



Travis AFB

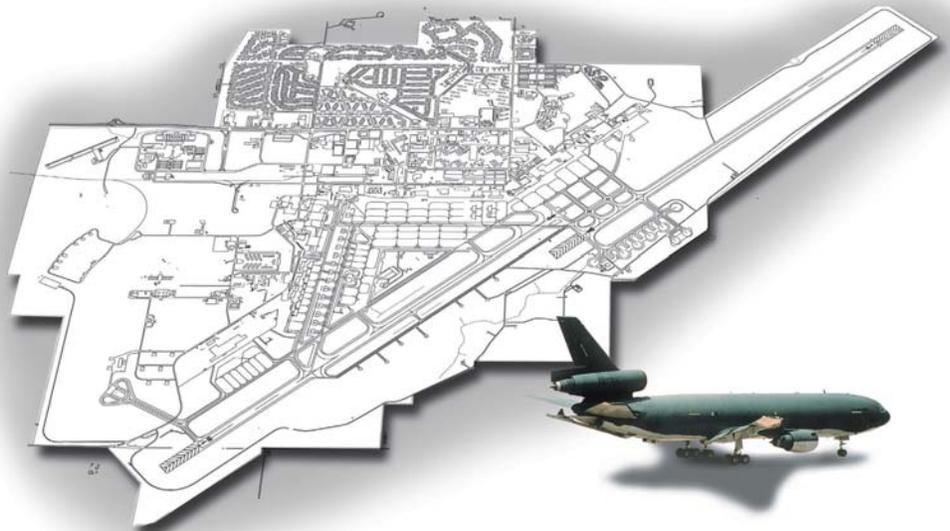


Environmental Restoration Program

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision

FINAL

MAY 2006





DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

May 10, 2006

MEMORANDUM FOR DISTRIBUTION

FROM: 60 CES/CEVR
411 Airmen Drive
Travis AFB CA 94535-2001

SUBJECT: Final North, East, and West Industrial Operable Unit (NEWIOU) Soil, Sediment,
and Surface Water Record of Decision (ROD)

The attached change-out package contains the signature pages and other materials needed to convert the Draft Final Soil, Sediment, and Surface Water ROD for the North East West Industrial Operable Unit (NEWIOU) at Travis AFB into a final version. This ROD documents the selected alternatives for the remediation of NEWIOU soil, sediment, and surface water sites. If you have any questions concerning the attached materials, please contact Mr. Glenn Anderson at (707) 424-4359.

A handwritten signature in black ink, appearing to read "Mark H. Smith".

MARK H. SMITH
Chief, Environmental Restoration

Attachment:
Change-out package for the final NEWIOU Soil, Sediment, and Surface Water ROD

Distribution: (see attached)

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**North/East/West Industrial Operable Unit
Travis Air Force Base**

**North/East/West Industrial Operable Unit
Soil, Sediment, and Surface Water
Record of Decision**

Final

**60th Air Mobility Wing
Travis Air Force Base, California**

May 2006

Contents

Section	Page
Acronyms	ix
Part I Declaration	I-1
Site Name and Location	I-1
Statement of Basis and Purpose	I-1
Assessment of the Site	I-1
Description of the Selected Remedies	I-5
Community Acceptance of Selected Remedies.....	I-8
On-Base Consolidation.....	I-9
Remedial Design/Remedial Action Documents	I-9
Soil, Sediment, and Surface Water Cleanup Levels	I-10
Land Use Controls	I-11
NEWIOU SSSW ROD Data Certification Checklist	I-11
Declaration.....	I-12
Signature Sheet.....	I-13
Part II Decision Summary.....	II-Intro-1
Introduction	II-Intro-1
1.0 TRAVIS AFB DESCRIPTION	II-1-1
1.1 Physical Description	II-1-1
1.2 Land Use	II-1-1
1.3 Ecology	II-1-3
1.3.1 Terrestrial Habitats	II-1-4
1.3.2 Aquatic/Wetland Habitats.....	II-1-4
1.3.3 Wildlife.....	II-1-7
1.4 Geology and Hydrogeology	II-1-8
1.4.1 Geology and Soils	II-1-8
1.4.2 Hydrogeology	II-1-12
1.4.3 Groundwater Use.....	II-1-13
1.5 Surface Water	II-1-13
2.0 OVERVIEW OF TRAVIS AFB RESTORATION BRANCH AND ENVIRONMENTAL PROGRAMS.....	II-2-1
2.1 Management Action Plan and Travis AFB General Plan.....	II-2-1
2.2 CERCLA Process	II-2-2
2.2.1 Remedial Investigations (RIs)	II-2-2
2.2.2 Feasibility Study (FS).....	II-2-2
2.2.3 Proposed Plan.....	II-2-2
2.2.4 Record of Decision (ROD)	II-2-3
2.2.5 Remedial Design (RD).....	II-2-3
2.2.6 Remedial Action (RA)	II-2-3
2.3 Operable Units	II-2-3
2.3.1 Scope and Role of Operable Units at Travis Air Force Base	II-2-3

Contents (Cont'd)

Section	Page
2.3.2	NEWIOU Description II-2-4
2.3.3	WABOU and NEWIOU Status in the Cleanup Process..... II-2-5
2.4	Removal Actions II-2-5
2.5	Risk Assessment..... II-2-5
2.6	Community Participation II-2-6
2.7	Petroleum-Only Contaminated Sites Program..... II-2-7
2.8	Remedial Design/Remedial Action II-2-8
3.0	NEWIOU REMEDIAL INVESTIGATION SUMMARY II-3-1
3.1	Nature and Extent of Contamination..... II-3-1
3.2	Risk Assessments II-3-6
3.2.1	Human Health Risk Assessment II-3-6
3.2.2	Ecological Risk Assessment..... II-3-9
3.3	Site Descriptions..... II-3-16
3.3.1	SD001 (Union Creek) II-3-16
3.3.2	FT002 (Fire Training Area 1) II-3-17
3.3.3	FT003 (Fire Training Area 2) II-3-17
3.3.4	FT004 (Fire Training Area 3) II-3-17
3.3.5	FT005 (Fire Training Area 4) II-3-18
3.3.6	LF007 (Landfill 2) II-3-18
3.3.7	OT010 (Sludge Disposal Site) II-3-19
3.3.8	SS015 (Solvent Spill Area and Facilities 550 and 552)..... II-3-19
3.3.9	SS016 (Oil Spill Area and Facilities 11, 13/14, 20, 42/1941, 139/144, and Storm Sewer Right-of-Way) II-3-19
3.3.10	WP017 (Oxidation Pond Site)..... II-3-20
3.3.11	SS029 (Monitoring Well MW329x29 Area)..... II-3-20
3.3.12	SS030 (Monitoring Well MW269x30 Area)..... II-3-20
3.3.13	ST032 (Areas of Monitoring Wells MW107x32 and MW246x32) II-3-21
3.3.14	SD033 (Storm Sewer II, South Gate Area, Facilities 810 and 1917, and West Branch of Union Creek)..... II-3-21
3.3.15	SD034 (Facility 811)..... II-3-21
3.3.16	SS035 (Facility 818/819) II-3-22
3.3.17	SD036 (Facility 872/873/876)..... II-3-22
3.3.18	SD037 (Sanitary Sewer System, Facilities 837/838, 919, 977, 981, Ragsdale/V Area, and Area G Ramp in the WIOU)..... II-3-22
3.4	Description of RI No Further Action Sites..... II-3-23
3.4.1	NFA Sites Determined in the NOU RI..... II-3-23
3.4.2	NFA Sites Determined in the EIOU RI II-3-23
3.4.3	NFA Sites Determined in the WIOU RI..... II-3-25
4.0	NEWIOU FEASIBILITY STUDY SUMMARY..... II-4-1
4.1	Initial Screening of Alternatives II-4-2

