

Prior Year Progress: Groundwater long-term management (LTM) continued at FTHE-01. Remedial action (operation) RA(O) continued at FTHE-28. Final characterization work was completed at FTHE-28 to support the remedial design. Bioremediations injections to address groundwater contamination occurred in FY 11.

Future Plan of Action: Landfill compliance monitoring at FTHE-01 will continue as required under state regulations to include sampling and analysis of groundwater and landfill gas monitoring. The closure plan also requires semiannual inspections and a settlement analysis every five years. The RA(O) at FTHE-28 will continue until cleanup levels have been met. Quarterly groundwater sampling will continue as part of the remediation enhanced natural attenuation process at FTHE-28.

MMRP

Prior Year Progress: The remedial investigation (RI) at FTHE-001-R-01 was completed in 2011 and concluded that no munitions of concern or soil contamination related to munitions training had occurred, resulting in a determination of no further action (NFA).

Future Plan of Action: An NFA record of decision (ROD) decision document (DD) will be signed in 2012.

CR

Prior Year Progress: Additional site characterization activities conducted in 2011 identified: (1) that soil contamination with high concentrations of gasoline contaminants existed above and below the water table; (2) site permeability varied greatly in both horizontal and vertical extents, and would limit groundwater extraction cleanup methods. The new information has changed the plans for the remedial action from pump and treat to soil excavation and natural attenuation.

Future Plan of Action: Based on the site characterization completed in 2011, remedial screening evaluations are to be completed to narrow remedial technologies that can be used to address soil and groundwater contamination. The State Water Resources Control Board has proposed a new "Low Threat Site Closure" policy to address sites similar to Building 258. Final implementation is not expected until FY 2014 at the earliest.

FORT HUNTER LIGGETT
Army Defense Environmental Restoration Program
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 34/32

Installation Site Types with Future and/or Underway Phases

- 1 Contaminated Ground Water
(FTHE-28)
- 1 Landfill
(FTHE-01)

Most Widespread Contaminants of Concern

Petroleum, Oil and Lubricants (POL), Volatiles (VOC)

Media of Concern

Groundwater, Soil

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

Site ID	Site Name	Action	Remedy	FY
FTHE-19	FORMER UST SITE(FORMER DOL MP/FACILITY95	FRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1991
FTHE-29	EXP 52/57 FORMER UST SITE	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1991
FTHE-28	BLDG 194 - OLD POL FACILITY	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1992
FTHE-27B	FORMER CDEC 8J WASTE OIL TANK SITE	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1993
FTHE-02	BATTERY ACID NEUTRALIZATION PIT(BLDG290)	IRA	WASTE REMOVAL - SOILS	1994
FTHE-03	FIRE DRILL PIT #1 (EXISTING BURN PIT)	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1994
FTHE-25	BLDG 290 WASTE OIL SUMP	IRA	WASTE REMOVAL - SOILS	1994
FTHE-25	BLDG 290 WASTE OIL SUMP	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1994
FTHE-29	EXP 52/57 FORMER UST SITE	IRA	GROUND WATER TREATMENT	1994
FTHE-28	BLDG 194 - OLD POL FACILITY	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1995
FTHE-29	EXP 52/57 FORMER UST SITE	IRA	WASTE REMOVAL - SOILS	1995
FTHE-25	BLDG 290 WASTE OIL SUMP	FRA	BIOREMEDIATION	1996
FTHE-02	BATTERY ACID NEUTRALIZATION PIT(BLDG290)	IRA	REMOVAL	1997
FTHE-28	BLDG 194 - OLD POL FACILITY	IRA	WASTE REMOVAL - SOILS	1997
FTHE-30	AMMUNITION CRATE BURN AREA	FRA	WASTE REMOVAL - SOILS	1997
FTHE-32	MILLER RANCH CONTAMINATED SOIL PILES	FRA	WASTE REMOVAL - SOILS	1998
FTHE-34	FORMER WV MAINTEN HAZ ACCUM AREA (B-259)	IRA	WASTE REMOVAL - SOILS	1999
FTHE-39	MILLER RANCH EVAP. POND & SUMP	IRA	OTHER	1999
FTHE-03	FIRE DRILL PIT #1 (EXISTING BURN PIT)	IRA	OTHER	2000
FTHE-16	FORMER PESTICIDE STORAGE (BLDG. T-157)	IRA	WASTE REMOVAL - SOILS	2000
FTHE-20	BLDG 290 FORMER HAZ WASTE STORAGE AREA	IRA	OTHER	2000

IRP Summary

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

Site ID	Site Name	Action	Remedy	FY
FTHE-24	FIRE DRILL PIT #2 (ABANDONED BURN PIT)	FRA	OTHER	2000
FTHE-26	BLDG 122 - OLD PX FACILITY (FORMER USTS)	FRA	OTHER	2000
FTHE-27B	FORMER CDEC 8J WASTE OIL TANK SITE	FRA	OTHER	2000
FTHE-28	BLDG 194 - OLD POL FACILITY	IRA	BIOREMEDIATION - IN SITU GROUNDWATER	2000
FTHE-29	EXP 52/57 FORMER UST SITE	FRA	OTHER	2000
FTHE-01	LANDFILL #1	FRA	NATURAL ATTENUATION	2002
FTHE-01	LANDFILL #1	IRA	CAPPING	2002
FTHE-16	FORMER PESTICIDE STORAGE (BLDG. T-157)	FRA	REMOVAL	2002
FTHE-28	BLDG 194 - OLD POL FACILITY	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2002

Duration of IRP

Date of IRP Inception: 198312

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 200212/201409

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

IRP Contamination Assessment

Contamination Assessment Overview

In 1982 FHL received a Resource Conservation and Recovery Act (RCRA) interim status permit which listed solid waste management units [(SWMU): Battery Acid Neutralization Pit Building 290 (FTHE-02), the fire drill pits (FTHE-03 and FTHE-24)], explosive ordnance disposal ranges (FTHE-07,08,09,10), the vehicle service area (FTHE-27), etc) as interim status storage areas. In 1990 a RCRA closure and post closure plan was developed by FHL to revoke the interim status permit and it was submitted to the DTSC Region 2 (permitting).

In 1983 the Installation Restoration Program (IRP) was initiated at FHL when the US Army Toxic and Hazardous Material Agency completed an installation assessment report.

Since 1983 FHL has identified sites to be included in the Army Environmental Database - Restoration (AEDB-R). These sites include former underground storage tank (UST) sites, former hazardous waste accumulation areas, spill areas, former waste treatment plants, former fire training burn areas, a battery acid neutralization pit, a landfill, and firing ranges.

In 1985 the USACE, Sacramento District, conducted an investigation of two fire drill pits at FHL. This investigation prompted two updates to the initial installation assessment in 1986 and 1987. The updated reports identified the sanitary landfill (FTHE-01), a seepage pit at Building 290 (FTHE-25), and two fire drill pits (FTHE-3 and FTHE-24) for further response. In 1988 the USACE, Omaha District, conducted an investigation at the Building 290 seepage pit (FTHE-25) and nearby Building 290 Battery Acid Neutralization Pit (FTHE-02), the vehicle service area (FTHE-27), and the two fire drill pits (FTHE-03 and FTHE-24). The resulting report (Environmental Assessment, 1990) recommended that further actions needed to be conducted at all of these sites which lead to further RIs and feasibility studies.

In 1986 in response to California requirements for landfill closure, the USACE, Sacramento District, began several surveys, groundwater monitoring, and a design for capping the sanitary landfill (FTHE-01). In 1994 groundwater monitoring indicated that there had not been any release of hazardous constituents from the landfill to the groundwater. In 1995 FHL received a notice of violation (NOV) which required the improvement of the groundwater monitoring program by installing additional downgradient wells. In March 1996 seven additional monitoring wells were installed and monitoring began. Since the second quarter of 1996, trichloroethylene (TCE) above drinking water levels has been detected in groundwater downgradient of the landfill; however, TCE concentrations have shown a historical decline. In April 1999 a feasibility study (FS) addressing groundwater contamination at the landfill was submitted to the CRWQCB and approved in November. In December 2000, the preferred remedy (enhanced natural attenuation) was implemented at the landfill.

In 1989 an investigation was initiated by USACE for additional sites: the old Post Exchange (PX) facility (FTHE-26), a former UST site at Building 176 Directorate of Logistics (DOL) Troop Motor Pool (TMP) Facility, FTHE-19), the old petroleum, oil, and lubricant (POL) facility at Building 194, and a former UST site at the Miller Ranch Building T-624. The resulting report (JMM,1991) recommended further action necessary at the old POL facility at Building 194 (FTHE-28) and the former UST site at Building 176. In a letter from DTSC, dated Aug. 19, 1996, no further RA for soil was required for the old PX facility (FTHE-26). In June 1999 the CRWQCB required further investigation to delineate the extent of groundwater contamination.

In 1992 an RI/FS was initiated by the USACE, Sacramento District for the two fire drill pits (FTHE-03 and FTHE-24), the Building. 194-Old POL Facility (FTHE-28) and a petroleum release at Building. EXP 52/57 (FTHE-29). Additional investigations were performed at these sites, and in letters to FHL DTSC accepted recommendations for NFA at FTHE-03 (Sept. 16, 1998), FTHE-24 (June 10, 1998), and FTHE-29 (Dec. 16, 1997).

In 1993 the US Environmental Protection Agency (USEPA) conducted a preliminary review and visual site inspection (SI) for preparation of a RCRA facility assessment (RFA). The final RFA (SAIC, March 1994) identified 101 SWMUs and 21 as AOCs at FHL. One of the units identified was a former pesticide mixing area (FTHE-16). In 1995 FHL submitted a revised RCRA closure plan (drafted in 1990). In 1996 the RCRA closure plan was reduced to three sites and approved by DTSC. FHL has completed the cleanup activities at these three sites and received a final certification from the DTSC in October 1998.

Also in 1993, the USACE, Sacramento District began investigation of the ammunition crate burn area (FTHE-30), a former sewage treatment plant (FTHE-17) and former evaporation ponds at Miller Ranch (FTHE-39). In a letter to FHL dated June 22, 1998, the California Environmental Protection Agency (CAL EPA) DTSC accepted the recommendation for NFA at FTHE-30 and, in a letter dated Oct. 15, 1998, for FTHE-17.

In September 1995 FHL received an NOV from the CRWQCB for not submitting documents for a landfill cap and for lack of progress made on the existing fire drill burn pit (FTHE-03) RA and an enforcement order was received from the CAL EPA DTSC

IRP Contamination Assessment

Contamination Assessment Overview

Region 2 (permitting) for improper closure of the existing fire drill burn pit and the California data exchange center (CDEC) Site 8J (UST). The installation submitted the information requested and full compliance was achieved.

In December 1996 FHL received an NOV for not providing a schedule to achieve compliance with California Code of Regulations Title 23, Division 3, Chapter 15, Article 5 (Monitoring and response program requirements). The NOV required a schedule identifying specific steps for initiating and completing final landfill closure construction and a schedule for submitting a corrective action plan addressing groundwater contamination beneath Building 194. After FHL issued a response and a follow-up meeting was conducted a schedule was developed and agreed upon by all agencies involved.

