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FINAL

Basewide Operable Unit
Mather AFB, California

Final Explanation of Significant Difference
From the Record of Decision

Excavation of Shallow Soil Contaminated with Lead at Site 10C/68

June 2008

AFRPA Western Region Execution Center
3411 Olson Street
McClellan CA 95652-1003

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Acronyms and Abbreviations

AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFRPA	Air Force Real Property Agency
ARARs	applicable or relevant and appropriate requirements
BACT	Best Available Control Technology
BRAC	Base Realignment and Closure
BCT	BRAC Cleanup Team
CBRA	Comprehensive Baseline Risk Assessment
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	contaminant of concern
CVRWQCB	Central Valley Regional Water Quality Control Board
DI	deionized
DTSC	Department of Toxic Substances Control
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
FFS	Focused Feasibility Study
IC	Institutional Control
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MWH	Montgomery Watson Harza
NCP	National Contingency Plan
NPL	National Priorities List
OU	operable unit
PRG	Preliminary Remediation Goal
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act of 1986
µg/L	microgram(s) per liter
µg/dL	microgram(s) per deciliter
U.S.	United States
U.S. EPA	United States Environmental Protection Agency
WET	Waste Extraction Test

1.0 INTRODUCTION

This decision document presents an explanation of significant difference (ESD) from the Final Record of Decision (ROD) for the cleanup of the Basewide Operable Unit (Air Force Base Conversion Agency (AFBCA), 1998) at the former Mather Air Force Base, California (Mather). The ESD is developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Under Section 117(c) of CERCLA an ESD is required when significant changes (but not changes fundamental to the remedy selected in the ROD) are made to the final remedial action as described in the ROD. This ESD follows recommendations in the United States (U.S.) Environmental Protection Agency (EPA) Guidance for Preparing Superfund Proposed Plans, Records of Decisions, and Other Superfund Remedy Selection Decision Documents (U.S. EPA, 1999).

The significant difference from the ROD that is documented in this ESD is not considered a fundamental difference because lead cleanup was part of the remedial alternatives presented in the Focused Feasibility Study (FFS) for the Basewide Operable Unit (IT Corp., 1997) and in the Proposed Plan for Environmental Cleanup at the Basewide Operable Unit Sites (AFBCA, 1997), and presented for public comment from 24 May to 23 June 1997.

Site 10C/68, one of several sites in the Basewide Operable Unit, is a location where fire training was conducted prior to development of the site and the surrounding area into the facilities that would support the Strategic Air Command starting in the late 1950s. The site was identified in the records search in 1982, but was incorrectly located several times on maps during early site investigations (variously called Site 10, 10A, 10B). The actual location of fire training was encountered during drilling of groundwater monitoring well MAFB-209 in 1992, which penetrated petroleum-contaminated soils. The significance of this being related to fire training was not recognized at the time. Follow-up investigations both by Air Force personnel and during the Additional Site Characterization Remedial Investigation (IT Corp, 1996a) found a layer of petroleum-stained soil from about 8 to 11 feet deep that was associated with the initial limited debris and later a debris pit about 40 feet in diameter that had lead-contaminated soils.

The FFS for the Basewide Operable Unit (IT Corp., 1997) evaluated remedial alternatives for addressing the debris pit and associated lead contamination, and these alternatives were presented in the Proposed Plan for public comment. However, prior to the finalization of the Basewide Operable Unit ROD, it was decided that the debris would be cleaned up under removal action

authority, and the portions of the debris and soil that were suitable would be placed in landfill Site 4 during the consolidation of other solid waste into that landfill. Consequently, because the lead-contaminated debris and soil was excavated under the removal action authority (AFBCA, 1996), the remedy selected in the ROD did not address lead as a contaminant to be cleaned up. For purposes of remediation, Site 10C was combined in the ROD with the adjacent Site 68. The two sites have overlapping areas of contamination, and are generally referred to as Site 10C/68.

This ESD describes how additional lead-contaminated soil at Site 10C/68 was discovered in 2002, during sewer installation beneath the asphalt of Truemper Way, and how it will be remediated under one of the alternatives described in the FFS and the Proposed Plan for the Basewide Operable Unit, with institutional controls (ICs) to be established by a separate decision document if residual lead contamination remains at Site 10C/68 in concentrations incompatible with unrestricted land use.

The U.S. Air Force is still the owner of the property at Site 10C/68, the responsible party for the contamination, and has been delegated authority by Executive Order to provide the necessary remedial action consistent with the NCP and CERCLA Section 104. The U.S. EPA Region IX and State of California provide regulatory support and concurrence for the investigations and cleanup activities through the Mather Air Force Base (AFB) Federal Facilities Agreement (U.S. Air Force 1989). Both the U.S. EPA and State of California concur with this ESD.

Mather sites have been investigated under the U.S. Air Force Installation Restoration Program (IRP) since 1982. The entire base was proposed for listing on the Superfund (CERCLA) National Priorities List (NPL) in July 1989, and was placed on the NPL on 21 November 1989. In July 1989, the U.S. Air Force, the U.S. EPA, and the State of California signed the Federal Facility Agreement (FFA), under CERCLA Section 120. The FFA is a legal/contractual document governing the relationships between the Air Force and the regulatory agencies that oversee the cleanup program at Mather. The Air Force, U.S. EPA, California Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Control Board (CVRWQCB) remedial project managers are the key participants of the Base Realignment and Closure (BRAC) Cleanup Team (BCT), with the Air Force serving as lead agency. The BCT makes decisions regarding site assessment and cleanup at Mather.