Contents (Cont'd)

Section	Page
4.2	Detailed Analysis of Alternatives..... II-4-4
4.3	Comparative Analysis of Alternatives..... II-4-4
4.3.1	Summary of the Surface Water Group..... II-4-8
4.3.2	Summary of the Soil Groups II-4-8
4.4	Corrective Action Management Unit (CAMU) II-4-16
5.0	SELECTED REMEDIAL ACTIONS..... II-5-1
5.1	Description of Selected Remedial Alternatives II-5-1
5.1.1	Alternative 10— No Action for Surface Water II-5-1
5.1.2	Alternative 16—No Action for Soil or Sediment..... II-5-3
5.1.3	Alternative 17—Land Use Controls II-5-3
5.1.4	Alternative 18—Excavation..... II-5-4
5.2	Criteria Used to Determine Soil and Sediment Cleanup Levels II-5-7
5.2.1	Residential/Industrial Exposure Scenarios II-5-7
5.2.2	Risk Management II-5-8
5.2.3	Human Health Exposure for Carcinogens and Non-Carcinogens II-5-9
5.2.4	Ecological Exposure..... II-5-10
5.2.5	Groundwater Protection II-5-11
5.2.6	NEWIOU Reference Concentrations..... II-5-11
5.2.7	Vapor Intrusion..... II-5-12
5.2.8	Total Petroleum Hydrocarbons (TPH)..... II-5-12
5.3	Site-Specific Remedial Actions..... II-5-13
5.3.1	Storm Sewer Systems A and C, Union Creek (SD001) II-5-14
5.3.2	Fire Training Area 1 (FT002) II-5-20
5.3.3	Fire Training Area 2 (FT003) II-5-22
5.3.4	Fire Training Area 3 (FT004) II-5-24
5.3.5	Fire Training Area 4 (FT005) II-5-31
5.3.6	Landfill 2, Areas B, C, D, E, and G (LF007) II-5-36
5.3.7	Sludge Disposal Site (OT010) II-5-42
5.3.8	Solvent Spill Area and Facilities 550 and 552 (including area at Facility 1832) (SS015)..... II-5-43
5.3.9	Oil Spill Area, Facilities 11, 13/14, 20, 42/1941, 139/144, and Selected Sections of Storm Sewer Right-of-Way (SS016)..... II-5-45
5.3.10	Oxidation Pond Site (WP017)..... II-5-47
5.3.11	MW329x29 Area (SS029) II-5-48
5.3.12	MW269x30 Area (SS030) II-5-50
5.3.13	MW107x32 and MW246x32 Areas (ST032)..... II-5-51
5.3.14	Storm Sewer System B (West Branch of Union Creek), Facilities 810 and 1917, and South Gate Area (SD033) II-5-53
5.3.15	Facility 811 (SD034)..... II-5-58
5.3.16	Facility 818/819 (SS035) II-5-59
5.3.17	Facility 872/873/876 (SD036)..... II-5-60

Contents (Cont'd)

Section	Page	
5.3.18	Sanitary Sewer System, Facilities 837, 838, 919, 977, and 981, Area G Ramp, and Ragsdale/V Area (SD037).....	II-5-61
5.3.19	Summary of Selected Remedial Alternatives.....	II-5-64
5.4	Land Use Controls (LUCs).....	II-5-65
5.4.1	Components of the Travis AFB General Plan and Existing Administrative Procedures.....	II-5-71
5.4.2	Residential Cleanup Levels	II-5-72
5.5	Statutory Determinations.....	II-5-73
5.5.1	Protectiveness of Human Health and the Environment	II-5-74
5.5.2	Applicable or Relevant and Appropriate Requirements	II-5-74
5.5.3	Cost-Effectiveness	II-5-74
5.5.4	Use of Permanent Solutions, Alternative Treatments, or Resource Recovery Technologies to the Maximum Extent Practicable	II-5-75
5.5.5	Preference for Treatment as a Principal Element	II-5-75
5.5.6	Five-Year Review Requirements	II-5-75
5.6	RD/RA Implementation and Schedule	II-5-75
5.7	Site Closure	II-5-77
5.8	Documentation of Significant Changes	II-5-77
6.0	LIST OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND PERFORMANCE STANDARDS	II-6-1
6.1	Overview	II-6-1
6.2	ARARs Identification, Development, and Evaluation.....	II-6-2
6.2.1	Methodology	II-6-2
6.2.2	Solicitation, Identification, and Evaluation of State ARARS	II-6-2
6.3	Determination of ARARs.....	II-6-3
6.4	Action-Specific ARARs	II-6-4
6.4.1	Hazardous Waste Treatment, Storage, and Disposal Requirements.....	II-6-4
6.4.2	Water Resources Requirements	II-6-4
6.5	Location-Specific ARARs.....	II-6-5
6.6	Chemical-Specific Cleanup Levels (Based on TBCs)	II-6-6
7.0	WORKS CITED	II-7-1
APPENDIX A: Travis AFB Work Coordination Forms		
Part III	Responsiveness Summary	III-1
	First Public Comment Period	III-1
	Second Public Comment Period	III-3

List of Tables

	Page
Table I-1	Listing and Summary of Current Status of Sites I-2
Table I-2	Evaluated Remedial Alternatives I-5
Table I-3	Selected Remedial Alternatives I-6
Table II-1-1	Stratigraphic Column of Geologic Units at Travis AFB II-1-11
Table II-3-1	NEWIOU Site Descriptions II-3-2
Table II-3-2	Summary of Contaminants of Concern, Contaminants of Potential Ecological Concern, and Potential Risks at NEWIOU Soil, Sediment, and Surface Water Sites Identified in the RIs..... II-3-10
Table II-3-3	Contaminants of Potential Ecological Concern at EIOU Soil, Sediment, and Surface Water Sites, Identified by Weight of Evidence Analysis II-3-16
Table II-4-1	Remedial Alternative Evaluation Criteria II-4-5
Table II-4-2	NEWIOU Soil, Sediment, and Surface Water Sites II-4-6
Table II-4-3	Site Groupings II-4-7
Table II-4-4	Summary of Total Scores, Present Worth Costs, and Benefit/Cost Ratios for Surface Water II-4-13
Table II-4-5	Soil Groups Evaluation Summary II-4-13
Table II-4-6	Summary of Total Scores and Benefit/Cost Ratios for Soil II-4-14
Table II-4-7	Summary of Total Present Worth Costs for Soil..... II-4-15
Table II-5-1	Evaluated Remedial Alternatives II-5-2
Table II-5-2	CAMU Soil Acceptance Levels II-5-5
Table II-5-3	Cleanup Levels for Sediment COCs and COECs at SD001 (Main Branch of Union Creek)..... II-5-19
Table II-5-4	Estimated Cost of Remedial Alternatives Evaluated for SD001 (Main Branch of Union Creek)..... II-5-19
Table II-5-5	Cleanup Levels for Soil COCs at FT003 (Fire Training Area 2)..... II-5-23
Table II-5-6	Estimated Cost of Remedial Alternatives Evaluated for FT003 (Fire Training Area 2) II-5-23
Table II-5-7	Cleanup Levels for Soil COC and COEC at FT004 (Fire Training Area 3) II-5-27
Table II-5-8	Estimated Cost of Remedial Alternatives Evaluated for FT004 (Fire Training Area 3) II-5-28
Table II-5-9	Cleanup Levels for Soil COCs at FT005 (Fire Training Area 4)..... II-5-32
Table II-5-10	Estimated Cost of Remedial Alternatives Evaluated for FT005 (Fire Training Area 4) II-5-32
Table II-5-11	Cleanup Levels for Soil COC and COEC at LF007 (Base Landfill 2) II-5-39
Table II-5-12	Estimated Cost of Remedial Alternatives Evaluated for LF007 (Landfill 2) Area E..... II-5-39
Table II-5-13	Cleanup Levels for Sediment COCs and COECs at SD033 (West Branch of Union Creek) II-5-54