The FHL Landfill No. 1 consists of 40 acres containing 14 unlined cells without leachate collection and removal systems. Mission Creek Road is northeast of the site and the San Antonio River lies to the southwest. From 1956 to June 1987 the landfill was operated as a nonhazardous disposal facility. Fill material probably includes residential refuse, commercial solid waste, and construction/demolition waste. On June 30, 1987 the site reached its solid waste capacity of approximately 367,000 cubic yards, and waste disposal operations ceased. The site was closed by capping as a class III landfill with an ongoing monitoring program per the state of California regulations. The closed landfill is regulated under state landfill closure requirements and Order No. R3-2004-0006 "General Waste Discharge Requirements for Post-Closure Maintenance of Closed, Abandoned, or Inactive Non hazardous Landfills Within the Central Coast Region," dated Feb. 6, 2004, issued by the CRWQCB Central Coast Region. Landfill Monitoring will continue as required under State Regulations to include sampling and analysis of groundwater and landfill gas monitoring. The closure plan also requires semiannual inspections and a settlement analysis every five years.

Former site FTHE-19 has been combined with FTHE-28 because the groundwater plumes from both sites are commingled. Site FTHE-28, located east of the former DOL motor pool, originally consisted of two USTs and one aboveground storage tank (AST). FTHE-19 was a waste oil UST. All tanks were removed by 2004. Sampling has detected benzene, toluene, ethylbenzene, and xylene (BTEX) in the soil and in the groundwater. Additional characterization work was initiated in FY09 to optimize understanding of the hydrogeologic environment at the site. In FY10, additional final characterization was completed to support the final remedial design. A remedial design has been developed and the RA is planned for FY11.

FTHE-01 - Landfill No. 1 began the LTM phase in 2002. Semiannual groundwater monitoring of 17 wells, methane monitoring, and annual inspections will continue as required under state landfill closure requirements until FY40.

The RA(O) at FTHE-28 started in 2002 and will continue until cleanup levels have been met in 2015. Quarterly groundwater sampling will continue as part of the remediation enhanced natural attenuation process at FTHE-28.

Cleanup Exit Strategy

Annual inspections of the cap at Landfill No. 1 (FTHE-01) plus groundwater and landfill gas monitoring will continue. Bioremediation with groundwater monitoring will continue at the Building 194 POL Facility (FTHE-28) through FY13 and groundwater monitoring will be conducted for three to five years in the LTM phase. Final characterization work has been completed and remedial action operation of the bioremediation system continues at Building 194.

IRP Previous Studies

1986	Title	Author	Date
	Quality Assurance/Quality Control Plan, Hydrogeologic Investigations, Fort Hunter Liggett, California, HLA Job No. 7579,120.02, Final	Harding Lawson Associates	NOV-1986
	Solid Waste Assessment Test Proposal, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,122.02, Final	Harding Lawson Associates	DEC-1986
1987			
	Safety, Health, and Emergency Response Plan (SHERP), Fort Hunter Liggett, California, HLA Job No. 7579,125.02, Final	Harding Lawson Associates	MAY-1987
	Grading Recommendations, Fort Hunter Liggett Sanitary Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,161.02 & 87-3161.02 Final	Harding Lawson Associates	JUN-1987
	Monitoring Plan, Solid Waste Air Quality Assessment Test, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,137.02 Final	Harding Lawson Associates	OCT-1987
1988			
	Solid Waste Assessment Test, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Volumes I and II, HLA Job No. 7579,135.02 Final	Harding Lawson Associates	JUN-1988
1989			
	Report of Waste Discharge - Closure and Postclosure Maintenance Plan, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 07579,286.02 Final	Harding Lawson Associates	OCT-1989
1990			
	Revised Part A Application, Fort Hunter Liggett Hazardous Waste Part A Permit Withdrawal, Fort Hunter Liggett, California, HLA Job No. 7579,316.02 Final	Harding Lawson Associates	JAN-1990
	Operating Record Procedures, Central Hazardous Waste Accumulation Facility, Fort Hunter Liggett, California, HLA Job No. 7579,317.02, Final	Harding Lawson Associates	FEB-1990
	Waste Analysis Plan, Central Hazardous Waste Accumulation Facility, Fort Hunter Liggett, California, HLA Job No. 7579,320.02 Final	Harding Lawson Associates	FEB-1990
	Closure and Postclosure Plan, Fort Hunter Liggett, California, HLA Job No. 7579,318.02, Final	Harding Lawson Associates	FEB-1990
	Subsurface Record, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,160.02 Final	Harding Lawson Associates	MAR-1990
	Quarterly Report - September 1989, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,282.02 Final	Harding Lawson Associates	MAY-1990
	Amended Report of Disposal Site Information, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,159.02	Harding Lawson Associates	MAY-1990
	Quarterly Report - June 1989, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,281.02	Harding Lawson Associates	MAY-1990
	First Quarterly Report - March 1988, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,221.02	Harding Lawson Associates	JUN-1990

IRP Previous Studies

1990	Title	Author	Date
	Second Quarterly Report - June 1988, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,222.02	Harding Lawson Associates	JUN-1990
	Work Plan, Fog Oil Study, Fort Hunter Liggett, California, HLA Job No. 7579,361.02	Harding Lawson Associates	AUG-1990
	Design Analysis - Phase II Vapor Recovery System, Spec No. 8903, File No. 198-25-245, Fort Hunter Liggett, California, HLA Job No. 7579,299.02	Harding Lawson Associates	SEP-1990
	EXP57 UST Waste Oil Spill Investigation Sampling Plan, Fort Hunter Liggett, California, Project/Task No. 10777/422, Old HLA Job No. 7579,081*,422.02	Harding Lawson Associates	OCT-1990
	Design Package, Landfill Closure, Specification No. 8682, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 07579,286.02	Harding Lawson Associates	NOV-1990
	Record of Decision, Landfill Closure, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,286.02	Harding Lawson Associates	DEC-1990
	Design Analysis, Fort Hunter Liggett Landfill Closure, Spec No. 8682, File No. 198-25-239, Fort Hunter Liggett, California, HLA Job No. 7579,287.02	Harding Lawson Associates	DEC-1990
1991			
	Quarterly Report - March 1989, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No.7579,280.02	Harding Lawson Associates	APR-1991
	Third Quarterly Report - September 1988, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,223.02	Harding Lawson Associates	APR-1991
	Fourth Quarterly Report - December 1988, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job No. 7579,224.02	Harding Lawson Associates	APR-1991
	Solid Waste Air Quality Assessment Test, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, HLA Job Nos. 7579,138.02, 7579,139.02,	Harding Lawson Associates	APR-1991
	EXP57 UST Waste Oil Spill Investigation, Fort Hunter Liggett, California, Project/Task No. 10777/422, Old HLA Job No. 7579,422.02	Harding Lawson Associates	JUL-1991
	Remedial Investigation/Feasibility Study Work Plan, Existing Fire Drill Burn Pit, Fort Hunter Liggett, California, Project/Task No. 10777/426, Old HLA Job No. 7579,426.02	Harding Lawson Associates	OCT-1991
	Toxic Air Emissions Inventory Plan, Fort Hunter Liggett, Fort Hunter Liggett, California, HLA Job No. 7579,303.02, Draft March 7, 1990	Harding Lawson Associates	OCT-1991
	Site Safety Plan Addendum to Fort Hunter Liggett SHERP, Remedial Investigation/Feasibility Study, Existing Fire Drill Burn Pit, Fort Hunter Liggett, California, Project/Task No. 10777/426, Old HLA Job No. 7579,426.02	Harding Lawson Associates	OCT-1991
	Quality Assurance/Quality Control Plan, Site-specific Amendment for Existing Fire Drill Burn Pit, Fort Hunter Liggett, California, Project/Task No. 10777/426, Old HLA Job No. 7579,426.02	Harding Lawson Associates	OCT-1991
	Criteria Air Emissions Inventory Plan, Fort Hunter Liggett, California, HLA Job No. 7579,307.02	Harding Lawson Associates	DEC-1991

IRP Previous Studies

1992	Title	Author	Date
	Toxics Air Emissions Inventory Report, Fort Hunter Liggett, Monterey County, California, Project/Task No.10774/308, Old HLA Job No. 7579,308.02	Harding Lawson Associates	JUN-1992
	Report of Waste Discharge, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 10777/820	Harding Lawson Associates	SEP-1992
	Site Safety Plan, Addendum to Fort Hunter Liggett Groundwater Well Destruction Investigation, Fort Hunter Liggett, California, Project/Task No. 10777/826	Harding Lawson Associates	NOV-1992
1993			
	Work Plan Summary, Site Characterizations, Fort Hunter Liggett, California, Project/Task No. 22167/130	Harding Lawson Associates	JAN-1993
	Literature Review and Site Reconnaissance Solid Waste Management Units, Fort Hunter Liggett, California, Project /Task No. 22167/303	Harding Lawson Associates	FEB-1993
	Safety, Health, and Emergency Response Plan (SHERP), Fort Hunter Liggett, California, Project/Task No. 22167/130	Harding Lawson Associates	JUN-1993
	Work Plan, Investigation of Eight Sites, Fort Hunter Liggett, California, Project/Task No. 22167/130	Harding Lawson Associates	JUN-1993
	Waste Management Plan, Investigation-Derived Waste, Fort Hunter Liggett, California, Project/Task No. 22167/110	Harding Lawson Associates	JUL-1993
	Work Plan, Investigation of Eight Sites, Fort Hunter Liggett, California, Project/Task No. 22167/130	Harding Lawson Associates	JUL-1993
	Safety, Health, and Emergency Response Plan (SHERP), Fort Hunter Liggett, California, Project/Task No. 22167/130	Harding Lawson Associates	JUL-1993
	Quarterly Report, Third Quarter 1993, Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/00671	Harding Lawson Associates	JUL-1993
	Work Plan Amendment, Fort Hunter Liggett, California, Project/Task No. 23367/0101	Harding Lawson Associates	AUG-1993
	Work Plan Summary, Building 2253, 4362, and 4534 at Fort Ord and Building 258 at Fort Hunter Liggett, California, Project/Task No. 23367/00312	Harding Lawson Associates	SEP-1993
	Proposed Alternative Landfill Closure Design, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367 00511	Harding Lawson Associates	SEP-1993
	Addendum to the Safety, Health, and Emergency Response Plan (SHERP), Building 290 Acid Neutralization Pit, Fort Hunter Liggett, California, Project/Task No. 22167/120,	Harding Lawson Associates	OCT-1993
	Quarterly Report, September 1993, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00671	Harding Lawson Associates	OCT-1993
	Revision 1, Quality Assurance Project Plan, Fort Hunter Liggett and Non-NPL Sites at Fort Ord, California, Project/Task No. 22167/110	Harding Lawson Associates	NOV-1993
	Amendment to the Safety, Health, and Emergency Response Plan (SHERP), Fort Hunter Liggett, Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00613	Harding Lawson Associates	NOV-1993