This ESD will be included in the Administrative Record for the Basewide Operable Unit (OU) as required in the NCP Section 300.825 (a)(2). The Administrative Record is located at 3411 Olson Street, McClellan, CA, and is open for inspection by the public between the hours of 9 a.m. and 3 p.m. Monday through Thursday (or call 916-643-1250 x201 for an appointment).

A copy of the ESD is also available for public inspection at 10503 Armstrong Avenue, Mather, CA, (call Bill Hughes at 916-997-1564 for an appointment). A public comment period is not required for this ESD; however, the Air Force is notifying the public of the availability of the ESD for the Basewide OU ROD in a notice in the *Sacramento Bee* and the *Grapevine Independent Newspaper*.

2.0 SITE BACKGROUND AND SELECTED REMEDY

This section provides a brief description of Site 10C/68, its history, contamination problems, and the selected remedy. Further details can be found in the Basewide OU ROD and in the Administrative Record.

2.1 Site Description and History

Mather is an inactive, former military facility located approximately 10 miles east of Sacramento in Sacramento County, California, as shown in Figure 1. Mather AFB closed on 30 September 1993, under the Base Realignment and Closure Act. At the time of closure, the base encompassed 5,718 acres in an unsurveyed part of Township 8 North, Ranges 6 East and 7 East. Since closure, portions of the base have undergone reuse under long-term leases to Sacramento County for a regional park and for the Mather Field airport. The housing area and portions of the Main Base area have been deeded to Sacramento County for redevelopment. Portions of the Main Base area became part of the City of Rancho Cordova on 1 July 2003.

Site 10C/68 is located just north of the former refueling apron, and westward from the air cargo building on Truemper Way (Figure 1). Vegetation at Site 10C/68 consists of annual grasses.

Topography of the site is fairly flat, with elevations about 80 feet above mean sea level. Surface water in the area drains into the storm drain system and is piped to an unnamed tributary of Morrison Creek, informally called the West Ditch.

Remedial investigations and the remedial action at Site 10C/68 were undertaken as part of the Mather AFB IRP. The U.S. Air Force, U.S. EPA, and State of California signed the Basewide OU ROD in 1998 (AFBCA, 1998).

Figure 1: Site 10C/68 Location Map

The fire training facility that was at Site 10C/68 was identified in the 1982 Records Search (CH2M Hill, 1982). Prior to the ROD, several investigations had targeted incorrect locations for the fire training facility now known to be at Site 10C/68. The correct location, Site 10C/68, was investigated under the Additional Site Characterization investigation (IT Corp., 1996a).

A baseline risk assessment was also conducted as part of the remedial investigation activities. The Comprehensive Baseline Risk Assessment (CBRA) (IT Corp, 1996b) was performed on the site data prior to the removal of debris and associated soil from Site 10C/68. The CBRA identified a health risk associated with lead in soil at Site 10C/68; the lead presenting significant risk was excavated under removal action authority (AFBCA, 1996). No numerical removal goal was explicitly identified, but the risk screening number of 130 milligrams per kilogram (mg/kg) lead and a soluble designated level of 15 milligrams per liter (mg/L) were identified as preliminary remediation goals (PRGs) in the Basewide Operable Unit FFS Report based on residential or unrestricted land use (IT Corp, 1997). The total lead cleanup level of 130 mg/kg has been used as a cleanup level elsewhere at Mather (sites 20 and 86) because it represents the concentration above which the LEADSPREAD model predicted a blood lead level of 10 micrograms per deciliter (µg/dL), the whole-blood lead level of concern for children (DTSC, 1992). A revised LEADSPREAD level of concern (151 mg/kg) is used in this ESD in lieu of the 130 mg/kg screening level, based on site-specific information (see Appendix A). This value is acceptable to the State to represent a concentration below which unrestricted land use is protective of human health. The soluble cleanup level has also been used at other sites to be protective of groundwater quality, but adjusted for the environmental attenuation on a site-specific basis.

During the 1996 removal action at Site 10C/68, lead confirmation sampling was conducted. The maximum lead detection was 68 mg/kg.

In 2002, Sacramento County excavated a trench and installed a sewer line beneath the roadway of Truemper Way. Just below a portion of the roadway, a dark layer was visible which was thought to be ash related to historical fire training. Subsequent investigation by Montgomery Watson Harza (MWH) revealed the extent of this horizon and determined that the layer contained lead contamination. Most of the contaminated layer lies beneath the roadway.

2.2 *Description of the Remedy Selected in the ROD*

The selected remedy for Site 10C/68 is documented in the Final ROD for the cleanup of the Basewide Operable Unit (AFBCA, 1998). The major components of the remedy are:

- In situ treatment of the fuel-contaminated subsurface soils at Sites 10C and 68; and
- Treatment of the off gas (if applicable) will be conducted using granular activated carbon or more cost-effective means of best available control technology (BACT) as necessary to comply with applicable or relevant and appropriate requirements (ARARs).