List of Tables (Cont'd)

	Page
Table II-5-14	Estimated Cost of Remedial Alternatives Evaluated for SD033 (West Branch of Union Creek).....II-5-57
Table II-5-15	Selected Remedial AlternativesII-5-64
Table II-6-1	Travis AFB - NEWIOU Soil Sites, State ARARs, California Department of Toxic Substances Control RequirementsII-6-7
Table II-6-2	Travis AFB - NEWIOU Soil Sites, Federal ARARs, Waste Transfer, Treatment, Storage, and Disposal RequirementsII-6-8
Table II-6-3	Travis AFB - NEWIOU Soil Sites, State ARARs, Water Board Requirements.....II-6-9
Table II-6-4	Travis AFB - NEWIOU Soil Sites, State ARARs, BAAQMD Air Remediation RequirementsII-6-10
Table II-6-5	Travis AFB – NEWIOU Soil Sites, State ARARs, Fish and Game Requirements.....II-6-11
Table II-6-6	Travis AFB – NEWIOU Soil Sites, Federal ARARs, Requirements Under the U.S. Code and Related RegulationsII-6-13

List of Figures

	Page
Figure II-1-1	Travis AFB and Operable Units.....II-1-2
Figure II-1-2	Wetlands and Vernal Pools at Travis AFBII-1-5
Figure II-1-3	Geologic Map of Travis AFB and Vicinity.....II-1-9
Figure II-1-4	Location of On-Site Surface Water at Travis AFBII-1-15
Figure II-3-1	Estimated Areas of Soil Contamination for Consideration in the NEWIOU FS.....II-3-7
Figure II-4-1	Alternatives for Surface Water Group J.....II-4-9
Figure II-4-2	Alternatives for Soil Groups (K, L, M, N, O, P, Q and R).....II-4-11
Figure II-5-1	Acceptance Level Sampling ProcessII-5-6
Figure II-5-2	Union Creek (SD001 and SD033) 2004 Sample LocationsII-5-15
Figure II-5-3	SD001 (Main Branch of Union Creek) Estimated Excavation AreaII-5-17
Figure II-5-4	FT003 (Fire Training Area 2) Estimated Excavation AreasII-5-25
Figure II-5-5	FT004 (Fire Training Area 3) Estimated Excavation AreasII-5-29
Figure II-5-6	FT005 (Fire Training Area 4) Estimated Excavation AreasII-5-33
Figure II-5-7	Estimated Excavation Areas LF007 (Landfill 2).....II-5-37
Figure II-5-8	SD033 (West Branch of Union Creek) Estimated Excavation AreaII-5-55
Figure II-5-9	NEWIOU Sites with Land Use Controls as a Selected or Contingent Remedy.....II-5-67

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Acronyms

AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFI	Air Force Instruction
AMC	Air Mobility Command
AMW	Air Mobility Wing
AOC	Area of Concern
ARAR	applicable or relevant and appropriate requirement
AST	aboveground storage tank
AVGAS	aviation gasoline
BAAQMD	Bay Area Air Quality Management District
BASH	bird/air strike hazard
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
Cal-EPA	California Environmental Protection Agency
CAMU	Corrective Action Management Unit
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
COC	contaminant of concern
COEC	contaminant of ecological concern
COPC	contaminant of potential concern
COPEC	contaminant of potential ecological concern
CRP	Community Relations Plan
CSM	conceptual site model
CTV	critical toxicity value
CWA	Clean Water Act
CWC	California Water Code
DAA	Detailed Analysis of Alternatives
DCA	dichloroethane
DCE	dichloroethene
DDE	dichlorodiphenyldichloroethene
DI WET	deionized water waste extraction test
DNAPL	dense nonaqueous phase liquid
DPDO	Defense Property Disposal Office
DTSC	Department of Toxic Substances Control
EIAP	Environmental Impact Analysis Process
EIOU	East Industrial Operable Unit
EPC	exposure point concentration
ERA	ecological risk assessment

Acronyms (Cont'd)

ERP	Environmental Restoration Program
ESL	environmental screening level
ET	evapotranspiration
FFA	Federal Facility Agreement
FS	feasibility study
FTA	fire training area
gpm	gallon per minute
GSAP	groundwater sampling and analysis plan
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
HWCL	Hazardous Waste Control Law
IC	institutional controls
IR	Information Repository
IROD	Interim Record of Decision
ISA	Initial Screening of Alternatives
JEG	Jacobs Engineering Group, Inc.
JFSA	Jet Fuel Spill Area
K-12	kindergarten through 12th grade
LDR	land disposal restrictions
LECR	lifetime excess cancer risk
LUC	land use control
LUFT	leaking underground fuel tank
MADEP	Massachusetts Department of Environmental Protection
MAP	Management Action Plan
MCL	maximum contaminant level
mg/dL	milligrams per deciliter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MILCON	military construction
MNA	monitored natural attenuation
msl	mean sea level
MTR	minimum technology requirements
MW	monitoring well
NCP	National Contingency Plan

Acronyms (Cont'd)

NEPA	National Environmental Policy Act
NEWIOU	North/East/West Industrial Operable Unit
NFA	no further action
NOAA	National Oceanic and Atmospheric Association
NOU	North Operable Unit
NPL	National Priorities List
NWP	Nationwide Permit Conditions
OPS	Oxidation Pond Site
OSA	Oil Spill Area
OSWER	Office of Solid Waste and Emergency Response
OU	operable unit
OWS	oil/water separator
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyls
PCE	tetrachloroethene
PCWQCA	Porter-Cologne Water Quality Control Act
POCOS	Petroleum-Only Contaminated Sites
POL	petroleum, oil, and lubricants
ppm	parts per million
PRG	preliminary remediation goal
RA	remedial action
RAB	Restoration Advisory Board
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RD/RA	remedial design/remedial action
RI	remedial investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SDS	sludge disposal site
SDWA	Safe Drinking Water Act
SQT	Screening Quick Reference Tables
SSA	Solvent Spill Area
SS II	Storm Sewer II
SSRW	Storm Sewer Right-of-Way
SSS	Storm Sewer System
SSSW	soil, sediment, and surface water
SVE	soil vapor extraction
SVOC	semivolatile organic compound

Acronyms (Cont'd)

TBC	to be considered
TCDD(eq)	tetrachlorodibenzo-p-dioxin equivalent
TCE	trichloroethene
TPH	total petroleum hydrocarbons
TPH-E	total petroleum hydrocarbons, extractable factor
TPH-P	total petroleum hydrocarbons, purgeable fraction
TQ	toxicity quotient
TSCA	Toxic Substances Control Act
URS	URS Group, Inc.
USC	United States Code
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
WABOU	West/Annexes/Basewide Operable Unit
WIOU	West Industrial Operable Unit
WTTP	West Treatment and Transfer Plant
°F	degrees Fahrenheit
µg/L	microgram per liter

PART I

Declaration

Site Name and Location

Department of the Air Force
Travis Air Force Base
Fairfield, California 94535-5000

Statement of Basis and Purpose

This Record of Decision (ROD) presents the soil, sediment, and surface water (SSSW) remedial actions for the North/East/West Industrial Operable Unit (NEWIOU) at the Travis Air Force Base (AFB or Base) Superfund Site (EPA ID#CA5570024575) in Solano County, California. The Air Force and the United States Environmental Protection Agency (U.S. EPA) co-selected the soil, sediment, and surface water remedial actions in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 United States Code (USC) §9601 *et seq.*, and with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 Code of Federal Regulations (CFR) Part 300 (National Contingency Plan [NCP]), and Travis AFB's Federal Facility Agreement (FFA) with the U.S. EPA, the California Department of Health Services, and the Regional Water Quality Control Board (RWQCB). The Administrative Record contains the documents used in the selection of the soil, sediment, and surface water remedial actions. The Administrative Record is available for review at Travis AFB.