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1993	Title	Author	Date
	Quarterly Report, Third Quarter 1994, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/02171	Harding Lawson Associates	NOV-1993
	Addendum to the Quality Assurance Project Plan, FHL and Non-NPL Site at Fort Ord, California, Project/Task No. 22167/110	Harding Lawson Associates	NOV-1993
1994	Quarterly Report, Fourth Quarter 1993, Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/00671	Harding Lawson Associates	JAN-1994
	Quarterly Report, Fourth Quarter 1993, Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/00671	Harding Lawson Associates	JAN-1994
	Aquifer Testing Results and Dewatering Approach, Pilot Treatability Studies, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	APR-1994
	Quarterly Report, First Quarter 1994, Water Quality Management Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00671	Harding Lawson Associates	MAY-1994
	Work Plan, Pilot Treatability Studies, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	MAY-1994
	Quarterly Report, First Quarter 1994, Water Quality Management Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00671	Harding Lawson Associates	MAY-1994
	Addendum, Analytical Reports, USEPA Test Methods 8010 and 8020, Project/Task No. 23367/00671	Harding Lawson Associates	MAY-1994
	Addendum, Analytical Reports, USEPA Test Methods 8010 and 8020, Project/Task No. 23367/00671	Harding Lawson Associates	MAY-1994
	Technical Memorandum PTS-1, Pilot Treatability Studies, Aquifer Testing Results and Dewater Approach (Revised), EXP 52/57, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	JUN-1994
	Application for Authority to Construct and Operate Low Temperature Thermal Desorption Soil Treatment Unit, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	JUN-1994
	Technical Memorandum PTS-2, Pilot Treatability Studies, Excavation Limits and Soil Stockpile Areas, Abandoned Fire Drill Burn Pit and Building 290 Areas, Fort Hunter Liggett, California, Project/Task No. 23367/00751	Harding Lawson Associates	JUN-1994
	Technical Memorandum PTS-3, Pilot Treatability Studies, Health and Safety Procedures (Revised), Building EXP 52/57, Existing Fire Drill Burn Pit, Fort Hunter Liggett, California, Project/Task No. 23367/00791	Harding Lawson Associates	JUL-1994
	Environmental Assessment, Groundwater Well Destruction, Fort Ord, Fritzsche Army Airfield, and Fort Hunter Liggett, California, Project/Task No. 23367/00572	Harding Lawson Associates	JUL-1994
	Technical Memorandum PTS-5, Pilot Treatability Studies, Excavation Limits, Soil Stockpile Areas and Pilot Treatability Study Unit Locations, Existing Fire Drill	Harding Lawson Associates	AUG-1994

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Title	Author	Date
Burn Pit (EBP), Fort Hunter Liggett, California, Project/Task No. 23367/00752		
Technical Memorandum PTS-6, Pilot Treatability Studies, Excavation Limits and Soil Stockpile Areas, Abandoned Fire Drill Burn Pit and Building 290 Areas, Fort Hunter Liggett, California, Project/Task No. 23367/00752	Harding Lawson Associates	AUG-1994
Technical Memorandum PTS-7, Pilot Treatability Studies, Low Temperature Thermal Desorption, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	AUG-1994
Technical Memorandum PTS-4, Pilot Treatability Studies, Ex Situ Bioremediation Plan, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	AUG-1994
Closure & Postclosure Maintenance Plan, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00574	Harding Lawson Associates	SEP-1994
Technical Memorandum PTS-8, Pilot Treatability Studies, Asphalt Stabilization, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	SEP-1994
Closure & Post closure Maintenance Plan, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00574	Harding Lawson Associates	SEP-1994
Borehole Geophysical Logging Survey, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/02141	Harding Lawson Associates	OCT-1994
Addendum to the Safety, Health, and Emergency Response Plan (SHERP), Pilot Treatability Studies, Fort Hunter Liggett, California, Project/Task No. 23367/00716	Harding Lawson Associates	OCT-1994
Fort Hunter Liggett OSHA Audit, Status Report, Fort Hunter Liggett, California, Project/Task No. 23367/00791	Harding Lawson Associates	OCT-1994
Borehole Geophysical Logging Survey, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/02141	Harding Lawson Associates	OCT-1994
Draft Annual Report, Second, Third and Fourth Quarters 1993 and First Quarter 1994, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00672	Harding Lawson Associates	OCT-1994
Quarterly Report, Third Quarter 1994, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/02171	Harding Lawson Associates	NOV-1994
Sensitive Biological Resource Study, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00571	Harding Lawson Associates	NOV-1994
Flood Study, Fort Hunter Liggett Landfill Closure, Fort Hunter Liggett, California, Project/Task No. 23367/00571	Harding Lawson Associates	NOV-1994
Pre-Design Analysis, Fort Hunter Liggett Landfill Closure, Fort Hunter Liggett, California, Project/Task No. 23367/00573	Harding Lawson Associates	DEC-1994

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1994	Title	Author	Date
	Work Plan, Groundwater Investigation, Building 219, Fort Hunter Liggett, California, Project/Task No. 23367/03113	Harding Lawson Associates	DEC-1994
	Evaluation of Investigation-Derived Waste, June 1993 - January 1994, Fort Hunter Liggett, California, Project/Task No. 22167 740	Harding Lawson Associates	DEC-1994
1995			
	Technical Memorandum PTS-9, Pilot Treatability Studies, In Situ Soil Vapor Extraction, Former PX Facility, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	JAN-1995
	Amendment to the Quality Assurance Project Plan, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/00613	Harding Lawson Associates	JAN-1995
	Letter Report, Concrete Slab Repair, Building EXP 52/57, Fort Hunter Liggett, California, Project/Task No. 23367/00755	Harding Lawson Associates	MAR-1995
	Soil and Groundwater Investigation, Bldg EXP 57, Fort Hunter Liggett, California, Project/Task No. 10777/435, Old HLA Job No. 7579,435.02	Harding Lawson Associates	MAR-1995
	Revised Closure Plan, Five Hazardous Waste Management Units, Fort Hunter Liggett, California, Project/Task No. 23367/01771	Harding Lawson Associates	MAR-1995
	Investigation of Eight Sites, Fort Hunter Liggett, California, Project/Task No. 22167/281	Harding Lawson Associates	MAR-1995
	Criteria Air Emissions Inventory Report, Fort Hunter Liggett, Monterey County, California, Project/Task No. 10774/306, Old HLA Job No. 7579,306.02	Harding Lawson Associates	APR-1995
	Remedial Investigation, Existing Fire Drill Burn Pit, Fort Hunter Liggett, California, Volumes I and II, Volume III, Baseline and Ecological Risk Assessment, Project/Task No. 10777/433, Old HLA Job No. 7579,433.02	Harding Lawson Associates	APR-1995
	Letter Report, First Quarter 1995 Report, Basewide Drinking Water Quality Monitoring, Fort Hunter Liggett, California, Project/Task No. 23367/01873	Harding Lawson Associates	APR-1995
	Environmental Assessment, Landfill Closure, Fort Hunter Liggett, Fort Hunter Liggett, California, HLA Job No. 7579,326.02	Harding Lawson Associates	APR-1995
	Technical Memorandum SC-2, Pre-Design Evaluation, Hydropunch Sampling Results, Former PX Facility, Fort Hunter Liggett, California, Project/Task No. 23367/00771	Harding Lawson Associates	APR-1995
	Technical Memorandum SC-1, Additional Site Characterization Subsurface Soil Sampling for CDDs/CDFs at Abandoned Fire Drill Burn Pit to Evaluate LTTD Treatability, Fort Hunter Liggett, California, Project/Task No. 23367/01071	Harding Lawson Associates	APR-1995
	Periodic Site Review, Fort Hunter Liggett Sanitary Landfill, Fort Hunter Liggett, California, HLA Job No.7579,161.02	Harding Lawson Associates	APR-1995
	Quarterly Report, First Quarter 1995, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01871	Harding Lawson Associates	APR-1995
	Quarterly Report, First Quarter 1995, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort	Harding Lawson Associates	MAY-1995

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Title	Author	Date
Hunter Liggett, California, Project/Task No. 23367/02171		
Second Quarter 1995 Report, Basewide Drinking Water Quality Monitoring, Fort Hunter Liggett, California, Project/Task No. 23367/01873	Harding Lawson Associates	JUL-1995
Quarterly Report, Second Quarter 1995, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01871	Harding Lawson Associates	JUL-1995
Sampling and Analysis Plan, Pilot Treatability Studies, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	JUL-1995
Amendment to the QAPP and Field Procedures Manual, Pilot Treatability Studies, Fort Hunter Liggett, California, Project/Task No. 23367/00715	Harding Lawson Associates	JUL-1995
Quarterly Report, Second Quarter 1995, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/02171	Harding Lawson Associates	JUL-1995
Letter Report, Status of Hydrogen Sulfide and Free Floating Product Removal Projects, Groundwater Well Destruction Investigations, Fort Hunter Liggett, California, Project/Task No. 10777/826	Harding Lawson Associates	AUG-1995
Letter Report, Electromagnetic Well Location Survey Report, Groundwater Well Destruction Investigation, Fort Hunter Liggett, California, Project/Task No. 10777/826,	Harding Lawson Associates	AUG-1995
Letter Report, Pot-Holing Well Location Survey Report, Groundwater Well Destruction Investigation, Fort Hunter Liggett, California, Project/Task No. 10777/826	Harding Lawson Associates	AUG-1995
FHL Quality Assurance Program, Fort Hunter Liggett, California, Project/Task No. 23367/00791	Harding Lawson Associates	AUG-1995
Letter Report, Pump and Pumphouse Removal Report, Groundwater Well Destruction Investigation, Fort Ord and Fort Hunter Liggett, California, Project/Task No. 10777/826,	Harding Lawson Associates	AUG-1995
Work Plan, Remedial Investigation, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/03314, 03315, 03316	Harding Lawson Associates	SEP-1995
Work Plan, Additional Characterization Ammunition Crate Burn Area and Existing Fire Drill Burn Pit, Fort Hunter Liggett, California, Project/Task No. 23367/03013,03014,03015	Harding Lawson Associates	OCT-1995
Letter Report: Evaluation of Investigation-Derived Waste, HLA Storage Yard, Fort Hunter Liggett, California, Project/Task No. 23367/02121	Harding Lawson Associates	OCT-1995
Third Quarter 1995 Report, Basewide Drinking Water Quality Monitoring, Fort Hunter Liggett, California, Project/Task No. 23367/01873	Harding Lawson Associates	OCT-1995
Underground Waste Oil Tank Investigation - Site 8J, Addendum to Investigation of Eight Sites, Fort Hunter Liggett, California, Project/Task No. 23367/01071	Harding Lawson Associates	NOV-1995
Work Plan, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01813	Harding Lawson Associates	NOV-1995

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1995	Title	Author	Date
	Technical Memorandum PTS-10, Pilot Treatability Studies, Fort Hunter Liggett, California, Project/Task No. 23367/00772	Harding Lawson Associates	NOV-1995
	Letter, Recommendations for Disposal of Investigation-Derived Waste Soil Bins at Building EXP 52/57, Fort Hunter Liggett, California, Project/Task No. 30430/00491	Harding Lawson Associates	DEC-1995
	Quarterly Report, Third Quarter 1995, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01871	Harding Lawson Associates	DEC-1995
1996	Quarterly Report, Third Quarter 1995, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 33250/00171	Harding Lawson Associates	JAN-1996
	Letter Progress Report, Groundwater Investigation, Building 219, Fort Hunter Liggett, California, Project/Task No. 23367/03113	Harding Lawson Associates	FEB-1996
	Letter, Soil Sample Re-Collection Results, Excavation Confirmation, Bldg EXP 52/57, Pilot Treatability Studies, Fort Hunter Liggett, California, Project/Task No. 23367/00714	Harding Lawson Associates	FEB-1996
	Letter, Final Report Disposal of Investigation-Derived Waste, Site 8J and DEH Yard, Fort Hunter Liggett, California, Project/Task No. 23367/01071	Harding Lawson Associates	FEB-1996
	Quarterly Report, Fourth Quarter 1995, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01871,	Harding Lawson Associates	MAR-1996
	Letter, Data Transmittal, Water Quality Monitoring Program, Fourth Quarter 1995, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 33250/00173,	Harding Lawson Associates	MAR-1996
	Letter Report, Fourth Quarter 1995 Report, Basewide Drinking Water Quality Monitoring, Fort Hunter Liggett, California, Project/Task No. 23367/01873,	Harding Lawson Associates	MAR-1996
	Technical Memorandum SC-3, Additional Site Characterization, Geophysical Survey Results and Supplemental Work Plan, Fort Hunter Liggett, California, Project/Task No. 23367/03071	Harding Lawson Associates	MAY-1996
	Annual Report, Second and Third Quarters 1994 and First and Second Quarters 1995, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/02172	Harding Lawson Associates	MAY-1996
	Specification 8682, Landfill Closure Construction, Fort Hunter Liggett Landfill, Project/Task No. 23367/00591	US Army Corps of Engineers	MAY-1996
	Quarterly Report, Fourth Quarter 1995, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 33250/00171	Harding Lawson Associates	JUN-1996
	Data Transmittal, Monitoring Well Installation, Remedial Investigation, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/03331	Harding Lawson Associates	JUN-1996
	Data Transmittal, Water Quality Monitoring Program, Second Quarter 1996, Fort Hunter Liggett Landfill, Fort	Harding Lawson Associates	JUN-1996