The remedy selected in the ROD was modified from Alternative 10C/68.4 (i.e., the fourth of four alternatives) as presented in the FFS and in the Proposed Plan. The fourth alternative was modified by elimination of activities to excavate lead from surface soils. This activity was eliminated because at the time the ROD was finalized, the known lead contamination already had been excavated under removal authority. In other words, after soliciting public input on the remedial alternatives that included excavation of lead-contaminated soils, the excavation portion of the proposed remedies was accomplished by removal authority prior to finalization of the ROD. The second and third alternatives presented for public review and comment in the FSS and in the Proposed Plan also addressed excavation of lead-contaminated soils.

2.3 *Current and Potential Future Site and Resource Uses*

At the time of base closure in 1993, Mather AFB encompassed 5,718 acres. Most of the base was ruled surplus to the needs of the federal government and has been transferred or leased to various entities, primarily the County of Sacramento. The *Final Environmental Impact Statement for the Disposal and Reuse of Mather AFB* (AFBCA, 1992) presented the proposed reuse as a general aviation airport with air cargo operations and non-aviation uses including industrial, commercial, residential, educational, parks and recreation and natural habitat. In 1995, Mather Airport was officially opened as a 2,675-acre cargo airport and another 1,242 acres became Mather Regional Park. Both the airport and park areas are under long-term lease from the Air Force to Sacramento County. The four Supplemental Basewide OU sites are in these parcels. Sites 80 and 88 are in the Parks' parcel, and Sites 85 and 89 are in the Airport parcel. The land-use of the Airport and Park parcels is limited under terms of the planned conveyances to those compatible with airport and park uses, respectively. Other areas of Mather have been developed for housing, a business park, the Department of Veterans Affairs Medical Center, and the Federal Aviation Administration's Northern California TRACON facility.

Lands in the vicinity of Mather include a variety of residential, commercial, resource development/industrial, light industrial and undeveloped uses ranging from urbanized areas to open rural land. Areas to the west of the base primarily include light industrial and research and development uses with some agricultural land. North of the Mather Airport, the City of Rancho Cordova contains residential, commercial, research and development and related uses. There is strip commercial development along Folsom Boulevard and Mather Field Drive, and commercial development uses along the interchanges along U.S. Highway 50. Lands east and south of the base are mostly rural residential, agricultural or undeveloped, but housing developments are under construction east of Mather. Site 10C/68 is within the area currently leased by the Air Force Real Property Agency (AFRPA) to Sacramento County for an airport until land is transferred by deed to the County. Future land uses at Site 10C/68 are expected to be consistent with current uses, because they will be limited to airport uses by terms in the land transfer to the County. Airport uses are considered industrial land uses for purposes of exposure assumptions in human-health risk assessment.

3.0 DESCRIPTION OF AND BASIS FOR THE SIGNIFICANT DIFFERENCES

This ESD changes one portion of the ROD. To the extent that this ESD differs from the ROD, it supersedes it.

3.1 Reassessment of Site Risks from Lead Contamination in Soils

The baseline assessment of site risks for Site 10C/68 was documented in the Comprehensive Baseline Risk Assessment Report (IT Corp., 1996b). The risk assessment was conducted based on site characterization data, and incorporated into the selection of contaminants of concern (COCs) and PRGs in the Basewide OU FFS (IT Corp., 1997). The removal action conducted in 1996 at Site 10C/68 during development of the Basewide OU ROD resulted in excavation of a debris pit and associated lead contamination such that the removal goals, set at the FFS PRGs, were met. These FFS PRGs were adjudged protective of human health and the environment, including protection of water quality. There has not been a further quantitative assessment of site risks for the residual lead contamination that remains at the removal location for concentrations at or below the removal goals that were proposed in the Basewide OU FFS. However, revised PRGs are calculated in this ESD to address cleanup of the additional lead contamination discovered at Site 10C/68 consistent with the proposed land use as an airport area.

3.1.1 Health Risk Assessment for Lead at Site 10C/68

Site 10C/68 has an area containing lead contamination in what appears to have been a shallow trench filled with ash from fire training. The sole COC identified in this ash at Site 10C/68 is lead. The highest concentration found in samples from this layer is 3460 mg/kg. This concentration is well above values that are protective of human health under occupational exposure scenarios, and therefore the contamination is not compatible with unrestricted use.

To determine what concentration of lead is compatible with unrestricted use, a human health risk for lead was calculated using the DTSC LEADSPREAD model default and site-specific exposure assumptions. The site-specific, but conservative, soil values were used for both calculations and region-specific drinking water concentrations were entered and compared to the default value. Typically, the value for soil concentration entered would be a 95% upper confidence level estimate of the mean of site samples. However, for Site 10C/68, the highest lead value was used because the sampling was not designed to provide a representative estimate of the mean concentration. The threshold of concern is a predicted blood lead level of 10 µg/dL. Based on exposure assumptions used in the LEADSPREAD model, the maximum concentration of lead in

the ash layer at Site 10C/68 (i.e., 3460 mg/kg) is predicted to result in a blood lead level of 133.5 µg/dL value for a child receptor at the 99th percentile estimate. The model predicts this blood lead level assuming concurrent exposure to a lead concentration in drinking water of 6 micrograms per liter (µg/L), which is the 90th percentile reported from nearby drinking water supplies. The model predicts a blood lead level of 135.2 µg/dL value for a child receptor at the 99th percentile estimate if the default drinking water value of 15 µg/L is assumed. The calculation of a concentration compatible with unrestricted use is described below.

