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Record of Decision:

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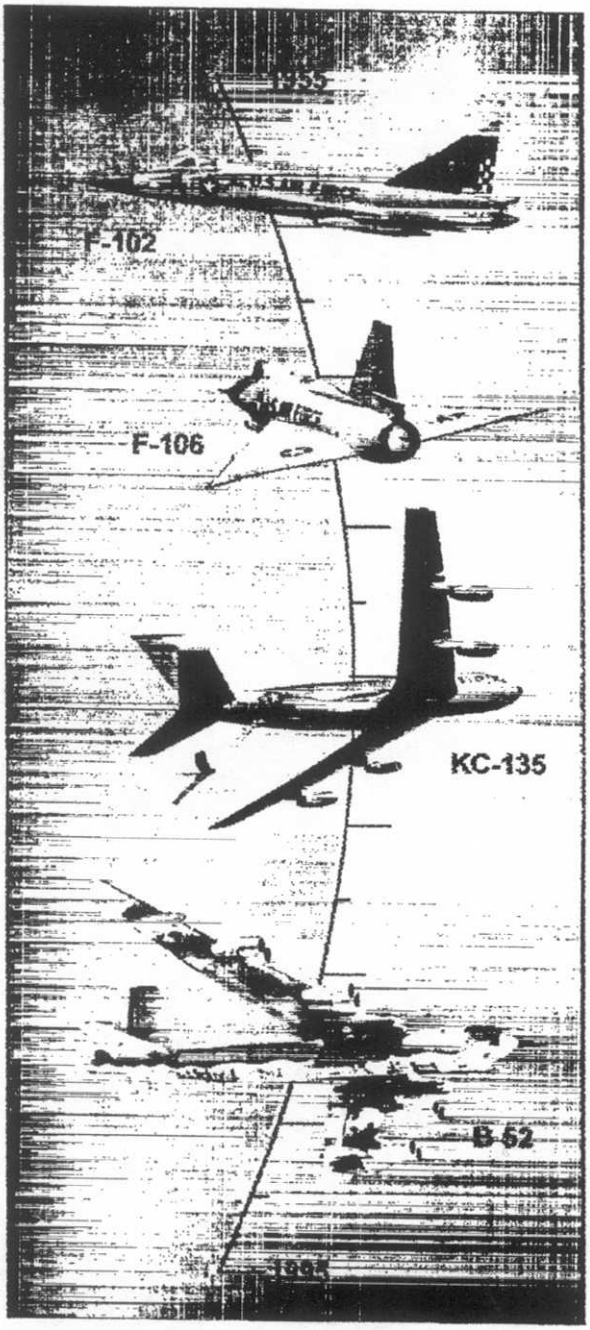

Source Control Operable Unit RECORD OF DECISION PART 1

Castle Airport

FINAL

September 2002

FINAL
Source Control Operable Unit
RECORD OF DECISION, CASTLE Airport

SCOU ROD PART I

DEPARTMENT OF THE AIR FORCE
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SUBJECT: Source Control Operable Unit Record of Decision Part 1, Final

The *Source Control Operable Unit (SCOU) Record of Decision Part 1*, prepared for the Air Force by WPI, is attached for your records. The document was finalized on 11 September 2002. The attached incorporates all of the revisions made during the finalization process. Also included is a CD version of the document.

Thank you for everyone's effort on completing this document. If you have any questions, please call me at (703) 696-5581.

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CASTLE AIRPORT
Source Control Operable Unit
Record of Decision Part 1

FINAL

prepared for
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September 3, 2002 Revisions to the July 23, 2001 Final Version previously modified on December 14, 2001, May 22, 2002, July 11, 2002 and August 7, 2002

GSA Contract No. GS-10F-0139J Order Number DASW01-02-F-0912

Air Force Center for Environmental Excellence
Base Closure Restoration Division
Environmental Restoration Directorate
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ROD Format

This Source Control Operable Unit (SCOU) Record of Decision (ROD) has been divided into seven separate sections based on U.S. Environmental Protection Agency (EPA) Guidance for Superfund Decision Documents (EPA, July, 1989) and comments received from the Base Realignment and Closure (BRAC) Cleanup Team (BCT). In addition, a separate section has been created for the Administrative Record while all plates are located in the Appendices section. Although this ROD was prepared in accordance with the EPA guidance cited above, the ROD includes the significant elements of EPA's A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents (EPA, July, 1999). A brief overview of material contained within each section is provided below:

Section 1. Declaration - Provides the Statement of Basis and Purpose, a summary of contaminants identified during investigation activities, a complete listing of all 233 SCOU sites, brief descriptions of the remedies selected to clean up these sites, brief summaries of the Statutory Determinations for the selected remedies, and signature blocks for BCT representatives.

Section II. Decision Summary - Provides an overview of the base environmental setting, history, scope and role of the SCOU, investigation screening methods, and remedial action objectives (RAOs). The Decision Summary also contains site-specific Remedial Investigation (RI) narratives, summaries of water quality and human health risk screening, remedial alternatives considered, and the supporting discussion for Castle Airport No Further Action (NFA) sites. Appendix E includes a reassessment of site decisions found within Section II due to changes in toxicity and risk factors for some hazardous substances implemented since development of the March 8, 1999 version of the draft final SCOU ROD part 1.

Section III. Applicable or Relevant and Appropriate Requirements (ARARs) – Explains the non-applicability of ARARs to the NFA sites of this ROD.

Section IV. SCOU Proposed Plan Responsiveness Summary - Summarizes comments received during the SCOU Proposed Plan Public Comment Period and provides Air Force responses to these comments.

Section V. Response to Agency Comments - Contains Air Force responses to regulatory agency comments, including the most recent comments on the December 14, 2001 Final of the SCOU ROD.

Section VI. Petroleum Hydrocarbon Only Sites - Provides characterization summaries for 32 SCOU sites that are impacted by petroleum hydrocarbons only. Sites impacted by petroleum hydrocarbon only are exempt from the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), but have been included in the SCOU ROD for tracking purposes.

Section VII. References - Provides a summary of all pertinent environmental documents that have been developed as part of the Castle environmental investigation and restoration process.

Section VIII. Administrative Record – Provides a compilation of the Administrative Record.

Section IX. Appendices – Contains all plates that are referenced within this document.

Acronyms

µg/dL	Micrograms Per Deciliter
µg/L	Micrograms Per Liter
µg/kg	Micrograms Per Kilogram
AALs	Applied Action Levels
ADD	Average Daily Dose
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFCEE	Air Force Center for Environmental Excellence
AFOEHL	Air Force Occupational and Environmental Health Laboratory
APCDs	California Air Pollution Control Districts
APEG	Alkaline Polyethylene Glycolate
AQUIRE	Aquatic Toxicity Information Retrieval Database
AQMDs	California Air Quality Management Districts
ARARs	Applicable or Relevant and Appropriate Requirements
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
ATM	Atmospheric Transport Model
ATSDR	Agency for Toxic Substance and Disease Registry
AVS	Aerospace Audiovisual Services
B	Building
BACT	Best Available Control Technology
BCD	Base-Catalyzed Decomposition
BCT	BRAC Closure Team
BEMO	Battelle Environmental Management Organization
bgs	Below Ground Surface
BHHRA	Baseline Human Health Risk Assessment
BOD	Biochemical Oxygen Demand
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BWS	Basewide Sector
CAA	Clean Air Act
CAC	California Administrative Code
CAFB	Castle Air Force Base
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Administration
CB	Comprehensive Basewide
CBA	Central Base Area
CBOU	Comprehensive Basewide Operable Unit
CC	Corrosion Control
CCR	California Code of Regulations
CDF & G	California Department of Fish and Game
CDM	Climatological Dispersion Model

Acronyms (continued)

CDR	Conceptual Design Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund Act)
CF HSZ	Confined Hydrostratigraphic Zone
CFCs	Chlorofluorohydrocarbons
CFR	Code of Federal Regulations
CIWMB	California Integrated Waste Management Board
CLP	Contract Laboratory Program
cm/sec	Centimeters/Second
CNDDB	California National Diversity Data Base
COC	Contaminant of Concern
COD	Chemical Oxygen Demand
Conc.	Concentration
COPC	Contaminant of Potential Concern
COEC	Contaminant of Ecological Concern
COPEC	Contaminant of Potential Ecological Concern
CPCMP	Closure/Post Closure Maintenance Plan
CRL	Contact Reporting Limit
CRP	Community Relations Plan
CRWQCB	California Regional Water Quality Control Board
CSA	Contaminant Source Assessment
CSM	Conceptual Site Model
CV	Coefficient of Variation
CVR	Central Valley Region
CWA	Clean Water Act
CWPCA	California Water Pollution Control Association
CY	Cubic Yards
DA	Discharge Area
DBF	Detonation and Burn Facility
DCA	Dichloroethane
DCE	Dichloroethene
DDD	Dichlorodiphenyidichloroethane
DDE	Dichlorodiphenyidichloroethene
DDT	Dichlorodiphenyltrichloroethane
DEIS	Draft Environmental Impact Statement
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DLM	California Water Board, Designated Level Methodology
DERP	Defense Environmental Restoration Program
DHS	California Department of Health Services
DNAPL	Defense Non-Aqueous Phase Liquid
DOD	Department of Defense
DP	Disposal Pit
DQO	Data Quality Objectives

Acronyms (continued)

DRMO	Defense Reutilization and Marketing Office
DTSC	Department of Toxic Substances Control, California Enviromental Protection Agency
EBS	East Base Sector
EC50	Effective Concentration, 50%
EC	Electrical Conductivity
ECAO	Enviromental Criteria Assessment Office
EE/CA	Engineering Evaluation/Cost Analysis
EM	Environmental Management
EM-31	Geonics EM-31 Ground Conductivity Meter
EMSL	Environmental Monitoring System Laboratory
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ERA	Ecological Risk Assessment
ES	Engineering-Science
ET	Evapotranspiration
ETC	The Earth Technology Corporation
FBP	Federal Bureau of Prisons
FEIS	Final Environmental Impact Statement
FEL	Field Equipment Logbook
FFA	Federal Facilities Agreement
FID	Flame Ionization Detector
FML	Flexible Membrane Liner
FOST	Finding of Suitability to Transfer
FPC	CDM Federal Programs Corporation
FSL	Fuel Spill Location
FS	Feasibility Study
FSP	Field Sampling Plan
FTA	Fire Training Area
GAC	Granulated Activated Carbon
GAM	Ground-Air Missiles
GC	Gas Chromatograph
GFAA	Graphite Furnace Atomic Absorption
GMS	Geoscience Modeling System
GPR	Ground Penetrating Radar
gpd	Gallons Per Day
gpm	Gallons Per Minute
HQ	Hazard Quotient
HAZWRAP	Hazardous Waste Remedial Action Program
HDPE	High Density Polyethylene
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HLA	Harding Lawson Associates

Acronyms (continued)

HPCDD	Heptachlorinated Dibenzo-p-dioxin
HSA	Hollow Stem Auger
HS&C	California Health and Safety Code
HSP	Health and Safety Plan
HSZ	Hydrostratigraphic Zone
HWCA	Hazardous Waste Control Act
HWS	Hazardous Waste Storage
IAG	Interagency Agreement
ICs	Institutional Controls
IC50	Inhibition Concentration-50%
ICP	Inductively Coupled Plasma
IP	Implementation Procedure
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
IT	International Technology Corporation
IWL	Industrial Waste Line
IWMB	Integrated Waste Management Board
“j”	Estimated Value
JEG	Jacobs Engineering Group, Inc.
JP-4	Jet Propellant Type 4
JP-5	Jet Propellant Type 5
kg	Kilogram
LC50	Lethal Concentration, 50% mortality
LCS	Laboratory Control Sample
LDMS	Leak Detection Monitoring System
LDRs	Land Disposal Restrictions
LF	Landfill
LOEC	Low-Observed-Effect-Concentration
LOEL	Lowest Observed Effect Level
LOX	Liquid Oxygen
LRA	Local Reuse Authority
LSS	Lower Subshallow
LTGSP	Long-Term Groundwater Sampling Plan
LTM	Long-Term Monitoring
LTO	Long-Term Operation
LTU	Land Treatment Unit
LUCs	Land-Use Covenants
LUFT	Leaking Underground Fuel Tank
M&E	Metcalf & Eddy
MAQL	Maximum Allowable Quantitation Limits
MAW	Military Airlift Wing
MBS	Main Base Sector
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDL	Method Detection Limit

Acronyms (continued)

MDRD	Minimum Detectable Relative Differences
MEK	Methyl Ethyl Ketone
mg/L	Milligrams/Liter
mg/kg	Milligrams Per Kilogram
ML/CL	Silt/Clay
MMES	Martin Marietta Systems, Inc.
MOA	Memorandum of Agreement
MOBS	Miscellaneous Other-Base Sector
MP	Metals Processing
MPR	Monthly Progress Report
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSL	Mean Sea Level
MSWLF	Municipal Solid Waste Landfill
MTP	Main TCE Plume
MW	Monitoring Well
NAAQS	National Ambient Air Quality Standards
NBS	North Base Sector
NCP	National Contingency Plan
ND	Not Detected at the Respective Method Detection Limit
NDDB	Natural Diversity Data Base
NDI	Nondestructive Inspection
NEIC	National Enforcement Investigations Center
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	No Further Action
NFI	No Further Investigation
NLFZ	North Landfill Zone
NPDES	National Pollutant Discharge Elimination System
NOEC	No-Observed-Effect-Concentration
NOEL	No-Observed-Effect-Level
NPL	National Priorities List
NSPS	New Source Performance Standards
NTU	Nephelometric Turbidity Unit
O&M	Operations & Maintenance
OBS	Off-Base Sector
OCDD	Octachlorodibenzo-p-dioxin
OERR	Office of Emergency and Remedial Response
OPS	Operating Properly and Successfully
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
OVA	Organic Vapor Analyzer
OWS	Oil/Water Separator
P2TM	Phase 2 Technical Memorandum
PAH	polycyclic aromatic hydrocarbon

Acronyms (continued)

PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparabililty
PCBs	Polychlorinated Biphenyls
PCDD	Polychlorinated Dibenzo-p-dioxin
PCDF	Polychlorinated Dibenzofurans
PCE	Perchloroethene or Tetrachloroethene
PCL	Proposed Cleanup Level
pCi/L	Pico Curies/Liter
PCOC	Potential Contaminant of Concern
PD	Probability of Detection
PDEIS	Practical Draft Environmental Impact Statement
PEF	Particulate Emission Factor
PFA	Probability of False Alarm
PFFA	POL Fuel Farm Area
PID	Photoionization Detector
PM	Particulate Matter
PMEL	Precision Measurement Equipment Laboratory
POL	Petroleum, Oil, and Lubricant
POTW	Publicly Owned Treatment Works
PP	Proposed Plan
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
PRAOs	Preliminary Remedial Action Objectives
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Parties
PVC	Polyvinyl Chloride
PW	Production Well
PWQSA	Preliminary Water Quality Site Assessment
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAMS	Quality Assurance Management Staff
QAPP	Quality Assurance Project Plan
QC	Quality Control
QRA	Quantitative Risk Assessment
RA	Remedial Action
RAB	Restoration Advisory Board
RAGS	Risk Assessment Guidance for Superfund
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine
RFA	RCRA Facility Assessment
RfD	Reference Dose
Risk	Risk Assessment

Acronyms (continued)

RG	Rig Geologist
RI	Remedial Investigation
RIC	U.S. Air Force Radioisotope Committee
RI/FS	Remedial Investigation/ Feasibility Study
RI/RDA	Remedial Investigation/ Remedial Design Action
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RPM	Remedial Project Manager
RQL	Reporting Quantitation Limit
RSD	Relative Standard Deviation
RWQCB	California Regional Water Quality Control Board
SA	Storage Area
SAC	Strategic Air Command
SAP	Sampling and Analysis Plan
SARA	Superfund Amendment and Reauthorization Act of 1986
SB	Soil Boring
SBS	South Base Sector
SC	Clayey Sands
scfm	Standard Cubic Feet Per Minute
SCOU	Source Control Operable Unit
SDS	Storm Drain System
SDWA	Safe Drinking Water Act
SEAM	Superfund Exposure Assessment Manual
SIP	State Implementation Plan
SJVUAPCD	San Joaquin Valley Unified Air Pollution Control District
SLFZ	South Landfill Zone
SM	Silty Sands
SOP	Standard Operating Procedure
SOV	Soil Organic Vapor
SOW	Statement of Work
SP	Poorly-graded Sands
SRA	Screening Risk Assessment
SSG	Site Supervising Geologist
ST	Structure
STLC	Soluble Threshold Limit Concentration
STOP	SVE Termination or Optimization Process
SVE	Soil Vapor Extraction
SVOCs	Semivolatile Organic Compounds
SW	Well-graded Sands
SW-846	Test Methods for Evaluating Solid Waste
SWAT	Solid Waste Assessment Test
SWMU	Solid Waste Management Unit
SWRCB	State Water Resources Control Board
T&E	Technical and Economic Evaluation
TAL	Target Analyte List

Acronyms (continued)

TBC	To Be Considered
TBV	Threshold Background Value
TCC	Test Center Complex
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TEF	Toxicity Equivalence Factor
TEPH	Total Extractable Petroleum Hydrocarbons
THQ	Target Hazard Quotient
TMB	Trimethylbenzene
TMV	Toxicity, Mobility, or Volume
TO-14	EPA Method of Analysis for VOCs by Gas Chromatogragh/Mass Spectrometry
TOC	Total Organic Carbon
TOX	Total Organic Halides
TPCA	Toxic Pits Cleanup Act
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
TSDF	Treatment, Storage, and Disposal Facility
TTLC	Total Threshold Limit Concentration
TVOCs	Total Volatile Organic Compounds
TVPH	Total Volatile Petroleum Hydrocarbon
TW	Test Well
UCL	Upper Confidence Limit
UFL	Underground Fuel Leaks
USAF	United States Air Force
USF & WS	U. S. Fish and Wildlife Service
USCS	Unified Soil Classification System
USS	Upper Subshallow
UST	Underground Storage Tank
uv	Ultraviolet
VF	Volatilization Factor
VOA	Volatile Organic Analysis
VOCs	Volatile Organic Compounds
Vol/Vol	Volume Per Volume
WBS	West Base Sector
WCC	Woodward-Clyde Consultants
WET	Waste Extraction Test
WFLS	West Flight Line Sector
WHRS	Wildlife Habitat Relationships System Database
WP	Work Plan
WP/SAP	Work Plan/Sampling and Analysis Plan

Acronyms (continued)

WPCF	Water Pollution Control Federation
WQSA	Water Quality Site Assessment
WSA	Weapons Storage Area
XRF	X-Ray Fluorescence Spectrometry
yr	Year

Section I

Section I. Declaration For Castle Airport Source Control Operable Unit (SCOU) Record Of Decision (ROD) 1

Site Name and Location

Castle Airport, (formerly Castle Air Force Base)
Merced County, California (See SCOU Site Selected Alternative Map, Plate 5-1 in Appendix C)

Statement of Basis and Purpose

The SCOU is the third of three operable units (OUs) that were developed to investigate and address environmental concerns at Castle Airport. The first two operable units (OU 1 and OU 2) involved investigation and remediation of groundwater contamination. The SCOU was designated to investigate contamination in unsaturated (vadose zone) soils, characterize the impact that vadose zone contamination has had on groundwater, and develop and select remedial alternatives that are appropriate for site conditions.

The SCOU consists of 233 individual soil sites. This decision document (SCOU ROD Part 1) addresses 169 of the 233 sites for which no further action is required to address risks to human health and the potential impact to groundwater. Final decisions for the remaining 64 SCOU sites will be documented in subsequent RODs. Those 64 sites were deferred due to various issues.

Sites addressed in this ROD include 137 Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) sites characterized as not requiring further action (No Further Action [NFA] sites) and 32 sites (non-CERCLA) primarily contaminated by petroleum hydrocarbons. Those 32 sites are included in this ROD for tracking purposes only. The sites identified as petroleum hydrocarbon only (PHO) sites were limited to those sites that were primarily impacted by constituents of concern that are not subject to CERCLA requirements. Final remedial decisions for these sites will be addressed under all applicable laws and regulations.

