

**FY2012**

**JOINT BASE LEWIS-MCCHORD**  
**Compliance-Related Cleanup**  
**Installation Action Plan**

Printed 24 January 2013

---

## Table of Contents

Statement Of Purpose.....	1
Acronyms.....	2
Acronym Translation Table.....	4
Installation Information.....	5
Cleanup Program Summary.....	6
Compliance-Related Cleanup.....	7
CC Summary.....	8
CC Contamination Assessment.....	9
CC Previous Studies.....	10
Compliance-Related Cleanup Site Descriptions.....	11
CC FL09 Bldg 5115 Leaking Tank Site (AOC 8-3).....	12
CC FL23 Landfill 5.....	13
Site Closeout (No Further Action) Summary.....	14
CC Schedule.....	15
CC Milestones.....	15
CC Schedule Chart.....	16

## Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear compliance-related cleanup (CC) 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 CC manager, the West Regional Office of the Installation Management Command (IMCOM-West), Fort Lewis, regulatory agencies and the executing agencies, an IAP was completed. The IAP is used to track requirements, schedules and budgets for all Army installation cleanup programs.

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

The following persons contributed to the formulation and completion of this Installation Action Plan for JOINT BASE LEWIS-MCCHORD:

Versar for Joint Base Lewis-McChord  
USAEC  
Joint Base Lewis-McChord  
PB&A, Inc. for USAEC

## Acronyms

AEDB-CC	Army Environmental Database - Compliance-Related Cleanup
AFB	Air Force Base
AOC	Area of Concern
bgs	below ground surface
CCP	Compliance-Related Cleanup Program
CMI(C)	Corrective Measures Implementation-Construction
CMI(O)	Corrective Measures Implementation-Operation
CMS	Corrective Measures Study
cPAH	carcinogen Polycyclic Aromatic Hydrocarbons
CS	Confirmatory Sampling
CTC	Cost-to-Complete
DD	Decision Document
DES	Design
ER,A	Environmental Restoration, Army (formerly DERA)
FLAO	Fort Lewis Agreed Order
FRA	Final Remedial Action
FTLE	AEDB-CC designation for Fort Lewis
FY	Fiscal Year
GAAF	Gray Army Airfield
GWM	Groundwater Monitoring
IAP	Installation Action Plan
IM	Interim Measure
IMCOM	Installation Management Command
IMP(C)	Implementation-Construction
IMP(O)	Implementation-Operation
IRA	Interim Remedial Action
IRP	Installation Restoration Program
ISC	Initial Site Characterization
K	Thousand
kg	kilogram
LTM	Long-Term Management
LUC	Land Use Control
mg	milligram
MTCA	Model Toxics Control Act
PAH	Polycyclic Aromatic Hydrocarbons
RA	Remedial Action
RC	Response Complete
RIP	Remedy-In-Place
RIWP	Remedial Investigation Work Plan
SRCPP	Solvent Refined Coal Pilot Plant
SWMU	Solid Waste Management Unit
TEE	Terrestrial Ecological Evaluation
TEF	Toxicity Equivalency Factor
TPH-D	Total Petroleum Hydrocarbons-Diesel
TPH-G	Total Petroleum Hydrocarbons-Gasoline

## Acronyms

TPH-HO Total Petroleum Hydrocarbons-Heavy Oil  
ug/L micrograms per liter  
USEPA US Environmental Protection Agency  
VOCs Volatile Organic Compounds  
WA Washington  
WAC Washington Administrative Code

# 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)

## CERCLA

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

## RCRA Underground Storage Tank (UST) Site Phase Terms

= Initial Site Characterization(ISC)  
= Investigation(INV)  
= Corrective Action Plan(CAP)  
= Design(DES)  
= Implementation (Construction)(IMP(C))  
= Implementation (Operations)(IMP(O))  
= Long Term Management(LTM)  
= Interim Remedial Action(IRA)

# Installation Information

## Installation Locale

**Installation Size (Acreage):** 86176

**City:** Fort Lewis

**County:** Pierce and Thurston

**State:** Washington

## Other Locale Information

JBLM encompasses an area of over 90,000 acres within Pierce and Thurston Counties in the state of Washington. The JBLM working population is approximately 50,000 personnel including military, civilian, and contractor employees. Significant adjacent population centers include Lakewood to the north (population 58,000), unincorporated Spanaway/Parkland to the east, Olympia, Lacey, and Tumwater to the south (population 86,000), and DuPont (population 2500) to the west.