3.1.2 Exposure Assessment

Exposure assessment is the determination of the magnitude, frequency, duration, and route of exposure. Populations that currently or potentially may contact chemicals at Mather were identified along with potential routes of exposure (contact with a chemical). Magnitude is determined by estimating the amount, or concentration, of the chemical at the point of contact over a specified time period, or exposure duration, as well as intake, or dose, of the chemical.

The DTSC LEADSPREAD model incorporates exposure from inhalation of dust, ingestion of soil and water, and ingestion of plants. The model was used with default values for exposure and in addition with a site-specific, yet still conservative, estimate of the lead concentration of drinking water. Although the 90th percentile lead concentration in tap water samples from adjacent drinking water systems has been reported at about 2 to 4 µg/L, the values from the Mather-Sunrise water system have been 10 µg/L (2004) and 14 µg/L (2007). For the purposes of this ESD, a value of 14 µg/L was used in lieu of the default value. The default value is 15 µg/L, which is set at the maximum legal concentration that can be provided long-term by a water system subject to the Safe Drinking Water Act.

The threshold of concern for lead in soil at Site 10C/68 is a concentration of 151 mg/kg. Above this concentration, unrestricted exposure could result in a blood lead level greater than 10 µg/dL. This has been estimated using the DTSC LEADSPREAD model using the regional estimate for lead concentrations in drinking water. The default values in the model result in a soil lead level of 146 mg/kg as a PRG, that is, 99% of children exposed to soil in a residential setting where lead concentrations in soil are 146 mg/kg or less are predicted to have blood lead levels no greater than 10 µg/dL. The default values assume ingestion of drinking water at the highest lead concentration allowed by the Safe Drinking Water Act, 15 µg/L. Substituting a conservative upper bound on lead (i.e., 14 µg/L) reported in drinking water at Mather or the adjacent Sunrise service are results in a site-specific PRG of 151 mg/kg lead in soil, which is protective at the 99th percentile estimate of blood lead level in a child exposed in a residential scenario.

Therefore, the 151 mg/kg is adopted by this ESD as a concentration of total lead in soil compatible with unrestricted land use, above which land-use restrictions are required to limit exposure to the contaminated soil. The supporting LEADSPREAD calculations are included in Appendix A.

3.1.3 Toxicity Assessment

No additional toxicity assessments were done for post-removal contaminants, as the only remaining contaminant of concern, lead, was assessed using toxicity values inherent in the DTSC LEADSPREAD model and the agreed-upon blood lead threshold level of concern, 10 µg/dL.

3.1.4 Risk Characterization

The only risk characterization done was a calculation of the threshold of concern for lead in the soil at 151 mg/kg; above which unacceptable blood lead levels are predicted to occur under the unrestricted land use exposure scenario using the DTSC LEADSPREAD model (see Appendix A). This value represents a threshold for residual lead after the excavation authorized by this ESD is completed. If residual lead concentrations at Site 10C/68 exceed 151 mg/kg after the proposed excavation is complete, then ICs in the form of land-use restrictions will be required to prevent unacceptable exposure to the residual lead, and will be established by a decision document after the excavation is completed and residual lead concentrations determined.

3.1.5 Uncertainty Analysis

All risk characterization includes sources of uncertainty inherent to the risk assessment process. The uncertainties in this case are primarily due to limitations in the available site data and methods used to quantify risk. Uncertainty may be compounded and the resulting risk estimates may be overestimated or underestimated by several orders of magnitude. However, this risk characterization is adequate to justify the proposed excavation, and post-excavation confirmation sampling will provide the necessary information to determine whether ICs will be required based on whether residual lead concentrations at Site 10C/68 are above 151 mg/kg.

The uncertainties in the DTSC LEADSPREAD blood lead level estimates include the choice of exposure assumptions of mass and concentration. Site-specific lead in air (dust) and in edible plants has not been determined, so default values are used. The values for drinking water supply are chosen conservatively with a bias to higher concentrations so that risk is not underestimated:

two values were compared, the default of 15 µg/L and a value of 14 µg/L that is representative of the Mather-sunrise potable water system.

3.2 Remedial Action Objectives

This section identifies the Remedial Action Objectives (RAOs) for the significant differences to the remedy for Site 10C/68 authorized by this ESD.

The objective of excavating and properly disposing of soil containing lead contamination is, at a minimum, to eliminate the presence of concentrations incompatible with industrial land use; as shown on Table 3-1, the U.S. EPA PRG for industrial exposure assumptions has been set at concentrations above 800 mg/kg and will be the cleanup goal for this action. Another objective is to protect water quality in the underlying aquifer at or below the tap water maximum contaminant level (MCL) of 15µg/L by excavating soluble lead at concentrations above 15 mg/L; the rationale for this action level is also presented on Table 3-1. It is anticipated that the excavation effort may result in lead concentrations remaining at the site that are above 151 mg/kg, the unrestricted use level established through site-specific determinations using the DTSC's LEADSPREAD model. If residual lead remains at Site 10C/68 at concentrations incompatible with unrestricted land use (i.e., lead concentrations remaining at the site that are above 151 mg/kg), then ICs will be established by a decision document and implemented to prevent unacceptable risks that may result from disturbance of, and exposure to, lead contaminated soils at this location. However, based on the site conceptual model, the burial trench has a distinct footprint. Therefore, it is likely that excavation to meet the industrial cleanup level (i.e., 800 mg/kg lead) may also meet the residential or unrestricted cleanup level (i.e., 151 mg/kg lead); in this case, ICs would not need to be established.