This ROD is based on the findings of the Castle Airport SCOU RI/FS (May 1997) and the SCOU Data Gap Investigation Report (July 1999), a supplement to the RI/FS. These documents are the culmination of over a decade of vadose zone investigations at Castle Airport. A summary of these and other key environmental documents is provided in the attached Administrative Record index.

This decision document presents the Selected Remedies for the listed sites at Castle Airport (formerly Castle Air Force Base) at Merced County California, which were chosen in accordance with CERCLA, as amended by Superfund Amendments and Reauthorization Act (SARA), and the National Oil and Hazardous Substances Contingency Plan (NCP). These decisions are based on the Administrative Record file and EPA and the State of California concurs with the selected remedies.

Assessment of the Sites

The response actions selected in this ROD are necessary to protect the public health or welfare from actual or threatened releases of hazardous substances into the environment.

At the No Further Action sites, levels of contaminants do not present a threat to human health or water quality based on human health risk, water quality site assessments, and, in selected cases, risk management decisions. For some NFA sites, the Air Force has undertaken cleanup activities under its Removal Action Program. The Air Force, as the Lead Agency, has determined that no additional action is necessary to protect public health or welfare.

A complete listing of all 233 SCOU sites, organized according to decision document and remedial technology is provided below. Detailed information on the SCOU ROD Part 1 sites can be found in the referenced section.

169 Sites Considered for Inclusion in SCOU ROD Part 1 (182 Original Sites Less 13 Sites [DP5, DP6, DP8, DP8A, DP9, LF5, LF5 Trenches, ETC8, ETC10, PCB4, PCB5, and PCB6] Deferred to Subsequent ROD)							
Section II, Subsection 5.2 - No Further Action *(137 Sites)*							
1.	Building 23	28.	Disposal Pits 4A/4B	55.	N3	113.	SWMU 4.1
2.	Building 47	29.	Disposal Pit 7 (LF5)	56.	N4	114.	SWMU 4.2
3.	Building 84	30.	Disposal Pit 10 (LF5)	57.	N5	115.	SWMU 4.9
4.	Building 541	31.	ETC 2	58.	N6	116.	SWMU 4.10
5.	Building 545	32.	ETC3	59.	N7	117.	SWMU 4.11
6.	Building 547	33.	ETC6	60.	N8	118.	SWMU 4.12
7.	Building 871	34.	ETC7	61.	N9	119.	SWMU 4.13
8.	Building 1182	35.	ETC11	62.	N10	120.	SWMU 4.19
9.	Building 1204	36.	ETC12[#]	63.	PCB 1, 2, 3	121.	SWMU 4.20
10.	Building 1205	37.	ETC13	64.	PCB 7	122.	SWMU 4.24
11.	Building 1207	38.	Firing Range	65.	PCB 8	123.	SWMU 4.25
12.	Building 1319	39.	FTA2	66.	PCB 9	124.	SWMU 4.26
13.	Building 1335	40.	H1	67.	Sanitary Sewer 1	125.	SWMU 4.27
14.	Building 1344	41.	H2	68.	Sanitary Sewer 3	126.	SWMU 4.28
15.	Building 1404	42.	H3	69.	Sanitary Sewer 5	127.	SWMU 4.30
16.	Building 1405	43.	Hangar F-1	70.	Sanitary Sewer 6	128.	SWMU 4.31
17.	Building 1529	44.	Hangar F-2	71.	Sanitary Sewer 7	129.	SWMU 4.32
18.	Building 1550	45.	Hangar F-3	72.	Sanitary Sewer 9	130.	SWMU 4.33
19.	Building 1562	46.	Hangar F-5	73-104.	Stains1 to 32	131.	SWMU 4.34
20.	CVLFA	47.	Hangar F-6	105.	Storage Area B1	132.	SWMU 4.35
21.	CVLFB	48.	HWS4	106.	Storage Area B2	133.	SWMU 4.36
22.	DBF	49.	IWL	107.	Storage Area B4	134.	SWMU 4.37
23.	Discharge Area 3	50.	LG1	108.	Storm Drain System	135.	SWMU 4.38
24.	Discharge Area 8	51.	Landfill 1	109.	Structure 1201	136.	UFL4
25.	Disposal Pit 1 (LF1)	52.	Landfill 2	110.	Structure 1206	137.	Discharge Area 2
26.	Disposal Pit 2 (LF1)	53.	Landfill 3[#]	111.	Structure 1571		
27.	Disposal Pit 3 (LF1)	54.	N2	112.	Structure T85		

[#] These NFA sites are being investigated further to determine if the remaining contaminants pose a threat to ecological receptors on the former base.

Section VI, Subsection 8 – Petroleum Hydrocarbon Only Sites *32 Petroleum Hydrocarbon Only Sites (NFA Under CERCLA, Must Meet Other Applicable Laws and Regulations)*							
138.	Building 59[4]	146.	Building 950	154.	Discharge Area 7[4]	162.	JP4 Fuel Line
139.	Building 79[4]	147.	Building 951	155.	ETC4[7]	163.	JP7
140.	Building 175	148.	Building 1324	156.	FTA3[*]	164.	PFFA[4]
141.	Building 325	149.	Building 1325/HWS3	157.	Fuel Spill 1	165.	Sanitary Sewer 8[4]
142.	Building 508[4]	150.	Building 1560	158.	Fuel Spill 2	166.	Structure T61/HWS1[7]
143.	Building 551[*]	151.	Building 1865/1868	159.	Fuel Spill 3	167.	UFL1[6]
144.	Building 909[4]	152.	Discharge Area 1/TCC1	160.	Fuel Spill 4	168.	UFL2
145.	Building 917[4]	153.	Discharge Area 6[4]	161.	H4[6]	169.	UFL3

*Insignificant VOC contamination. An evaluation similar to the START Process will be accomplished to ascertain the potential impact to groundwater

For tracking purposes, the remaining 64 SCOU sites, not addressed by this ROD, are listed below. These sites are organized by site characteristic.

64 Sites to be Included in SCOU ROD Part 2 or Other Subsequent RODs							
Section II, Subsection 5.1 - Landfill Sites *Zoned Capping with Institutional Controls (8 Sites)*							
170.	Disposal Pit 5 (LF4)	172.	Disposal Pit 8 (LF5)	174.	Disposal Pit 9 (LF5)	176.	Landfill 5
171.	Disposal Pit 6 (LF4)	173.	Disposal Pit 8A (LF5)	175.	Landfill 4	177.	Landfill 5 Trenches
Volatile Organic Compound Sites (23 Sites)							
178.	Building 51[1]	184.	Building 1266[2]	190.	Discharge Area 4[5]	196.	Sanitary Sewer 2
179.	Building 52[1]	185.	Building 1314[5]	191.	Discharge Area 5	197.	Sanitary Sewer 4
180.	Building 53[1]	186.	Building 1350	192.	ETC5[2]	198.	Structure 55[2]
181.	Building 54[2]	187.	Building 1532	193.	FTA1	199.	Structure T66[2]
182.	Building 1253[1]	188.	Building 1709	194.	Hangar F-4	200.	Structure T67[2]
183.	Building 1260[2]	189.	Building 1762	195.	SA B3[2]		
Shallow Contamination Sites (16 Sites)							
201.	Building 1541[8]	205.	SWMU 4.6	209.	SWMU 4.15	213.	SWMU 4.21
202.	SWMU 4.3	206.	SWMU 4.7	210.	SWMU 4.16	214.	SWMU 4.22
203.	SWMU 4.4	207.	SWMU 4.8	211.	SWMU 4.17	215.	SWMU 4.23[8]
204.	SWMU 4.5	208.	SWMU 4.14	212.	SWMU 4.18	216.	SWMU 4.29
Miscellaneous Sites (17 Sites)							
217.	Stain 33	222.	Stain 38	227.	Stain 43	232.	PCB 5
218.	Stain 34	223.	Stain 39	228.	Stain 44	233.	PCB 6
219.	Stain 35	224.	Stain 40	229.	ETC-8		
220.	Stain 36	225.	Stain 41	230.	ETC-10		
221.	Stain 37	226.	Stain 42	231.	PCB 4		

[1] indicates facilities in the Building 51 Group
[2] indicates facilities in the Building 54 Group
[3] indicates facilities in the Discharge Area 8 Group
[4] indicates facilities in the Petroleum Fuel Farm Area Group
[5] indicates that Discharge Area 4 and Building 1314 are linked
[6] indicates that H4 and UFL1 are linked
[7] indicates that ETC4 and Structure T61/HWS1 are linked
[8] indicates that Building 1541 and SWMU 4.23 are linked

No Further Action Sites

Some NFA sites did not require cleanup actions at all, while at other sites the Air Force actually performed removal actions. Based on an assessment of risk to human health and threat or impact to groundwater from the contaminated sites, and, in some instances, risk management evaluations, these NFA sites do not require additional remedial action to protect human health or the groundwater.

Statutory Determinations

At the No Further Action sites, residual levels of contaminants do not present a threat to human health or the groundwater. The Air Force, as the Lead Agency, has determined that no action is necessary and that sites are suitable for unrestricted and unlimited reuse. A statutory five-year review is not required. However, NFA sites are subject to reevaluation under CERCLA if the risk characterization changes for these sites.

ROD Data Certification Check List

The following information is included in the Decision Summary section of this Record of Decision. Additional information can be found in the Administrative Record file for the sites.

- Chemicals of concern and their respective concentrations
- Baseline risk represented by chemicals of concern
- Cleanup Levels established for chemicals of concern and the basis for these levels.
- How Source materials representing principal threats are addressed
- Current and reasonably anticipated future land use assumptions used in the baseline risk assessment and ROD.
- Potential land use and groundwater use that will be available at the site as a result of the selected remedy.
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which estimates are projected.
- Key factors that led to selecting the remedy

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Section II

Section II. Decision Summary

This summary provides an overview of the environmental concerns posed by contaminated soil at 169 of the 233 SCOU sites at Castle Airport and the remedies selected to address those concerns. It includes a description of the site characteristics and the remedial alternatives considered in the Castle Airport SCOU RI/FS, and incorporates additional information developed in the Data Gap Investigation Report. Additionally, this section summarizes the analysis of these alternatives compared to criteria set forth in the NCP, explains the rationale behind remedy selections to address contaminated soils at the base, and shows how the selected remedies satisfy the statutory requirements of CERCLA.

1.0 Site Name, Description and Location

Castle Airport is located in Merced County, California (Plate 1-1, Vicinity Map, in Appendix A). The site covers an area of 2,777 acres and includes a runway and airfield, industrial areas, housing, recreational facilities, and several non-contiguous parcels.

Neighboring communities include Atwater, located immediately to the west, Winton, located to the northwest, and Merced, located approximately five miles southeast of Castle Airport. Land use within a two-mile radius of Castle Airport is urban and agricultural. Urban residential areas consisting of former base housing, trailer parks, and recently constructed residential suburban housing, are located west, south, and east of the base. Agricultural areas and rural farm residences are located to the north of the base. Potential future land uses in the Castle Airport area include schools, residential, recreational, industrial, and commercial.

Castle Airport is located within the Merced River Valley, which is part of the larger San Joaquin Valley. The area has been leveled by progressive down-cutting of the Merced River and its tributaries, and by wind erosion. The airport is situated about halfway between the Merced River and Black Rascal Creek, two tributaries of the San Joaquin River. This river and creek make up the major surface drainages near Castle Airport. Except for periods of prolonged or heavy rain, runoff does not discharge from Castle Airport. During periods of heavy rainfall, runoff is diverted to the southern tip of the base where it accumulates behind a weir that discharges to either Livingston Canal or Canal Creek. Water remaining behind the weir dissipates by evaporation and percolation.

The San Joaquin Valley forms the southern half of the Great Valley Geomorphic Province of California and is underlain by a basement complex composed of metamorphic and granitic rocks. In the vicinity of Castle Airport, the basement is overlain by a thick sequence of sedimentary deposits of Tertiary/Quaternary age (Plate 1-2, Generalized Basewide Geologic Model, in Appendix A). Quaternary-age sediments extend from the ground surface to about 350 feet below ground surface (bgs). The upper 20 feet of these deposits consist of windblown and flood plain sediments of the Holocene age. The transition from the Holocene age to the Pleistocene age occurs at the base of these sediments.

Sands dominate the vadose zone at Castle Airport (Plate 1-2, Generalized Basewide Geologic Model, in Appendix A) and range from poorly graded to well graded with a significant component of silty sands (SM). Clayey sands (SC) were encountered to a lesser degree and well-graded sands (SW) only occasionally. Silt/clay (ML/CL) was also encountered. In general, sand types found in the vadose zone are as follows:

- Upper vadose zone (less than 25 feet bgs) is comprised of chiefly SM and to a lesser degree poorly-graded sand (SP)
- Middle vadose zone (25 to 50 feet bgs) primarily contains SP and to a lesser degree SM, as well as minor amounts of SC and SW
- Lower vadose zone (50 to 70 feet bgs) comprises SP, SM, and some SW with occasional gravels near 70 feet bgs

Due to the heterogeneous nature of the area, vertical migration rates of contaminant releases can vary widely. Iron- and silica-cemented sands and silts (hardpan) are often encountered between approximately 2.5 feet and 15 feet bgs. This hardpan is discontinuous beneath the base and varies in thickness from a few inches to greater than 5 feet. Because the degree of cementing varies widely, the hardpan is not completely impermeable. However, the hardpan can retard vertical movement of moisture and form local perched water zones. The hardpan has not served as a significant barrier to vertical migration of contaminants.

The general horizontal groundwater flow direction beneath Castle Airport is west-southwest toward the San Joaquin River. This is consistent with the regional groundwater flow in the eastern part of the San Joaquin Valley. Two regional pumping centers located to the northwest and south-southwest of Castle Airport influence local groundwater flow directions in the Atwater-Merced area. The migration and fate of dissolved contaminants in groundwater at Castle Airport depend largely on the influence of these pumping centers as well as natural hydrogeologic conditions.

Groundwater zones beneath Castle Airport are heterogeneous and are characterized by laterally discontinuous lenses of channel-fill sands and gravels surrounded by a less permeable overbank deposit. These groundwater zones are divided into five hydrostratigraphic zones (HSZs): the shallow HSZ, upper subshallow (USS) HSZ, lower subshallow (LSS) HSZ, confined (CF) HSZ, and deep HSZ, as shown on Plate 1-2, Generalized Basewide Geologic Model, in Appendix A. Each HSZ is a sequence of sediments with the finer sediments generally occurring at the top and the predominant water-bearing sections or lenses at the bottom. The HSZs do not represent isolated aquifers, but provide the general stratigraphic correlation (which can often be recognized during drilling) to guide the installation of monitoring wells within predominant water-bearing units.

There is a small, natural, vertical component of groundwater flow beneath Castle Airport (Jacobs, 1995a). Hydrographs indicate that there is a relatively consistent downward vertical gradient between the shallow and USS HSZs and that these two HSZs are in relatively close hydraulic connection.

The cyclic seasonal pattern observed in elevations in the CF HSZ is due to the pumping of large volumes of groundwater for irrigation purposes during the late summer and fall. The dissimilarity in water level fluctuations between the shallow and CF HSZs suggests there is little direct hydraulic connection between these zones.

2.0 Site History and Enforcement Activities

Castle Airport fell under the provisions of CERCLA with the authorization of the Superfund SARA of 1986. Castle Airport was proposed for the National Priorities List (NPL) of hazardous waste sites on July 22, 1987. The former base was officially listed as an NPL site on November 21, 1989. The United States Environmental Protection Agency (EPA), California Environmental Protection Agency (Cal/EPA), and the U.S. Air Force signed an inter-agency agreement, known as the Castle Air Force Base Federal Facility Agreement (FFA) on July 21, 1989. The FFA establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the former base, in accordance with CERCLA, the NCP, and incorporated federal and state standards, policies, and guidance.

Castle Airport began as a military air base in December 1941 to train Army aircrews during World War II. The Strategic Air Command (SAC) assumed responsibility for the base in 1946. The base was occupied by the 93rd Bombardment Wing until closure in September 1995. Fuels, primarily jet propellant type 4 (JP4), solvents, and chemicals were used at the base since the 1940s. Municipal and chemical wastes were also generated as a result of maintenance operations, fuel management, fire training, and other base activities. In the 1950s, expanded industrial activities related to the SAC mission resulted in increased waste generation rates.

Originally, the major industrial activities related to aircraft maintenance centered in two hangars (Buildings 47 and 51) and the machine shop (Building 52) located on the southwestern side of Apron Avenue. Activities associated with Building 52 included metal plating and processing and jet engine maintenance. Building 52 was demolished in 1977. In 1955, an additional parking apron, hangar (Building 1550), and other structures were added to support the newly arrived 456th Fighter Interceptor Squadron. Building 1550 has been used extensively for industrial activities. Buildings 1253 and 1260 were built in the late 1970s and assumed the majority of the industrial activities previously performed in Building 52.

Following the sampling of several water production wells in 1978, the Air Force determined that groundwater beneath Castle Airport was contaminated with trichloroethylene (TCE) and other VOCs. During routine sampling of wells in 1980, trace levels of TCE were detected in the four base water production wells. Consequently, seven test wells were installed by the Air Force to investigate the shallow HSZ aquifer. The results of this investigation prompted the Air Force to construct a new deep HSZ aquifer supply well (PW10) and provided the impetus for the Air Force's aggressive strategy to address groundwater contamination under the Castle Airport Installation Restoration Program (IRP). This strategy led to the initiation of groundwater cleanup actions and cleanup of source areas designed to control contaminant migration and to protect human health and the environment.

2.1 Castle Environmental Investigation

The initial phase of the IRP at Castle Airport was conducted in 1981, at which time 35 potential contaminant source sites were identified. Of the 35 sites identified, seven were previously unknown potential source areas. Follow-on activities confirmed and partially delineated the extent of the TCE groundwater contamination.

In March 1984, the California Regional Water Quality Control Board (RWQCB) Central Valley Region (CVR) issued Cleanup and Abatement Order Number 84-027. This order required Castle Airport to provide users of the base water supply and contaminated off-base wells with additional sources of potable water. Also, Castle Airport was required to implement remedial measures to remediate identified groundwater contamination and prevent future groundwater degradation. In response to this requirement, groundwater pump and treat systems have been installed to control plume migration and to remediate contaminated groundwater. Final decisions for groundwater remediation are documented in the Comprehensive Basewide ROD Part 1.

In September 1984, an additional field investigation was started that included the installation of 27 monitoring wells and 11 unsaturated zone lysimeters to determine the presence of groundwater contamination and perched water zones. This investigation determined that the soils and sediments at the majority of the sites had not been significantly affected, but that groundwater needed further evaluation. Significant TCE concentrations were detected in the central or Main Base Sector (MBS). The final report of this field investigation recommended additional investigations of the landfill, fire training areas, fuel spills, and disposal areas, and also further evaluation of the TCE plume in the MBS.

Follow-on investigation of the landfills, fuel discharges, and disposal areas consisted of monitoring soil organic vapor (SOV) at 205 points, drilling 48 soil borings, installing 27 monitoring wells and five lysimeters, and conducting two rounds of groundwater sampling. These investigations were completed in April 1987, and the final report was issued in August 1988 (Phase II Remedial Investigation, Weston, 1988).

Results of the field investigations and data collection activities were used to develop the initial RI/FS. Phase I of the RI field activities started in August 1988. Activities included the installation of 63 additional monitoring wells in the upper and lower HSZ of the shallow aquifer and nine monitoring wells in the CF deep HSZ aquifer. In June 1989, Phase II of the RI was initiated; which involved two rounds of groundwater sampling of 160 wells. These wells included previously installed base and Phase II wells, new RI base wells, and off-base private wells. Additionally, 77 soil borings were drilled and sampled to assist in future characterization of various sites. Two rounds of groundwater level measurements were also made, and 15 short-term (4-hour) aquifer-pumping tests were conducted. Phase II of the RI field activities was completed in February 1990. (Follow On Investigation of Landfills, Fuel Spills, and Discharge Areas, IT Corp, 1990).