## Installation Mission

JBLM provides logistical support and maneuver areas, ranges, facilities for I Corps and supporting units, and worldwide airlift capabilities.

## Lead Organization

## Lead Executing Agencies for Installation

Compliance-Related Cleanup Program (CCP) within JBLM Public Works

## Regulator Participation

<b>Local</b>	Pierce County Health District
<b>State</b>	Washington State Department of Ecology (WSDOE), Hazardous Waste and Toxics Reduction Program, Southwest Regional Office

## Installation Program Summaries

### CC

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

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

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 201212/201212

**Prior Funding:** \$3,841.4 K

**Current Requirements:** \$12.0 K

**Future Requirements:** \$204.0 K

## Cleanup Program Summary

### Installation Historic Activity

CC sites at JBLM were primarily leaking underground storage tanks (USTs) or spill sites. In 1993 Fort Lewis submitted a Resource Conservation and Recovery Act (RCRA) Part B permit application for a hazardous waste storage unit. A RCRA facility assessment (RFA) was completed in 1997 as a result of the permit application. An agreed order between Fort Lewis and Ecology was signed in 2001 to complete a remedial investigation (RI), feasibility study (FS), and cleanup in accordance with Model Toxics Control Act (MTCA) regulations. CC FL01 through CC FL21 are sites that have been addressed under the Fort Lewis Agreed Order (FLAO). Fort Lewis prepared the final FLAO RI report and obtained WSDOE approval in February 2008.

Fort Lewis and the WSDOE agreed to focus on the highest-priority leaking USTs under the FLAO and address the remaining low-priority tanks as a voluntary cleanup action. CC FL07 through CC FL21 are the 15 high-priority tank sites. All of these sites except CC FL09 have been closed.

In 2010 all of the active CC sites except CC FL09 and CC FL23 were transferred to the Defense Environmental Restoration Program (DERP). CC FL09 is a former tanks site at which active remediation is complete. Final action is to implement Land Use Controls (LUCs) to prevent residential development. CC FL23 involves long-term groundwater monitoring associated with closure of a permitted landfill.

**JOINT BASE LEWIS-MCCHORD**  
**Compliance-Related Cleanup**

## CC Summary

**Total Number of AEDB-CC Sites:** 19

**Number of sites with site inspection/confirmation sampling complete:**16

**Number of sites with remedy selected (RI-FS/CMS/RFI complete):** 5

**Number of sites with construction completed (RA(C)/CMI(C)):** 2

**Number of sites with closeout complete:**22

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

- 1 Landfill  
(CC FL23)
- 1 Underground Storage Tank  
(CC FL09)

### Most Widespread Contaminants of Concern

Metals, Polycyclic Aromatic Hydrocarbons (PAH)

### Media of Concern

Groundwater, Soil

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

Site ID	Site Name	Action	Remedy	FY	Cost
CC FL23	Landfill 5	FRA	OTHER	1993	TBD
CC FL02	Former Med & CW Incinerator (SWMU 24)	FRA	WASTE REMOVAL - SOILS	2006	\$1.0 K

# CC Contamination Assessment

## Contamination Assessment Overview

A remedial investigation work plan (RIWP) was completed for the FLAO sites in September 2004. A ruling of No further action (NFA) was obtained for the majority of the CC-eligible FLAO sites in the RIWP. There were 35 RCRA corrective action sites requiring further action under the FLAO following the RIWP. NFA was obtained for 26 of these 35 sites in the February 2008 Final FLAO RI Report. Of the remaining nine sites, six were CC-funded leaking tank sites and three are Environmental Restoration Program (ERP)-funded sites.