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1996

Title	Author	Date
Hunter Liggett, California, Project/Task No. 33250/00271		
Letter Report, Closure Report, Soil Vapor Extraction Pilot Treatability Study, Old PX Facility, Fort Hunter Liggett, California, Project/Task No. 23367/00754	Harding Lawson Associates	JUN-1996
Letter Report, Preliminary Field Report, Trenching Investigation, Existing Fire Drill Burn Pit, Fort Hunter Liggett, California, Project/Task No. 23367/03071	Harding Lawson Associates	JUN-1996
First Quarter 1996 Report, Basewide Drinking Water Quality, Fort Hunter Liggett, California, Project/Task No. 23367/01873	Harding Lawson Associates	JUL-1996
Quarterly Report, First Quarter 1996 Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01873	Harding Lawson Associates	JUL-1996
Letter Report, Addendum to the Final Closure and Post Closure Maintenance Plan, Final (100%) FHL Landfill Closure Design, Fort Hunter Liggett, California, Project/Task No. 23367/00553	Harding Lawson Associates	JUL-1996
Letter Report: Groundwater Data Evaluations and Draft Work Plan for Proposed Additional Groundwater Investigations, Project/Task No. 23367/00713	Harding Lawson Associates	AUG-1996
Second Quarter 1996 Report, Basewide Drinking Water Quality Monitoring, Fort Hunter Liggett, California, Project/Task No. 23367/01873	Harding Lawson Associates	SEP-1996
Quarterly Report, Second Quarter 1996, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 33250/00271	Harding Lawson Associates	OCT-1996
Quarterly Report, Second Quarter 1996, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01871	Harding Lawson Associates	OCT-1996
Work Plan, RCRA Facility Investigation, SWMU 51, Fort Hunter Liggett, California, Project/Task No. 23367/036152	Harding Lawson Associates	OCT-1996
Quarterly Report, Third Quarter 1996, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 33250/00271	Harding Lawson Associates	DEC-1996
Quarterly Report, Third Quarter 1996, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01871	Harding Lawson Associates	DEC-1996

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Letter Report, Updated Basewide Recommendations, Fort Hunter Liggett, Fort Hunter Liggett, California, Project/Task No. 23367/01872	Harding Lawson Associates	FEB-1997
Letter Report, Disposition of Investigation-Derived Waste, Remedial Investigation, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/03373	Harding Lawson Associates	FEB-1997
Work Plan and Sampling and Analysis Plan, Evaluation Monitoring Program, Revised Report of Waste Discharge, Project/Task No. 36101/06070101	Harding Lawson Associates	FEB-1997
Letter Report, Survey for Asbestos-Containing Material, Mobile Trailer Units 83960-2R72 and 840185-2R72, Fort Hunter Liggett, California, Project/Task No.	Harding Lawson Associates	MAR-1997

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Title	Author	Date
36101/100202		
Quarterly Report, Fourth Quarter 1996, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01871	Harding Lawson Associates	MAR-1997
Update of RCRA Facility Assessment (RFA), Solid Waste Management Unit (SWMU) Status, and Recommendations for Inclusion in the RCRA Facility Investigation, Fort Hunter Liggett, Project/Task No. 36101/10070101	Harding Lawson Associates	MAR-1997
1995 Annual Report, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 23367/01872	Harding Lawson Associates	MAR-1997
Fourth Quarter 1996 Report, Basewide Drinking Water Quality Monitoring, Fort Hunter Liggett, California, Project/Task No. 23367/01873	Harding Lawson Associates	MAR-1997
Letter Report, Soil Stockpile Work Plan, Building 194, Fort Hunter Liggett, California, Project/Task No. 36101/070201	Harding Lawson Associates	APR-1997
Letter Report, Work Plan Amendments to Closure Plan, Soil Sampling Along Influent Line to Former Battery Acid Neutralization Pit, Building 290, Fort Hunter Liggett, California, Project/Task No. 36101/040702	Harding Lawson Associates	APR-1997
Letter Report, Relocation of Contaminated Soil Stockpiles, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/01090101	Harding Lawson Associates	APR-1997
Letter Report, Soil Stockpile Investigation, Building 194, Fort Hunter Liggett, California, Project/Task No. 36101/070201	Harding Lawson Associates	MAY-1997
Letter Report, Soil Sampling Work Plan, Building 194 Excavation, Fort Hunter Liggett, California, Project/Task No. 36101/070202	Harding Lawson Associates	MAY-1997
Phase 1 Remedial Investigation and Evaluation Monitoring Program Work Plan, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 23367/03316	Harding Lawson Associates	JUN-1997
Letter Report, Recommendations for Disposal of Soil Cuttings, Evaluation Monitoring Program, Fort Hunter Liggett Landfill, Project/Task No. 36101/060401	Harding Lawson Associates	JUN-1997
Technical Memorandum SC-4, Additional Site Characterization, Trenching Investigation Results and Work Plan Addendum for Additional Investigation at the Existing Fire Drill Burn and Ammunition Crate Burn Area, Fort Hunter Liggett, California, Contract DACA05 86-C-0244, Project/Task No. 23367/03071	Harding Lawson Associates	JUN-1997
Quarterly Report, First Quarter 1997, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 35626/00272	Harding Lawson Associates	JUN-1997
Letter Report, Final Work Plan, Additional Groundwater Investigations, Building 290 Area and Building EXP 52/57, Pre-Design Evaluation, Fort Hunter Liggett, California, Project/Task No. 23367/00713	Harding Lawson Associates	JUN-1997
Letter Report, Soil Sampling Along Influent Line to Former Battery Acid Neutralization Pit, Building 290, Fort Hunter Liggett, California, Project/Task No.	Harding Lawson Associates	JUL-1997

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Title	Author	Date
36101/040702		
1996 Annual Report, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 36101/200701	Harding Lawson Associates	JUL-1997
Letter Report, Leachfield Design Analysis, Millers Ranch Area, Fort Hunter Liggett, California, Project/Task No. 36101/140501	Harding Lawson Associates	JUL-1997
Work Plan/Sampling and Analysis Plan, Pesticide Mixing Area, Fort Hunter Liggett, California, Project/Task No. 36101/09070101	Harding Lawson Associates	JUL-1997
1996 Annual Report, Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 33250/00272	Harding Lawson Associates	AUG-1997
RCRA Closure Certification Report, Building 290 and TEC Site 8J, Fort Hunter Liggett, California, Project/Task No. 36101/04070101	Harding Lawson Associates	AUG-1997
RCRA Closure Certification Report, Building 290 and TEC Site 8J, Fort Hunter Liggett, California, Project/Task No. 36101/13070101	Harding Lawson Associates	AUG-1997
Quarterly Report, Second Quarter 1997, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/200703	Harding Lawson Associates	AUG-1997
Quarterly Report, First and Second Quarter 1997, Basewide Water Quality Monitoring Program, Volume V and VI, Fort Hunter Liggett, California, Project/Task No. 36101/200702	Harding Lawson Associates	SEP-1997
Drum Removal Work Plan and Sampling and Analysis Plan, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Contract DACA05-96-D-0007, Delivery Order 0025-2, Project/Task No. 39162/00114,	Harding Lawson Associates	OCT-1997
Work Plan, Surface Soil Sampling and Analysis Plan, Abandoned Fire Drill Burn Pit, Fort Hunter Liggett, California, Contract No. DACA31-94-D-0069, Project/Task No. 36101/110701	Harding Lawson Associates	OCT-1997
Quarterly Report, Third Quarter 1997, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/200703	Harding Lawson Associates	OCT-1997
Evaluation Monitoring Program, Phase 2 Remedial Investigation, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/060703	Harding Lawson Associates	OCT-1997

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Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/200703	Harding Lawson Associates	JAN-1998
Quarterly Report, Fourth Quarter 1997, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California; Volume V, and Volume VI, Project/Task No. 36101/200702	Harding Lawson Associates	FEB-1998
Corrective Action Plan, Building 194 Site, Fort Hunter Liggett, California, Project/Task No. 36101/070701	Harding Lawson Associates	APR-1998
Quarterly Report, Fourth Quarter 1997, Water Quality Monitoring Program, Fort Hunter Liggett Quarterly Report, First Quarter 1998, Water Quality Monitoring	Harding Lawson Associates	JUN-1998

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1998	Title	Author	Date
	Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/200703,		
	Quarterly Report, First Quarter 1998, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 36101/200702	Harding Lawson Associates	JUN-1998
	Site-specific Health and Safety Plan, RCRA Facility Investigation, AOC.5.22, Miller Ranch Area, Fort Hunter Liggett, California, Project/Task No. 36101/140201	Harding Lawson Associates	JUN-1998
	Technical Memorandum of Site Investigation, SWMU 51 (Former Sewage Treatment Plan No. 1), Fort Hunter Liggett, California, Project/Task 23367/03671	Harding Lawson Associates	JUL-1998
	Quarterly Report, Second Quarter 1998, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Volume VII, Project/Task No. 36101/200702	Harding Lawson Associates	JUL-1998
	Quarterly Report, Second Quarter 1998, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/200703	Harding Lawson Associates	JUL-1998
	Annual Report, First Through Fourth Quarters 1997, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California, Project/Task No. 36101/200703	Harding Lawson Associates	JUL-1998
	1997 Annual Report, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Project/Task No. 36101/200701	Harding Lawson Associates	JUL-1998
	Technical Memorandum of Site Investigation, Pesticide Mixing Area, Fort Hunter Liggett, California, Project/Task No. 36101/090702	Harding Lawson Associates	AUG-1998
	Request for No Further Action, Various Sites, Fort Hunter Liggett, California, Project/Task No. 36101/160702	Harding Lawson Associates	AUG-1998
	Technical Memorandum No. 2 of Site Investigation and Soil Removal Action Work Plan for Pesticide Mixing Area, Fort Hunter Liggett, California, Project/Task No. 36101/090703	Harding Lawson Associates	NOV-1998
1999	Quarterly Report, Fourth Quarter 1998, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California, Volume VII	Harding Lawson Associates	JAN-1999
	Quarterly Report, Fourth Quarter 1998, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-1999
	Draft Annual Report, First through Fourth Quarters 1998, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	MAR-1999
	Preliminary Draft Feasibility Study, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	MAR-1999
	Draft 1998 Annual Report, Basewide Water Quality Monitoring Program, Fort Hunter Liggett, California	Harding Lawson Associates	MAR-1999
	Revised ORC Pilot Study, Building 194 Site, Fort Hunter Liggett, California	Harding Lawson Associates	MAR-1999
	Draft Feasibility Study, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	APR-1999
	Quarterly Report, First Quarter 1999, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett	Harding Lawson Associates	APR-1999