Phase III of RI field activities began in March 1990 and continued through May 1991. These activities included quarterly groundwater sampling and analysis, 30-day aquifer-pumping tests, a preliminary site assessment of the Castle Vista landfills, six rounds of groundwater level measurements, development of Work Plan No. 2, and a sewer line television camera survey.

In May of 1991, IT Corporation performed a limited records search and identified basewide TCE source areas. The records search focused on gathering information about the use, storage, and disposal of TCE and other contaminants. This investigation identified several new TCE source areas. The Contaminant Source Assessment (CSA) which, included record searches, personnel interviews, and reviews of engineering drawings and aerial photographs, found an additional 39 areas and 24 SWMUs that required investigation. In 1994, the Draft Environmental Impact Statement identified an additional 11 potential contaminant source areas.

A total of 233 sites were investigated during SCOU RI activities. Investigation methods included geophysical surveys and soil and soil gas sampling and analyses. The summary of the SCOU RI/FS was submitted for agency review in February of 1995. The 1995 RI/FS was rejected by the agencies and the Air Force was requested to initiate further investigation of 40 SCOU sites. The updated Draft Final RI/FS was submitted for agency review in January of 1997 and finalized in May 1997. However, based on further agency comment, it was determined that 24 of the SCOU sites required further evaluation before a remedial alternative could be selected and one site (FTA1) required a CERCLA evaluation of alternatives for metal and dioxin contamination.

Sites that required further evaluation fell into two categories, Further Action Data Gap sites and Technical and Economic Evaluation (T&E) sites. These sites were either not sampled as part of the RI, or the data collected were not adequate to fully determine the extent, concentrations, or impact of site contamination. There were a total of 12 Further Action Data Gap sites and 12 T&E sites. To address needs for additional data, the Air Force completed Data Gap and T&E investigations for these sites. This work was carried out in late 1997 and early 1998.

In August of 1997, the SCOU Proposed Plan was submitted to the community for review. The purpose of the Proposed Plan was to notify the community of the preferred remedial alternatives for all of the SCOU sites. The Data Gap/T&E sites were included in the Proposed Plan as “contingency” sites pending resolution of data gap and technical and economic evaluations. The Data Gap/T&E evaluations have since been completed in accordance with the provisions of the Proposed Plan.

In March 8, 1999, the Air Force issued a draft final Record of Decision for 167 SCOU sites. However, that ROD was never finalized because of disagreements with the regulatory agencies on institutional control language. In the interim, the Air Force has since conducted cleanups and reassessments of additional SCOU sites which have been added to the SCOU ROD Part 1 to total 169 SCOU sites.

3.0 Highlights of Community Involvement

The Community Relations Plan (CRP) for Castle Airport was completed in 1990 and updated, by Castle Airport's Office of Public Affairs, in 1992, May 1995, February 1997, and July 1997. A revised draft CRP was issued in February 1998.

Consistent with the Base's CRP, the Air Force established a Restoration Advisory Board (RAB) composed of EPA, Cal/EPA, the Air Force, Merced County, and local representatives from adjacent communities. The RAB meets regularly to provide the community representatives with up-to-date information on recent events. Castle Airport publishes and distributes "Enviro-Progress" and "Enviro-Fact Sheet" community newsletters, both of which serve to keep the community informed of recent activities.

As a follow-up to the SCOU RI/FS, which was finalized in May of 1997, the SCOU Proposed Plan was submitted to the Castle RAB for review on August 15, 1997. The Proposed Plan provided a brief overview of the information contained in the RI/FS and listed the proposed remedial alternatives for each SCOU site. The public comment period for the Proposed Plan was conducted from August 15 through October 15, 1997. Three public hearings on the SCOU Proposed Plan were held at Atwater City Hall. Two hearings were held on August 26, 1997 and a follow up hearing was conducted on September 23, 1997. Notices of Proposed Plan hearings were published in the Merced Sun-Star, Atwater Signal, and the Livingston Chronicle. Copies of the Proposed Plan were mailed to key members of the RAB and the community and were also made available at the public hearings and through the Administrative Record located at both the Merced Public Library and at the Base Conversion Agency (BCA) offices at Castle Airport. Response to comments received during the public hearings and comment period are included in the Responsiveness Summary, Section IV, Subsection 7 of this ROD.

This decision document presents the selected remedies for 169 of the 233 SCOU sites at the former Castle Air Force Base located in Atwater, California. The remedies are chosen in accordance with CERCLA, as amended by SARA and, the NCP. These remedial decisions are based on information contained in the Administrative Record. A summary of the Administrative Record is provided in Section VIII of this ROD. The public participation requirements of CERCLA Sections 113(K)(2)(B)(I-v) and 117 have been substantively met.

4.0 Scope and Role of the Operable Unit

4.1 Castle Operable Units

During Phase III of the groundwater investigations, Castle Airport was divided into operable units (OUs) 1 and 2. These OUs are location-specific areas designated by the Air Force in an attempt to define the extent of groundwater contamination plumes and their related source areas. The geographical location and aerial extent of OU 1 and OU 2 are depicted in Plate 4-1, Operable Unit Site Location Map, in Appendix B. An Interim ROD for OU 1 was finalized in August 1991 to address the principal TCE plume beneath the central portion of the Main Base Sector and contiguous areas to the south and southwest. A final ROD for OU 2 was designed to address Remedial Actions for groundwater contamination in the Discharge Area 4 (DA-4) and Wallace Road areas.

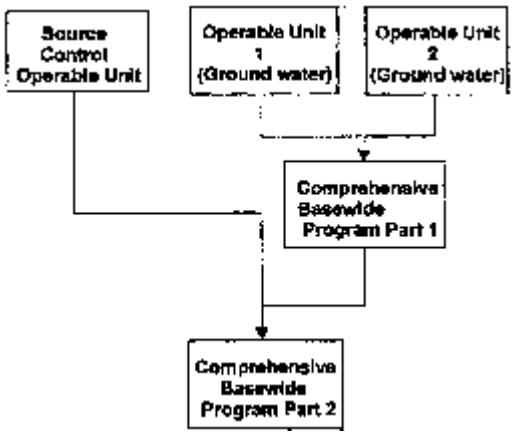
The third Castle Operable unit, the SCOU, was designated to characterize contamination of unsaturated soils (vadose zone) and their effect on groundwater plumes at Castle Airport. Work was initiated on the SCOU in May of 1993, when the Work Plan/Sampling and Analyses Plan (WP/SAP) for the Remedial Investigation and Feasibility Study (RI/FS) was finalized. The objectives of the SCOU RI/FS were to:

- Investigate the nature and extent of vadose zone contamination from the surface to a depth of 60 feet bgs.
- Assess the risks that contaminated soils pose to human health and water quality.
- Evaluate the feasibility of various Remedial Action alternatives.
- Recommend preferred remedies.

The Air Force's approach for the SCOU sites is to document its remedial decisions for the sites in multiple RODs: SCOU ROD Part 1 and follow-on RODs, including SCOU ROD Part 2. SCOU ROD Part 1 is intended for the lesser contaminated vadose zone sites (169 SCOU sites), SCOU ROD Part 2 will address 50 of the remaining sites, and FTA1, ETC-8, and ETC-10 will be addressed in the Comprehensive Basewide Program (CB) Part 2 ROD as well. LF4 and LF5 and associated sites will be considered in the appropriate follow-on ROD.

4.2 Comprehensive Base-wide Program

The Comprehensive Basewide Program was originally established to combine final evaluation and cleanup of both soil and groundwater at Castle Airport. Because of an extension of the investigation activities under the SCOU, the CB program was segmented into two parts, CB Part 1 and CB Part 2. As illustrated below, the SCOU ROD (Parts 1 and 2) will be a component of CB Part 2.



In 1997, the CB ROD Part 1 was finalized. The CB ROD Part 1 superseded the "Interim" OU 1 ROD and the final OU 2 ROD that had been developed for groundwater operable units, OU 1 and OU 2, and set final cleanup levels for groundwater remediation necessary to protect human health and the environment.

The CB ROD Part 1 addressed the full range of contaminated groundwater under both the Castle Airport and the contiguous areas where contaminated groundwater has migrated off base. These contaminated groundwater areas included the Main Base Plume, the East Base Plume, and the Castle Vista Plume. Based on the CB ROD Part 1, contaminated groundwater plumes within the existing maximum contaminant level (MCL) boundary of the most restrictive contaminant present will be cleaned up to MCL levels.

The CB ROD Part 2 will combine information from all three operable units and be the final remedial decision document for Castle Airport. The CB ROD Part 2 will also contain the final decisions for ecological receptors at Castle. The CB ROD Part 2 is scheduled for completion in April 2003.

4.3 Changes from Prior CERCLA Documentation

The SCOU comprises a total of 233 individual sites. The SCOU RI/FS and Proposed Plan addressed all 233 of these sites. However, because the Air Force and regulatory agencies have been unable to reach agreement on a variety of SCOU issues, including VOC remedial action objectives (RAOs), soil vapor extraction shut-off criteria, implementation and monitoring requirements for ICs and Deed restrictions, and on selected remedies, a total of 64 SCOU sites have been removed from the SCOU ROD Part 1. Final decisions for these 64 sites will be documented in the SCOU ROD Part 2, the CB ROD Part 2, or other subsequent ROD. The Declaration includes a listing of all 233 SCOU sites organized by decision document and site characteristics.

4.4 Assessment of Impacts to Groundwater, Human Health, and the Environment

As part of the RI/FS process, SCOU sites were assessed for potential risk to human health and the environment, including impact from the contaminated soil to groundwater that is a current or potential source of drinking water. The potential risk to groundwater was evaluated using Water Quality Site Assessments (WQSAs), risk to human health was evaluated according to EPA Risk Assessment Guidance for Superfund sites, and environmental risk was assessed using Ecological Risk Assessment. Final decisions on water quality risks in the vadose zone and human health risks in the 0 to 15 foot interval of the vadose zone are presented in this ROD. Final decisions on ecological risks and vadose zone human health risks from 15 feet to the top of the water table will be presented in the SCOU ROD Part 2 or in the CB ROD Part 2. Plate 4-2, The CERCLA Remedial Process, in Appendix B, shows the entire CERCLA Remedial Process from Preliminary Assessment stage through post-ROD changes. A flow chart that traces the disposition of Castle SCOU sites is provided on Plate 4-3, Source Control Operable Unit (SCOU) Site Disposition Flow Chart, in Appendix B.

4.4.1 Water Quality Site Assessment (WQSA)

WQSAs were based on background water quality analyses and RWQCB guidance. The WQSA procedure for soils established leachable contaminant concentrations in soil that are protective of groundwater quality. The goal of the WQSAs is to ensure that SCOU sites having the potential to adversely affect groundwater quality were given appropriate consideration in the FS portion of the RI/FS.

4.4.1.1 Site Background Levels

The first step of the WQSA procedure was to establish background levels for known and suspected contaminants. Contaminants evaluated included VOCs, semivolatile organic compounds (SVOCs), and inorganics (metals). Because organic contaminants are not found naturally in soil or water, background for organics are assumed to be zero. However, because analytical methods generally cannot report a zero level, the method detection limit (MDL) was established as the background level for organic contaminants.

Determining background levels for inorganic contaminants involved collection and analyses of soil samples from uncontaminated locations at Castle Airport. The background samples naturally segregated into four lithology groups: (1) shallow silts (surface to approximately 30 feet below ground surface [bgs]), (2) shallow sands (same interval), (3) deep silts (approximately 30 to 70 feet bgs), and (4) deep sands (same interval). Statistical analyses were conducted on the sample results to determine distribution for each inorganic compound in each lithology type. Once the distribution of an analyte was established, the threshold background value (TBV) was calculated as being equal to the mean plus two standard deviations, which included 95 percent of the background population. TBVs were based on the maximum measured concentration within the lithology-specific data groups.

As discussed in the SCOU RI/FS, several metals (boron, cadmium, hexavalent chromium, mercury, molybdenum, thallium, and selenium) were not detected in the background samples. When this occurred, the reporting limit was selected as the TBV. Furthermore, the metals concentrations in the background evaluation that exceeded the blank sample concentration more than five times are manganese, barium, zinc, and nickel in the shallow silt and sand concentrations, and zinc and nickel in the deep silt and sand concentrations (1995 SCOU RI/FS). The TBVs for Castle Airport based on the lithology-specific measured maxima are listed on Plate 4-4, Threshold Background Values-Totals, in Appendix B. The same methodology was used to develop soluble TBVs based on the California WET Method (Plate 4-5, Soluble Threshold Background Values (WET), in Appendix B). The TBVs were approved by the agencies and Air Force in December 1993. Further information on establishment of organic and inorganic background concentrations is provided in Section 6.1.5 of the SCOU RI/FS.

4.4.1.2 WQSA Contaminants of Potential Concern

The initial list of contaminants of potential concern was compiled from information obtained through previous investigations (International Technology Corporation [IT], 1990a) and the Comprehensive Site Assessment (Jacobs, 1992). From this list, vadose zone modeling methods were used to determine soil concentrations that were considered protective of groundwater. This evaluation was used as the basis for indication of suspected source areas and for definition of the nature and extent of contamination. If the detected concentration of the contaminant in the soil was greater than the protective levels, the contaminant was included as a Contaminant of Potential Concern (COPC). A listing of COPCs is provided on Plate 4-6, Contaminants of Potential Concern in Soil: Castle Airport, in Appendix B. Due to greater mobility, VOCs pose the greatest risk to groundwater quality at Castle Airport, while SVOCs and metals are considered less likely to impact groundwater.

4.4.1.3 WQSA Evaluation of VOCs

Sites with VOC contamination were assessed using a phased approach. Initially, Preliminary Water Quality Site Assessments (PWQSAs) were conducted as a preliminary screening tool for site contaminants that could affect groundwater quality. The PWQSA procedure used for the Castle SCOU was a modification of the procedure specified in *Draft Water Quality Site Assessment for Soils and Ground Water* (RWQCB, 1992). The protective levels established by the PWQSA for soils were used as the basis for identification of potential source areas and for initial definition of the nature and extent of contamination during the field investigation and to determine if additional field sampling was needed.

A second, more detailed analysis of contaminant fate and transport, which built on the PWQSA and incorporated soil gas data, was used to further define the potential site contaminants likely to impact groundwater. This process compared site soil and soil gas contaminant levels to protective threshold levels that were estimated based on the EPA recommended VLEACH computer modeling program. Additional information on the application of VLEACH at the Castle SCOU sites can be found in Part 1, Section 8.0 of the SCOU RI/FS. The model was calibrated using the conservative assumption that each SCOU site was underlain by sand, which would be very permeable and offer little resistance to the downward migration of contaminants. Two VLEACH assessments were conducted. The first, "VLEACH1" considered contamination leaching to the water table and mixing with groundwater in a 1-foot thick mixing zone. VLEACH1 took the method detection limits (MDLs) as water quality levels protective of groundwater. To further evaluate potential impact to groundwater, a second, more conservative estimation of impact was conducted for the most toxic of the VOC contaminants. This estimation model, known as VLEACH2, did not consider a mixing zone and in general, estimated a greater impact to groundwater. Based on RWQCB recommendations, groundwater quality limits were set as screening leachate concentrations. A summary of VLEACH1 (mixing zone) and selected VLEACH2 (no mixing zone) "Threshold" contaminant levels for VOCs that are considered protective of groundwater quality are provided on Plate 4-7a, Preliminary Remedial Objectives for Volatile Organics, in Appendix B. An illustration of the VLEACH1 modeling parameters is provided on Plate 4-8, VLEACH Mixing Illustration, in Appendix B, a flow chart of the VLEACH screening process is provided on Plate 4-9, VLEACH Screening Criteria Development Process, in Appendix B. Further information regarding the use of VLEACH1 and VLEACH2 during the WQSA process is provided below in Section II, Subsection 4.4.1.5.

4.4.1.4 WQSA Evaluation of SVOCs and Metals

Screening levels for selected SVOC compounds were developed using the VLEACH1 (mixing zone) scenario. All SVOC compounds were modeled using the fate and transport characteristics of naphthalene, the most mobile SVOC identified during the Castle RI/FS. Because of its relative mobility, Naphthalene was also modeled using the VLEACH2 (no-mixing zone) scenario. However, because SVOCs that pose a risk to human health at the surface were rarely detected at depths deeper than 15 feet below grade and because SVOCs have not been detected in coherent distributions of groundwater at the base, further VLEACH2 modeling of additional SVOC compounds was not conducted. A summary of VLEACH1 (mixing zone) screening levels for SVOCs is provided in Plate 4-7b, Remedial Action Objectives for Semi-Volatile Organics, in Appendix B.

With regard to metals, the results of subsurface investigations at sites with surface metal contamination indicated that soluble metal transport at Castle was not common. The WQSA screening procedure for metals followed California Water Board Designated Level Methodology (DLM). This process determined whether observed metal-bearing leachate poses a threat to groundwater, and if it does, calculates an expected attenuation for metal content in soil. The DLM procedure for metals compares leachate concentrations of metals with background metals content in groundwater and with allowable threshold limits in groundwater (e.g., MCLs) to determine the amount of natural attenuation (sorption on soil) necessary to prevent leachate from affecting underlying groundwater. The DLM threshold values for total metals were calculated by using the regression equation that describes relationships of the total and soluble metals in groundwater, and assumes contamination from 40 to 65 feet bgs. This provides a conservative value as it compares contaminant concentrations found at shallower depths to criteria based on contamination at 40 to 65 feet bgs. “Threshold” contaminant levels for metals are provided in Plate 4-7c, Remedial Action Objectives for Metals/Other Inorganics, in Appendix B.

4.4.1.5 WQSA RAOs

The groundwater protective screening values determined in the Final SCOU RI, Section 8, were used as WQSA Preliminary Remedial Action Objectives (PRAOs). Because they are relatively immobile in the subsurface, SVOC and metal contamination were generally limited to shallow soil intervals. Based on this limited vertical extent, the BCT has accepted these PRAO (VLEACH1 for SVOCs and DLM for metals) values as final RAOs for these contaminants. RAOs for VOCs have been deferred to the SCOU ROD Part 2 based upon detailed decision criteria that have been set forth by the Air Force, EPA, DTSC, and RWQCB to terminate SVE activities on a site-specific basis. The termination criteria are referred to as the SVE turn-off criteria or “STOP” evaluation. The STOP evaluation incorporates scientific, engineering, and cost variables. The process is employed after it has been determined that VOCs do not pose an adverse risk to human health. The STOP process was devised to address potential risk to water quality.

The STOP process is initiated when contaminant concentrations have decreased to levels that no longer will result in adverse impact upon groundwater, or when concentrations have stabilized to levels that no longer result in effective contaminant removal.

The STOP evaluation includes site-specific data regarding the contaminant mass and distribution, the physical characteristics of the contaminant and the subsurface soil, historical and potential impact to groundwater, proximity of active groundwater extraction wells, SVE removal efficiency, and long-term cost benefit analysis of SVE system operation. Plates 4-7a, 4-7b, and 4-7c in Appendix B present a summary of PRAOs for VOCs, RAOs for SVOCs, and inorganics, respectively. These plates were adapted from Section 2 of the Final SCOU RI/FS - Part3: Feasibility Study.

4.4.2 Human Health Risk Assessment (HHRA)

The Human Health Risk Assessment (HHRA) involved determination of the nature and extent of threats to human health posed by site contamination. To manage the large number of SCOU sites efficiently, the HHRA was conducted in two stages.

First, a Screening Risk Assessment (SRA) was conducted to determine which sites had the potential to impact human health. The SRA process involved determination of the magnitude, frequency, and route of possible contaminant exposure. Potential receptors were identified along with potential exposure routes that defined the mechanism of contact with site contaminants. The magnitude of exposure was determined by estimating the amount, or dose, of the chemical to the receptor.

For the purpose of the SRAs, the maximum detected concentration of each analyte up to 15 feet bgs at the site was taken to represent the exposure point concentration for that analyte. When calculating the average daily dose (ADD), age-adjusted values for soil ingestion, inhalation rates, and dermal exposure were used to determine carcinogenic risk, while non-carcinogenic hazard was calculated based on exposure to a child. This was done to ensure the most conservative estimates of risks and hazards. Cancer risks and non-cancer hazard indices were calculated using EPA guidance (EPA, 1991e; 1995a).