The State of California, through the California Environmental Protection Agency's Department of Toxic Substances Control (Cal-EPA/DTSC) and the San Francisco Bay RWQCB, concurs with the selected soil, sediment, and surface water remedies.

Assessment of the Site

As a result of past industrial activities, releases of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), fuels (petroleum hydrocarbons), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins, pesticides, and metals (inorganic compounds) have contaminated the soil at 18 NEWIOU sites and the sediment and surface water at 2 NEWIOU sites (Main and West Branches of Union Creek) at Travis AFB. Actual or threatened releases of hazardous substances from these sites, if not addressed by implementing the response actions selected in this NEWIOU SSSW ROD, may present a potential threat to soil, sediment, and surface water relative to public health, welfare, or the environment.

Fifty-nine sites with potential contamination resulting from past industrial activities were originally identified during the North Operable Unit (NOU) Remedial Investigation (RI), East Industrial Operable Unit (EIOU) RI, and West Industrial Operable Unit (WIOU) RI. Table I-1 presents the current status of the sites that were evaluated during the three RIs. After the RIs,

Table I-1

Listing and Summary of Current Status of Sites

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision, Travis AFB, California

Site Name	Site Designation	Status
Evaluated during the North Operable Unit Remedial Investigation		
Base Landfill No. 1	LF006	NFA for soil determined at conclusion of RI. Groundwater contamination is addressed in the NEWIOU Groundwater IROD.
Base Landfill No. 2	LF007	Remedy Selected in NEWIOU SSSW ROD
Former Skeet Range		NFA ^a
Cyanide Disposal Pit	OT011	NFA ^b
Former Defense Property Disposal Office (DPDO) Area	LF007	Remedy Selected in NEWIOU SSSW ROD
Evaluated during the East Industrial Operable Unit Remedial Investigation		
Oil Spill Area	SS016	Remedy Selected in NEWIOU SSSW ROD
Tower Area Removal Action	SS016	Remedy Selected in NEWIOU SSSW ROD
Facility 11	SS016	Remedy Selected in NEWIOU SSSW ROD
Facilities 13/14	SS016	Remedy Selected in NEWIOU SSSW ROD
Facility 20	SS016	Remedy Selected in NEWIOU SSSW ROD
Facilities 42/1941	SS016	Remedy Selected in NEWIOU SSSW ROD
Facilities 139/144	SS016	Remedy Selected in NEWIOU SSSW ROD
Solvent Spill Area, Facilities 550/552	SS015	Remedy Selected in NEWIOU SSSW ROD
Facility 808	SS015	Remedy Selected in NEWIOU SSSW ROD
Facility 1832	SS015	Remedy Selected in NEWIOU SSSW ROD
MW107x32 and MW246x32	ST032	Remedy Selected in NEWIOU SSSW ROD
MW329x29 Area	SS029	Remedy Selected in NEWIOU SSSW ROD
MW269x30 Area	SS030	Remedy Selected in NEWIOU SSSW ROD
Fire Training Area 4	FT005	Remedy Selected in NEWIOU SSSW ROD
Oxidation Pond Site	WP017	Remedy Selected in NEWIOU SSSW ROD
Sludge Disposal Site	OT010	Remedy Selected in NEWIOU SSSW ROD
Facility 1205	SD031	NFA for soil determined at conclusion of RI. Groundwater contamination is addressed in the NEWIOU Groundwater IROD.
Fire Training Area 2	FT003	Remedy Selected in NEWIOU SSSW ROD
Fire Training Area 3	FT004	Remedy Selected in NEWIOU SSSW ROD
Fire Training Area 1	FT002	Remedy Selected in NEWIOU SSSW ROD
Storm Sewer Right-of-Way (includes Main Branch of Union Creek)	SD001	Remedy Selected in NEWIOU SSSW ROD
North/South Gas Stations	ST018	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.
Facility 363 (Fuel storage area)	ST028	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.

Table I-1 (Cont'd)

Listing and Summary of Current Status of Sites

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision, Travis AFB, California

Site Name	Site Designation	Status
Evaluated during the East Industrial Operable Unit Remedial Investigation		
Grid 216 I (Location of 1956 C-124 airplane crash)		NFA determined at conclusion of RI.
Facility 336 (Location of former pesticide shop)		NFA determined at conclusion of RI.
Facility 1185 (Location of possible fuel spill and UST)		NFA determined at conclusion of RI.
Facility 1201 (Flight kitchen and service shop)		NFA determined at conclusion of RI.
Facility 206 (Two USTs removed from site in 1984)		NFA determined at conclusion of RI.
Facility 226 (Auto and photography hobby shop)		NFA determined at conclusion of RI.
Facility 381 (Old Base Hospital)		NFA determined at conclusion of RI.
Evaluated during the West Industrial Operable Unit Remedial Investigation		
Facility 809	SS014	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.
Facility 835		NFA determined at conclusion of RI.
Facility 839		NFA determined at conclusion of RI.
Facility 842		NFA determined at conclusion of RI.
Facility 871		NFA determined at conclusion of RI.
Abandoned AVGAS Pipeline	SS014	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.
TF-33 Test Stand Area	ST027	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.
JFSA – Site 1	SS014	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.
JFSA – Site 2	SS014	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.
JFSA – Site 3	SS014	Removed from CERCLA. Incorporated into the Travis AFB POCOS program.
Facilities 818 and 819	SS035	Remedy Selected in NEWIOU SSSW ROD.
Facility 811	SD034	Remedy Selected in NEWIOU SSSW ROD.
Facilities 872, 873, and 876	SD036	Remedy Selected in NEWIOU SSSW ROD.
Storm Sewer System B (includes West Branch of Union Creek)	SD033	Remedy Selected in NEWIOU SSSW ROD.
Facility 810	SD033	Remedy Selected in NEWIOU SSSW ROD.
Facility 1917	SD033	Remedy Selected in NEWIOU SSSW ROD.
South Gate Area	SD033	Remedy Selected in NEWIOU SSSW ROD.
Sanitary Sewer System	SD037	Remedy Selected in NEWIOU SSSW ROD.
Facilities 837 and 838	SD037	Remedy Selected in NEWIOU SSSW ROD.
Facility 919	SD037	Remedy Selected in NEWIOU SSSW ROD.