IRP Previous Studies

1999

Title	Author	Date
Landfill, Fort Hunter Liggett, California		
Quarterly Report, First Quarter 1999, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	APR-1999
Extension Letter, Building 194 Stockpile Management and Groundwater Investigation, Task Order 0021, Fort Hunter Liggett, California	Harding Lawson Associates	JUN-1999
Extension Letter, Site 8J Well Decommissioning and Report, Fort Hunter Liggett, California	Harding Lawson Associates	JUN-1999
DWR 188 Forms for Fort Hunter Liggett Landfill Well Abandonment	Harding Lawson Associates	JUL-1999
Laboratory Kickoff Meeting, Groundwater Monitoring Projects, Fort Hunter Liggett	Harding Lawson Associates	JUL-1999
Technical Memorandum, Destruction Record, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	JUL-1999
Quarterly Report, Second Quarter 1999, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	JUL-1999
Quarterly Report, Second Quarter 1999, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	JUL-1999
Draft Remedial Investigation/Feasibility Study, Existing Fire Drill Burn Pit, Abandoned Fire Drill Burn Pit, Site 8J, Building 290 Area Exp 52/57, Former PX Facility, Fort Hunter Liggett	Harding Lawson Associates	OCT-1999

2000

Work Plan ORC Pilot Study, Building 194 Site, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-2000
Quarterly Report, Fourth Quarter 1999, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-2000
Quarterly Report, Fourth Quarter 1999, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-2000
Remedial Investigation/Feasibility Study, Existing Fire Drill Burn Pit Site 8J Building 290 Area-EXP 52/57-Former PX Facility, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-2000
Work Plan, Groundwater Investigation, Building 194 Site, Fort Hunter Liggett, California	Harding Lawson Associates	MAR-2000
Letter of Request to Discharge Purge Water, Mr. Gary Houston, Fort Hunter Liggett, California	Gary Houston	APR-2000
Letter of Transmittal of Comprehensive Certificates of Analysis, Fort Hunter Liggett Landfill Groundwater Monitoring Project	Harding Lawson Associates	APR-2000
First Quarter 2000 Basewide Water Quality Monitoring Program, Building 194 Area, Fort Hunter Liggett, California	Harding Lawson Associates	APR-2000
First Quarter 2000 Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	APR-2000
Draft 1999 Annual Report for Building 194 (Basewide), Fort Hunter Liggett, California	Harding Lawson Associates	APR-2000
Cost Proposal, Landfill Closure Activities and Investigations, Fort Hunter Liggett, California	Harding Lawson Associates	JUN-2000

IRP Previous Studies

2000	Title	Author	Date
	Draft Technical Memorandum, Groundwater Investigations, Former USTs at Buildings 313, 176, and 258, Fort Hunter Liggett, California	Harding Lawson Associates	JUN-2000
	Fort Hunter Liggett Groundwater Monitoring 3rd Quarter 2000, Laboratory Kick off Meeting	Harding Lawson Associates	JUL-2000
	Pilot Study Addendum, Building 194 Site, Fort Hunter Liggett, California	Harding Lawson Associates	JUL-2000
	Final Technical Memorandum, Groundwater Investigations, Former USTs at Buildings 313, 176, and 258, Fort Hunter Liggett, California	Harding Lawson Associates	OCT-2000
	Work Plan, HRC Barrier Installation, FHL Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	OCT-2000
	Quarterly Report, Third Quarter 200, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	OCT-2000
	Quarterly Report, Fourth Quarter 1999, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	OCT-2000
	FHL Groundwater Monitoring 4th Quarter 2000 Laboratory Kick-off Meeting, Fort Hunter Liggett, California	Harding Lawson Associates	NOV-2000
2001	Quarterly Report, Fourth Quarter 2000, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-2001
	Well Destruction Plan, 35 Wells at Nine Sites, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-2001
	Quarterly Report, Fourth Quarter 2000, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, California	Harding Lawson Associates	JAN-2001
	Quarterly Report, First Quarter 2001, Building 194 Area, Fort Hunter Liggett, California	Harding Lawson Associates	APR-2001
	Quarterly Report, First Quarter 2001, Fort Hunter Liggett Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	APR-2001
	Well Abandonment at Nine Sites, Fort Hunter Liggett, California,	Harding Lawson Associates	MAY-2001
	FHL Groundwater Monitoring Third Quarter 2001, Laboratory Kick-off Meeting, Fort Hunter Liggett, California	Harding Lawson Associates	JUL-2001
	Quarterly Report, Second Quarter 2001, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, California	Harding Lawson Associates	AUG-2001
	Quarterly Report, Second Quarter 2001, FHL Landfill, Fort Hunter Liggett, California	Harding Lawson Associates	AUG-2001
2002	Final Feasibility Study, Abandoned Fire Drill Burn Pit, Pesticide Mixing Area	Harding ESE/MACTEC	MAY-2002
2003	Final Preliminary Assessment/Site Inspection, Solid Waste Management Units and Areas of Concern, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	AUG-2003
	Quarterly Report, Third Quarter 2003, Building 194 Area, Hydrogen Peroxide Pilot Study, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	NOV-2003
2004			

IRP Previous Studies

Year	Title	Author	Date
2004	Semiannual Report, April through September 2003, Water Quality Monitoring Program, Fort Hunter Liggett Landfill.	MACTEC Engineering and Consulting, Inc.	FEB-2004
	Semiannual Report, July 1 2003 through December 31, 2003, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	MAR-2004
	Quarterly Report, First Quarter 2004, Building 194 Area, Hydrogen Peroxide Pilot Study, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	MAY-2004
	Semiannual Report, January 1 through June 30, 2004, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, CA	MACTEC Engineering and Consulting, Inc.	AUG-2004
2005	Semiannual Report, July 1 2004 through December 31, 2004, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	FEB-2005
	Semiannual Report, July 1, through December 31, 2004, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, CA	MACTEC Engineering and Consulting, Inc.	FEB-2005
	Quarterly Report, First Quarter 2005, Building 194 Area, Hydrogen Peroxide Pilot Study, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	MAY-2005
	Semiannual Report, January 1 through June 30, 2005, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	SEP-2005
	Semiannual Report, January 1 through June 30, 2005, Water Quality Monitoring Program, Fort Hunter Liggett Landfill.	MACTEC Engineering and Consulting, Inc.	SEP-2005
	Quarterly Report, Third Quarter 2005, Building 194 Area, Hydrogen Peroxide Pilot Study, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	JAN-2006
2006	Semiannual Report, July 1 2004 through December 31, 2005, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	FEB-2006
	Semiannual Report, July 1, 2005 through December 31, 2005, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, CA	MACTEC Engineering and Consulting, Inc.	FEB-2006
	Semiannual Report, January 1 through June 30, 2006, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	SEP-2006
	Semiannual Report, January 1 through June 30, 2006, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, CA	MACTEC Engineering and Consulting, Inc.	SEP-2006
	Quarterly Report, Third Quarter 2005, Building 194 Area, Hydrogen Peroxide Pilot Study, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	JAN-2006
	Quarterly Report, Fourth Quarter 2005, Building 194 Area, Hydrogen Peroxide Pilot Study, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	DEC-2005
2007	Semiannual Report, July 1, 2006 through January 5, 2007, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, CA	MACTEC Engineering and Consulting, Inc.	MAR-2007
2009	Semiannual Report, July 1 through December 31, 2008, Building 194 Area, Water Quality Monitoring Program, Fort Hunter Liggett, CA	MACTEC Engineering and Consulting, Inc.	FEB-2009
	Semiannual Report, July 1, through December 31, 2008, Water Quality Monitoring Fort Hunter Liggett Landfill-Volume 2	MACTEC Engineering and Consulting, Inc.	FEB-2009

IRP Previous Studies

	Title	Author	Date
2009	Semiannual Report, January 1 through July 1, 2009, Water Quality Monitoring Program, Fort Hunter Liggett Landfill, CA	MACTEC Engineering and Consulting, Inc.	OCT-2009
	Volume 2, Semi-Annual Report, January 1 through June 30, 2009, Water Quality Monitoring Program, Fort Hunter Liggett Landfill	MACTEC Engineering and Consulting, Inc.	OCT-2009
2010	Semiannual Landfill Performance Inspection Report Fort Hunter Liggett Landfill	Sacramento USACE	FEB-2010
	Fort Hunter Liggett Landfill-Post Closure Monitoring Final-2010 Semiannual Report	Ahtna Engineering	NOV-2010
	Fort Hunter Liggett Building 194 Final-Fourth Quarter 2009 through Third Quarter 2010 Annual Report	Ahtna Engineering	DEC-2010
2011	Final Vapor Intrusion Study (Area of Buildings 194 and 258)	Sacramento USACE	FEB-2011
	Final Site Characterization Report, Building 194 Area, Fort Hunter Liggett, California, April 22, 2011	Mactec E&I	APR-2011
	Final Remedial Design, Building 194 Area, Fort Hunter Liggett, California, April 22, 2011	Mactec E&I	APR-2011
	Final Building 258 Site Investigation, Technical Memorandum, Fort Hunter Liggett, California, July 14, 2011	Mactec E&I	JUL-2011
2012	Final Building 258 Area, Site Characterization Report, Fort Hunter Liggett, California, February 29, 2012	Mactec E&I	FEB-2012

FORT HUNTER LIGGETT
Installation Restoration Program
Site Descriptions

Site ID: FTHE-01
Site Name: LANDFILL #1

STATUS

Regulatory Driver: CWA

RRSE: HIGH

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

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	198312.....	198612
SI.....	198312.....	198612
RI/FS.....	199012.....	200206
IRA.....	199906.....	200208
RA(C).....	200111.....	200208
LTM.....	200209.....	204209

RIP Date: N/A

RC Date: 200208

SITE DESCRIPTION

The FHL Landfill No. 1 consists of 40 acres containing 14 unlined cells without leachate collection and removal systems. Mission Creek Road is northeast of the site and the San Antonio River lies to the southwest. From 1956 to June 1987, the landfill was operated as a nonhazardous disposal facility. Fill material probably includes residential refuse, commercial solid waste, and construction/demolition waste. On June 30, 1987, the site reached its solid waste capacity of approximately 367,000 cubic yards, and waste disposal operations ceased. The site was closed by capping as a class III landfill with an ongoing monitoring program per the state of California regulations. In 1997 about 500 crushed drums were removed from an area adjacent to the landfill. Groundwater samples were collected from the bottom of three excavations, and the groundwater was not found to be impacted.

In 1988 a solid waste assessment test performed under the state's Water Resources Control Board requirements indicated the landfill does not appear to have caused a significant adverse impact on the groundwater or surface water. Under the IRP, an RI was conducted to determine if there had been a release from the landfill. In February 1996 seven new monitoring wells downgradient to the landfill were installed. Sampling results from several monitoring wells continue to indicate dichloroethylene (DCE) [65 parts per billion (ppb)] and TCE (850 ppb) in groundwater. The maximum contaminant level (MCL) for TCE and DCE is five ppb.

A surface containment cell was constructed within the boundaries of this landfill. The POL and pesticide contaminated soils (nonhazardous) from other FHL sites have been transported and stored at the cell. This soil was used as part of the foundation layer (below the impermeable liner) of this landfill's cap.

Activities associated with landfill closure included: consolidation of four outlying cells into the main landfill in 1998, grading operations for subgrade preparation, and decommissioning of interior monitoring wells in 1999. In September 2000 capping of cells 7 and 8 were completed. Capping of cells 9 through 12, and cell 5 was completed in November 2001. In 1997 regulatory closure of the buried drums area was received. Cell 6, the last cell of the landfill, was capped in 2002 and no further construction is required.