Second, a human health risk assessment (HHRA) was conducted to further evaluate sites where the SRA indicated a greater than 1×10^{-6} increased incidence of cancer risk or a Hazard Index (HI) greater than 1. This second evaluation considered both residential and industrial/occupational land use scenarios, consistent with anticipated plans for base re-use. The Castle Conceptual Site Model that depicts potential contaminant exposure pathways that were considered during the HHRA is provided on Plate 4-10, Conceptual Site Model, in Appendix B. A summary of the HHRA findings is provided on Plate 4-11, Summary of Carcinogenic Risks and Noncarcinogenic Hazards, in Appendix B.

A base background study and a baseline risk assessment were conducted to:

- Identify the risks and hazards associated with potential human exposure to contaminants in soils at Castle Airport
- Determine appropriate response actions
- Provide a basis for the determination of contaminant cleanup goals for soils at Castle Airport that are protective of public health
- Help determine whether additional response actions are necessary at the site
- Modify preliminary remediation goals

4.4.2.1 HHRA COPCs

In order to quantify site risk, it was necessary to determine what contaminants at the site were of potential concern. During the SCOU RI, a total of 104 analytes were identified in soil samples collected at SCOU sites. Reported chemicals included inorganics (metals and gross alpha and beta radiation), VOCs, SVOCs, pesticides, herbicides, and Total Petroleum Hydrocarbons (TPH) as gasoline, diesel, and JP4. All organic analytes detected in the SCOU RI were forwarded for consideration in the risk assessment. Detected inorganic analytes were evaluated relative to naturally-occurring background levels. Only inorganic analytes considered to be anthropogenic and detected above background levels were included in the risk assessment. The determination of

anthropogenic or man made inorganic analytes is presented in detail in the SCOU RI/FS Part 2, Human Health Risk Assessment (HHRA) Section 4.0.

Not all analytes were selected as COPCs for evaluation in the risk assessment. The EPA provides several rationales for excluding chemicals from consideration as COPCs in the risk assessment.

These include the following:

- Reported concentrations of the chemical are false positives (e.g., due to laboratory contamination or due to field cross contamination).
- Reported concentrations of the chemical are representative of naturally occurring levels.
- The chemical is an essential human nutrient and is present at concentrations that are unlikely to cause adverse health effects.
- The detected analyte represents a class of compounds for which individual risks or hazards cannot be quantified.

As a result, certain detected analytes were excluded as COPCs. Calcium, copper, iron, magnesium, sodium, and zinc were eliminated on the basis that they are essential nutrients (at concentrations detected). TPH (as gasoline and diesel) and gross beta radiation were eliminated as classes of compounds because individual risks cannot be quantified. Data reported for TPH are not suitable for risk assessment which require the toxicological effects of the constituents to be evaluated individually rather than as a group (i.e., hydrocarbons).

Based on the above evaluations, the risk assessment identified a total of 95 chemicals (13 inorganics and 82 organics) as COPCs in soils at Castle Airport. These are listed in Plate 4-6, Contaminants of Potential Concern in Soil: Castle Airport, in Appendix B. The COPCs identified in soils at Castle Airport may be considered potential human carcinogens or they may have known adverse noncarcinogenic health effects or they may exhibit both carcinogenic and non-carcinogenic health affects. Consequently, both carcinogenic risks and noncarcinogenic health hazards due to exposure to these compounds were evaluated in the SCOU HHRA.

4.4.2.2 Exposure Assessment

Potential migration pathways through soils, surface water, sediments, groundwater, and air are illustrated in the basewide conceptual site model (Plate 4-10 in Appendix B). Most migration pathways at Castle Airport can be grouped into the following categories:

- Surface migration: surface dispersion or runoff of spilled contamination, stormwater runoff, dust emissions, volatile emissions, and bio-uptake.
- Vadose zone migration: infiltration from leaking pipelines or tanks, downward percolation from surface runoff, volatilization into soil gas, and bio-uptake.
- Saturated zone migration: lateral and vertical contaminant migration in groundwater.

Surface and vadose zone migration pathways are addressed in detail in the SCOU RI/FS; saturated zone migration is addressed in the CB–Part 1 Ground water RI/FS (Jacobs, 1996).

The SCOU HHRA evaluated three scenarios for human exposure to COPCs. For each of the following scenarios, exposure is assumed only to involve contaminants identified in soil to a depth of 15 feet bgs. The three scenarios are:

- Residential Scenario-Child. For this scenario, the standard EPA exposure factors for body weight, ingestion, and inhalation were used and exposure duration of six years was assumed.
- Residential Scenario-Adult. For this scenario, the standard EPA exposure factors for body weight, ingestion, and inhalation were used and an exposure duration of 30 years was assumed.
- Occupational Exposure-For this scenario, a work setting was assumed. A worker was assumed to work 250 days a year for 25 years.

Exposure point concentrations were represented by the UCL^{95} or the maximum detected concentration, whichever was less. The UCL^{95} is the 95 % upper confidence limit of the arithmetic mean. The ADD, or the amount of the chemical incorporated into the body is determined differently for carcinogens and noncarcinogens:

- Carcinogens - The ADD for carcinogens is based on the estimated exposure duration, extrapolated over an estimated 70-year lifetime.
- Noncarcinogens - The ADD is averaged over the estimated exposure period.

4.4.2.3 Toxicity Assessment and Risk Characterization

The toxicity assessment is composed of two steps: 1) hazard identification and 2) dose-response assessment. Hazard identification is the process of determining whether exposure to a chemical may result in a deleterious health effect on humans. It consists of characterizing the nature of the effect and the strength of the evidence that the chemical will cause the observed effect. Dose-response assessment characterizes the relationship between dose and the incidence and/or severity of the adverse health effect in the exposed population.

For risk assessment purposes, COPCs are generally separated into categories based on their toxicological properties. The primary basis of this categorization is whether a chemical exhibits potentially carcinogenic or noncarcinogenic health effects. Because chemicals that are suspected carcinogens may also give rise to noncarcinogenic effects, COPCs must be evaluated separately for both effects. Based on the exposure and toxicity assessments, risk characterization is performed to provide a quantitative and qualitative expression of the likelihood of adverse effects on a potentially exposed population. The following sections briefly describe important aspects of the SCOU HHRA toxicity assessment and risk characterization for carcinogens, noncarcinogens and lead.

4.4.2.3.1 Cancer Risk

Carcinogenic risk is expressed as the probability that an individual will develop cancer over a lifetime as a result of exposure to the potential carcinogen. Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. The guidance for calculating risks to human populations uses a range of cancer risk as a target for establishing

health protection goals. The target risk range for cancer is between 1 in ten thousand (10^{-4}) and one in one million (10^{-6}). An excess lifetime cancer risk of 1 x 10^{-6} indicates that, as a plausible upper-bound estimate, an individual has a one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific conditions at a site. The 10^{-6} risk level has been used as a basis for determining remediation goals when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants or multiple exposure pathways.

4.4.2.3.2 Noncarcinogenic Risk

Noncarcinogenic hazards are characterized by comparing the estimated exposure level over a specified period of exposure with a Reference Dose (RfD) to provide a numeric estimate of the likelihood of a toxic response. An RfD is an estimate of a daily exposure level (dose) that is unlikely to present appreciable risk or deleterious effects during a lifetime. Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as a hazard quotient (HQ) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). By adding the HQ for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the hazard index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. An HI above one indicates that someone exposed to the contamination may experience adverse health effects.

4.4.2.3.3 Lead Exposure Assessment

Risks associated with exposures to lead were evaluated using the Cal/EPA blood-lead biokinetic model (Department of Toxic Substances Control, California [DTSC], 1992). This was done because most human health effects data are based on blood lead concentrations rather than on the external dose. The model is used to calculate a serum lead level in hypothetical child residents and occupational receptors, which then may be compared to the target blood-lead level of 10 micrograms per deciliter (µg/dL) of blood.

4.4.2.4 HHRA Conclusions and Summary

Final decisions on human health risks from the 0 to 15 foot interval of the vadose zone are presented in this ROD. Consequently, no additional ecological or human health risk assessment will be performed for the vadose zone interval beneath 15 feet.

Based on the hypothetical exposure scenarios and the available site characterization data, a theoretical cancer risk and a hazard quotient were calculated for each site. The theoretical risk is the cumulative total of the risks posed by the chemicals identified. Sites determined in the risk assessment to present a cumulative risk less than 1.0 X 10^{-6}, an HI less than 1, and a blood lead level less than 10 µg/dL were generally recommended for NFA. Sites that exceeded these criteria for the adult residential scenario were forwarded from the HHRA to the FS for further evaluation. Plate 4-11 provides a summary of carcinogenic risks and noncarcinogenic hazards for all SCOU sites that exceeded the decision criteria. Plate 4-11 provides only summary level information. This information is useful for general evaluation. Professional judgment and risk management considerations (as allowed by EPA regulations) were also used in reaching final

remedial decisions. The SCOU HHRA evaluated the human health risks associated with contaminated soils at Castle Airport in the absence of Remedial Actions or ICs. Site-specific uncertainties for the risk assessment are summarized in Appendix D of the RI/FS.

All risk assessment results were reconsidered based on changes to toxicity factors and other risk assessment parameters that have occurred since completion of the SCOU risk assessment in 1996 (JEG, 1997c). A detailed presentation of this review and update is provided in Appendix E and referenced in the specific site discussion sections of this ROD.

4.4.2.5 HHRA RAOs

HHRA RAOs were calculated using the methodology outlined in *Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual (Part B), (EPA, 1991)* and updated in the Region 9 Preliminary Remediation Goals (EPA, *1996).* All risk assessment results and RAOs were reviewed and updated based on changes to toxicity factors and other risk assessment parameters that have occurred since completion of the SCOU risk assessment in 1996. Sites affected by the update are identified in the respective site summary section and the reader is referred to Appendix E for the detailed re-evaluation results. The RAOs are generally established at the lowest level of, (a) the concentration that represents a cancer risk of 1 X 10^{-6}, or (b) the concentration that represents a chemical-specific non-cancer hazard quotient of 1. The calculated values are based on exposure via ingestion, inhalation (volatile emissions or airborne dust particles), and dermal absorption. However, where the calculated soil concentration exceeded the soil saturation limit for the analyte, the soil saturation value was used as the RAO. This is consistent with the Preliminary Remedial Goal (PRG) tables. The following equations were used to calculate the RAOs.

For carcinogenic endpoints:

$$Conc_{soil} = \frac{TR \times AT \times BW}{(EF_{soil} \times ED_{soil} \times IR_{soil} \times CF \times SF_o) + (EF_{air} \times ED_{air}\ IR_{air} \times 1/PEF \times SF_1) + (EF_{derm} \times ED_{derm} \times AF \times CF \times ABS \times SA \times SF_o)}$$

For noncarcinogenic endpoints:

$$Conc_{soil} = \frac{THQ \times AT \times BW}{(EF_{soil} \times ED_{soil} \times IR_{soil} \times CF \times 1/RfD_n) + (EF_{air} \times ED_{air}\ IR_{air} \times 1/PEF \times 1/RfD_i) + EF_{derm} \times ED_{derm} \times AF \times CF \times ABS \times SA \times 1/RfD_o}$$

Note: For VOCs (defined as having a molecular weight of less than 200 g/mole and a Henry's Law constant greater than 1 x 10^{-5} atm-m^3/mole-K), the volatilization factor (VF) is used in place of the particulate emission factor (PEF).

The definition of each exposure parameter is shown below:

Exposure Parameters			
Parameter	*Definition*	*Value*	*Reference*
$Conc_{soil}$	Target soil cleanup level (mg/kg)		
TR	Target risk	1×10^{-6}	
AT	Averaging time (days)	25,550	EPA, 1989, 1991
BW	Body weight (kg)	70	EPA, 1989, 1991
EF_{soil}	Exposure frequency - soil (days/yr)	350	EPA, 1989, 1991
ED_{soil}	Exposure duration - soil (yrs)	30	EPA, 1989, 1991
EF_{air}	Exposure frequency - air (days/yr)	350	EPA, 1989, 1991
ED_{air}	Exposure duration - air (yrs)	30	EPA, 1989, 1991
EF_{derm}	Exposure frequency - dermal (days/yr)	100	DTSC, 1992
ED_{derm}	Exposure duration - dermal (yrs)	30	EPA, 1989, 1991
IR_{soil}	Ingestion rate - soil (mg/day)	100	EPA, 1989, 1991
IR_{air}	Inhalation rate - soil (m3/day)	20	EPA, 1996
PEF	Particulate emission factor (m^3/kg)	1.316×10^9	EPA, 1996
AF	Soil-to-skin adherence factor (unitless)	0.2	EPA, 1992, 1996
ABS	Skin absorption (unitless)	0.15	DTSC, 1994
CF	Conversion factor (kg/mg)	10^{-6}	----
SF_o	Oral cancer slope factor [(mg/kg-day)$^{-1}$	2.0	EPA, 1997
SF_i	Inhalation cancer slope factor [(mg/kg-day)$^{-1}$]	2.0	EPA, 1997
SA_R	Surface Area (Adult Residential) (cm^2-day)	5800	EPA, 1991
SA_I	Surface Area (Adult Industrial) (cm^2-day)	5000	EPA, 1991
RfD_O	Oral non cancer reference dose (mg/kg-day)	NA	IRIS, HEAST, NCEA
RfD_I	Inhalation non cancer reference dose (mg/kg-day)	NA	IRIS, HEAST, NCEA
THQ	Target Hazard Quotient	1	EPA, 1989, 1991

For polychlorinated biphenyls (PCBs), the RAO for carcinogenic endpoints for residential exposure is:

$$Conc_{soil} = \frac{1 \times 10^{-6} \times 25550 \times 70}{(350 \times 30 \times 100 \times 10^{-6} \times 2)+(350 \times 30 \times 20 \times 7.6 \times 10^{-10} \times 2) + (100 \times 30 \times 0.2 \times 10^{-6} \times 0.15 \times 5800 \times 2)}$$

=0.57 mg/kg

For occupational exposure:

$$Conc_{soil} = \frac{1 \times 10^{-6} \times 25550 \times 70}{(250 \times 25 \times 50 \times 10^{-6} \times 2)+(250 \times 25 \times 20 \times 7.6 \times 10^{-10} \times 2) + (250 \times 25 \times 0.2 \times 10^{-6} \times 5000 \times 2)}$$

=0.72 mg/kg

Because there are no available RfDs for PCBs, it is not possible to calculate RAOs for noncarcinogenic effects. The following differences between the Castle Airport-specific and Region 9 PRG tables should be noted:

For calculations based on carcinogenic endpoints, the PRG tables utilize age-adjusted intake values for ingestion, inhalation, and dermal absorption to account for variances in the intake rates, body weight, and skin surface area between adults and children. Additionally, PRGs for

noncarcinogenic endpoints are calculated utilizing exposure values for children rather than age-adjusted values that reflect both childhood and adult exposures. The noncarcinogenic RAO calculations for Castle Airport are for lifetime adult exposure.

The PRG tables use an SF_o of 7.7 $(mg/kg\text{-}day)^{-1}$ for PCBs. The values in IRIS were updated in October 1996 subsequent to the publication of the 1995 PRG tables. The current SF_o of 7.7 $(mg/kg\text{-}day)^{-1}$ is used in the RAO calculations.

The PRG tables use a default skin absorption of 10 percent (0.10) for all organic compounds. The value of 15 percent (0.15) for PCBs recommended by DTSC (1994) was used in the RAO calculations.

The Region 9 PRGs assume dermal exposure occurs 350 days/year. In the SCOU HHRA, dermal contact was assumed to occur 100 days/yr based on site-specific considerations for residential exposure. This value was used in the calculation of the residential RAOs.

Site-specific RAO data are provided in the site summaries found in Section II, Subsections 5.1 of this ROD. Summaries of HHRA RAOs for VOCs, SVOCs, and metals are provided on Plates 4-7a, 4-7b, and 4-7c in Appendix B, respectively.

4.4.3 Ecological Risk Assessment

Ecological Risk Assessments (ERAs) have been completed on all of the Castle SCOU sites. This includes the Scoping, Phase 1, and Phase 2 ERAs. These studies identified a total of 27 sites with sensitive ecological habitat. These habitats were wetlands and or wetland uplands. A wetland habitat is characterized by standing water or moisture sufficient to sustain wetland vegetation. An upland habitat is an area that drains to a wetland.

Feasibility Studies will be conducted for the SCOU sites with potential ecological concerns that have on-going or planned Remedial Actions, including ETC-12, LF-3, LF-5 and Disposal Pit 9 (LF5). The FS will present an evaluation of the potential effect on-going or planned remediation will have on ecological resources at these sites. The Feasibility Studies will also evaluate alternative or modified Remedial Actions to mitigate potential impacts of site remediation. The FS findings will be presented as a component of the CB Part 2 RI/FS.

Remedial alternatives selected for SCOU sites included with this ROD were based on human health and or water quality risk. Because the Ecological FS is incomplete, remedies selected in this ROD may have to be augmented based on the ecological FS findings. Any remediation undertaken prior to completion of the CB Part 2 would be performed with the possibility of additional future eco-driven actions. However, the Air Force, State of California, and EPA agree that any future actions should not interfere with the protection of human health or water quality. A summary of sites, grouped by habitat type, where ecological concerns have been identified is provided below:

Wetland
Landfill 3
Landfill 5 (including DP7, DP8, DP8A, DP9, DP10, and LF5 trenches)
Earth Technology Corporation 10
Earth Technology Corporation 12
Storm Drain System
Fire Training Area 1

Upland
Disposal Area 1 (including B950 and B951)
Earth Technology Corporation 2
Earth Technology Corporation 11
Fire Training Area 1
Firing Range
Landfill 1 (including DP1, DP2, and DP3)
Landfill 2
Landfill 4 (DP5 and DP6)

4.5 Risk Management Decisions

After the SCOU RI/FS was completed, sites that failed either WQSA or Risk Screening Analyses were further evaluated to confirm the screening results. These evaluations took into consideration site specific conditions, including variations in background levels of naturally occurring minerals, site relationship to known groundwater plumes, and complete reassessment of data set and information. Based on these evaluations, it was determined that for selected sites that failed WQSA and/or Risk Screening Analyses, remediation was not warranted. Justifications of these determinations, known as Risk Management Decisions, are presented in the Site Summary portion of this ROD. Twenty (20) of the 137 CERCLA NFA sites presented in this ROD required Risk Management Decision justification. These sites include:

Risk Management Decision NFA Sites			
B84	DBF	FTA2	Storm Drain System
B1335	DP7	PCB1,2,3	Structure ST1201
B1404	DP10	PCB8	Structure ST1206
B1405	ETC7	SA B1	UFL4
B1529	ETC11	SS1	DA-2

4.6 Institutional Controls (ICs)

As described in the NCP and applied to remedy selection, ICs are non-treatment, non-engineering methods used to prevent human exposure to contaminants remaining at hazardous waste sites at concentrations above health risk levels. ICs may be a stand-alone remedy or may be used necessary to supplement and complement the treatment or engineering remedial actions. Contaminants remain on site at the eight Landfill 4 and Landfill 5 sites at concentrations above the human health risk level necessary for unrestricted use of the property. These sites were originally included in the SCOU ROD Part 1 as NFA sites; however these sites have been removed from the SCOU ROD Part 1 for deferred consideration by another decision document.

This section, as well as discussion relating to the Landfill 4 and Landfill 5 sites, are retained within this ROD in order to inform the reader as to the history of and future plans for sites that are to be deferred to one or more subsequent RODs. The remaining 137 CERCLA sites of this ROD do not require any further action or ICs.

4.7 Five-Year Review

In compliance with CERCLA requirements, a Five-year Review process has been developed to assess the effectiveness of Remedial Actions being undertaken at Castle Airport. The goal of the reviews will be to confirm that the selected Remedial Actions are meeting performance standards established in the Castle RODs, that cleanup levels are being achieved in accordance with the selected remedy, and that the selected Remedial Actions continue to be protective of human health and the environment. BCT representatives from the DTSC, the RWQCB, the EPA, and the Air Force will be participants in this review process. The initial Five-year review for the entire base was completed in 1998. Groundwater issues associated with OU 1 and OU 2 and issues related to SCOU Removal Actions were the main topics of discussion during the review.