Table I-1 (Cont'd)

Listing and Summary of Current Status of Sites

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision, Travis AFB, California

Site Name	Site Designation	Status
Evaluated during the West Industrial Operable Unit Remedial Investigation (Cont'd)		
Ragsdale/V Area	SD037	Remedy Selected in NEWIOU SSSW ROD.
Facility 977	SD037	Remedy Selected in NEWIOU SSSW ROD.
Facility 981	SD037	Remedy Selected in NEWIOU SSSW ROD.
Area G Ramp	SD037	Remedy Selected in NEWIOU SSSW ROD.

^a NFA determined at conclusion of RI as an individual AOC. Several AOCs were combined and designated LF007 after the RI. See additional discussion in Section 3.4.

^b NFA for OT011 was determined and documented in the NFA consensus statement of 24 April 1996 (Travis AFB, 1996) which was signed by the U.S. Air Force, U.S. EPA, California Department of Toxic Substances Control, and San Francisco Regional Water Quality Control Board.

AOC	=	area of concern	POCOS	=	Petroleum-Only Contaminated Site
AVGAS	=	aviation gasoline	RI	=	remedial investigation
CERCLA	=	Comprehensive Environmental Response, Compensation, and Liability Act	ROD	=	record of decision
IROD	=	interim record of decision	SSSW	=	soil, sediment, and surface water
JFSA	=	jet fuel spill area	U.S. EPA	=	United States Environmental Protection Agency
NEWIOU	=	North/East/West Industrial Operable Unit	UST	=	underground storage tank
NFA	=	no further action			

these three operable units (OUs) were merged into the NEWIOU for purposes of the Feasibility Study (FS), Proposed Plan, and ROD. Additional information on sites selected for No Further Action (NFA) at the conclusion of the RIs is provided in Section 3.4 of Part II (Decision Summary) of this ROD. At the NFA sites, residual levels of contaminants do not present a threat to human health or the environment. The Air Force, with regulatory concurrence, has determined that no further action is necessary and that the sites are suitable for unlimited use and unrestricted exposure.

The RIs identified the need for the evaluation of remedial alternatives at 16 soil sites and 2 soil, sediment, and surface water sites (18 total sites). All but five of these 18 sites (SD001, FT002, FT003, OT010, and WP017) require an action to address groundwater contamination and are included in the *Groundwater Interim Record of Decision for the North/East/West Industrial Operable Unit, Travis AFB, California* (Travis AFB, 1997) (NEWIOU Groundwater IROD). Two additional sites (LF006 and SD031) did not require evaluation for soil but require an action to address groundwater contamination and are included in the NEWIOU Groundwater IROD.

The NEWIOU contains most of the soil and groundwater sites on Travis AFB. The remaining sites on the Base are in the West/Annexes/Basewide Operable Unit (WABOU), except for sites removed from the WABOU, as discussed in the Declaration section of the *West/Annexes/Basewide Operable Unit Soil Record of Decision, Travis Air Force Base, California* (Travis AFB, 2002a) (WABOU Soil ROD). The WABOU Soil ROD was completed in December 2002 and served as a guide for the development of this NEWIOU SSSW ROD. Section 2.3 (Operable Units) of this NEWIOU SSSW ROD provides a more detailed description of the OUs on Travis AFB. The Travis AFB Basewide Groundwater ROD will document the final selection of remedies for all groundwater sites on Travis AFB.

Description of the Selected Remedies

The Air Force evaluated six potential remedial alternatives to address contaminated surface water in the NEWIOU and seven potential remedial alternatives to address contaminated soil and sediment in the NEWIOU. Table I-2 presents all remedial alternatives evaluated.

Table I-2

Evaluated Remedial Alternatives

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision, Travis AFB, California

Cleanup Alternative^a	Description
Surface Water Remedial Alternatives^a	
10. No Action	Federal regulations require the use of this alternative as a starting point for comparing the other alternatives. No surface water treatment takes place.
11. Institutional Actions	Surface water would be monitored to determine the levels of contamination over time. No active treatment of the water is involved. The <i>Travis AFB General Plan</i> (Base General Plan) (Travis AFB, 2002b) will be updated after the ROD is signed to note that the surface water is being monitored and not for use.
12. Collection Sump, Ion Exchange, Activated Carbon, Discharge to Union Creek	Water is pumped into a collection sump, where it is held and treated. Two forms of treatment are used. First, ion exchange uses special resins to remove metals from the water. Second, the water, still contaminated with organic contaminants, is then passed through charcoal filters. The contaminants adsorb onto the charcoal, which can later be regenerated to remove the contaminants. Treated water is discharged (in accordance with effluent discharge limits) to Union Creek, which empties into the Suisun Marsh via the Hill Slough.
13. Collection Sump, Activated Carbon, Discharge to Union Creek	Same as Alternative 12, without ion exchange. This alternative would be used at sites without metal contamination.
14. Slip-Lining and Collaring Storm Sewer	During slip-lining, a plastic pipe is installed within an existing deteriorated storm sewer pipe, thereby limiting infiltration of contaminated groundwater into the storm sewer system. Collars are external barriers installed along the pipe to prevent contaminated water from moving through the gravel surrounding the pipe.
15. Source Control	Source control relies on treating contamination at the source, before it is discharged into a creek. Pump and treat interim actions to address contaminated groundwater will prevent possible contaminant movement to surface water. Periodic cleanout of storm sewers and sumps also will prevent contaminants from reaching the creek.
Soil and Sediment Remedial Alternatives^a	
16. No Action	Federal regulations require the use of this alternative as a starting point for comparing the other alternatives. Under this alternative, no soil or sediment treatment takes place.
17. Land Use Controls	Future land use and soil and sediment disturbance activities are restricted. The Base General Plan will be updated after the ROD is signed to reflect any specific restrictions required at each site.
18. Excavation	Contaminated soils are excavated and removed to a designated CAMU at Travis AFB or to an off-base landfill.

Table I-2 (Cont'd)

Evaluated Remedial Alternatives

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision, Travis AFB, California

Cleanup Alternative	Description
Soil and Sediment Remedial Alternatives (cont'd)	
19. Cap	The site is covered with a material such as asphalt, concrete, synthetic membrane, or soil and /or clay. For landfill areas, the area also is graded to control runoff, thereby minimizing the potential for rainwater to move through contaminated soil, to protect the groundwater below from contamination.
20. Excavation, Ex Situ High Temperature Thermal Treatment, Disposal at Landfill	Contaminated soil is excavated and treated at high temperatures (for example, in a rotary kiln incinerator). As a result, organic contaminants are destroyed through conversion to carbon dioxide, water, and hydrochloric acid. The acid is then removed. Treated soil is placed at the designated CAMU or at an off-base landfill.
21. In Situ Soil Vapor Extraction (SVE), Off-Gas Treatment	Contaminated soil vapor is extracted from the ground to remove contaminants. The contaminated vapors are then treated by catalytic or thermal oxidation, which converts VOCs to carbon dioxide, water, and hydrochloric acid. The acid is then removed.
22. In Situ Bioventing	Air is injected below the ground surface to encourage the growth of microorganisms in the soil. Microorganisms can help break down certain VOCs.
<p>^a Surface water alternatives are numbered 10 through 15, and soil and sediment alternatives are numbered 16 through 22 to be consistent with the numbers used in the NEWIOU Feasibility Study (Radian Corporation, 1996a). Groundwater alternatives were numbered 1 through 9.</p> <p>CAMU = Corrective Action Management Unit SVE = soil vapor extraction NEWIOU = North/East/West Industrial Operable Unit VOC = volatile organic compound ROD = record of decision</p>	

Subsequent to the evaluation of alternatives, the Air Force selected a remedy for the 18 NEWIOU sites addressed in this NEWIOU SSSW ROD. Table I-3 presents the selected remedies. The Air Force and the U.S. EPA co-selected these remedies as the most appropriate strategies for addressing contaminated soil, sediment, and surface water in the NEWIOU. These remedies address the potential human health and environmental risks that could result from exposure to human (e.g., workers and residents) and ecological (e.g., terrestrial and aquatic) receptors, or the migration of contaminants to groundwater or surface water.