The three ERP-funded sites are tracked in the Army Environmental Database-Restoration (AEDB-R) database. Also, in 2009 five of the six active CC-eligible sites were transferred to the ERP and are no longer tracked in the CC database. The remaining active site is CC FL23, Landfill 5. One other site, CC FL09, is a former UST in which no further remediation except LUCs is anticipated.

## Cleanup Exit Strategy

Long-term monitoring will be conducted for CC FL23 under the state of Washington's landfill closure regulations. LUCs are being implemented for CC FL09.

## CC Previous Studies

	Sites	Title	Author	Date
<b>2005</b>	FL-09	SI and Soil Removal Report for former Bldg 5115	Versar, Inc.	NOV-2005
<b>2006</b>	All	Draft Final SI Report Former UST/AST Sites (AOC 8 & 9)	Hart Crowser	MAY-2006
	FL-04, FL-05, FL-08, FL-10	GW Monitoring Plan for Bldg 4131, A0111, A1033, GAAF Fuel Facility	Versar, Inc	SEP-2006
<b>2008</b>	All	Fort Lewis Agreed Order RI Report	Fort Lewis	FEB-2008
	FL-04, FL-05, FL-08, FL-09, FL-10, FL-17	Fort Lewis Agreed Order FS for Seven Sites (Draft)	Fort Lewis	DEC-2008

**JOINT BASE LEWIS-MCCHORD**  
**Compliance-Related Cleanup**  
**Site Descriptions**

Site Name: Bldg 5115 Leaking Tank Site (AOC 8-3)

**STATUS**

Regulatory Driver: RCRA C

Risk Score: 0A

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA.....	199601.....	199706
RFI/CMS.....	200103.....	201212

RIP Date: N/A

RC Date: 201212

Closeout Date: 201212

**SITE DESCRIPTION**

A 500-gallon heating oil UST (AOC 8-3) was removed in July 1997. Only potential MTCA Standard Method B exceedances were Total Petroleum Hydrocarbons-Diesel (TPH-D) of 22,000 milligrams/kilogram (mg/kg) in a sample collected from the north sidewall at four feet. In order to protect the structural integrity of Building 5115, additional excavation did not take place. Excavation dimensions were 5 feet by 10 feet by 8 feet deep. Thirteen additional cubic yards (cy) of soil were removed in 2005 at the former building location.

Fort Lewis Compliance-Related Cleanup Program (CCP) over-excavated around former excavation (dimensions = 18 feet by 23 feet by 7 feet deep) in Fiscal Year (FY)05. Minimal contamination was encountered. Approximately ten cy of petroleum-contaminated soil was taken to the Landfill 5 land farm. Maximum TPH-D and maximum TPH-Heavy Oil (TPH-HO) were 109 mg/kg on the east sidewall and 329 mg/kg on the west sidewall. Only potential MTCA exceedance was total carcinogen polycyclic aromatic hydrocarbons (cPAH) toxicity equivalent factor (TEF) concentration of 0.317 mg/kg in the east sidewall, which is above the MTCA Method A/Standard Method B cleanup level for the potential direct contact pathway.

In FY10 an FS was submitted to the WSDOE; however, legal negotiations have delayed the state's review.

**CLEANUP/EXIT STRATEGY**

Because of the limited extent and questionable location of cPAHs in the soil, the recommended alternative is to implement LUCs on future residential land use and future excavation activities.