The next Five-year Review is scheduled for 2003. The 2003 review will provide a more comprehensive evaluation of the SCOU sites remedies and will include discussion of protectiveness and an ARAR review. Five-year reviews will continue until all sites are suitable for unrestricted and unlimited reuse. NFA sites are subject to reevaluation under CERCLA if the risk characterization changes for these sites.

5.0 Site Summary Guide

Sites discussed in the SCOU ROD Part 1 have been organized into three site groups listed below. The landfill sites are deferred to a subsequent ROD, and are mentioned in this ROD for continuity since they were initially a part of this ROD. NFA sites are the only sites included as part of this ROD's Decision Summary. Information pertaining to Petroleum Hydrocarbon sites, which are not subject to CERCLA requirements, is included in Section VI, Subsection 8. A listing of these groups and the section where these sites can be found in this ROD is provided below. The physical locations of SCOU sites are shown on Plate 5-1, SCOU Site Selected Alternative Map, in Appendix C.

- Landfill Sites (Section II, Subsection 5.1)
- NFA Sites (Section II, Subsection 5.2)
- Petroleum Hydrocarbon Only Sites (Section VI, Subsection 8.1)

All risk assessment results and RAOs were reviewed and updated based on changes to toxicity factors and other risk assessment parameters that have occurred since completion of the SCOU risk assessment in 1996 (JEG, 1997c). A detailed presentation of this review and update is provided in Appendix E. Sites affected by the update are identified in the respective site summary section and the reader is referred to Appendix E for additional information. Table 8 of Appendix E contains a summary of risk assessment results, comparing the 1996 values to the updated, most recent values, for both cancer risk and non-cancer risk.

Information provided in these sections includes the following:

Site Characterization - Provides a summary of the RI findings for each site. This section typically includes the Plate 5-1 map coordinates for the site, an overview of the site investigation effort, the contaminants of concern, and the highest contaminant levels found at the site.

Water Quality Risks - Provides a summary of WQSA findings for each site and includes a list of contaminants that exceeded allowable WQSA levels. Additional data on how WQSA COPCs and RAOs were developed can be found in Section 4.3.1.

Human Health Risk Assessment - For sites where risk assessments were performed, the findings of these assessments are provided. This includes SRAs and, where applicable, HHRAs. For sites impacted by lead, summaries of blood-lead estimates are provided. Also included is a brief summary of the contaminants that were the risk "drivers." Additional data on how Human Health Risk Assessment COPCs and RAOs were developed can be found in Section 4.3.2.

Site COCs and RAOs - This section includes a summary of site COCs and RAOs and includes the RAO basis.

Changes from Prior CERCLA Documentation – For applicable sites, this section explains why the preferred alternatives, presented in the RI/FS and Proposed Plan, have been changed in this ROD.

Risk Management Decision - This section provides a brief summary of assumptions and justifications that the remedial project managers (RPMs) have used to make remedial decisions for sites that exceeded WQSA screening levels and or had human health risks that exceeded unrestricted reuse (1×10^{-6}) levels.

Description of Alternatives - Provides a brief summary of remedial alternatives developed and considered during the RI/FS process. Information on how each alternative would be implemented at each site is included in the section's tables.

Comparative Analyses of Alternatives - Provides a site-by-site comparative evaluation of all the considered alternatives using the CERCLA "Balancing" and "Modifying" criteria. This information is provided in a table format.

Selected Alternative - Lists the selected alternative for each site and the criteria used for making this decision.

Statutory Determinations - Provides a summary of how the selected alternative meets the statutory requirements of CERCLA.

5.1 Landfill Sites Selected for Remedial Action

There are two landfills incorporating a total of eight separate SCOU sites at Castle Airport that have been designated for cleanup and that are subject to Remedial Actions. Removal actions were undertaken for LF4 and LF5 as per Action Memoranda date August 27, 1997 and

November 12, 1998, under which LF4 and LF5 were zoned capped with ICs to follow. Zone capping for LF4 and LF5 was completed in September 2000 and October 1999, respectively. A landfill summary is presented below:

Zoned Capping with Institutional Controls		
Landfill 4	Landfill 5	Disposal Pit 8A (LF5)
Disposal Pit 5 (LF4)	Landfill 5 Trenches	Disposal Pit 9 (LF5)
Disposal Pit 6 (LF4)	Disposal Pit 8 (LF5)	

Based on the Remedial Investigation, the primary concern at these landfills is contaminants commonly associated with municipal waste. The trench portion of Landfill 5 (LF5) is also impacted by VOCs.

These sites were originally targeted for final determination within the SCOU ROD Part 1 but have been deferred to a subsequent decision document. They are referenced here for overall understandability of the final version of the ROD in comparison to earlier drafts.

5.2 No Further Action Sites

Based on information gathered during the SCOU RI/FS, subsequent Data Gap investigations, follow-on confirmation sampling after cleanups, and reassessments of information and data sets, it has been determined that 137 CERCLA SCOU sites require no further action (NFA) to protect human health and water quality. The NFA determination for each site was based on (1) a pre-RI decision, (2) a pre-FS decision, (3) a post-FS decision, or (4) a Risk Management Decision. A listing of the SCOU NFA sites, grouped by determination basis, is provided below. An NFA Summary Table that provides the rationale for the NFA decisions is provided on Plate 5-2-1, NFA Summary, in Appendix C.

5.2.1 Changes from Prior CERCLA Documentation

During the SCOU investigation and remedy selection process, the Air Force, with concurrence of the BCT, changed the selected remedy for several post FS NFA sites from active remediation or ICs to NFA. These changes were based on a variety of factors, which included responding to community concerns, acquiring additional data, conducting interim measures, and reevaluating risk and potential water quality impacts. Sites where the NFA decision represents a significant change from previously documented preferred alternatives are noted below. The basis and justification for the changes are included in the site summaries.

5.2.2 Pre-Remedial Investigation No Further Action Sites

Pre-RI NFAs were based on site interviews and review of available records that indicated hazardous materials were not used or stored at the site or that the site was not owned or operated by the Air Force, or was not part of base operations. These sites were not sampled as part of the RI. RPM concurrence with the NFA status was agreed to prior to initiating RI activities. The pre-Remedial Investigation No Further Action Sites are shown in the table below.

Pre-Remedial Investigation NFA (17 Sites)			
ETC3	H3	N5	N10
ETC6	LG1	N6	PCB7
ETC13	N2	N7	
H1	N3	N8	
H2	N4	N9	

Site-by-site summaries of the pre-RI NFA sites are provided below.

5.2.2.1 Earth Technology Corporation 3 (ETC3)

ETC3 was identified as a possible former explosive ordinance disposal (EOD) range located in the Miscellaneous and Other Base Sector (MOBS) north of Landfill 2 (S13, Plate 5-1 in Appendix C). This identification was based on review of a 1946 aerial photograph that was conducted as part of the Castle Disposal and Reuse, Preliminary Draft Environmental Impact Statement (Earth Technology Corp. 1993). However, a records search, site inspection, and interviews could not confirm that this area was used for EOD. The area is currently flat and covered with grass. This site is located in an area that has a future use designated as aviation support.

In November 1993, a site visit was conducted by the BCT. No visible indication of EOD operation was observed. Also, based on review of Air Force EOD policy, it was determined that ETC3 did not meet Air Force requirements for EOD use, and the possibility that ETC3 was used for EOD purposes was remote. Based on BCT concurrence, a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.2.2 Earth Technology Corporation 6 (ETC6)

ETC6 was identified as a former service station located in the MOBS south and east of UFL1 (R10, Plate 5-1 in Appendix C). This identification was based on a review of aerial photographs conducted as part of the Castle Disposal and Reuse, Preliminary Draft Environmental Impact Statement (Earth Technology Corp., 1993). A records search, site inspection, and interviews could not confirm the exact location of the station. Most of the area is now covered by an asphalt parking lot. This site is located in an area that has a future use designated as commercial.

Geonics EM-31 ground conductivity meter (EM-31) and ground penetrating radar (GPR) geophysical surveys were conducted to identify anomalies at the site that may represent potential USTs and piping. The only anomalies identified at the site were attributable to known underground utilities and fence lines. Based on professional judgement, the survey did not reveal anomalies that would represent USTs or related piping. Due to a lack of a specific drilling target, and with concurrence of the BCT, no further investigation was undertaken, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.2.3 Earth Technology Corporation 13 (ETC13)

ETC13 was a trench area located in the MOBS south of Landfill 5 (G12, H11, Plate 5-1 in Appendix C) and was reportedly the site of buried aircraft wreckage. This site description was based on a review of a 1946 aerial photograph conducted as part of the Castle Disposal and Reuse Preliminary Draft Environmental Impact Statement (Earth Technology Corp. 1993). Visual observation of the site indicated the presence of a distinct mound and assorted surface debris. This site is located in an area that has a future use designated as residential.

A geophysical survey was conducted as part of the SCOU RI investigation. This survey utilized a Geonics EM-31 ground-conductivity meter and an EDA Model OMNI IV vertical magnetic gradiometer to evaluate the distribution of metal at the site. The OMNI IV survey indicated only scattered pieces of aluminum and no large magnetic anomalies. The EM-31 survey results were also negative. No strong anomalies that would indicate a burial pit or large deposits of metals were noted. Since significant quantities of wreckage were not found, no further evaluation was conducted and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.2.4 H1

Site H1 was a commercial gas station located adjacent or near the Castle Vista/Castle Gardens area that was not a part of the Base. Based on RPM concurrence, a determination to remove this site from further consideration has been made for this site. This decision is documented in the Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan, Draft Final (JEG, 1993).

5.2.2.5 H2

Site H2 was a commercial gas station located adjacent or near the Castle Vista/Castle Gardens area that was not a part of the Base. Based on RPM concurrence, a determination to remove this site from further consideration has been made for this site. This decision is documented in the Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan, Draft Final (JEG, 1993).

5.2.2.6 H3

Site H3 was a commercial gas station located adjacent or near the Castle Vista/Castle Gardens area that was not a part of the Base. Based on RPM concurrence, a determination to remove this site from further consideration has been made for this site. This decision is documented in the Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan, Draft Final (JEG, 1993).

5.2.2.7 LG1

Site LG1 was a former municipal/sewage treatment lagoon located in the MOBS (T12, Plate 5-1 in Appendix C). No known hazardous materials were stored or discharged at this site. This site is located in an area that has a future use designated as industrial. Based on BCT concurrence, a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.2.8 to 5.2.2.16 N2, N3, N4, N5, N6, N7, N8, N9, and N10

The “N” sites were identified as “ground disturbance” areas during a review of aerial photographs of Castle Airport. These areas were reportedly located in the MOBS in open land, north and east of the flightline. The exact coordinates of these sites are not known. For site count purposes, the “N” sites represent nine individual sites. These sites are located in an area that has a future use designated as airfield.

Site investigation indicated that the disturbances were a result of vehicles becoming stuck in mud. Interviews and site visits found no evidence of use or storage of hazardous materials associated with the disturbances. Based on BCT concurrence, the sites were not sampled as part of the SCOU RI and a determination of NFA has been made for these sites. The NFA decision is documented in Consensus Agreement #21 (Castle Airport, 2000) for N4 and N5, and the Final SCOU RI/FS (JEG, 1998c) for the other “N” sites.

5.2.2.17 Polychlorinated Biphenyls Site 7 (PCB7)

PCB7 was part of a radio transmitter facility and is located in the East Base Sector (EBS) (L16, Plate 5 – 1 in Appendix C), approximately 500 feet south of ETC10. Based on site inspection and interviews, it was determined that PCB7 was not contaminated and sampling was not required. This site is located in an area that has a future use designated as public/recreation. The site was recommended for NFA based on a pre-RI decision and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.3 Pre-Feasibility Study No Further Action Sites

For the majority of the pre-FS NFA sites, the NFA justification was based on sampling results meeting WQSA and Human Health Risk Preliminary Remedial Action Objective (PRAO) screening criteria that were determined to be protective of water quality and human health. WQSA screening criteria for VOC contamination included VLEACH1, VLEACH2, and California Water Board, Designated Level Methodology (DLM) values. WQSA screening for non-VOC contaminants included VLEACH1 values for SVOCs and DLM-derived values for metals. If site data indicated that contaminant concentrations were below the PRAOs for metals and SVOCs and below the VLEACH2 levels for VOCs, it was determined that the site did not represent an unacceptable threat to water quality. Due to the conservative nature of the screening process, the BCT agreed that, if the site concentrations did not exceed the PRAOs or VLEACH2 concentrations, the site could be referred to NFA status pending the outcome of Human Health risk screening. Additional information on the WQSA screening process can be found in Section II, Subsection 4.4.1.

Human health risk screening included completion of screening risk assessments (SRAs). A more detailed HHRA was conducted for sites that exceeded 1×10^{-6} predicted incidence of cancer or that had an HI greater than one. For sites contaminated by lead, estimated blood-lead levels are calculated based on California EPA guidance, which is based on a more stringent model than that used by EPA. Estimated blood-lead levels below 10 μg/dL are considered acceptable.

For pre-FS NFA sites that were sampled, summaries of the WQSA and Human Health Risk Evaluations are included. For pre-FS NFAs that were not sampled (B541, B545, and B1182), the NFA decision was based on site inspections or surveys, interviews, and consensus of the BCT.

Site-by-site summaries of the pre-FS NFA sites are provided below. VLEACH2 values are shown for the VOCs, VLEACH1 values are shown for the SVOCs, and DLM-derived values are shown for metals. Since metals are relatively immobile in the vadose zone, DLM evaluation for metals assumed contaminants were present at 40 to 65 feet bgs. Summaries of the Human Health Risk Evaluation and Remedial Alternatives Evaluation are also included. The pre-Feasibility Study NFA Sites are shown in the following table:

Pre-Feasibility Study NFA (26 Sites)			
B23	B1205	Hangar F-2	SA B4
B47	B1207	Hangar F-3	SS3
B541	B1319	Hangar F-5	SS5
B545	B1562	Hangar F-6	SS9
B547	DP4A/4B	HWS4	ST 1571
B1182	ETC12	IWL	
B1204	Hanger F-1	SA B2	

Site-by-site summaries of the pre-FS NFA sites are provided below.

5.2.3.1 Building 23 (B23)

B23 was located in the MBS (P10, Plate 5-1 in Appendix C) and was the location of the Aviation Maintenance Squadron from 1946 to 1956. From 1956 through base closure, the site was used for combat flight instruction. Base personnel confirmed that no equipment maintenance was conducted on site. The only potential contaminant source identified at the site was an electrical transformer. TEPH and possibly PCBs were the only potential chemicals of concern. This site is located in an area that has a future use designated as institutional (educational).

Two hand auger samples were taken adjacent to the site transformer pole. A total of ten soil samples collected from these borings were submitted for laboratory analyses. Analyses indicated no TEPH or PCBs. However, pesticide 4,4-DDT was identified in the subsurface samples.

Water Quality Impacts: A summary of the analytical results compared to the VLEACH1 RAO is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B23 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
4,4-DDT	0.0019	1	82.91	0-40	VLEACH1

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk evaluation results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B23 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.3×10^{-9}	0.0001

5.2.3.2 Building 47 (B47)

B47 was located in the MBS (Q11, Plate 5-1 in Appendix C) and was used as a maintenance hangar for servicing and washing aircraft from 1941 through the 1950s. The building was most recently used as a retail sales center. The building had three floor drains, two located in the central portion of the building and one located in the northwest corner of the building. Materials handled at the site included solvents, grease, fuels, lubricating oils, paints, and paint thinner. This site is located in an area that has a future use designated as aviation support.

As part of RI activities, two soil boring, four hand auger, and six shallow soil gas probes were installed at the site. Laboratory analyses of soil samples indicated no TPH, 0.5 mg/kg silver at 4 feet bgs, and 0.78 mg/kg molybdenum at 14 feet bgs. Low levels of benzene, toluene, and 1,1 Dichloroethene (DCE) were also identified in the hand auger soil samples.

PCE and TCE were identified in the downhole soil gas samples collected from near the southern corner of the building at 20 feet bgs with maximum concentrations of 6.02 and 5.90 µg/L, respectively. TCE, PCE, benzene, toluene, and xylenes were also reported in shallow soil gas samples from 5 and 10 feet intervals. Concentration levels of these shallow soil VOCs ranged from 0.024 µg/L for benzene up to 4.34 µg/L for TCE.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B47 – Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Silver	0.5	4	6,000	0-10[1]	Water Board, DLM
Molybdenum	0.78	14	95	40-65	Water Board, DLM
Soil Gas (µg/L)					
Benzene	0.024	10	66.3	10-20	VLEACH2
Toluene	0.45	10	33,150	10-20	VLEACH2
1,1 DCE	0.15	10	66.3	10-20	VLEACH2
Xylenes	0.95	10	37,525	10-20	VLEACH2
PCE	6.02	20	19	10-20	VLEACH2
TCE	5.90	20	19	10-20	VLEACH2

[1] Silver RAO based on attenuation factor of 1,000 and TBV value of 6 µg/L

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. The risk assessment results in this section are the 1996 SCOU ROD values. Based on the risk evaluation results, the site does not pose a risk to human health and a determination of NFA has been made for this site. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B47 - Human Health Risk Assessment Summary– Screening	
Cancer Risk	*Non-Cancer Hazard Index*
3.9×10^{-8}	0.0001

5.2.3.3 Building 541 (B541)

B541 is located in the MBS (S10, Plate 5-1 in Appendix C) and was part of the 93rd Civil Engineer Squadron. It consists of a heating section, which was insulated by asbestos. It was most recently used for spray painting signs. A small diesel generator was also located in the building. Materials handled at the site included asbestos, paints, paint thinners, and fuels. This site is located in an area that has a future use designated as commercial.

Asbestos material was removed from the building during the site asbestos abatement program and was disposed of in a sanitary landfill. Subsequent inspections found no asbestos material remaining at the site. A small fuel stain was noted under the diesel generator; however, because the asphalt beneath the generator appeared to be in good condition, there was no need for sample collection, and NFA is recommended. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.3.4 Building 545 (B545)

B545 was located in the MBS (S10, Plate 5-1 in Appendix C) and was most recently used as the base police station. Previously, the site was used as the Civil Engineering design office. Hazardous substances were not used or stored at B545. This site is located in an area that has a future use designated as commercial. Based on a lack of potential contaminant sources, B545 was not sampled during the RI and a determination of NFA has been made for this site based on site history. Further rationale for the NFA decision at B545 is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.3.5 Building 547 (B547)

B547 was located in the MBS (SIO, Plate 5-1 in Appendix C) and was used as a Civil Engineering office building and testing laboratory. The building was demolished in the late 1980s. Based on interviews with Castle Airport personnel, a former gas station may have been located directly east of the site where a concrete pad is located. Materials stored there may have included petroleum products, paints, and solvents. This site is located in an area that has a future use designated as commercial.

As part of the RI, a magnetometer survey was conducted to determine if buried underground storage tanks or piping remained at the site. This survey found no evidence of buried tanks or piping. Two 20-foot deep soil borings were installed near B547 to investigate possible leaks associated with former connections to a 6-inch sewer line that had been delineated during the B545 Phase I Sampling Plan. Two soil samples from each boring, one from 5 feet bgs and one from 19-20 feet bgs were collected and submitted for laboratory analyses. No TPH, TVPH, SVOCs, or VOCs were identified. Silver, slightly above background levels, was detected at a depth of 4 feet bgs in SB-01. However, silver was not above background levels in the deeper SB-01 sample, which was collected from 19 feet bgs.