Table I-3

Selected Remedial Alternatives

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision, Travis AFB, California

Site Description	Site Designation	Medium	Selected Alternative
Storm Sewer Right-of-Way (includes Main Branch of Union Creek)	SD001	Soil	16 – No Action
		Sediment	18 – Excavation ^a 17 – Land Use Controls ^b
		Surface Water	10 – No Action ^c
Fire Training Area 1	FT002	Soil	16 – No Action
Fire Training Area 2	FT003	Soil	18 – Excavation 17 – Land Use Controls ^b
Fire Training Area 3	FT004	Soil	18 – Excavation 17 – Land Use Controls ^b

Table I-3 (Cont'd)

Selected Remedial Alternatives

North/East/West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision, Travis AFB, California

Site Description	Site Designation	Medium	Selected Alternative
Fire Training Area 4	FT005	Soil	18 – Excavation 17 – Land Use Controls ^b
Base Landfill No. 2	LF007	Soil	18 – Excavation 17 – Land Use Controls ^b
Sludge Disposal Site	OT010	Soil	16 – No Action
Solvent Spill Area, Facilities 550/552, and 1832	SS015	Soil	17 – Land Use Controls. Cleanup has been completed as a removal action.
Oil Spill Area, Facilities 11, 13/14, 20, 42/1941, 139/144, and sections of Storm Sewer Right-of-Way	SS016	Soil	17 – Land Use Controls
Oxidation Pond Site	WP017	Soil	16 – No Action
MW-329 Area	SS029	Soil	16 – No Action
MW-269 Area	SS030	Soil	16 – No Action
MW-107, MW-246	ST032	Soil	17 – Land Use Controls
Storm Sewer System B (includes West Branch of Union Creek), Facility 810, Facility 1917, and South Gate Area	SD033	Soil	17 – Land Use Controls
		Sediment	18 – Excavation ^a 17 – Land Use Controls ^b
		Surface Water	10 – No Action ^c
Facility 811	SD034	Soil	16 – No Action
Facilities 818 and 819	SS035	Soil	16 – No Action
Facilities 872, 873, and 876	SD036	Soil	16 – No Action
Sanitary Sewer System, Facilities 837, 838, 919, 977, and 981, Area G Ramp, and Ragsdale/V Area	SD037	Soil	17 – Land Use Controls

^a Excavation for sediment at SD001 will be a total of 500 linear feet at sample point 0014 (250 upstream, 250 downstream).

Excavation for sediment at SD033 will be in the area of sample point U17 (from Outfall II to the confluence of the West and Main Branches of Union Creek).

^b Land use controls will be required if the levels of hazardous substances remaining in the soil or sediment after excavation do not allow for unlimited use and unrestricted exposure. At LF007, land use controls will also be required to protect the integrity of the CAMU cover at that site.

^c The 1998 NEWIOU SSSW Proposed Plan proposed “Source Control” (extraction and treatment of groundwater) as the cleanup alternative for surface water at these sites, indicating Union Creek is not a source of contamination, but that the creek may be receiving TCE-contaminated water from groundwater through storm sewer infiltration. Subsequent to the 1998 NEWIOU SSSW Proposed Plan, extraction and treatment (pump and treat) of contaminated groundwater was implemented as part of the WABOU and NEWIOU Groundwater IRODs. GSAP sampling has shown that extraction of groundwater has reduced the levels of TCE in the creek to levels that do not pose a risk to human health or the environment. GSAP monitoring will continue to be used to ensure that groundwater actions are preventing contaminants from reaching Union Creek. As “Source Control” has already been implemented under the groundwater IRODs, no action will be implemented under this ROD for surface water.

CAMU = Corrective Action Management Unit
 GSAP = groundwater sampling and analysis plan
 IROD = interim record of decision
 NEWIOU = North/East/West Industrial Operable Unit

ROD = record of decision
 SSSW = soil, sediment, and surface water
 TCE = trichloroethene
 WABOU = West/Annexes/Basewide Operable Unit

In July 2003, the Air Force completed the SS015 removal action. The removal action met the industrial cleanup levels of the selected remedial action, and the residual contamination in the removal area was less than the residential preliminary remediation goals (PRGs). However, during a subsequent construction project, a different area of SS015 was found to have soil contamination that was less than the industrial PRG but more than the residential PRG. Even though this area is under a concrete parking lot, Alternative 17 (Land Use Controls) will be applied to this site.

Community Acceptance of Selected Remedies

The Air Force issued the *North/East/West Industrial Operable Unit, Travis Air Force Base, Proposed Plan for Soil, Sediment, and Surface Water* (Travis AFB, 1998a) (NEWIOU SSSW Proposed Plan) and held a public comment period in 1998 to promote public input on the Air Force approach to soil remediation. The Proposed Plan described several potential alternatives for each site, and excavation was identified as the preferred alternative for any site where excavation could likely end up as the selected remedial action for the site. As a result, 16 of the 18 sites had excavation as all or part of the proposed remedy.

Subsequently, after detailed site-by-site presentations and discussions with regulatory agencies, additional sampling at some of the sites, evaluation of human health risks by comparison to U.S. EPA PRGs, and an updated ecological risk assessment (ERA), it appeared that at many of the sites, excavation was not necessary. Specifically, it was determined that for sites FT002, OT010, SS015, SS016, WP017, SS029, SS030, ST032, SS035, and SD037, which previously had excavation as the preferred alternative in the Proposed Plan, the preferred alternative should be no action or land use controls, as shown in Table I-3. For two sites, SD034 and SD036, which had land use controls or natural attenuation as the preferred alternative in the NEWIOU SSSW Proposed Plan, it was subsequently determined that the preferred alternative should be no action. These new preferred alternatives had all been identified as alternative remedies for each site in the Proposed Plan.

To inform the public of these proposed changes and to solicit public input on the new preferred alternatives, in 2006 the Air Force provided a new fact sheet, supplemental handout, public notice, public comment period, and public meeting on 26 January 2006. The new fact sheet and supplemental handout contained revisions to the NEWIOU SSSW Proposed Plan. These actions provided the public the opportunity to comment on the revised proposed alternatives.

The selected remedies in this ROD are the same as the preferred alternatives identified in the 2006 fact sheet, the 2006 supplemental handout, and at the public meeting, except that the name of the selected remedy for surface water at SD001 and SD033 is changed from "Source Control" to "No Action." As explained in Section 5.8, Section 5.1.1, and footnote c to Tables I-3 and II-5-15, this is a change in the name of the remedy only and not a change in the actual actions to be taken for surface water under this ROD. More specific information on this effort and the public response to both public comment periods is provided in Part III (Responsiveness Summary) of this ROD. Additional information on Community Participation in the Travis AFB Environmental Restoration Program (ERP) is provided in Section 2.6 of Part II of this ROD.