The DCE and TCE contamination in groundwater in several of the downgradient wells has been determined. In December 2000, the selected remedy (enhanced natural attenuation by injection of a hydrogen release compound) for groundwater remediation was implemented. Concentrations of TCE have declined below the MCL of five ppb; however, the 2008 results indicate that cis-1,2Dichloroethene, trans-1,2-Dichloroethene, and vinyl chloride were detected at concentrations of 37, 19, and 2.9 micrograms per liter (ug/L), above their MCLs of six, 10, and 0.5 ug/L, respectively. These will need to be evaluated if additional injections are necessary.

The closed landfill is regulated under state landfill closure requirements and Order No. R3-2004-0006 "General Waste Discharge Requirements for Post-Closure Maintenance of Closed, Abandoned, or Inactive Non hazardous Landfills within the Central Coast Region," dated Feb. 6, 2004, issued by the CRWQCB Central Coast Region. Landfill Monitoring will continue as required under State Regulations to include sampling and analysis of groundwater and landfill gas monitoring. The closure plan also requires semiannual inspections and a settlement analysis every five years.

Site ID: FTHE-01
Site Name: LANDFILL #1

CLEANUP/EXIT STRATEGY

Landfill No. 1 is currently in the LTM phase. Semiannual groundwater monitoring of 17 wells, methane monitoring, and annual inspections will continue as required under state landfill closure requirements.

Site ID: FTHE-28

Site Name: BLDG 194 - OLD POL FACILITY

STATUS

Regulatory Driver: CWA

RRSE: HIGH

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

Media of Concern: Groundwater

Phases	Start	End
PA.....	198801.....	199403
SI.....	198801.....	199406
RI/FS.....	199201.....	200209
IRA.....	199201.....	200009
RA(C).....	200111.....	200209
RA(O).....	200211.....	201409
LTM.....	201410.....	201909

RIP Date: 200211

RC Date: 201409

SITE DESCRIPTION

Former site FTHE-19 has been combined with FTHE-28 because the groundwater plumes from both sites are commingled. Site FTHE-28 originally consisted of two USTs and one AST. FTHE-19 was a waste oil UST. Building 194 is located east of the former DOL motor pool.

The three tanks at the original FTHE-28 have been removed. In 1958 two steel USTs were installed at Building 194. In 1980 one of the original tanks were replaced and the replacement tank was later removed in 1995. In 1992 the other original tank was removed. A diesel AST was located above a concrete vault at this site. That tank was removed in 1994.

Former site FTHE-19 is the site of a former UST located at the abandoned DOL motor pool facility in a large parking lot east of Building 176. The 750 gallon single-walled steel waste oil UST was used from 1964 until its removal in 1991. The follow-up investigation indicated groundwater contamination of total petroleum hydrocarbons (TPH) at a level of 3,400 parts per million (ppm). The groundwater contamination at this site may result from migration of contaminated groundwater from the tanks at Building 194. Sampling has detected BTEX in the soil and in the groundwater. Also, TPH has been detected in soil at 4800 ppm. A hydropunch investigation was also conducted. A successful pilot study was used to assess the effectiveness of enhanced natural attenuation and it was completed in November 2001. The removal of contaminated soil was completed as an interim remedial action (IRA). Approximately 5,000 cubic yards of contaminated soil was excavated.

In the semiannual Monitoring Report (2008) the consultant concluded that although the plume appears stable at this time, the rebound in benzene and total petroleum hydrocarbons as gasoline (TPH-g) concentrations within the upper plume area wells suggest the potential for a continuing source at the site. Further work is recommended to refine the conceptual site model, and evaluate the potential for continuing sources such as contaminated capillary fringe surrounding the plume wells 194-PZ-012 and 194-PZ-013.

Previously a pilot study was conducted using hydrogen peroxide and was successful in reducing the high concentration areas which could allow for natural attenuation. In FY10, additional final characterization work was completed and to support the final remedial design. In FY11, a remedial design was completed and is approved by regulatory agencies and the construction of the Remedial Action was initiated. The remediation was designed to be completed in two phases so a second round of treatment could be accomplished in the deeper zone when water levels were at the lowest elevation. Groundwater monitoring will continue for the next five years to determine the adequacy of the remediation and to determine if addition injections are required.

CLEANUP/EXIT STRATEGY

The RA(O) at FTHE-28 will continue until cleanup levels have been met. Quarterly groundwater sampling will continue as part of the remediation enhanced natural attenuation process at FTHE-28.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FTHE-02	BATTERY ACID NEUTRALIZATION PIT(BLDG290)	199906	Closure Letters from DTSC and RWQCB
FTHE-03	FIRE DRILL PIT #1 (EXISTING BURN PIT)	200009	DTSC Closure Letter
FTHE-04	FORMER PHOTO LAB SUMP (BLDG. 186)	199806	DTSC verbal, no written document located during USACE Periodic Review
FTHE-05	FORMER X-RAY LAB (BLDG 105)	199403	No evidence of release, NFA determined by Installation
FTHE-06	WASTE WATER LAB	199403	No evidence of release, NFA determined by Installation
FTHE-07	CROCKER RANGE	199403	Still an Active/operative Range
FTHE-08	ALPHA RANGE	199403	Still an Active/operative Range
FTHE-09	BRAVO RANGE	199403	Still an Active/operative Range
FTHE-10	RANGE B-9 (TANK RANGE -MPRC)	199403	RCRA Facility Assessment (RFA)
FTHE-16	FORMER PESTICIDE STORAGE (BLDG. T-157)	200212	DTSC Comments on 2003 PA/SI, LUC needs to be added to Base Master Plan
FTHE-17	FORMER SEWAGE TREATMENT PLANT	199809	DTSC Closure Letter
FTHE-19	FORMER UST SITE(FORMER DOL MP/FACILITY95	199101	Site was incorporated into Site FTHE-28
FTHE-20	BLDG 290 FORMER HAZ WASTE STORAGE AREA	200009	DTSC and RWQCB Closure Letters
FTHE-23	MILLER RANCH BLDG T-624-UST	199403	DTSC comments on 2003 PA/SI concur with NFA
FTHE-24	FIRE DRILL PIT #2 (ABANDONED BURN PIT)	200009	DTSC Comments on 2003 PA/SI, LUC needs to be added to Base Master Plan
FTHE-25	BLDG 290 WASTE OIL SUMP	199604	DTSC and RWQCB Closure Letters
FTHE-26	BLDG 122 - OLD PX FACILITY (FORMER USTS)	200009	DTSC and RWQCB Closure Letters
FTHE-27A	FORMER CDEC 8J HAZ WASTE ACCUM AREA	199906	DTSC and RWQCB Closure Letters
FTHE-27B	FORMER CDEC 8J WASTE OIL TANK SITE	200009	This site was consolidated into FTHE-27A and was closed out with it with DTSC and RWQCB Closure Letters
FTHE-27C	CDEC 8J AREA 1 TANK PARKING	199710	This site was consolidated into FTHE-27A and was closed out with it with DTSC and RWQCB Closure Letters
FTHE-27D	CDEC 8J AREA 3	199410	DTSC comments on 2000 RI/FS concur with NFA
FTHE-29	EXP 52/57 FORMER UST SITE	200009	DTSC and RWQCB Closure Letters
FTHE-30	AMMUNITION CRATE BURN AREA	199806	DTSC comments on 2003 PA/SI concur with NFA
FTHE-31	DEH FORMER CONTAMINATED SOIL PILE SITE	199403	DTSC comments on 2003 PA/SI concur with NFA
FTHE-32	MILLER RANCH CONTAMINATED SOIL PILES	199712	DTSC comments on 2003 PA/SI concur with NFA
FTHE-33	FORMER DOL HAZ WASTE ACCUM AREA (B-252)	200009	DTSC comments on 2003 PA/SI concur with NFA
FTHE-34	FORMER WV MAINTEN HAZ ACCUM AREA (B-259)	200106	DTSC comments on 2003 PA/SI concur with NFA
FTHE-35	FORMER ARMOR HAZ WASTE ACCUM AREA (B-25)	199809	DTSC comments on 2003 PA/SI concur with NFA
FTHE-36	FORMER OPEN YARD HAZ WASTE ACCUM AREA	199809	DTSC comments on 2003 PA/SI concur with NFA
FTHE-37	FORMER DOL HAZ WASTE ACCUM (HELIPAD)	199710	DTSC comments on 2003 PA/SI concur with NFA

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FTHE-38	DEH FORMER TRANSFORMER STRG (BLDG. 141)	199809	DTSC comments on 2003 PA/SI concur with NFA
FTHE-39	MILLER RANCH EVAP. POND & SUMP	199907	DTSC comments on 2003 PA/SI concur with NFA

IRP Schedule

Date of IRP Inception: 198312

Past Phase Completion Milestones

1987

PA (FTHE-01 - LANDFILL #1)

SI (FTHE-01 - LANDFILL #1)

1988

CS (FTHE-20 - BLDG 290 FORMER HAZ WASTE STORAGE AREA)

RFA (FTHE-20 - BLDG 290 FORMER HAZ WASTE STORAGE AREA)

1989

ISC (FTHE-27B - FORMER CDEC 8J WASTE OIL TANK SITE)

1990

RFA (FTHE-05 - FORMER X-RAY LAB (BLDG 105))

INV (FTHE-27B - FORMER CDEC 8J WASTE OIL TANK SITE)

1991

PA (FTHE-03 - FIRE DRILL PIT #1 (EXISTING BURN PIT))

SI (FTHE-03 - FIRE DRILL PIT #1 (EXISTING BURN PIT))

ISC (FTHE-19 - FORMER UST SITE(FORMER DOL MP/FACILITY95))

CS (FTHE-02 - BATTERY ACID NEUTRALIZATION PIT(BLDG290))

IMP(C) (FTHE-19 - FORMER UST SITE(FORMER DOL MP/FACILITY95))

RFA (FTHE-02 - BATTERY ACID NEUTRALIZATION PIT(BLDG290))

INV (FTHE-19 - FORMER UST SITE(FORMER DOL MP/FACILITY95))

1992

RFI/CMS (FTHE-20 - BLDG 290 FORMER HAZ WASTE STORAGE AREA)

1993

IRA (FTHE-27B - FORMER CDEC 8J WASTE OIL TANK SITE)

CAP (FTHE-27B - FORMER CDEC 8J WASTE OIL TANK SITE)

1994

ISC (FTHE-23 - MILLER RANCH BLDG T-624-UST)

IRA (FTHE-25 - BLDG 290 WASTE OIL SUMP)

RFA (FTHE-04 - FORMER PHOTO LAB SUMP (BLDG. 186), FTHE-06 - WASTE WATER LAB, FTHE-07 - CROCKER RANGE, FTHE-08 - ALPHA RANGE, FTHE-09 - BRAVO RANGE, FTHE-10 - RANGE B-9 (TANK RANGE -MPRC), FTHE-25 - BLDG 290 WASTE OIL SUMP, FTHE-27A - FORMER CDEC 8J HAZ WASTE ACCUM AREA, FTHE-27C - CDEC 8J AREA 1 TANK PARKING, FTHE-27D - CDEC 8J AREA 3, FTHE-33 - FORMER DOL HAZ WASTE ACCUM AREA (B-252), FTHE-35 - FORMER ARMOR HAZ WASTE ACCUM AREA (B-25), FTHE-36 - FORMER OPEN YARD HAZ WASTE ACCUM AREA, FTHE-37 - FORMER DOL HAZ WASTE ACCUM (HELIPAD), FTHE-38 - DEH FORMER TRANSFORMER STRG (BLDG. 141))

RI/FS (FTHE-24 - FIRE DRILL PIT #2 (ABANDONED BURN PIT))