Water Quality Impacts: A summary of the analytical results compared to DLM screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B547 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Silver	0.63	4	6,000[1]	0-10	Water Board, DLM

[1]Silver RAO based on attenuation factor of 1,000 and TBV value of 6 µg/L

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk evaluation results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

B547 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.7×10^{-8}	0.00002

5.2.3.6 Building 1182 (B1182)

B1182 is located in the MBS (Q8, Plate 5-1 in Appendix C) and was the Castle Airport Hospital, which included the dental clinic, medical X-ray, and surgery areas. Wastes handled at the site included silver-impacted film fixer from medical and dental X-rays and pathology wastes from surgeries that were incinerated. Developer solution waste was routed through a RCRA permitted solid waste management unit (SWMU 4.24) that recovered silver for recycling. This unit passed periodic inspections before being closed in accordance with RCRA Conditionally Exempt sites in 1995. This site is located in an area that has a future use designated as institutional (medical). Additional information on SWMU 4.24 can be found in Section II, Subsection 5.2.4.67. Two heating oil USTs (one 10,000 gallon and one 20,000 gallon) were located southwest of the building. These USTs were removed in July of 1996. Confirmation samples, collected from the excavations after the USTs were removed, indicated residual contamination was minor and below Castle UST cleanup standards. Tank closure was documented in the Closure Certification

Report (Laguna, 1997). With the exception of the UST samples, no other soil samples were collected at the site because there was no specific sampling target. The BCT concurred that a risk assessment was not warranted and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

Water Quality Impacts: A summary of maximum contaminant levels compared to appropriate DLM screening levels is provided below.

B1182 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH (total)	350	14	1,500	0-20	Water Board, DLM

5.2.3.7 Building 1204 (B1204)

B1204 was located in the WBS (M8, Plate 5-1 in Appendix C) and originally served as a motor repair shop and storage area for petroleum products. The building was demolished in 1970. A 1,000-gallon heating oil UST and a 5,000-gallon gasoline UST associated with B1205 were removed in 1968 and 1989, respectively. Materials handled on site included batteries, hydraulic components, fuels, and transformer oil. After demolition and UST removal had been completed, the new Civil Engineering building (B1200) was constructed over part of the site. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. This site is located in an area that has a future use designated as industrial.

A geophysical survey was conducted to confirm that USTs and associated piping had been removed from the site. Based on the survey findings, six soil borings and seven downhole soil gas probes were installed at the site. A total of 12 soil samples and 21 soil gas samples were collected from the borings/probes. No TPH or VOCs were detected in the soil samples. Metals found in soil samples were below threshold background levels. Soil gas analyses indicated up to 6.0 μg/L TCE from 20 feet bgs.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B1204 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/L)					
Lead	3.8	4	855	40-65	Water Board, DLM
Soil Gas (µg/L)					
TCE PCE	6.0 1.7	20 20	10.6 10.6	20-30 20-30	VLEACH2 VLEACH2

Human Health Risk Assessment: Building 1204 was evaluated as part of the Building 1205 SRA. A summary of the B1205 risk evaluation is provided below. The risk assessment results in this section are the 1996 SCOU ROD values. Based on the risk evaluation results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

5.2.3.8 Building 1205 (B1205)

B1205 was located in the MBS (M8, Plate 5-1 in Appendix C) and originally served as a motor repair shop and storage area for petroleum products. The building was demolished in 1970. Materials handled on site included batteries, hydraulic components, fuels, and transformer oil. Building 1205 was investigated in conjunction with Building 1204. See the Building 1204 summary for investigation details. This site is located in an area that has a future use designated as industrial.

Water Quality Impacts: A summary of the site analytical results compared to appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B1205 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Lead	3.8	4	855	40-65	Water Board, DLM
Soil Gas (µg/L)					
TCE PCE	6.0 1.7	20 20	10.6 10.6	20-30 20-30	VLEACH2 VLEACH2

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. The risk assessment results in this section are the 1996 SCOU

ROD values. Based on the risk evaluation results, B1204 and B1205 do not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B1204/B1205 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
2.0×10^{-8}	0.0001

5.2.3.9 Building 1207 (B1207)

B1207 was located in the MBS (M8, Plate 5-1 in Appendix C) and was used as an equipment maintenance shop and for gas mask testing. Oil, fuel, and lubricants were suspected contaminants of potential concern. This site is located in an area that has a future use designated as industrial.

One hand auger boring was installed in a runoff area adjacent to the site. Total depth of the boring was 0.5 feet. Laboratory analyses of a soil sample collected from the hand auger boring indicated no TPH or VOC contamination. Only the SVOC di-n-butylphthalate was identified.

Water Quality Impacts: A summary of the analytical results compared to the appropriate VLEACH 1 PRAO is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B1207 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
di-n-Butylphthalate	0.28	0	82.91	0-40	VLEACH1

Human Health Risk Assessment: A summary of the HI calculation is provided below. Since carcinogenic compounds were not identified during site sampling, an SRA was not conducted for this site. Based on the lack of carcinogenic compounds and HI calculations, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B1207 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
NA	0.0004

5.2.3.10 Building 1319 (B1319)

B1319 is located in the WBS along Perimeter Road between Disposal Areas DA-4 and DA-2 (L9, Plate 5-1 in Appendix C). Building 1319 was used for testing of aircraft equipment removed from planes and as a ground-to-air missile (GAM) facility. A boiler room, heating oil tank, 500-gallon UST, and an air compressor with a 9-gallon diesel AST were located at the site. The building boiler was connected to a 5,000-gallon heating oil storage tank located across the access road approximately 500 feet northwest of the building. A sump and several floor drains are located within the building. A bermed concrete pad storage area (SWMU 4.34) located north of Building 1319 was used as a temporary storage area for hazardous waste. Building 1319 is connected to the base sanitary sewer system. Fuels, oils, and solvents were potential contaminants at the site. This site is located in an area that has a future use designated as aviation support.

A GPR survey was conducted and confirmed the location of the site UST and piping. After the survey was completed, a total of nine soil borings and 11 shallow gas probes were installed at the site. The soil/soil gas sampling was conducted to determine what, if any, contamination was present at the site. A total of 20 soil samples (from depths ranging from 5 to 20.5 feet bgs) and 21 soil gas samples (from the same depths) were collected from the borings/probes.

With the exception of lead (15.6 mg/kg at 5.5 feet bgs), no other contaminants (TPH or VOCs) were identified in the soil samples. Soil gas analyses identified low levels (less than 5 μg/L) of VOCs including benzene, toluene, TCE, PCE, and xylenes in the downhole (21.5 feet bgs) soil gas samples. Low concentrations of TCE, PCE, vinyl chloride, and xylenes were also reported in five of the shallow gas probes (5 to 10 feet bgs). The maximum concentration level was 17.6 μg/L for TCE.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B1319 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Lead	15.6	5.5	855	40-65	Water Board, DLM
Soil Gas (µg/L)					
TCE	17.6	5	49	0-10	VLEACH2
PCE	0.052	21.5	10.6	20-30	VLEACH2
Vinyl Chloride	3.1	10	620.6	10-20	VLEACH2
Xylenes	3.7	10	37,525	10-20	VLEACH2
1,2-Dichlorobenzene	1.86	21.5	10,512	20-30	VLEACH2

Human Health Risk Assesment: A summary of the SRA, HI, and blood-lead level calculation (based on a child/residential exposure scenario) is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B1319 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
3.0×10^{-8}	0.00004

B1319 - Human Health Risk Assessment Summary – Lead Screening and HHRA			
Maximum Concentration	*Calculated Blood-Lead Level*	*Level of Concern*	*Basis*
Lead-15.6 mg/kg	4.7 µg/dL	10 µg/dL	Cal/EPA & EPA

5.2.3.11 Building 1562 (B1562)

The following discussion represents the evaluation of this site as presented by the 1996 SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Although the overall conclusions regarding this site have not changed, the reader is referred to Appendix E for a more current risk assessment for this site.

B1562 is located in the MBS (R13, Plate 5-1 in Appendix C) and was used by the 84th Fighter Interceptor Training Squadron and for aerospace ground equipment cleaning purposes. As part of ground equipment cleaning, waste may have entered the sanitary sewer associated with the site. Waste oil, hydraulic fluids, paints, thinners and solvents, lead, and cadmium were

materials/chemicals handled at the site. This site is located in an area that has a future use designated as aviation support.

Four soil gas probes and four auger borings were installed as part of the site investigation. A total of eight soil gas samples from depths of 5 to 10 feet bgs and six soil samples from 0 to 15 feet bgs were collected and submitted for analyses. Soil gas samples were analyzed for VOCs and hand auger samples were analyzed for TPH, VOCs, SVOCs, and metals, including lead.

No VOCs were detected in the soil gas samples. A trace amount of bis(2-ethylhexyl)-phthalate was reported in one surface soil sample. No other VOCs, SVOCs, or TPH were detected in the soil samples. Zinc (73.2 mg/kg), cadmium (3.0 mg/kg), molybdenum (0.75 mg/kg), and lead (85.9 mg/kg) were identified as being above TBVs.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM screemng levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B1562 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Zinc	73.2	0	319	40-65	Water Board, DLM
Cadmium	3.0	0	43.7	40-65	Water Board, DLM
Molybdenum	0.75	0	95	40-65	Water Board, DLM
Lead	85.9	0	855	40-65	Water Board, DLM

Human Health Risk Assesment: A summary of the SRA, HI, and blood-lead level calculation (using a child/residential exposure scenario) is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B1562 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
5.6×10^{-8}	0.04

B1562 - Human Health Risk Assessment Summary – Lead Screening and HHRA			
Maximum Concentration	*Calculated Blood-Lead Level*	*Level of Concern*	*Basis*
Lead-85.9 mg/kg	5.2 µg/dL	10 µg/dL	Cal/EPA & EPA

5.2.3.12 Disposal Pits 4A/4B (DP 4A/4B)

DP 4A/4B are located in the South Base Sector (SBS) (T13, Plate 5-1 in Appendix C) along the east side of the base drainage canal. They were reportedly used for the disposal of chemical wastes, drums, sludges, oils, solvents, and miscellaneous chemicals. Their presence was identified by Engineering Science in 1983 and by Kleinfelder in 1990. This site is located in an area that has a future use designated as industrial.

Pre-RI sampling was conducted to assess contamination and to further define pit boundaries. Four soil organic vapor points were installed in 1990 (IT, 1990) and no organic vapors were detected. One soil boring was installed and soil samples were collected and submitted for VOC, SVOC, and metals analyses. This analytical effort indicated that only one VOC (bromoform) was slightly above detection limits (0.006 ppm). All metals analyses were within Base TBVs.

During the RI, an EM-31 survey was conducted and 16 shallow soil gas probes were installed on a triangular grid with 100-foot spacing. Seven probes were installed at DP4A and nine probes were installed at DP4B. A total of 32 soil gas samples from depths of 5 and 10 feet bgs were collected and analyzed.

The EM-31 survey did not identify any ground disturbance anomalies that would indicate metal debris or metal drums. The only anomalies identified were interpreted to be buried pipeline or related to metal fencing. Laboratory analyses of the soil gas samples indicated no VOC contamination above the method detection limits.

Water Quality Impacts: During the SCOU RI, no contamination was identified. Based on the lack of contamination, the site does not pose a risk to water quality.

Human Health Risk Assessment: Based on the sampling results, cancer risk and non-cancer hazard index calculations were not required, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.3.13 Earth Technology Corporation 12 (ETC12)

ETC12 is located north of Landfill 3 in the EBS (H15, Plate 5-1 in Appendix C) and was identified as a disturbed area during a review of a 1958 aerial photograph. The site is currently covered with grass. Interviews and a records search did not identify any suspected chemical usage at this site. During site inspection, scattered construction debris was noted in the southern portion of the site and a waste filled trench was located in the northern area of the site. This site is located in an area that has a future use designated as public/recreation.

As part of the initial site investigation, a geophysical survey was conducted to identify magnetic anomalies and potential areas of buried waste. Based on the EM-31 findings, a total of 21 soil gas probes and one soil boring were installed at the site. A total of 41 soil gas samples, 21 from 5 feet bgs, 20 from 10 feet bgs, and one from 20 feet bgs, and one soil sample (4 feet bgs), were collected from the probes/borings.

Soil gas analyses indicated a maximum of 0.012 µg/L TCE at 5 feet bgs, 0.026 µg/L TCE at 5 feet bgs, and 0.022 µg/L benzene at 5 and 10 feet bgs. VOCs were not detected in any of the downhole samples. Cadmium (0.55 mg/kg) and lead (15.6 mg/kg) were the only metals from the soil sample with concentrations above TBVs. Minor amounts of construction debris (concrete and barbed wire) were noted at the 4-foot interval of ETC12SB01. No other physical evidence of waste disposal was noted.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

ETC12 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Cadmium	0.55	4	43.7	40-65	Water Board, DLM
Lead	15.6	5	855	40-65	Water Board, DLM
Soil Gas (µg/L)					
Benzene	0.022	5 & 10	282.2	0-10	VLEACH2
TCE	0.026	5	49.6	0-10	VLEACH2

Human Health Risk Assessment: Since the slightly elevated levels of cadmium and lead in the soil sample were considered to be naturally occurring, a risk assessment was not conducted at this site and a determination of NFA was made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.3.14 Hangar F-1

Hangar F-1 was an aircraft maintenance facility located in the West Flightline Sector (WFLS) (L10, Plate 5-1 in Appendix C). The hangar, which was demolished prior to 1979, was identified during a review of historical aerial photographs. Interviews and a records search found no information regarding materials or specific chemicals potentially handled at F-1. However, it is assumed that fuels, lubricating oils, and solvents were used. Hangar F-1 was investigated in conjunction with Hangars F-2 and F-3. This site is located in an area that has a future use designated as airfield.

To investigate the site, two 4.5-foot deep hand auger soil borings were installed in drainage areas adjacent at the former building. The sampling locations were selected based on site drainage in

order to detect possible sediment contamination from runoff. Two soil samples from each boring were analyzed for TPH, VOCs, and lead. Trace levels of VOCs (benzene, toluene, xylenes, 1,4-dichlorobenzene, 1,2,4- and 1,3,5-trimethylbenzene [TMB]) and elevated levels of lead (up, to 50.1 mg/kg) were found in one of the site borings. No other VOCs or TPH were reported in these samples.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

Hangar F-1 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Benzene	0.00074	4.5	0.292	0-10	VLEACH2
Toluene	0.00093	4.5	315	0-10	VLEACH2
Xylenes	0.0019	0	293	0-10	VLEACH2
1,4 DCB	0.00071	0	293	0-10	VLEACH2
1,2,4 TMB	0.0029	0	293	0-10	VLEACH2
1,3,5 TMB	0.00084	0	NA[1]	NA[1]	NA[1]
LEAD	50.1	0	855	40-65	Water Board, DLM

[1] A WQSA screening level was not developed for 1,3,5-Trimethylbenzene

Human Health Risk Assessment: A summary of the SRA, HI, and blood-lead level calculation (based on a child/residential exposure scenario) is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Hangar F-1 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
2.9×10^{-8}	0.0001

Hangar F-1 - Human Health Risk Assessment Summary – Lead Screening and HHRA			
Maximum Concentration	*Calculated Blood-Lead Level*	*Level of Concern*	*Basis*
Lead-50.1 mg/kg	4.9 µg/dL	10 µg/dL	Cal/EPA & EPA

5.2.3.15 Hangar F- 2

Hangar F-2 was an aircraft maintenance facility located in the WFS (M10, Plate 5-1 in Appendix C). The hangar, which was demolished prior to 1979, was identified during a review of historical aerial photographs. No information regarding materials or specific chemicals potentially handled at F-2 was found. However, it is assumed that fuels, lubricating oils, and solvents were used. Hangar F-2 was investigated in conjunction with Hangars F-1 and F-3. This site is located in an area that has a future use designated as airfield.

Two 4.5-foot deep hand auger soil borings were installed in drainage areas adjacent at Hangar F-2. The sampling locations were selected based on site drainage in order to detect possible sediment contamination from runoff. Two soil samples from each boring were analyzed for TPH, VOCs, and lead. No VOCs or TPH were found in any of the site soil samples. However, elevated lead levels (up to 175 mg/kg) were found in the site samples.

Water Quality Impacts: A summary of the analytical results compared to the appropriate DLM screening level is provided below. Based on the analytical results, the site does not pose a risk to water quality.

Hangar F-2 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Lead	175	0	855	40-65	Water Board, DLM

Human Health Risk Assessment: A summary of the SRA, HI, and blood-lead level calculations (based on a child/residential exposure scenario) is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Hangar F-2 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.0×10^{-8}	0.00002

Hangar F-2 - Human Health Risk Assessment Summary – Lead Screening and HHRA			
Maximum Concentration	*Calculated Blood-Lead Level*	*Level of Concern*	*Basis*
Lead-175 mg/kg	5.8 µg/dL	10 µg/dL	Cal/EPA & EPA

5.2.3.16 Hangar F- 3

Hangar F-3 was an aircraft maintenance facility located in the WFS (M10, Plate 5-1 in Appendix C). The hangar, which was demolished prior to 1979, was identified during a review of historical aerial photographs. No information regarding materials or specific chemicals potentially handled at F-3 was found. However, it is assumed that fuels, lubricating oils, and solvents were used. Hangar F-3 was investigated in conjunction with Hangars F-1 and F-2. This site is located in an area that has a future use designated as airfield.

One 3.5-foot deep hand auger soil boring was installed in a drainage area adjacent to Hangar F-3. The sampling location was selected based on site drainage in order to detect possible sediment contamination from runoff. Two soil samples from the boring were analyzed for TPH, VOCs and lead. No VOCs or TPH were found in any of the site soil samples. Elevated lead levels (up to 21.6 mg/kg) were found in the site samples.

Water Quality Impacts: A summary of the analytical results compared to the appropriate DLM screening level is provided below. Based on the analytical results, the site does not pose a risk to water quality.

Hangar F-3 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Lead	21.6	0	855	40-65	Water Board, DLM

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA far this site.

Hangar F-3 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.2×10^{-8}	0.0002

Hangar F-3 - Human Health Risk Assessment Summary – Lead Screening: and HHRA			
Maximum Concentration	*Calculated Blood-Lead Level*	*Level of Concern*	*Basis*
Lead-21.6 mg/kg	4.8 µg/dL	10 µg/dL	Cal/EPA & EPA

5.2.3.17 Hangar F- 5

Hangar F-5 is an aircraft maintenance facility located in the WFS northwest of Building 1350 (Q11, Plate 5-1 in Appendix C). No information regarding materials or specific chemicals potentially handled at F-5 was found. However, it is assumed that fuels, lubricating oils, and solvents were used. Hangar F-5 was investigated in conjunction with Hangars F-4 and F-6. This site is located in an area that has a future use designated as aviation support.

To evaluate potential contamination at the site, one soil boring and six soil gas probes were installed at F-5. Two soil samples, one downhole soil gas sample, and 12 shallow soil gas samples were collected from the boring/probes. The soil boring location was selected based on site drainage in order to detect possible sediment contamination from runoff. TCE at levels up to 9.12 µg/L was identified in shallow soil gas (10 feet bgs) samples at the site. Di-n-butyl phthalate with concentrations ranging from 0.38 to 0.4 mg/kg was detected in the soil samples (10 and 20 feet bgs) from boring F5SB-01. Trace levels of benzene (in soil gas) were detected. No other VOCs, SVOCs, TPH, or VOCs were detected in the soil samples. Also, no metals above background levels were reported in the site soil samples.

Water Quality Impacts: A summary of the analytical results compared to the appropriate VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

Hangar F-5 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Di-n-butyl phthalate	0.4	20	82.9	0-40	VLEACH1
Soil Gas (µg/L)					
Benzene	1.7	10	66.3	10-20	VLEACH2
TCE	9.12	10	19	10-20	VLEACH2

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculation is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

Hanger F-5 - Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
2.4×10^{-8}	0.0001

5.2.3.18 Hangar F- 6

Hangar F-6 is an aircraft maintenance facility located in the WFS northwest of Building 1350 (P11, P12, Plate 5-1 in Appendix C). No information regarding materials or specific chemicals potentially handled at F-6 was found. However, it is assumed that fuels, lubricating oils, and solvents were used. Hangar F-6 was investigated in conjunction with Hangars F-4 and F-5. This site is located in an area that has a future use designated as aviation support.