On-Base Consolidation

Alternative 18 (Excavation) is the selected remedial alternative for six of the NEWIOU soil and sediment sites (SD001, FT003, FT004, FT005, LF007, and SD033). Alternative 18 is described in the NEWIOU SSSW Proposed Plan as excavation of contaminated soil and sediment and removal to a designated Corrective Action Management Unit (CAMU) at Travis AFB or to an off-base landfill. Since the NEWIOU SSSW Proposed Plan was issued, the Air Force has built a CAMU within the boundaries of LF007, which was a base landfill that was closed and capped with native soil in 1974. Maintenance of the existing landfill consisted of the addition of soil and grading of the cap to allow good surface drainage. The regraded cap provided the foundation for the CAMU. The WABOU Soil ROD (Travis AFB, 2002a) provided the authority to build the CAMU. In 2003, excavated soil from three WABOU sites and the SS015 soil removal action were consolidated in the CAMU and capped with an evapotranspiration (ET) cap. Additional phase(s) of CAMU construction will be used to add and cap excavated soil and sediment from NEWIOU sites, as specified in this ROD.

The Air Force and regulatory agencies have established CAMU soil acceptance levels to determine the contaminant types and soil concentrations that can be placed in the CAMU. These requirements are presented in Table II-5-2 (CAMU Soil Acceptance Levels). If the contaminant levels within excavated soil and/or sediment exceed CAMU acceptance requirements, the Air Force will dispose of the soil at an appropriate permitted off-base landfill. If off-base disposal is necessary, the appropriate off-base disposal facility will be determined in accordance with the off-site rule of 40 CFR Section 300.440. Based on the most recent soil data, most, if not all, of the soil excavated from NEWIOU sites should meet CAMU soil acceptance levels and be suitable for placement in the CAMU.

Remedial Design/Remedial Action Documents

The Air Force will implement soil remedial actions as described in this NEWIOU SSSW ROD. Several primary documents under the Travis AFB FFA support the implementation of these actions. The Air Force has prepared the final *Basewide Soil Remedial Design/Remedial Action (RD/RA) Plan, Travis AFB, California* (Soil RD/RA Plan) (URS Group, Inc. [URS], 2002), which covers the general approach to implementing the soil remedies at all Travis AFB soil sites. The RD/RA Plan includes a description of primary documents that require regulatory approval under the Travis AFB FFA. The Air Force also has prepared three CAMU documents. The *LF007 Soil Remedial Action Design Report and Post-Closure Maintenance Plan* (CH2M HILL, 2002) addresses the CAMU design and maintenance. The *LF007 Soil Remedial Action Phase I Landfill Cap, CAMU Subgrade, Wetland Mitigation Report* (Shaw E&I, 2003) summarizes the construction of Phase 1 of the CAMU, which involved performing maintenance on the existing landfill cap, preparing the foundation for the CAMU, and constructing new wetlands to mitigate for wetlands required to be filled in for cap maintenance. The *LF007 Phase 2 Soil Remedial Action Report* (Shaw E&I, 2004) summarizes the construction of Phase 2 of the CAMU, which consolidated and capped soil from four ERP sites.

In addition, the Air Force will prepare site-specific remedial designs and remedial action work plans for each NEWIOU site to provide a detailed approach for the selected remedy at the appropriate site. The regulatory agencies will review each of these documents, as they are

primary documents under the Travis FFA. The Air Force and regulatory agencies will also review the analytical and performance data from these actions to verify their effectiveness at meeting remedial action objectives (RAOs).

Soil, Sediment, and Surface Water Cleanup Levels

The cleanup levels presented in Section 5.3 are based on the protection of human health, ecological receptors, and groundwater and surface water beneficial uses.

Following lengthy negotiations with the regulatory agencies encompassing both the previously executed WABOU Soil ROD and this NEWIOU SSSW ROD, the Air Force accepted the U.S. EPA's recommendation to use the current PRGs (Smucker, 2004) as a basis for soil cleanup levels for carcinogenic chemicals that equate to a fixed level of risk (1×10^{-6}) and for non-carcinogenic chemicals that equate to a fixed level of risk (hazard index [HI] = 1). PRGs are "To Be Considereds" (TBCs), not federal and state applicable or relevant and appropriate requirements (ARARs). TBCs include nonpromulgated criteria, advisories, guidance, and proposed standards issued by federal or state governments. By definition, ARARs are promulgated, or legally enforceable federal and state requirements. TBCs are not ARARs because they are not promulgated requirements. The Air Force accepted human health cleanup levels based on PRGs for NEWIOU soil and sediment sites because most sites have multiple contaminants and a cumulative risk that needs to be addressed. While using these PRGs potentially results in cleanup levels more conservative than required, Travis AFB determined that its site-specific situations with multiple contaminants justified accepting the PRG-based cleanup levels. Travis AFB estimated the expense of justifying less conservative cleanup levels to the regulators in terms of time and money and ultimately determined that accepting the PRG-based cleanup levels will result in minimal incremental cleanup costs. This approach has already worked well under the WABOU Soil ROD. Cleanup levels based on PRGs will be used unless there are site-specific considerations that justify a less stringent cleanup level. In this ROD, there are no sites where a less stringent cleanup level was used. Surface water cleanup levels were not developed because Alternative 10 (No Action) is the selected alternative for surface water under this ROD. Groundwater Sampling and Analysis Program (GSAP) sampling has shown that extraction of groundwater has reduced the levels of TCE in the creek to levels that do not pose a risk to human health or the environment.

The October 2004 U.S. EPA Region 9 PRG table contains concentrations for both residential and industrial use. Since Travis AFB is an industrial facility, as described in Section 5.2.1 (Residential/Industrial Exposure Scenarios), the soil cleanup levels for each site are based on the industrial PRG. The soil cleanup level table for each site (included in Section 5.3 of this report) contains two columns of the current residential PRGs (carcinogen and non-carcinogen) and two columns of the current industrial PRGs (carcinogen and non-carcinogen) that equate to a potential 10^{-6} cancer risk and potential HI of 1.

Section 5.2.4 discusses how a NEWIOU ERA was performed to derive inputs for soil, sediment, and surface water actions and cleanup levels that are protective of ecological receptors.

Section 5.2.5 discusses the rationale for determining whether soil remedial actions will be protective of groundwater beneficial uses.

Land Use Controls

Alternative 17 (Land Use Controls) is all or part of the selected remedial alternative for 10 NEWIOU soil, sediment, and surface water sites. The Air Force identifies herein the land use controls (LUCs) applicable to the NEWIOU sites that the Air Force deems necessary for future protection of human health and the environment. Alternative 17 is accomplished by a prohibition on residential development and restrictions on soil and sediment disturbance in designated areas set forth in the Travis AFB General Plan (Base General Plan), administrative measures, and signage. For the CAMU cover at LF007, Alternative 17 prohibits all activities on the cover other than CAMU operations and maintenance activities as described in the *LF007 Soil Remedial Action Design Report and Post-Closure Maintenance Plan* (CH2M HILL, 2002). The restrictions on activities on the CAMU cover will also be set forth in the Base General Plan. The Air Force will include in the Base General Plan any specific restrictions required at each site, a statement that restrictions are required because of the presence of pollutants or contaminants, the current land users and uses of the site, the geographic control boundaries, and the objectives of the land use controls. Unless a site is cleaned up to levels appropriate for unlimited use and unrestricted exposure, the Base General Plan will reflect the prohibitions on residential development (including day care centers, kindergarten through 12th grade (K-12) schools, play areas, and hospitals), restrictions on soil and sediment disturbances, and restrictions on all activities on the CAMU cover at LF007 other than operations and maintenance activities. Upon completion of a remedial action at a site, the Base will update the Base General Plan to modify the site-specific use restrictions as appropriate. The Base General Plan will contain a map depicting the geographic boundaries of all NEWIOU sites where land use controls are in effect. The administrative measures are the Base Civil Engineer work request procedures, the base dig permit procedures, and the Environmental Impact Assessment Process (EIAP) as described in Section 5.4.1.