PA (FTHE-16 - FORMER PESTICIDE STORAGE (BLDG. T-157), FTHE-17 - FORMER SEWAGE TREATMENT PLANT, FTHE-24 - FIRE DRILL PIT #2 (ABANDONED BURN PIT), FTHE-26 - BLDG 122 - OLD PX FACILITY (FORMER USTS), FTHE-28 - BLDG 194 - OLD POL FACILITY, FTHE-30 - AMMUNITION CRATE BURN AREA, FTHE-31 - DEH FORMER CONTAMINATED SOIL PILE SITE, FTHE-32 - MILLER RANCH CONTAMINATED SOIL PILES, FTHE-34 - FORMER WV MAINTEN HAZ ACCUM AREA (B-259), FTHE-39 - MILLER RANCH EVAP. POND & SUMP)

SI (FTHE-16 - FORMER PESTICIDE STORAGE (BLDG. T-157), FTHE-24 - FIRE DRILL PIT #2 (ABANDONED BURN PIT), FTHE-26 - BLDG 122 - OLD PX FACILITY (FORMER USTS), FTHE-28 - BLDG 194 - OLD POL FACILITY, FTHE-31 - DEH FORMER CONTAMINATED SOIL PILE SITE, FTHE-32 - MILLER RANCH CONTAMINATED SOIL PILES, FTHE-34 - FORMER WV MAINTEN HAZ ACCUM AREA (B-259), FTHE-39 - MILLER RANCH EVAP. POND & SUMP)

CS (FTHE-04 - FORMER PHOTO LAB SUMP (BLDG. 186), FTHE-33 - FORMER DOL HAZ WASTE ACCUM AREA (B-252), FTHE-35 - FORMER ARMOR HAZ WASTE ACCUM AREA (B-25), FTHE-36 - FORMER

IRP Schedule

	OPEN YARD HAZ WASTE ACCUM AREA, FTHE-37 - FORMER DOL HAZ WASTE ACCUM (HELIPAD), FTHE-38 - DEH FORMER TRANSFORMER STRG (BLDG. 141))
1995	
RI/FS	(FTHE-29 - EXP 52/57 FORMER UST SITE)
PA	(FTHE-29 - EXP 52/57 FORMER UST SITE)
SI	(FTHE-17 - FORMER SEWAGE TREATMENT PLANT, FTHE-29 - EXP 52/57 FORMER UST SITE, FTHE-30 - AMMUNITION CRATE BURN AREA)
IRA	(FTHE-29 - EXP 52/57 FORMER UST SITE)
RFI/CMS	(FTHE-27C - CDEC 8J AREA 1 TANK PARKING)
CS	(FTHE-25 - BLDG 290 WASTE OIL SUMP, FTHE-27A - FORMER CDEC 8J HAZ WASTE ACCUM AREA, FTHE-27C - CDEC 8J AREA 1 TANK PARKING, FTHE-27D - CDEC 8J AREA 3)
1996	
CMI(C)	(FTHE-25 - BLDG 290 WASTE OIL SUMP)
RFI/CMS	(FTHE-37 - FORMER DOL HAZ WASTE ACCUM (HELIPAD))
1997	
RI/FS	(FTHE-30 - AMMUNITION CRATE BURN AREA)
IRA	(FTHE-02 - BATTERY ACID NEUTRALIZATION PIT(BLDG290))
RA(C)	(FTHE-30 - AMMUNITION CRATE BURN AREA)
1998	
RA(C)	(FTHE-32 - MILLER RANCH CONTAMINATED SOIL PILES)
RFI/CMS	(FTHE-04 - FORMER PHOTO LAB SUMP (BLDG. 186), FTHE-33 - FORMER DOL HAZ WASTE ACCUM AREA (B-252), FTHE-35 - FORMER ARMOR HAZ WASTE ACCUM AREA (B-25), FTHE-36 - FORMER OPEN YARD HAZ WASTE ACCUM AREA, FTHE-38 - DEH FORMER TRANSFORMER STRG (BLDG. 141))
RI/FS	(FTHE-17 - FORMER SEWAGE TREATMENT PLANT, FTHE-32 - MILLER RANCH CONTAMINATED SOIL PILES)
RD	(FTHE-32 - MILLER RANCH CONTAMINATED SOIL PILES)
1999	
IRA	(FTHE-34 - FORMER WV MAINTEN HAZ ACCUM AREA (B-259), FTHE-39 - MILLER RANCH EVAP. POND & SUMP)
RI/FS	(FTHE-26 - BLDG 122 - OLD PX FACILITY (FORMER USTS), FTHE-39 - MILLER RANCH EVAP. POND & SUMP)
RFI/CMS	(FTHE-02 - BATTERY ACID NEUTRALIZATION PIT(BLDG290), FTHE-27A - FORMER CDEC 8J HAZ WASTE ACCUM AREA)
2000	
RA(C)	(FTHE-24 - FIRE DRILL PIT #2 (ABANDONED BURN PIT), FTHE-26 - BLDG 122 - OLD PX FACILITY (FORMER USTS), FTHE-29 - EXP 52/57 FORMER UST SITE)
IRA	(FTHE-03 - FIRE DRILL PIT #1 (EXISTING BURN PIT), FTHE-16 - FORMER PESTICIDE STORAGE (BLDG. T-157), FTHE-20 - BLDG 290 FORMER HAZ WASTE STORAGE AREA, FTHE-28 - BLDG 194 - OLD POL FACILITY)
RI/FS	(FTHE-03 - FIRE DRILL PIT #1 (EXISTING BURN PIT))
IMP(C)	(FTHE-27B - FORMER CDEC 8J WASTE OIL TANK SITE)
2001	
RI/FS	(FTHE-34 - FORMER WV MAINTEN HAZ ACCUM AREA (B-259))
2002	
IRA	(FTHE-01 - LANDFILL #1)
RI/FS	(FTHE-01 - LANDFILL #1, FTHE-16 - FORMER PESTICIDE STORAGE (BLDG. T-157), FTHE-28 - BLDG 194 - OLD POL FACILITY)
RA(C)	(FTHE-01 - LANDFILL #1, FTHE-16 - FORMER PESTICIDE STORAGE (BLDG. T-157), FTHE-28 - BLDG

IRP Schedule

194 - OLD POL FACILITY)

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: 200209

Schedule for Next Five-Year Review: 2015

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

FORT HUNTER LIGGETT IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
FTHE-01	LANDFILL #1	LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
FTHE-28	BLDG 194 - OLD POL FACILITY	RA(O)						
		LTM						

FORT HUNTER LIGGETT
Army Defense Environmental Restoration Program
Military Munitions Response Program

MMRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 12/11

Installation Site Types with Future and/or Underway Phases

1 Unexploded Munitions/Ordnance
(FTHE-001-R-01)

Most Widespread Contaminants of Concern

Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern

Soil

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

Site ID	Site Name	Action	Remedy	FY
N/A				

Duration of MMRP

Date of MMRP Inception 200302

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201301/201301

Date of MMRP completion including Long Term Management (LTM): 201209

MMRP Contamination Assessment

Contamination Assessment Overview

The Department of Defense (DoD) has established the Military Munitions Response Program (MMRP) under the Defense Environmental Restoration Program (DERP) to address DoD sites with munitions and explosives of concern (MEC) including unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC).

The US Army's inventory of Closed, Transferring, and Transferred (CTT) Military ranges and sites, has identified sites eligible for action under MMRP.

The MMRP-eligible sites include other than operational ranges where UXO, DMM and MC are known or suspected and the release occurred prior to Sept. 30, 2002. Properties classified as operational ranges are not eligible and, therefore, are excluded from the MMRP program.

The MMRP began in the late-1990s as a result of key drivers such as processes outlined in the National Contingency Plan (40 Code of Federal Regulations 300) as authorized by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 US Code 9605, as amended by the Superfund Amendments and Reauthorization Act of 1986, Publication L. 99-499.

The process began with three phases of range inventories. Phase I consisted of installations completing an initial data call. The USAEC managed the implementation Phases (II and III) of the MMRP inventory.

The Phase II inventory dealt with active and inactive (A/I) range considerations. Phase III involved the CTT range inventory conducted in 2002. Included were extensive mapping, data collection for upload to the Army Range Inventory Database, an assessment of the explosives safety risk for CTT ranges or sites with UXO or DMM identified in the inventory, and a determination of which sites on the inventory potentially qualify for the MMRP.

The CTT range inventory report identified 12 MMRP sites at FHL. Five of these sites have been response complete in AEDB-R, either because they were found to be eligible for the formerly used defense sites (FUDS) MMRP or because they overlapped with an operational range. During the historical records review (HRR), of the seven remaining sites, two were found to also be eligible for the FUDS MMRP, one was found to overlap with an operational range, and one was found to overlap with a FUDS MMRP site.

An SI was completed in FY08 at sites FTHE-001-R-01 (Artillery Range), FTHE-002-R-01 [Artillery Range Transferred (TD) No. 2], and FTHE-011-R-01 [Artillery Range (TD) No. 1]. The SI recommended an RI/FS for MEC at the Artillery Range, but indicated no further investigation is needed for MC pending the results of the RI. The SI recommended no further investigation for MEC or MC at Artillery Range (TD) No. 2 and Artillery Range (TD) No. 1.

An RI was completed at the Artillery Range in 2011 and the NFA decision documents will be completed by September 2012.

Cleanup Exit Strategy

The RI and the DD will be finalized in 2012. NFA is anticipated.

MMRP Previous Studies

	Title	Author	Date
2003	Preliminary Assessment, Phase III Army Closed, Transferring, and Transferred Ranges/Sites Inventory for Fort Hunter Liggett	TechLaw, Inc.	SEP-2003
2007	Draft Historical Records Review	FPM Group	MAY-2007
2008	Final Site Inspection Report, Fort Hunter Liggett, Monterey County, California	FPM Group, LTD	SEP-2008
2010	Community Relations Plan: Military Munitions Response Program Remedial Investigation, United States Fort Hunter Liggett, CA.	URS Group, Inc.	OCT-2010
	Final Remedial Investigation Work Plan, MMRP, MRS FTHE-001-R-01	URS	OCT-2010
2011	Final Remedial Investigation Report, Military Munitions Response Program. Munitions Response Site FTHE-001-R-01, U.S. Army Garrison Fort Hunter Liggett, CA	URS	SEP-2011
	Final Proposed Plan, Military Munitions Response Program. Munitions Response Site FTHE-001-R-01, US Army Garrison Fort Hunter Liggett, CA	URS	NOV-2011

FORT HUNTER LIGGETT
Military Munitions Response Program
Site Descriptions

Site ID: FTHE-001-R-01
Site Name: ARTILLERY RANGE

STATUS

Regulatory Driver: CERCLA

MRSPP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
PA.....	200302.....	200308
SI.....	200606.....	200809
RI/FS.....	201001.....	201209

RIP Date: N/A

RC Date: 201301

SITE DESCRIPTION

This closed range was used as an artillery range in the early-1940s. The majority of the range falls within an A/I area. The next largest portion is now part of the cantonment area. The balance has been transferred and is discussed as artillery range (TD). The range encompasses portions of several closed ranges, including a pistol range, a 1000 inch range, a trainfire range, (known distance), machine gun range, a hand grenade range (closed in 1969), a practice rifle grenade range (closed in 1969), a rocket range, impact areas and gun positions, and a tank firing range. Some of the ranges included at this site were in use until 1980.