Meeting the RAOs shall be the primary and fundamental indicators of performance for the excavation, the ultimate aim of which is to protect human health and the environment. The performance measures are the RAOs plus the actions necessary to achieve those objectives. It is anticipated that successful implementation and completion of these measures will achieve protection of human health and the environment and compliance with all legal requirements. The RAOs for lead in soil at Site 10C/68 are listed in Table 3-1.

The ROD remedy is changed to reinstate the excavation of lead-contaminated surface soils, including soils deeper than 2 feet deep (subsurface soils) as necessary to achieve a cleanup level of 800 mg/kg total lead based on industrial land use, and 15 mg/L soluble lead as measured by the waste extraction test (WET) method substituting deionized (DI) water for an acidic solution.

This method is referred to as the DI WET method. Both cleanup levels apply to the cleanup; excavation will occur until remaining soil is below both cleanup levels. Sampling and laboratory analysis will be conducted for both soluble and total lead to confirm attainment of the cleanup levels; details of the sampling activities will be provided in a work plan.

The cost of the additional lead excavation and disposal is estimated to be about $120,000. This estimate conservatively assumes excavation of 110 tons, disposal of this material as hazardous waste, and 12 confirmation samples (total lead and soluble lead by the DI WET method). The actual amount of soil excavated and number of samples collected will be dictated by the work plan (MWH, 2004, to be modified to reflect the cleanup levels in this ESD) and site conditions, but will be sufficient to demonstrate that the remedial action cleanup levels have been achieved.

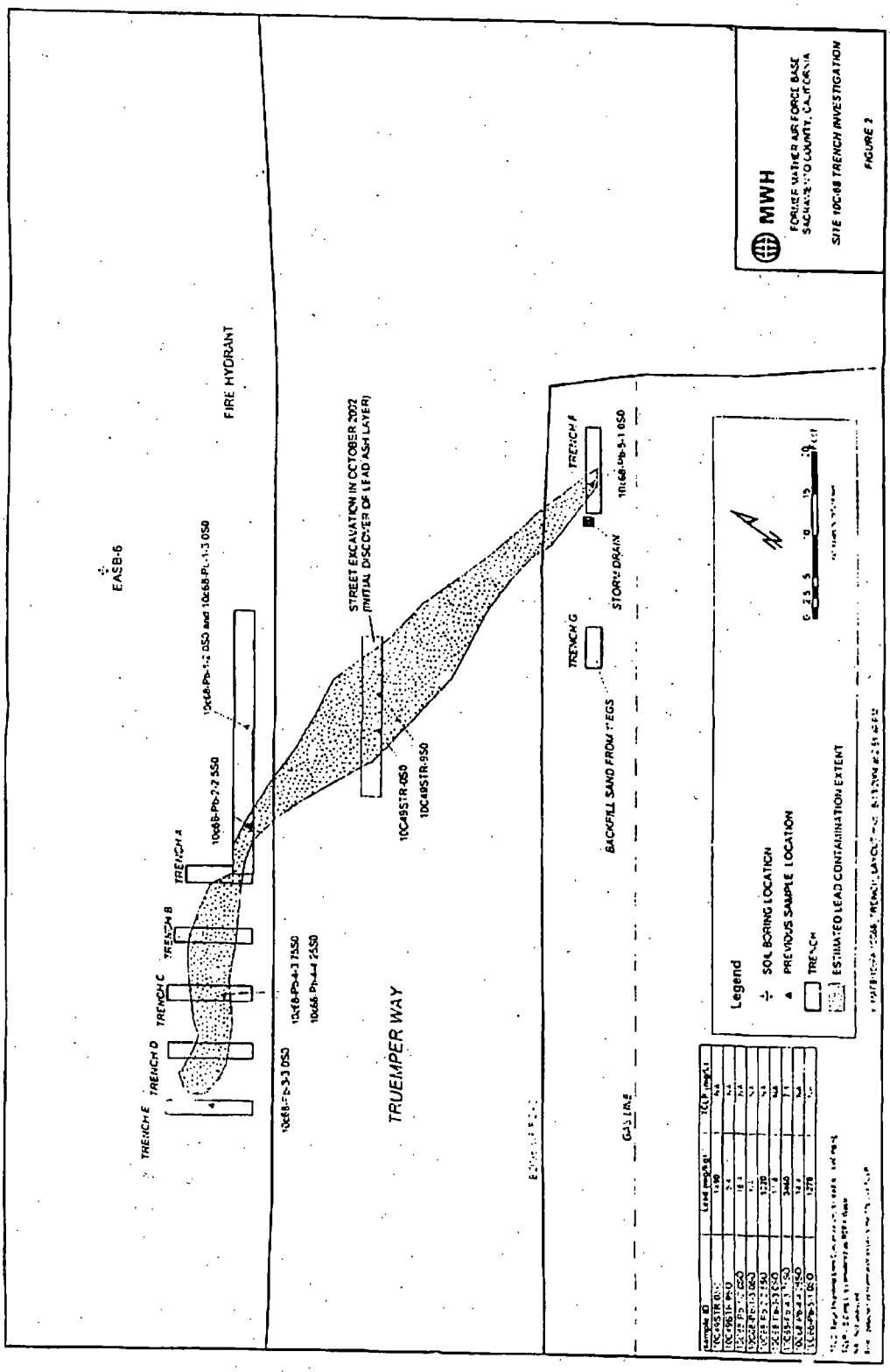
The area of lead contamination is shown on Figure 2.