Section 5.4 provides a more detailed description of the remedial action objectives of Alternative 17, of administrative measures to be applied at sites with LUCs, of provisions regarding transfer of property subject to LUCs and regulatory notification of proposed land use changes and discovery of activities inconsistent with LUC objectives, and of provisions regarding monitoring. The Air Force is responsible for implementing, monitoring, maintaining, and enforcing the identified controls.

If the Air Force determines that it cannot meet specific LUC requirements, it is further understood that the remedy may be reconsidered and that additional measures may be required to ensure the protection of human health and the environment.

NEWIOU SSSW ROD Data Certification Checklist

The following information is included in Part II (Decision Summary) of this ROD. Additional information on these sites can be found in the Travis AFB Administrative Record.

1. Contaminants of concern (COCs) and contaminants of potential ecological concern (COPECs) and their respective concentrations identified in the RIs (Table II-3-2 [Summary of Contaminants of Concern, Contaminants of Potential Ecological Concern, and Potential Risks at NEWIOU Soil, Sediment, and Surface Water Sites Identified in the RIs]).

2. Baseline risk represented by the COCs identified in the RIs (Table II-3-2 [Summary of Contaminants of Concern, Contaminants of Potential Ecological Concern, and Potential Risks at NEWIOU Soil, Sediment, and Surface Water Sites Identified in the RIs]).
3. Cleanup levels established for COCs and/or contaminants of ecological concern (COECs) and the basis for these levels (Section 5.2 [Criteria Used to Determine Soil and Sediment Cleanup Levels] and Tables II-5-3, II-5-5, II-5-7, II-5-9, II-5-11, and II-5-13).
4. How source materials constituting principal threats are addressed (Section 5.3 [Site-Specific Remedial Actions]).
5. Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD (Section 5.2.1 [Residential/Industrial Exposure Scenarios], Section 1.4.3 [Groundwater Use], and Section 5.2.5 [Groundwater Protection]).
6. Potential land use that will be available at the sites as a result of the selected remedies (Section 5.4.2 [Residential Cleanup Levels]).
7. Total present worth cost estimates (Section 4.3 [Comparative Analysis of Alternatives], Tables II-4-4 and II-4-7).
8. Key factor(s) that led to selecting the remedies (Section 5.3 [Site-Specific Remedial Actions]).

Declaration

These soil, sediment, and surface water remedial actions are protective of human health and the environment, are compliant with federal and state ARARs directly associated with these actions, and are cost-effective. These actions utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. Remedies that treat contamination were considered. However, for the NEWIOU soil and sediment sites, excessive cost made treatment impractical when compared to excavation and disposal. Because these remedies will result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the final remedial action to ensure that the remedies are, or will be, protective of human health and the environment. The Air Force and the regulatory agencies have addressed the statutory preference for remedies that reduce toxicity, mobility, or volume as a principle element in this NEWIOU SSSW ROD.

**Lead and Support Agency Acceptance of the
NEWIOU Soil, Sediment, and Surface Water Record of Decision
Travis Air Force Base, California**

This signature sheet documents the United States Air Force's and the United States Environmental Protection Agency's co-selection and documentation of the soil, sediment, and surface water remedial actions contained in this Record of Decision for the NEWIOU at Travis Air Force Base, and the State of California, by the California Environmental Protection Agency, Department of Toxic Substances Control's and the San Francisco Bay Regional Water Quality Control Board's concurrence with this Record of Decision. The respective parties may sign this sheet in counterparts.



Lyn D. Sherlock
Colonel, USAF
Commander
60th Air Mobility Wing

2 May 06

Date

Kathleen H. Johnson
Chief
Federal Facilities Cleanup Branch
U.S. Environmental Protection Agency, Region 9

Date

The State of California, Department of Toxic Substances Control (DTSC) had an opportunity to review and comment on this Record of Decision, and our concerns were addressed.

Anthony J. Landis, P.E.
California Environmental Protection Agency
Department of Toxic Substances Control
Chief of Operations
Office of Military Facilities

Date

Bruce H. Wolfe
California Regional Water Quality Control Board
San Francisco Bay Region
Executive Officer

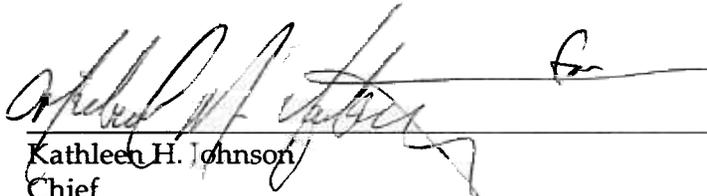
Date

**Lead and Support Agency Acceptance of the
NEWIOU Soil, Sediment, and Surface Water Record of Decision
Travis Air Force Base, California**

This signature sheet documents the United States Air Force's and the United States Environmental Protection Agency's co-selection and documentation of the soil, sediment, and surface water remedial actions contained in this Record of Decision for the NEWIOU at Travis Air Force Base, and the State of California, by the California Environmental Protection Agency, Department of Toxic Substances Control's and the San Francisco Bay Regional Water Quality Control Board's concurrence with this Record of Decision. The respective parties may sign this sheet in counterparts.

Lyn D. Sherlock
Colonel, USAF
Commander
60th Air Mobility Wing

Date



Kathleen H. Johnson
Chief

4/24/06
Date

Federal Facilities Cleanup Branch
U.S. Environmental Protection Agency, Region 9

The State of California, Department of Toxic Substances Control (DTSC) had an opportunity to review and comment on this Record of Decision, and our concerns were addressed.

Anthony J. Landis, P.E.
California Environmental Protection Agency
Department of Toxic Substances Control
Chief of Operations
Office of Military Facilities

Date

Bruce H. Wolfe
California Regional Water Quality Control Board
San Francisco Bay Region
Executive Officer

Date

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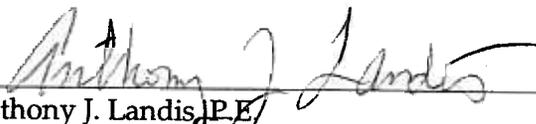
Lyn D. Sherlock
Colonel, USAF
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Kathleen H. Johnson
Chief
Federal Facilities Cleanup Branch
U.S. Environmental Protection Agency, Region 9

Date

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Anthony J. Landis, P.E.
California Environmental Protection Agency
Department of Toxic Substances Control
Chief of Operations
Office of Military Facilities

4-18-06

Date

Bruce H. Wolfe
California Regional Water Quality Control Board
San Francisco Bay Region
Executive Officer

Date

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Colonel, USAF
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Date

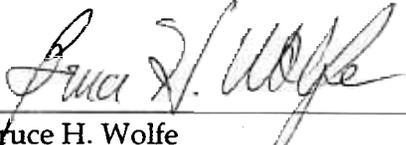
Kathleen H. Johnson
Chief
Federal Facilities Cleanup Branch
U.S. Environmental Protection Agency, Region 9

Date

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Anthony J. Landis, P.E.
California Environmental Protection Agency
Department of Toxic Substances Control
Chief of Operations
Office of Military Facilities

Date


Bruce H. Wolfe
California Regional Water Quality Control Board
San Francisco Bay Region
Executive Officer

4/19/06
Date

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