The 2007 HRR report recommended further investigation at the site for both MEC and MC. During the SI, due to the revised training area boundaries (current operational range area), the acreage of the artillery range munitions response site (MRS) was reduced from 6,896 acres [identified in the final HRR (FPM, 2007)] to 547 acres. Based on the 2008 final SI, further investigation via a RI was recommended for the AOC portion identified within the MRS. SI field survey indicates training occurred at the site, and observations of munitions debris at the site confirm range usage. An RI was finalized in 2011 and the results of the work did not identify any area requiring cleanup. This conclusion was agreed to by the state regulatory agency Department of Toxic Substances Control. A public meeting to present the No Action Proposed Plan was conducted in January, 2012 and no objections to the plan were stated. A no action ROD is planned to be completed by September 2012.

CLEANUP/EXIT STRATEGY

The RI will be finalized in 2011 and the DD will be signed by late 2012. NFA is anticipated.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
FTHE-002-R-01	ARTILLERY RANGE (TD) NO. 2	200809	NFA following Site Inspection.
FTHE-003-R-01	MANEUVER AND BIVOUAC AREA	200706	This site was transferred to FUDS.
FTHE-004-R-01	PRACTICE BOMBING RANGE 1	200809	NFA following Site Inspection. FUDS site
FTHE-005-R-01	BOMBING RANGE 2 NORTH	200809	Ineligible, Operational Range
FTHE-006-R-01	MANEUVER AREA	200709	This site was transferred to FUDS.
FTHE-007-R-01	TRAINING RANGE	200709	This site was transferred to FUDS.
FTHE-008-R-01	TANK FIRING RANGE 2	200809	NFA following 2008 SI, FUDS
FTHE-009-R-01	ANTITANK RANGE	200809	NFA following 2008 SI, FUDS
FTHE-010-R-01	BOMBING RANGE 3	200706	This site was transferred to FUDS.
FTHE-011-R-01	ARTILLERY RANGE (TD) NO. 1	200809	NFA following Site Inspection.
FTHE-012-R-01	PRACTICE BOMBING RANGE 2	200709	This site was discovered to reside on an operational area.

MMRP Schedule

Date of MMRP Inception 200302

Past Phase Completion Milestones

2003

PA (FTHE-001-R-01 - ARTILLERY RANGE, FTHE-002-R-01 - ARTILLERY RANGE (TD) NO. 2, FTHE-003-R-01 - MANEUVER AND BIVOUAC AREA, FTHE-004-R-01 - PRACTICE BOMBING RANGE 1, FTHE-005-R-01 - BOMBING RANGE 2 NORTH, FTHE-006-R-01 - MANEUVER AREA, FTHE-007-R-01 - TRAINING RANGE, FTHE-008-R-01 - TANK FIRING RANGE 2, FTHE-009-R-01 - ANTITANK RANGE, FTHE-010-R-01 - BOMBING RANGE 3, FTHE-011-R-01 - ARTILLERY RANGE (TD) NO. 1, FTHE-012-R-01 - PRACTICE BOMBING RANGE 2)

2008

SI (FTHE-001-R-01 - ARTILLERY RANGE, FTHE-002-R-01 - ARTILLERY RANGE (TD) NO. 2, FTHE-004-R-01 - PRACTICE BOMBING RANGE 1, FTHE-005-R-01 - BOMBING RANGE 2 NORTH, FTHE-008-R-01 - TANK FIRING RANGE 2, FTHE-009-R-01 - ANTITANK RANGE, FTHE-011-R-01 - ARTILLERY RANGE (TD) NO. 1)

Projected Phase Completion Milestones

See attached schedule

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

To Be Determined

Final RA(C) Completion Date:

Schedule for Next Five-Year Review: 2015

Estimated Completion Date of MMRP at Installation (including LTM phase): 201209

FORT HUNTER LIGGETT
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 Underground Storage Tank
 (CCFHL001)

Most Widespread Contaminants of Concern

Other (Free-product, Benzene)

Media of Concern

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

Site ID	Site Name	Action	Remedy	FY
CCFHL001	UST CORRECTIVE ACTION, BLDG. 258	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2009

Duration of CR

Date of CR Inception: 199901

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 200909/201808

Date of CR completion including Long Term Management (LTM): 202309

CR Contamination Assessment

Contamination Assessment Overview

The Building 258 area is used as a motor pool and ECS. The site is to the south of 7th Division Road. A release of approximately 30,000 to 40,000 gallons of gasoline occurred during an earthquake in October 1988, when the underground pipes for four USTs split. The plume is approximately one mile long, less than 100 yards wide, and is thought to be contained by bedrock highs. It is approximately a half mile from the San Antonio River, which flows into the San Antonio Reservoir, and provides drinking water for about 250,000 residents of San Luis Obispo County, California. Contamination is potentially impacting drinking water supplies.

Benzene levels were initially measured at 18,000 ppb in 1999 and have ranged up to 39,300 ppb. The most recent groundwater monitoring period (fourth quarter 2011) identified benzene levels up to 22,400 ppb. Nine monitoring wells were installed between 2002 and 2004, and nine more wells were in 2011 and early 2012. An SVE system installed in the release area in November 2009 generated over 17,000 gallons of fuel product, and free-product continues to be found in the wells.

RA(O) was implemented at CCFHL001 using (1) a SVE system at the source area, (2) monitoring well installation and sampling, (3) quarterly sampling and analysis, and (4) source area sampling and analysis. Although the SVE system was initially successful in reducing the high contaminant concentrations at the source area, extreme fluctuations in groundwater elevations and extended drought conditions have limited its usefulness. The SVE system operated for a two-year period starting in FY 2009 and was turned off in FY11.

Cleanup Exit Strategy

Additional site characterization activities conducted in 2011 identified high concentrations of gasoline contaminants existed in soil above and below the water table; site permeability also varied greatly in both horizontal and vertical extents, and would limit groundwater extraction cleanup methods. Based on the site characterization completed in 2011, remedial screening evaluations will be performed in order to narrow the list of remedial technologies that can be used to address soil and groundwater contamination.

Beginning in FY12, cleanup activities planned for CCFHL001 include

- (1) the removal of 5,500 cubic yards of contaminated soil in the source area,
- (2) injection of amendments into the excavation before backfill with clean soil,
- (3) installation of new monitoring wells, and
- (4) quarterly sampling and analysis.

The Remedial Design should be produced by June 2012, with regulatory approval expected by July 2012. Contamination will be addressed in all three regions of the plume: source, mid- plume, and distal end. To confirm groundwater remediation is complete, regulatory agencies have historically required at least five years of monitoring after a site reaches the aquifer cleanup requirements.

Finally, the State Water Resources Control Board has proposed a new Low Threat Site Closure policy to address sites similar to Building 258. Final implementation of the new policy is not expected until FY14 at the earliest.

CR Previous Studies

Title

Author

Date

There are no Previous Studies

FORT HUNTER LIGGETT
Compliance Restoration
Site Descriptions

Site Name: UST CORRECTIVE ACTION, BLDG. 258

STATUS

Regulatory Driver: CWA
Contaminants of Concern: Other (Benzene, Free-product)
Media of Concern: Groundwater

Table with 3 columns: Phases, Start, End. Rows include PA, RI/FS, RA(C), RA(O), LTM with corresponding start and end dates. RA(O) row is highlighted.

SITE DESCRIPTION

The Building 258 area is used as a motor pool and ECS. The site is to the south of 7th Division Road. A release of approximately 30,000 to 40,000 gallons of gasoline occurred during an earthquake in October 1988...

Benzene levels were initially measured at 18,000 ppb in 1999 and have ranged up to 39,300 ppb. The most recent groundwater monitoring period (fourth quarter 2011) identified benzene levels up to 22,400 ppb.

RA(O) was implemented at CCFHL001 using (1) a SVE system at the source area, (2) monitoring well installation and sampling, (3) quarterly sampling and analysis, and (4) source area sampling and analysis.

CLEANUP/EXIT STRATEGY

Additional site characterization activities conducted in 2011 identified high concentrations of gasoline contaminants present in soil above and below the water table; site permeability also varied greatly in both horizontal and vertical extents...

Beginning in FY12, cleanup activities planned for CCFHL001 include

- (1) the removal of 5500 cubic yards of contaminated soil in the source area,
(2) injection of amendments into the excavation before backfill with clean soil,
(3) installation of new monitoring wells, and
(4) quarterly sampling and analysis.

The remedial design should be produced by June 2012, with regulatory approval expected by July 2012. Contamination will be addressed in all three regions of the plume: source, mid-plume, and distal end.

Site Closeout (No Further Action) Summary

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

CR Schedule

Date of CR Inception: 199901

Past Phase Completion Milestones

1999

PA (CCFHL001 - UST CORRECTIVE ACTION, BLDG. 258)

2001

RI/FS (CCFHL001 - UST CORRECTIVE ACTION, BLDG. 258)

2009

RA(C) (CCFHL001 - UST CORRECTIVE ACTION, BLDG. 258)

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: 200909

Schedule for Next Five-Year Review: 2015

Estimated Completion Date of CR at Installation (including LTM phase): 202309

FORT HUNTER LIGGETT CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCFHL001	UST CORRECTIVE ACTION, BLDG. 258	RA(O)						
		LTM						

Community Involvement

Technical Review Committee (TRC): None

Community Involvement Plan (Date Published): 201010

Restoration Advisory Board (RAB): No

Reason Not Established: The community has expressed no sufficient, sustained interest in a RAB.

Community Interest Solicited on: 201010

Efforts Taken to Determine Interest

An October 2010 Public Relations Plan Addendum and community surveys prompted a public notice soliciting interest in the formation of a restoration advisory board (RAB). The notice was placed in the Monterey County Herald and the South County Newspapers, LLC, which covers the King City Rustler, Greenfield News, Soledad Bee, and Gonzales Tribune on Aug. 18 and 19, 2010. The RAB would have been in support of an RI for MMRP Site FTHE-001-R-01. The responses were insufficient to form a RAB.

Results

The community has not expressed a sufficient, sustained interest in a RAB. After careful evaluation of the solicitation results, the commander determined that there is no need for a RAB at the installation.

Follow-up Procedures

Moving forward, individuals interested in the environmental restoration activities at the installation should contact the FHL PAO to express interest in obtaining more information and/or forming a RAB. Public notification and solicitation of public comment will occur upon completion of the no action proposed plan and DD to follow the finalization of the RI for FTHE-001-R-01. The need for RAB solicitation will be evaluated again in 2012.

Additional Community Involvement Information

In October 1995, community interviews were conducted, but there was not enough public interest to create a RAB. In 1995, three Information Repositories were established and a community relations plan was finalized in 1996.

In 1998, FHL updated the community relations plan and conducted a second round of community interviews; however, interest is insufficient to create a RAB. The installation will continue to monitor community interest.

In June 2001 a public meeting was conducted in King City, California for public comment related to the proposed plan for closure of these four IRP sites: the Burn Pit, Site 8J, the EXP 52/57 site, and the former PX. No community interest was expressed.

In August 2002 a public meeting was held for the landfill, but there was no public attendance. The secluded location of FHL makes a RAB difficult, but the community members routinely interact, albeit informally, with the installation point of contact (POC) and information about how the environmental programs are going is provided.

A solicitation for a RAB was also published in two local newspapers in April 2009; however, there was no response. The installation has established an IR at the locations listed below.

Administrative Record is located at

US Army Garrison, Fort Hunter Liggett
Environmental Office, Building 243
Jolon, CA 93928
(831) 386-2219

Information Repository is located at

San Antonio School Library
67550 Lockwood Jolon Road
Lockwood, CA 93932
(831) 385-3051

and

Monterey County Free Library

Community Involvement

26 Central Avenue
Salinas, CA 93901
(831) 455-9699

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

TAPP Title: N/A

Potential TAPP: N/A