One soil boring and six soil gas probes were installed at F-6. Two soil samples and 12 shallow soil gas samples were collected from the boring/probes. The soil boring location was selected based on site drainage in order to detect possible sediment contamination from runoff.

Analyses of shallow soil gas samples from this site indicated the presence of benzene, toluene, 4-ethyltoluene, and TCE at the 10-foot interval of F6SG01. PCE, 1,2 DCE,1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, and xylenes were identified in duplicate soil gas samples for this site. TCE levels ranging from 1.1 to 2.31 µg/L were identified in the downhole soil gas samples at this site from 10 feet bgs. No other VOCs were reported in downhole soil gas samples from this site. No soil gas levels exceeded WQSA screening levels. No VOCs, SVOCs, TPH, or metals above TBV were reported in the site soil samples.

Water Quality Impacts: A summary of the analytical results compared to the appropriate VLEACH2 screening level is provided below. Based on the analytical results, the site does not pose a risk to water quality.

Hangar F-6 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil Gas (µg/L)					
Benzene	0.577	10	66.3	10-20	VLEACH2
Toluene	0.0049	10	33,150	10-20	VLEACH2
1,2 DCB	0.438	10	37,525	10-20	VLEACH2
Ethylbenzene	0.439	10	48,785	10-20	VLEACH2
TCE	2.31	10	19	10-20	VLEACH2
Xylenes	2.21	10	37,525	10-20	VLEACH2

Human Health Risk Assessment: Cancer risk and non-cancer hazard index calculations is were not conducted for this site because no contamination was identified in the site soil samples. A determination of NFA was made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG,1998c).

5.2.3.19 Hazardous Waste Site (HWS4)

Hazardous Waste Site (HWS) 4 is located in the WBS near Fire Training Area 3 and DA-4, and encompasses Structure 1313 (K8, Plate 5-1 in Appendix C). A total of six ASTs (four 5,000-gallon tanks and two 4,000-gallon tanks) were located at the site. The tanks were used to store JP-4 and waste oil. Secondary containment around the ASTs consisted of 10-inch thick concrete walls and floor. No underground sanitary sewer discharge lines or surface drain age trenches were associated with the site. This site is located in an area that has a future use designated as aviation support.

Between 1988 and 1991, two soil gas probes and one soil boring were installed at the site. A total of four shallow soil gas samples (from depths of 4 and 6 feet bgs) and four groundwater samples (from depths of 95, 170, 199, and 258 feet bgs) were collected from the probes. Analyses of the shallow soil gas samples indicated concentrations between 0.1 and 0.4 µg/L TPH and less than 0.02 µg/L BTEX. TCE was detected in groundwater at 95 feet and 170 feet bgs. Groundwater TCE levels were 1,700 µg/L at 95 feet bgs, and 2.1 µg/L at 170 feet bgs. No contamination was reported in the samples from 199 and 258 feet bgs.

A geophysical survey was conducted and nine soil gas probes, five soil borings, and two hand auger borings were installed at the site as part of the SCOU RI. The goal of the geophysical survey was to locate any fuel lines leading from HWS4 to FTA3 and any lateral lines to the main trunk line. A total of 18 shallow gas samples (from depths ranging from 5 to 10 feet bgs), three downhole soil gas samples (20-foot interval), and 12 soil samples (depths ranging from 0 to 19 feet bgs) were collected from the probes/borings to determine what, if any, contamination was located at the site.

The geophysical survey identified no evidence of fuel lines connecting the FTA3 area to HWS4. Due to interference from reinforcing bars in concrete and ASTs, it was difficult to determine the location of lateral lines. However, the conductivity data suggests that a probable location of lateral lines is between soil gas probes HWS4SG07 and SG08.

TCE was detected above the reporting limit in duplicate samples SG01 and SG07. Trace amounts of acetone, benzene, toluene, ethylbenzene, 4-ethyltoluene, Freon 12, methyl ethyl ketone, tetrachloroethene (PCE), and 1,2,4-trimethylbenzene (TMB) were also identified in these gas probes. Ethylbenzene (24.8 µg/L) and xylenes (80.6 µg/L) were detected above reporting limits and preliminary water quality site assessment levels in HWS4SB03. No other VOCs were detected in the downhole soil gas samples.

No TPH or SVOC compounds were identified in the soil samples. Trace concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX), TCE, and styrene were detected but were below reporting and WQSA limits.

Water Quality Impacts: A summary of the RI/FS analytical results compared to the appropriate VLEACH2 screening level is provided below. Based on shallow soil and soil gas data collected during the RI, there does not appear to be a significant TCE source area at the site. For this reason, it was determined that the TCE noted in the site groundwater in 1991 did not result from

a release at HWS4, but was more likely to be related to the DA-4 VOC contamination site, and that the site did not pose a risk to water quality.

HWS4 Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Benzene	0.00061	19	68.4	10-20	VLEACH2
Toluene	0.00087	19	75	10-20	VLEACH2
Ethylbenzene	0.00075	19	220	10-20	VLEACH2
Xylenes	0.0014	19	195	10-20	VLEACH2
Styrene	0.0004	19	NA[1]	NA[1]	NA[1]
TCE	0.001	19	18.3	10-20	VLEACH2
Soil Gas (µg/L)					
Acetone[1]	0 026	10	NA[1]	NA[1]	NA[1]
Benzene	0.001	5	282	0-10	VLEACH2
Ethylbenzene	24.8	20	48,785	0-10	VLEACH2
Toluene	0.004	5	138,540	0-10	VLEACH2
1,2,4 -TMB	0.018	10	37,525	10-20	VLEACH2
4-ethyltoluene	0.098	5	NA[1]	NA[1]	NA[1]
Freon 12	0.015	10	620.6	10-20	VLEACH2
Methyl Ethyl Ketone	0.28	10	NA[1]	NA[1]	NA[1]
Xylenes	80.6	10	37,525	10-20	VLEACH2
PCE	0.01	20	19	10-20	VLEACH2
TCE	0.2250	5	49.6	0-10	VLEACH2
TCE	0.12	10	19	10-20	VLEACH2

[1]Screening levels not developed for acetone, 4-ethyltoluene, methyl ethyl ketone, or styrene

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculation is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results to not change the conclusion of NFA for this site.

Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
2.2×10^{-8}	0.0001

5.2.3.20 Industrial Waste Line (IWL)

The IWL is located in the Base-wide Sector (BWS) and extends from Building 1529 southwest approximately 3,000 feet to Perimeter Road. Approximately 800 feet of the pipeline was constructed of vitrified clay pipe and approximately 2,200 feet was constructed of stainless steel pipe. The pipeline is not currently in use. The IWL was designed to transport wastes from the industrial portions of the base to the Castle Airport treatment facility. Potential contaminants associated with the IWL include fuels, oils, and degreasing solvents. This site traverses areas that have future uses designated as aviation support, industrial, and commercial.

As part of SCOU RI, six soil borings and 21 soil gas probes were installed adjacent to the pipeline. The soil gas probes and two of the soil borings were installed along the abandoned vitrified clay pipe portion of the IWL. The soil gas probes were installed at 50-foot intervals, while the borings were drilled near lateral connections. The remaining soil borings were installed along the stainless steel portion of the IWL. A total of 15 soil samples (9 to 34 feet bgs) and 21 soil gas samples (10 feet bgs) were collected from the borings/probes.

Soil gas samples indicated detectable quantities of aromatic and halogen.ated VOCs at concentrations below WQSA screening levels. Soil samples collected from the clay pipe portion of the IWL indicated no TPH, VOC, or SVOC contamination. Boron, beryllium, and cadmium levels exceeded threshold background levels for metals in one clay pipe soil boring.

Water Quality Impacts: A summary of the analytical results compared to the appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

IWL Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Beryllium	1.0	9	7.6	40-65	Water Board, DLM
Boron	33.5	9	NA[1]	NA[1]	NA[1]
Cadmium	0.58	9	43.7	40-65	Water Board, DLM
Soil gas (µg/L)					
Benzene	0.031	10	66.3	10-20	VLEACH2
Toluene	0.064	10	33,150	10-20	VLEACH2
4-EBZME	0.0324	10	NA[1]	NA[1]	NA[1]
TCE	0.0091	10	19	10-20	VLEACH2
TMB 135	0.023	10	NA[1]	NA[1]	NA[1]
Xylenes	0.1517	10	37,525	10-20	VLEACH2

[1]A WQSA screening level was not developed for boron, 1,3,5-trimethylbenzene, or 4-ethyltoluene (4-EBZME)

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
5.1×10^{-9}	0.00001

5.2.3.21 Storage Area B2 (SA B2)

SA B2 is located in the MBS approximately 250 feet southeast of the POL fuel farm (T13, Plate 5-1 in Appendix C). SA B2 was an area of potential concern based on a review of aerial photographs (USEPA, 1991). Interviews and a records search did not identify any suspected chemical usage regarding the site. This site is located in an area that has a future use designated as industrial. To verify lack of contamination at SA B2, four soil gas probes were installed and sampled. Four soil gas samples collected from 10 feet bgs indicated no contamination. Since there is no evidence of contamination at this site, a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

5.2.3.22 Storage Area B4 (SA B4)

SA B4 is located in the MBS on the edge of the operational apron between Stains 40 and 42 and approximately 100 feet east of Building 1344 (P12, Plate 5-1 in Appendix C). SA B4 was an area of potential concern based on a review of aerial photographs (EPA, 1991). This site is located in an area that has a future use designated as airfield. Interviews and a records search did not identify any suspected chemical usage regarding the site. Four hand auger borings were installed at the site as part of the SCOU RI. The borings were located at grid intersections approximately 25 feet apart. A total of five hand auger soil samples from depths ranging from surface to 4.5 feet bgs were collected and submitted for laboratory analyses.

Laboratory analyses of one of the surface soil samples (SAB4HA01) indicated the presence of the BTEX volatiles and semivolatiles naphthalene and bis(2-ethylhexyl)phthalate (BIS2EHP). Of these contaminants, ethylbenzene (6.3 µg/kg) and xylenes (45.0 µg/kg) had the highest concentrations. Silver, cobalt, nickel, and lead were detected above TBV but below WQSA and risk threshold levels. Maximum levels of silver (2.7 mg/kg), cobalt (128 mg/kg), nickel (58.5 mg/kg), and lead (30.9 mg/kg) were identified in these samples.

Water Quality Impacts: A summary of the analytical results compared to the appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

SAB4 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Silver	2.7	0	6000	0-10[2]	Water Board, DLM
Cobalt	128	0	349	40-65	Water Board, DLM
Nickel	58.5	0	1,167	40-65	Water Board, DLM
Lead	30.9	1	855	40-65	Water Board, DLM
BIS2EHP	0.17	0	82.9	0-40	VLEACH1
Soil (µg/L)					
Benzene	0.64	0	291.5	0-10	VLEACH2
Toluene	1.7	0	315,150	0-10	VLEACH2
Ethylbenzene	6.3	0	220,340	0-10	VLEACH2
Xylenes	45	0	293,350	0-10	VLEACH2
Naphthalene	2.3	0	82.9	0-10	VLEACH2
TMB124	3.7	0	293,350	0-10	VLEACH2
TMB 135	0.95	0	NA[1]	NA[1]	NA[1]

[1]A WQSA screening level was not developed for 1,3,5-trimethylbenzene (TMB 135)
[2]Silver RAO based on attenuation factor of 1,000 and TBV value of 6 µg/L

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

SA B4 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
6.7×10^{-8}	0.1

5.2.3.23 Sanitary Sewer 3 (SS3)

A network of sanitary sewer lines serves most of Castle Airport and the off-base housing areas. SS3 is a portion of this network that is located in the BWS directly north of UFL2 (Q12, Plate 5-1 in Appendix C). Liquids suspected to be present in the sewer lines include fuels, solvents, and oils. This site is located in an area that has a future use designated as aviation support. As part of the SCOU RI, five soil borings were installed in the vicinity of SS3. A total of 12 soil samples (9 to 29 feet bgs) and 10 soil gas samples (10 and 20 feet bgs) were collected from the borings.

Water Quality Iimpacts: A summary of the analytical results compared to the VLEACH2 screening levels, is provided below. Based on the analytical results, the site does not pose a risk to water quality.

SS3 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Benzene	0.00048	10.5	0.068	10-20	VLEACH2
Toluene	0.00081	10.5	75.4	10-20	VLEACH2
Ethylbenzene	0.00096	10.5	48.8	10-20	VLEACH2
Xylenes	0.0026	10.5	293	10-20	VLEACH2
Xylenes	0.0058	20.5	195	20-30	VLEACH2
TCE	0.0008	10.5	0.018	10-20	VLEACH2
TCE	0.00079	20.5	0.01	20-30	VLEACH2
1,2 DCBZ	0.00096	10.5	195	10-20	VLEACH2
1,3 DCBZ	0.0012	10.5	NA[1]	NA[1]	NA[1]
1,2,4 TMB	0.0052	20.5	54.6	20-30	VLEACH2
1,2,4 TMB	0.0012	5.5	293	0-10	VLEACH2
1,3,5 TMB	0.00066	5.5	NA[1]	NA[1]	NA[1]
Soil Gas (µg/L)					
TCE	5.0	20	19	10-20	VLEACH2

[1] A WQSA screening level was not developed for 1,3,5-trimethylbenzene or 1,3 dichlorobenzene

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

SS3 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.9×10^{-8}	0.0003

5.2.3.24 Sanitary Sewer 5 (SS5)

A network of sanitary sewer lines serves most of Castle Airport and the off-base housing areas. SS5 is a portion of this network that is located in the BWS directly north of B1540 (R13, Plate 5-1 in Appendix C). Liquids suspected to be present in the sewer lines include fuels, solvents, and oils. This site is located in an area that has a future use designated as aviation support. As part of the SCOU RI, three soil borings were installed in the vicinity of SS5. A total of six soil samples (9.5 to 19.5 feet bgs) and four soil gas samples (10 and 20 feet bgs) were collected from the borings.

Water Quality Impacts: A summary of the analytical results compared to the appropriate DLM screening levels, is provided below. Based on the analytical results, the site does not pose a risk to water quality.

SS5 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Molybdenum	0.62	9.5	95	40-65	Water Board, DLM
Molybdenum	0.73	19.5	95	40-65	Water Board, DLM

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site.

SS5 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
7.2×10^{-9}	0.00001

5.2.3.25 Sanitary Sewer 9 (SS9)

A network of sanitary sewer lines serves most of Castle Airport and the off-base housing areas. SS9 is a collapsed section of line located in the BWS 50 feet southeast of SS2 (Q11, Plate 5-1 in Appendix C). The collapse was discovered during a 1994 video survey of the sewer system. Liquids suspected to be present in the sewer lines include fuels, solvents, and oils. This site is located in an area that has a future use designated as institutional (educational). As part of the SCOU RI, eight soil borings were installed in the vicinity of SS9. A total of 16 soil samples (9 and 24 feet bgs) and 8 soil gas samples (20 feet bgs) were collected from the borings.

Water Quality Impacts: A summary of the analytical results compared to the appropriate DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

SS9 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Vanadium	74.9	24	629	40-65	Water Board, DLM
Soil Gas (µg/L)					
TCE	2.3	20	10.6 -	20-30	VLEACH2

Human Health Risk Assessment: A summary of the SRA, and HI calculation is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c). The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

SS9 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
8.7×10^{-9}	0.0001

5.2.3.26 Structure 1571 (ST1571)

ST1571, built as a washrack in 1978, was located in the MBS (R14, Plate 5-1 in Appendix C). This facility was reportedly used as a jet engine stand. However, the use of the site, dates of operation, and the hazardous materials usage could not be confirmed. The facility consists of a concrete pad, a 9,450-gallon water tank mounted on the pad, a sump pump used to pump water from a deep well, an oil/water separator (SWMU 4.22), and a drainage ditch. The oil water separator reportedly received waste-water containing oils, fuels, hydraulic fluids, paints, metals, and possibly solvents. This site is located in an area that has a future use designated as institutional (educational).

Three soil borings were installed as part of the site investigation. Two borings were located adjacent to the oil/water separator and one boring was located adjacent to the sump pump. A total of five soil samples (7 to 20.5 feet bgs) and two downhole gas samples (20 and 21.5 feet bgs) were collected from these borings. The soil samples were analyzed for TPH, VOCs, SVOCs, metals, and lead. The downhole gas samples were analyzed for VOCs. The downhole gas samples did not contain VOC contamination. None of the soil samples contained TPH, VOC, or SVOC contamination above WQSA threshold levels. With the exception of molybdenum (0.69 mg/kg, estimated value), all soil analyses were below TBVs.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM and VLEACH2 screening levels is provided below. Based on this evaluation, the site does not present a threat to groundwater quality, and a determination of NFA has been made for this site.

ST1571 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Benzene	0.00057	20.5	0.021	20-30	VLEACH2
Toluene	0.00077	20.5	21.6	20-30	VLEACH2
Ethylbenzene	0.0012	20.5	78.5	20-30	VLEACH2
Xylenes	0.00304	20.5	54.6	20-30	VLEACH2
Chlorobenzene	0.00078	20.5	NA[1]	NA[1]	NA[1]
1,2 DCB	0.00097	20.5	55	20-30	VLEACH2
Methylene Chloride	**0.0059**	**20.5**	**0.0012**	**20-30**	**VLEACH2**
Molybdenum	0.69	20.5	95	40-65	Water Board, DLM

[1]WQSA Threshold not calculated for chlorobenzene.

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk assessment results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The NFA decision is documented in the Final SCOU RI/FS (JEG, 1998c).

ST1571 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
8.7×10^{-9}	0.00001

5.2.4 Post-Feasibility Study No Further Action Sites

A total of 74 SCOU sites are characterized as NFA sites based on post-FS decisions. These sites were carried through the FS process because of one of the following: (1) RI sampling had not been adequate to determine extent or degree of site contamination and additional data gap sampling was required to fully characterize the site, (2) RI evaluation indicated that site cleanup was required and remediation was completed and verified under Removal Action authority, (3) site contamination levels exceeded WQSA or human health risk screening levels, or (4) the site was a solid waste management unit (SWMU) subject to RCRA closure and was carried through the FS for tracking purposes. With the exception of Structure T85 (Data Gap Site) and two Removal Action sites (B871 and PCB9), these sites were recommended for NFA in the SCOU RI/FS. An analysis of alternatives for these sites is detailed in Appendix B, along with related information on LF4 and LF5, which have since been deferred from the SCOU ROD Part 1 to a subsequent ROD. The information on LF4 and LF5 serves as background support that has been retained in the final version of this ROD to aid in understanding of the document. The NFA determinations for the Data Gap Sites (e.g., Structure T85) were based on the findings of the Data Gap Investigation that was conducted during 1997. The NFA determinations for B871 and PCB9 were made based on the results of confirmation sampling after Removal Actions were completed. All ARARs were complied with as identified within Action Memoranda for all sites

for which removal actions were conducted. The post-Feasibility Study NFA Sites are shown in the table below.

Post-Feasibility Study NFA (74 Sites)			
B871[1]	Disposal Pit 2 (LF1)[1]	SWMU 4.9[1]	SWMU 4.28
B1344[1]	Disposal Pit 3 (LF1)[1]	SWMU 4.10[1]	SWMU 4.30
B1550[1]	LF2[1]	SWMU 4.11	SWMU 4.31[1]
CVLFA[1]	LF3[1]	SWMU 4.12	SWMU 4.32
CVLFB[1]	PCB9[1]	SWMU 4.13	SWMU 4.33
DA-3[1]	SS6[1]	SWMU 4.19[1]	SWMU 4.34
DA-8[1]	SS7[1]	SWMU 4.20	SWMU 4.35
ETC2[1]	Stains 1-32[2]	SWMU 4.24	SWMU 4.36[1]
Firing Range[1]	Structure T85[1]	SWMU 4.25[1]	SWMU 4.37
LF1[1]	SWMU 4.1	SWMU 4.26	SWMU 4.38
Disposal Pit 1 (LF1)[1]	SWMU 4.2	SWMU 4.27	

[1]The Selected NFA remedy has changed from previous CERCLA documented preferred alternative
[2]For site count purposes, Stains 1-32 represent 32 separate sites

Site-by-site summaries of the post-FS NFA sites are provided below.