Table 3-1

Remedial Action Objectives for Site 10C/68 Lead Excavation

Contaminant of Concern	Remedial Action Objective	Basis
Lead in soil	Prevent human exposure to concentrations above 800 mg/kg	U.S. EPA Region IX PRG for industrial land use
Lead in soil	Prevent human exposure to concentrations above 151 mg/kg	Unrestricted (i.e., residential land use) scenario; basis for ICs if post-excavation residual lead concentrations exceed this
Lead in soil	Excavate soil with soluble lead concentrations above 15 mg/L that could threaten water quality	Estimate of soluble designated level, assuming 1000-fold environmental attenuation to protect groundwater quality value of 15 µg/L based on the Safe Drinking Water Act tap-water standard

Figure 2: Site 10C/68 Location of Lead Contamination



3.3 Applicable or Relevant and Appropriate Requirements

There are several requirements governing the excavation and removal of soil contaminated with lead at Site 10C/68 and its proper disposal at an off-site facility. Some requirements are found in CERCLA; those outside of CERCLA are defined in CERCLA as ARARs, which are identified in the Basewide OU ROD and in this ESD. Compliance with these identified ARARs is required by the ESD to perform the cleanup of the soil at Site 10C/68 containing lead contamination.

3.3.1 Federal and State Chemical-Specific ARARs

There are no chemical-specific federal or state ARARs identified for the Site 10C/68 lead cleanup. Numerical standards for the disposal of lead-contaminated soils are established by action-specific ARARs.

3.3.2 Federal and State Location-Specific ARARs

There are no location-specific federal or state ARARs identified for the Site 10C/68 lead cleanup.

3.3.3 Federal and State Action-Specific ARARs

ARARs governing excavation and removal of soil contaminated with lead have not changed from those identified in the Basewide OU ROD, but Site 10C/68 has been added to the list of sites for which excavation is governed by the ARARs listed in Table 3-2. These are ARARs identified in the Basewide OU ROD for excavation activities but not associated with Site 10C/68 in the ROD.

Table 3-2: State and Federal Action-Specific Applicable or Relevant and Appropriate Requirements

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description of Applicable or Relevant and Appropriate Requirements
Federal Clean Water Act	40 CFR 122 - USEPA Administered Permit Programs: The National Discharge Elimination System	Subsection(s) as Listed Below	Requirements to ensure storm water discharges from Mather AFB remedial action activities do not contribute to a violation of surface water quality standards. All reasonable steps must be taken to minimize or prevent discharges which have a reasonable likelihood of causing adverse impacts on surface water quality (40 CFR 122.41(d)). Discharges into surface water must achieve federal and state water quality standards (40 CFR 122.44(d)).
	40 CFR 122.26	Applicable	
	40 CFR 122.41(d)	Applicable	
	40 CFR 122.41(e)	Applicable	
	40 CFR 122.44(d)	Applicable	
California Water Code	State Water Resources Control Board Order 99-08-DWQ (General order for storm water management at construction sites)	Relevant and Appropriate	Applies to construction sites one acre or greater in size, and smaller sites with a potential for causing water quality degradation. A SWPPP must be prepared and implemented prior to disturbing the site. The SWPPP must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. Non-storm water BMPs must also be implemented year round. The SWPPP shall remain on the site while the site is under construction, commencing with the initial mobilization and ending with site restoration of the excavation site. The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges and, (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges. The SWPPP shall include BMPs which address source control and, if necessary, shall also include BMPs which address pollutant control. Administrative portions of this permit are not applicable in accordance with CERCLA.

Table 3-2: State and Federal Action-Specific Applicable or Relevant and Appropriate Requirements (continued)

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description of Applicable or Relevant and Appropriate Requirements
Porter-Cologne Water Quality Control Act (California Water Code Sections 13140 thru 13147, 13172, 13260, 13263, 13267, 13304)	Title 23 (Waters), Division 3 (State Water Resources Control Board), Chapter 15 (Discharges of Waste to Land), Article 2 (Waste Classification and Management)	Subsection(s) as Listed Below	Classification and Siting Criteria (23 CCR 2530 (c & d): New waste piles shall be designed, constructed, and operated to ensure that wastes will be a minimum of five feet above the highest groundwater elevation. All containment structures at the unit shall have a foundation or base capable of supporting the structures and capable of withstanding hydraulic pressure gradients. The unit needs to be able to withstand flooding without washout, ground rupture, and rapid geological change. Class II (23 CCR 2532): Waste Management Units for Designated Waste: Waste management units will be isolated from the waters of the state through either natural or engineered barriers. Relevant to the waste being treated at the ex situ bioremediation facility. Excavated wastes from various sites will be spread in lifts in the Mather bioremediation cell. Treatment might include nutrient addition, irrigation, and aeration. This treatment is considered similar to a waste pile. Soils containing petroleum hydrocarbons are not anticipated to be classified as hazardous, but may be classified as designated wastes. Thus Class II requirements are considered most relevant.
	23 CCR 2530 (c)	Applicable 1,2	
	23 CCR 2530 (d)	Applicable 1,2	

ARAR = applicable or relevant and appropriate requirement
BMP = Best Management Practice
CCR = California Code of Regulation
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
SWPPP = Storm Water Pollution Prevention Plan
SWRCB = State Water Resource Control Board

Applicable 1. Only as invoked by 23 CCR 2511(d).
Applicable 2. Only as invoked through 23 CCR 2511(d).