**Site ID: CC FL23**  
**Site Name: Landfill 5**

**STATUS**

**Regulatory Driver:** RCRA D  
Contaminants of Concern: Metals, Volatiles (VOC)  
Media of Concern: Groundwater

<b>Phases</b>	<b>Start</b>	<b>End</b>
RFA.....	198501.....	198612
CMI(C).....	199201.....	199212
LTM.....	200001.....	202912
<b>RIP Date:</b> N/A		
<b>RC Date:</b> 199212		
<b>Closeout Date:</b> 203012		

**SITE DESCRIPTION**

Landfill 5 has been used as a landfill for both domestic garbage and construction debris. It began operation in the late 1960s as an unregulated facility. In the 1990s it was subject to RCRA Subtitle D requirements. The landfill was closed for municipal solid waste in the 1990s. Since then the site continues to be used as an inert landfill for construction debris and as a soil and construction materials recycling center. Thirty years of post-closure monitoring are required for the landfill.

Landfill 5 was formerly a National Priorities List (NPL) Comprehensive Environmental Response Compensation and Liability Act (CERCLA) site and was listed on the NPL in 1988. NFA was the selected remedy in the 1992 Record of Decision (ROD). The site was delisted from the NPL in 1995. Although the site was delisted, it is still subject to state landfill regulations (Washington Administrative Code 173-351). State requirements include 30 years of post-closure monitoring.

The site consists of seven cells. Five of the cells contain a cover only. Two other cells contain both a liner and a cover per the requirements of RCRA subtitle D. Primary contaminants of concern are iron and manganese. However, in accordance with Chapter 173-351 of the Washington Administrative Code, analytes that need to be monitored for post-closure include metals, volatile organic compounds (VOCs), and other inorganic compounds.

In October 2010 Fort Lewis and McChord Air Force Base were combined to become JBLM. The Army is the lead agency and assumed jurisdiction of JBLM property.

**CLEANUP/EXIT STRATEGY**

State requirements for closed landfills require 30 years of post-closure groundwater monitoring. The landfills will continue to be monitored until FY29.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
CC FL01	Misc. FLAO RCRA Corrective Action Sites	201003	Fort Lewis Agreed Order, 2001
CC FL02	Former Med & CW Incinerator (SWMU 24)	200608	Aug 2006 Cleanup Action Report
CC FL03	Southwest Wash Rack (SWMU 52-3)	200608	Cleanup Action Report
CC FL06	Former Practice Fire Tng Area (AOC 15-2)	200801	Jan 2008 Cleanup Action Report
CC FL07	Bldg 1445 Leaking Tank Site (AOC 8-1)	200608	Aug 2008 Cleanup Action Report
CC FL11	Bldg A0508 Leaking Tank Site (AOC 8-5)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL12	Bldg C0817 Leaking Tank Site (AOC 8-6)	200601	Jan 2006 SI Report
CC FL13	Bldg E0147 Leaking Tank Site (AOC 8-7)	201003	Fort Lewis Agreed Order RI Report (2008)
CC FL14	Bldg E0730 Leaking Tank Site (AOC 8-8)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL15	Soccer Field Leaking Tank Site (AOC 8-9)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL16	Bldg 2061 Leaking Tank Site (AOC 9-3)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL17	Bldg 5101 Leaking Tank Site (AOC 9-4)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL18	Bldg 8288 Leaking Tank Site (AOC 9-5)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL19	Bldg 9790 Leaking Tank Site (AOC 9-6)	200601	Jan 2006 SI Report
CC FL20	Bldg D0210 Leaking Tank Site (AOC 9-7)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL21	Bldg E1110 Leaking Tank Site (AOC 9-8)	200912	Fort Lewis Agreed Order RI Report (2008)
CC FL25	Former McCall Woods Range	200801	Jan 2008 SI Report

## CC Schedule

### Past Phase Completion Milestones

#### 1987

RFA (CC FL23 - Landfill 5)

#### 1993

CMI(C) (CC FL23 - Landfill 5)