4.0 PUBLIC PARTICIPATION ACTIVITIES

Although the remedy is modified from the original decision document, the modification is not a fundamental change in the scope or purpose of the action; therefore the only solicitation of public comment will be through the Mather Restoration Advisory Board (RAB). A notice of availability and brief description of this ESD will be published in the *Sacramento Bee* after the ESD is signed. The ESD will become a part of the Administrative Record for the Basewide OU at Mather. In addition, the topic will be discussed during the next Mather RAB meeting after signing of the ESD.

5.0 AFFIRMATION OF THE STATUTORY DETERMINATIONS

The ARARs addressed by the Basewide OU ROD for the Site 10C/68 remedy are augmented by the additional ARARs identified in Table 3-2 of this ESD.

Considering the additions to the Site 10C/68 remedy as documented in this ESD, the Air Force, U.S. EPA, and the State of California believe that this remedy is protective of human health and the environment, complies with federal and state requirements that were identified in the ROD and this ESD as ARARs, and is cost effective. In addition, the remedy continues to utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

If this remedy results in contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, institutional controls will be established in a decision document, and a review will be conducted no less frequently than each five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

6.0 ESD SIGNATURE PAGE

This ESD to the ROD for the Basewide OU sites is final and will be made available to the public by placement in the Administrative Record and information repository [per NCP §§300.435(c)(2)(i)(A) and 300.285(a)(2)].

This ESD may be executed and delivered in any number of counterparts, each of which when executed and delivered shall be deemed to be an original, but all such counterparts shall together constitute one and the same document.

Decision Statement: The U.S. EPA and the Air Force jointly select the remedy augmentation described in this ESD for the Basewide OU Site 10C/68, consisting of the excavation of soil contaminated with lead and implementation of ICs if excavation results in residual lead left on site at concentrations above those compatible with unrestricted use.

JEFFREY DOMM
Acting Director
Air Force Real Property Agency
U.S. Air Force

24 Jun 08
Date

MICHAEL M. MONTGOMERY
Chief, Federal Facilities and Site Cleanup Branch
Region IX
U.S. Environmental Protection Agency

31 July 08
Date

The State of California Department of Toxic Substances Control, and California Central Valley Regional Water Quality Control Board had an opportunity to review and comment on this ESD for the Basewide OU Site 10C/68.

ANTHONY J. LANDIS, P.E.
Supervising Hazardous Substances Engineer II
Sacramento Office
Brownsfields and Environmental Restoration Program
Department of Toxic Substances Control

8-4-08
Date

7.0 REFERENCES

Some of the references may be found on the internet at:
https://afrpaar.afrpa.pentagon.af.mil/docsearch/newdocsearchform.asp?base=MATHR

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Appendix A
Site 10C/68 LEADSPREAD Calculations

Appendix A
Site 10C/68 LEADSPREAD Calculations

Supporting health risk calculations were performed using LEADSPREAD 7, obtained from the DTSC website at http://www.dtsc.ca.gov/AssessingRisk/leadspread.cfm.

The blood lead level predicted for the exposure scenarios is shown in the "OUTPUT" table in percentile columns. The two right-most columns are preliminary remediation goals based on 99th and 95th percentiles for comparison, which are the soil concentrations at which exposure is predicted result in 99 percent and 95 percent respectively, of those exposed having blood lead levels no greater than 10 µg/dL. For determining a soil cleanup PRG, the value used is the PRG calculated for a child at the 99th percentile.

Two calculations were done for the highest lead concentration of total lead reported for the Site 10C/68 ash layer. This is the soil and ash for which excavation is authorized by this ESD. One calculation used the default drinking water concentration of 15 µg/L lead, and the other used a site-specific drinking water concentration of 14 µg/L lead, based on the 90th percentile of tap water results collected from the Mather-Sunrise water system in 2007 by the Sacramento County Water Agency. It should be noted that this value is greater than the 10 µg/L reported from the previous (2004) sampling at Mather-Sunrise, and much greater than the 90th percentile of the most recent tap water lead values from the adjacent Suburban (2004 & 2007) and Arden Cordova (2005) water systems were 2, 4, and 2 µg/L, respectively.

The latter calculation indicates that unrestricted land use could result in an unacceptable blood lead level (i.e., greater than 10 µg/dL in a child at the 99th percentile) where lead concentrations in soil exceed 151 mg/kg.

LEAD RISK ASSESSMENT SPREADSHEET

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

From USER'S GUIDE to version 7

Site 10C/68, Mather

Calculation using maximum lead detection (1000 mg/kg) in ash layer and default lead (MCL of 15 ug/L) in drinking water systems

INPUT	
MEDIUM	LEVEL
Lead in Air (ug/m^3)	0.028
Lead in Soil/Dust (ug/g)	3460.0
Lead in Water (ug/l)	15
% Home-grown Produce	7%
Respirable Dust (ug/m^3)	1.5

OUTPUT							
	Percentile Estimate of Blood Pb (ug/dl)					PRG-99	PRG-95
	50th	90th	95th	98th	99th	(ug/g)	(ug/g)
BLOOD Pb, ADULT	12.6	23.0	27.2	33.0	37.6	676	1063
BLOOD Pb, CHILD	45.2	82.6	97.8	118.8	135.2	146	247
BLOOD Pb, PICA CHILD	69.6	127.1	150.4	182.8	208.1	94	159
BLOOD Pb, OCCUPATIONAL	3.3	6.1	7.2	8.8	10.0	3475	5464

EXPOSURE PARAMETERS			
	units	adults	children
Days per week	days/wk	7	
Days per week, occupational		5	
Geometric Standard Deviation		1.6	
Blood lead level of concern (ug/dl)		10	
Skin area, residential	cm^2	5700	2900
Skin area occupational	cm^2	2900	
Soil adherence	ug/cm^2	70	200
Dermal uptake constant	(ug/dl)/(ug/d	0.0001	
Soil ingestion	mg/day	50	100
Soil ingestion, pica	mg/day		200
Ingestion constant	(ug/dl)/(ug/d	0.04	0.16
Bioavailability	unitless	0.44	
Breathing rate	m^3/day	20	6.8
Inhalation constant	(ug/dl)/(ug/d	0.08	0.19
Water ingestion	l/day	1.4	0.4
Food ingestion	kg/day	1.9	1.1
Lead in market basket	ug/kg	3.1	
Lead in home-grown produce	ug/kg	1557.0	

PATHWAYS

ADULTS	Residential			Occupational		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	3.8E-5	0.13	1%	1.4E-5	0.05	1%
Soil Ingestion	8.8E-4	3.04	24%	6.3E-4	2.17	65%
Inhalation, bkgrnd		0.05	0%		0.03	1%
Inhalation	2.5E-6	0.01	0%	1.8E-6	0.01	0%
Water Ingestion		0.84	7%		0.84	25%
Food Ingestion, bkgrnd		0.22	2%		0.23	7%
Food Ingestion	2.4E-3	8.28	66%			0%

CHILDREN	typical			with pica		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	5.6E-5	0.19	0%		0.19	0%
Soil Ingestion	7.0E-3	24.36	54%	1.4E-2	48.72	70%
Inhalation	2.0E-6	0.01	0%		0.01	0%
Inhalation, bkgrnd		0.04	0%		0.04	0%
Water Ingestion		0.96	2%		0.96	1%
Food Ingestion, bkgrnd		0.50	1%		0.50	1%
Food Ingestion	5.5E-3	19.18	42%		19.18	28%

LEAD RISK ASSESSMENT SPREADSHEET
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

From USER'S GUIDE to version 7

Site 10C/68, Mather

Calculation using maximum lead detection (1000 mg/kg) in ash layer and region-specific value for lead (6 ug/L) in drinking water systems

INPUT	
MEDIUM	LEVEL
Lead in Air (ug/m^3)	0.028
Lead in Soil/Dust (ug/g)	3460.0
Lead in Water (ug/l)	6
% Home-grown Produce	7%
Respirable Dust (ug/m^3)	1.5

OUTPUT							
	Percentile Estimate of Blood Pb (ug/dl)					PRG-99	PRG-95
	50th	90th	95th	98th	99th	(ug/g)	(ug/g)
BLOOD Pb, ADULT	12.1	22.0	26.1	31.7	36.1	828	1215
BLOOD Pb, CHILD	44.7	81.6	96.5	117.3	133.5	192	293
BLOOD Pb, PICA CHILD	69.0	126.1	149.2	181.3	206.3	123	188
BLOOD Pb, OCCUPATION,	2.8	5.2	6.1	7.4	8.5	4258	6246

EXPOSURE PARAMETERS			
	units	adults	children
Days per week	days/wk	7	
Days per week, occupational		5	
Geometric Standard Deviation		1.6	
Blood lead level of concern (ug/dl)		10	
Skin area, residential	cm^2	5700	2900
Skin area occupational	cm^2	2900	
Soil adherence	ug/cm^2	70	200
Dermal uptake constant	(ug/dl)/(ug/c	0.0001	
Soil ingestion	mg/day	50	100
Soil ingestion, pica	mg/day		200
Ingestion constant	(ug/dl)/(ug/c	0.04	0.16
Bioavailability	unitless	0.44	
Breathing rate	m^3/day	20	6.8
Inhalation constant	(ug/dl)/(ug/c	0.08	0.19
Water ingestion	l/day	1.4	0.4
Food ingestion	kg/day	1.9	1.1
Lead in market basket	ug/kg	3.1	
Lead in home-grown produce	ug/kg	1557.0	

PATHWAYS

ADULTS	Residential			Occupational		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	3.8E-5	0.13	1%	1.4E-5	0.05	2%
Soil Ingestion	8.8E-4	3.04	25%	6.3E-4	2.17	77%
Inhalation, bkgrnd		0.05	0%		0.03	1%
Inhalation	2.5E-6	0.01	0%	1.8E-6	0.01	0%
Water Ingestion		0.34	3%		0.34	12%
Food Ingestion, bkgrnd		0.22	2%		0.23	8%
Food Ingestion	2.4E-3	8.28	69%			0%

CHILDREN	typical			with pica		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	5.6E-5	0.19	0%		0.19	0%
Soil Ingestion	7.0E-3	24.36	55%	1.4E-2	48.72	71%
Inhalation	2.0E-6	0.01	0%		0.01	0%
Inhalation, bkgrnd		0.04	0%		0.04	0%
Water Ingestion		0.38	1%		0.38	1%
Food Ingestion, bkgrnd		0.50	1%		0.50	1%
Food Ingestion	5.5E-3	19.18	43%		19.18	28%

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