#### 1997

RFA (CC FL01 - Misc. FLAO RCRA Corrective Action Sites, CC FL02 - Former Med & CW Incinerator (SWMU 24), CC FL03 - Southwest Wash Rack (SWMU 52-3), CC FL06 - Former Practice Fire Tng Area (AOC 15-2), CC FL07 - Bldg 1445 Leaking Tank Site (AOC 8-1), CC FL09 - Bldg 5115 Leaking Tank Site (AOC 8-3), CC FL11 - Bldg A0508 Leaking Tank Site (AOC 8-5), CC FL12 - Bldg C0817 Leaking Tank Site (AOC 8-6), CC FL13 - Bldg E0147 Leaking Tank Site (AOC 8-7), CC FL14 - Bldg E0730 Leaking Tank Site (AOC 8-8), CC FL15 - Soccer Field Leaking Tank Site (AOC 8-9), CC FL16 - Bldg 2061 Leaking Tank Site (AOC 9-3), CC FL17 - Bldg 5101 Leaking Tank Site (AOC 9-4), CC FL18 - Bldg 8288 Leaking Tank Site (AOC 9-5), CC FL19 - Bldg 9790 Leaking Tank Site (AOC 9-6), CC FL20 - Bldg D0210 Leaking Tank Site (AOC 9-7), CC FL21 - Bldg E1110 Leaking Tank Site (AOC 9-8), CC FL25 - Former McCall Woods Range)

#### 2005

CS (CC FL02 - Former Med & CW Incinerator (SWMU 24))

#### 2006

CMI(C) (CC FL02 - Former Med & CW Incinerator (SWMU 24))

CS (CC FL01 - Misc. FLAO RCRA Corrective Action Sites, CC FL03 - Southwest Wash Rack (SWMU 52-3), CC FL07 - Bldg 1445 Leaking Tank Site (AOC 8-1), CC FL11 - Bldg A0508 Leaking Tank Site (AOC 8-5), CC FL12 - Bldg C0817 Leaking Tank Site (AOC 8-6), CC FL15 - Soccer Field Leaking Tank Site (AOC 8-9), CC FL19 - Bldg 9790 Leaking Tank Site (AOC 9-6))

#### 2007

CS (CC FL13 - Bldg E0147 Leaking Tank Site (AOC 8-7), CC FL14 - Bldg E0730 Leaking Tank Site (AOC 8-8), CC FL16 - Bldg 2061 Leaking Tank Site (AOC 9-3), CC FL18 - Bldg 8288 Leaking Tank Site (AOC 9-5), CC FL20 - Bldg D0210 Leaking Tank Site (AOC 9-7), CC FL21 - Bldg E1110 Leaking Tank Site (AOC 9-8))

#### 2008

CS (CC FL06 - Former Practice Fire Tng Area (AOC 15-2), CC FL25 - Former McCall Woods Range)

RFI/CMS (CC FL17 - Bldg 5101 Leaking Tank Site (AOC 9-4))

#### 2010

LTM (CC FL01 - Misc. FLAO RCRA Corrective Action Sites, CC FL11 - Bldg A0508 Leaking Tank Site (AOC 8-5), CC FL13 - Bldg E0147 Leaking Tank Site (AOC 8-7), CC FL14 - Bldg E0730 Leaking Tank Site (AOC 8-8), CC FL15 - Soccer Field Leaking Tank Site (AOC 8-9), CC FL16 - Bldg 2061 Leaking Tank Site (AOC 9-3), CC FL17 - Bldg 5101 Leaking Tank Site (AOC 9-4), CC FL18 - Bldg 8288 Leaking Tank Site (AOC 9-5), CC FL20 - Bldg D0210 Leaking Tank Site (AOC 9-7), CC FL21 - Bldg E1110 Leaking Tank Site (AOC 9-8))

### Projected Phase Completion Milestones

See attached schedule

## JOINT BASE LEWIS-MCCHORD CC Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC FL09	Bldg 5115 Leaking Tank Site (AOC 8-3)	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC FL23	Landfill 5	LTM						

---

## Community Involvement

Community involvement for CC sites is addressed through the WSDOE.