5.2.4.1 Building 871 (B871)

B871, the Base Recreation Facility, is located in the MBS and was constructed in 1989 (T11, Plate 5-1 in Appendix C). The building location was reportedly used as the Defense Reutilization and Marketing Office (DRMO) Hazardous Waste Storage Yard during the 1950s. The site was also used as a railroad locomotive and rail car repair yard. The Base Recreation Facility playing field was built over the former storage yard. During construction in 1989, several crushed 55-gallon drums were uncovered.

TEPH was detected in one surface sample at 180 mg/kg. PCBs were detected in two surface samples at concentrations of less than 0.1 mg/kg (maximum concentration was 0.081 mg/kg). Dieldrin was detected at a maximum concentration of 0.022 mg/kg. Anthropogenic lead was detected at a maximum concentration of 32 mg/kg. In 1996, TEPH, PCB, and pesticide-contaminated soil were excavated and taken to FTA1 where the soil was used as foundation material. Confirmation sampling conducted after excavation work was completed indicated that all contamination above cleanup levels had been removed. The closure of B871 was documented in the Technical Report for Removal Action at B871 (September 1996). The EPA, RWQCB, and DTSC closure acceptance letter was received on December 12, 1996. This site is located in an area that has a future use designated as commercial. The anticipated use of the B871 site is occupational, which is why the occupational exposure scenario was used here. Levels of PCBs, pesticides and TPH from soils excavated at B871 are below the PRAOs and PCLs for acceptance criteria for soil into FTA-1 (a CB Part 2 ROD site). This was in accordance with the approved WP/QPP. The maximum post excavation concentration for dieldrin was <0.0006 mg/kg (detection limit) as compared to the proposed clean up level of 0.3 mg/kg. Note that all

confirmation samples were below detection limits and residential PRAOs, thus no land use restrictions are required.

Water Quality Impacts: A summary of the analytical results compared to appropriate DLM, VLEACH1, and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B871 - WQSA Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Lead	32	0	855	40-65	Water Board, DLM
Methylene Chloride	0.007	4	0.008	0-10	VLEACH2
TEPH	180	0	1,500	0-20	Water Board, DLM
PCB	0.081	0	82.9	0-40	VLEACH1
DDT44	0.0045	0	82.9	0-40	VLEACH1
DDE45	0.016	0	82.9	0-40	VLEACH1
Chlordane A	0.036	0	82.9	0-40	VLEACH1
Chlordane G	0.043	0	82.9	0-40	VLEACH1
Dieldrin	0.022	0	NA[1]	NA[1]	NA[1]

[1]WQSA screening levels were not developed for Dieldrin.

Human Health Risk Assessment: A summary of the SRA findings for B871 is provided below:

B871 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
2.8×10^{-6}	0.1

Because the SRA exceeded 1 x 10^{-6} an HHRA was conducted based-on the SRA results. A summary of the HHRA is provided below:

B871 - Human Health Risk Assessment Summary – HHRA			
Adult Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
7.7 x 10^{-6}	0.1	1.2 x 10^{-7}	0.0001
Child Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
7.5 x 10^{-6}	0.3	1.1 x 10^{-7}	0.005
Occupational Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
3.6 x 10^{-7}	0.006	8.6 x 10^{-9}	0.00007

The maximum cumulative risk for the adult residential and occupational scenarios was 7.7 x 10^{-6} and the maximum cumulative HI was less than 1.0 for both exposure scenarios. Dieldrin and PCBs were the primary contributors to risk in the surface soil; methylene chloride was the primary contributor to risk in the subsurface soil. These contaminants present a marginal risk to human health in the residential scenario. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Site COCs and RAOs: No COCs were identified for B871 based on the Baseline Human Health Risk Assessment (BHHRA) assuming the occupational exposure scenario. However, the Air Force elected to implement a Removal Action at this site and cleanup objectives protective of human health (assuming the residential exposure scenario) were achieved. Two COCs, dieldrin and PCB, were applicable based on the BHHRA assuming the residential surface exposure pathway scenario. This ROD documents a Removal Action that addressed the following COCs:

B871 – Remediation Targets		
COC	*RAO*	*Basis*
Dieldrin	0.18 mg/kg	BHHRA, surface, residential
PCB	0.57 mg/kg	BBHRA, surface, residential

Changes from Prior CERCLA Documentation: PCBs, pesticides, and TEPH were present at or near the surface at B871. The need for remedial action was driven by WQSA goals for TEPH and

by the risk posed by the potentially complete exposure pathway of near-surface pesticides and PCBs. The SCOU RI/FS listed Land Treatment Unit (LTU) as the preferred alternative for B871. However, based on the need for foundation soil at FTA1, it was determined that excavating contaminated soil from B871 and using it as foundation soil at FTA1 would be a faster and more economical remediation method for B871. This work (JEG, 1995b) was undertaken as a Removal Action in 1996. Excavation and On-site Disposal was listed as the preferred alternative in the SCOU Proposed Plan, which was issued in August of 1997. The closure activities conducted at this site are documented in the closure report Final Technical Report for Removal Action at Building 871 (JEG 1996e) and agency concurrence was indicated by the DTSC letter of December 12, 1996. Confirmation samples collected after excavation work was completed confirmed that no additional action was needed to protect human health or water quality at B871, therefore a determination of NFA has been made for this site.

5.2.4.2 Building 1344 (B1344)

The following discussion represents the evaluation of this site as presented by the 1996 SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Although the overall conclusions regarding this site have not changed, the reader is referred to Appendix E for a more current risk assessment for this site.

B1344 is located in the MBS (P11, Plate 5-1 in Appendix C) and was used for fire truck maintenance. The site is near a 5,000-gallon above ground diesel storage tank to the west of B1344; a UST and a grease trap are located to the south. The site also includes a drum storage area. Materials used at the site include used oil and solvents associated with daily maintenance operations. This site is located in an area that has a future use designated as aviation support.

Areas of shallow PAH contamination were identified during the SCOU RI and SCOU Data Gap Investigations. No petroleum hydrocarbons or solvent VOCs were detected in soil borings or hand auger samples. Trace concentrations of aromatic and halogenated VOCs were reported in shallow soil gas samples. These analyses, vadose zone soil analyses and soil gas analyses, did not exceed WQSA screening levels for any potential COC. Therefore, there are no water quality impacts.

Surface and subsurface soil analyses exceeded the 1×10^{-6} human health risk assessment screening levels for all three-exposure scenarios. PAH was the primary contributor to the total estimated surface soil risk. No organic analytes were detected in the subsurface soil samples. Lead, above background in the subsurface soil, was the only contributor to subsurface soil risk. The risk assessment results are from the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

While the occupational exposure scenario is appropriate for B1344, the residential RAO for benzo(a)pyrene was used as an excavation guide to avoid ICs at the site. From May 31 through August 10, 2000, several iterations of excavations and confirmation samplings and analyses were conducted to meet appropriate RAO values. Excavated soil was stockpiled and sampled. Analytical results were below the landfill acceptance criteria, and the soils were transported to LF4 for disposal. The excavation was backfilled, compacted, and covered with sod. Sprinklers were re-installed and adjusted. A determination of NFA has been made for this site based on the analytical results of the confirmation samples, which were documented in the Action Memorandum for CERCLA Excavation Sites, ETC-2, ETC-8, DA-3, and Building 1344 at Castle Airport (JEG, 2000f) and the follow-up Closure Report for CERCLA and Petroleum Hydrocarbon - Contamination Excavation Sites Final (JEG, 2000b).

5.2.4.3 Building 1550 (B1550)

See Section 5.2.4.7, Discharge Area 8.

5.2.4.4 Castle Vista Landfill A (CVLFA)

CVLFA is located in the Off Base Sector (OBS) in the military family housing area southeast of the main portion of Castle AFB (W5, Plate 5-1 in Appendix C), in an area that has a future use designated as residential. No applicable COCs were identified for CVLFA; however, the site was recommended for evaluation in the FS, based on the California Integrated Waste Management Board's (CIWMB) closure requirements for landfills. In 1997 and 1998, all waste at CVLFA was excavated and consolidated at LF4. Removal actions were undertaken in accordance with Action Memorandum Removal Action for Castle Vista Landfills A and B and Castle Airport Landfills 2 & 4 (JEG, 1997h) dated June 3, 1997 authorizing excavation and removal of the wastes from CVLFA; Castle Vista A and Landfill 2 Closure Report Final (JEG, 1999c) dated May 1999 documents this action. This work was undertaken under Removal Action authority. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. The landfill has been backfilled with clean fill material and seeded with grass. The CVLFA Removal Action was needed to satisfy state regulatory landfill closure requirements, address community reuse concerns, reduce the land area impacted by contamination, and for cost-effectiveness (by conducting the work concurrently with the consolidation of LF4).

Excavation of waste began in October 1997 at the west end of CVLFA and proceeded east. Spotters were on site to direct the earthwork contractor, to visually identify the limits of waste, to segregate potential hazardous, designated, and/or radioactive waste, and to perform health and safety monitoring. Supporting previous investigation results, field monitoring indicated no VOC contamination. Monitoring using a gamma radiation survey instrument indicated no radioactivity above background levels.

CVLFA consisted almost entirely of relatively small amounts of municipal and household waste mixed with large amounts of soil, ranging from three to eight feet deep. Field monitoring results were below SOP 44 action levels at all times throughout construction. Based on spotters' visual observations and field screening results, no potential hazardous, designated, and/or radioactive

wastes were identified during excavation, and all waste was disposed of at LF4. Therefore, waste segregation, characterization, and/or off-site disposal were not required at CVLFA. Approximately 8,650 CY of waste material were excavated and transported to LF4. Since waste was identified beneath Sierra Madre Drive, a portion of this on-site road was removed, the underlying waste excavated, and the road replaced.

Based on the SCOU Work Plan, five confirmation samples and one waste characterization sample were scheduled for collection after excavation was complete. Since the limits of waste were greater than anticipated, two additional confirmation samples were collected, resulting in a total of seven confirmation samples. Each sample was collected on a 100-foot grid, representing an area of approximately 10,000 square feet. Potentially hazardous, designated, and/or radioactive materials were not identified or segregated; thus, no waste characterization samples were collected. All confirmation sample results were below RAOs, indicating that the excavation was successful in removing the landfill waste and that the excavated site met CPCMP objectives.

The excavation was backfilled with material stockpiled on site and imported from off-site sources. All backfill material was clean and met the specifications required in the CPCMP. Clean fill was placed in loose lifts of 12 inches on average, but not greater than 18 inches, visually estimated. Proper compaction was achieved, and the site was returned to its original grade. The section of road that was removed was restored to its original condition, and the site was graded to drain into the existing curb and gutter system. Work was completed at the site in April 1998.

Based on the information presented above, CVLFA has been closed in accordance with the approved Final CPCMP. Post-closure maintenance activities are not required because waste and residual contaminated soils have been removed, the identified data gaps have been closed, and the site poses no significant threat to water quality or human health. Therefore, a determination of NFA has been made for this site.

Additional Background Information: The following information pertaining to CVLFA is included within this ROD for background purposes only.

CVLFA was unlined and received municipal wastes from the city of Atwater from the late 1950s through the early 1960s and was covered with a vegetative cap. As a Class II disposal site, the landfill was permitted for receiving both residential and commercial refuse. The landfill was closed prior to Air Force purchase of the property. CVLFA contained approximately 8,500 CY of what appeared to be common municipal waste distributed within an area of approximately 2 acres. The landfill was characteristically shallow (less than 10 feet bgs in most of the area) and the volume of waste and cover soil was low. Trace levels of BTEX were detected in downhole soil gas samples at concentrations less than 1.0 µg/L, which were below the reporting quantitation limit. The only VOC/SVOC contaminants detected in soil gas samples were toluene (0.143 µg/L) and PCE (0.74 µg/L) at 20 feet bgs. *Bis*(2-ethylhexyl)phthalate (2.2 mg/L) at 5.5 feet bgs was found in the soil as was low levels of TEPH (less than 5.5 mg/kg) found at 5.5, 15.5, and 20.5 feet bgs. TEPH was also reported at a concentration of 51 mg/kg at 5.5 feet bgs. The metals antimony, manganese, molybdenum, and zinc were detected at concentrations slightly above TBVs in several soil boring samples, but manganese was the only metal that exceeded

WQSA screening levels. Manganese was not included as a CVLFA COC because it was not found in a discernable pattern or in conjunction with other contaminants that would suggest anthropogenic origin.

Water Quality Impacts: Although detected in low concentrations in soil gas, BTEX did not exceed vadose zone screening criteria. TEPH was detected in soil, but concentrations did not exceed vadose zone screening criteria. Based on vadose zone screening, with the exception of manganese discussed above, no maximum allowable soil or soil gas concentration threshold values were exceeded. A summary of the screening results is provided below:

CVLFA - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH	51	5.5	1,500	0-20	Water Board, DLM
Toluene	0.0005	15.5	75.4	10-20	VLEACH2
PCE	0.0013	5.5	0.047	0-10	VLEACH2
Manganese	**257**	**15.5**	**228**	**40-65**	**Water Board, DLM**
Molybdenum	1.1	5.5	95	40-65	Water Board, DLM
Zinc	97.3	5.5	319	40-65	Water Board, DLM
Antimony	4.9	15.5	11.5	40-65	Water Board, DLM
BIS2EHP	2.2	5.5	82.9	0-40	VLEACH1
Soil Gas (µg/L)					
Toluene	0.143	20	9,495	20-30	VLEACH2
PCE	0.74	20	10.6	20-30	VLEACH2

Human Health Risk Assessment: A summary of the SRA findings for CVLFA is provided below:

CVLFA - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
9.0×10^{-8}	0.002

The maximum cumulative risk for the residential and occupational scenarios was less than 1×10^{-6} and the HI was less than 1.0. Consequently, CVLFA does not present a significant risk to human health.

Site COCs and RAOs: There are no applicable COCs identified by the BHHRA or WQSA for CVLFA. The remedial decision was driven primarily by Integrated Waste Management Board (IWMB) closure requirements and proposed residential reuse of the site. Contamination levels for COCs including TPH and BTEX compounds did not exceed WQSA PRAOs or BHHRA RAOs. This ROD provides alternatives for meeting the IWMB and State Water Resources Control Board (SWRCB) closure requirements for landfills.

Response Action: Based on the Castle Reuse Plan, the residential exposure scenario is appropriate for CVLFA. Although only manganese exceeded WQSA screening levels, CVLFA was retained as a Removal Action site because of community concern regarding potential residential reuse. Under removal action authority the landfill was excavated and placed in Landfill 4. Since all waste was removed from CVLFA and confirmation samples showed that site cleanup was complete, this former landfill does not require ICs and will be open for unrestricted reuse (JEG, 1999c). CVLFA will not require ICs and will be open for unrestricted reuse. State concurrence with clean closure for CVLFA was received in May 1999.

5.2.4.6 Castle Vista Landfill B (CVLFB)

CVLFB is located in the OBS in the Castle Vista Military Family Housing area to the southwest of Castle AFB (U4, Plate 5-1 in Appendix C) and in an area that has a future use designated as residential. In 1997 and 1998, all waste at CVLFB was excavated and consolidated at LF4. Removal actions were undertaken in accordance with Action Memorandum Removal Action for Castle Vista Landfills A and B and Castle Airport Landfills 2 & 4 (JEG, 1997h) dated June 3, 1997 authorizing excavation and removal of the wastes from CVLFA and implementation of SVE for the VOCs; Landfill 1 and Landfill B Closure Report Final (JEG, 2000d) dated September 2000 documents this action. This work was undertaken under Removal Action authority. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. The landfill was backfilled with clean fill material and seeded with grass. The CVLFB Removal Action was needed to satisfy state regulatory landfill closure requirements, address community concerns for residential reuse, reduce the land area impacted by contamination, remove the groundwater contamination source area, and for cost-effectiveness (by conducting the work concurrently with the consolidation of LF4).

Investigations conducted during the 1996 SCOU RI/FS indicated the landfill to be of the unlined, trench-and-fill type. Although little evidence for the presence of hazardous, designated, or radioactive materials was found, groundwater underlying the site was found to be contaminated with *cis*-1,2-dichloroethene (*cis*-1,2-DCE) and vinyl chloride. In addition, PCE, dichlorobenzene, *cis*-1,2-DCE, vinyl chloride, copper, manganese, antimony, and fuel hydrocarbons were also found in vadose zone soils and soil gas.

To free the site for future use without deed restrictions, a combination of remedial actions was authorized in 1997, which included groundwater cleanup by pump-and-treat technologies, contaminated soil and waste excavation, and soil vapor extraction (SVE) to remove residual soil and soil gas contamination present in the vadose zone. A total of 72,000 CY of contaminated soil and waste were removed and transported to LF4. After all solid waste was removed from the site; confirmation samples confirmed that clean closure criteria had been met. The excavation was backfilled with clean fill and graded. The SVE system operated for three months in the performance testing mode and then an additional three months in full operation. This resulted in the removal of 99% of the mass of principal contaminant. The SVE system was shut down in March 1999, initiating a six-month static pulsing phase. By the end of this period, *cis*-1,2-DCE concentrations in soil gas had steadied at trace levels, showing that the contaminant remaining in

the vadose zone had been effectively depleted. Static soil gas concentrations of *cis*-1,2-DCE and vinyl chloride have dropped by factors of 100. Groundwater cleanup by pump and treat technologies is ongoing at the site under the Castle Vista Groundwater Treatment System Program.

As a result of these removal actions, CVLFB now poses no significant threat to human health or groundwater quality. No post-closure maintenance activities, other than those associated with the groundwater remedial program, are needed. Therefore, a determination of NFA has been made for this site.

Additional Background Information: The following information pertaining to CVLFB is included within this ROD for background purposes only.

CVLFB received residential and commercial refuse and non-biodegradable inert solid waste (Class II and III wastes). CVLFB contained approximately 62,000 CY of waste. The landfill was closed before the Air Force purchased the property. Surface cover at CVLFB consisted of approximately 1 to 8 feet of grass-covered fill soil. Debris intermixed with soil was encountered at approximately 3 feet bgs extending to a maximum depth of approximately 15 feet bgs in two areas near the southern end of the landfill. No liner was present at CVLFB.

All waste and contaminants, except mobile VOCs, were confined to shallow subsurface trenches or pits. Halogenated VOCs in soil gas were limited to the upper 50 feet of the vadose zone. The most prevalent contaminant detected in the soil was *cis*-1,2-DCE (up to 0.33 mg/kg). *Cis*-1,2-DCE (up to 300.0 μg/L) and other VOCs including PCE, TCE, and vinyl chloride (up to 282.5 μg/L at 20 feet bgs) were also detected in soil gas samples in all but three borings. *Cis*-1,2-DCE has also been identified in an off-base groundwater plume, for which CVLFB is the probable source. The off-base groundwater plume is being addressed by Remedial Action specified in the CB ROD Part 1 for groundwater. TEPH concentrations (up to 6.6 mg/kg) were detected in soil samples from four borings. Di-*n*-Butylphthalate was detected in three borings, while naphthalene and phenanthrene were detected in only one boring at concentrations less than WQSA or human health screening levels. Benzo(a)pyrene was also detected at a concentration of 0.081 mg/kg in the surface soil. Metals such as copper, boron, cadmium, molybdenum, manganese, and antimony were detected at concentrations above the TBVs. Of these metals, only antimony, copper, and manganese exceeded WQSA screening levels.

Water Quality Impacts: The maximum allowable soil and soil gas concentrations for *cis*-1,2-DCE were exceeded in the WQSA screening analysis. In addition, antimony, manganese and copper exceeded WQSA screening levels. A summary of COCs compared to appropriate WQSA screening levels is provided below:

CVLFB - WQSA Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH	6.6	5	1,500	0-20	Water Board, DLM
cis-1,2-DCE	0.0056	14.5	0.008	10-20	VLEACH2
***cis*-1,2-DCE**	**0.33**	**29.5**	**0.005**	**20-30**	**VLEACH2**
Copper	**626**	**25**	**244**	**40-65**	**Water Board, DLM**
Manganese	**356**	**9.5**	**228**	**40-65**	**Water Board, DLM**
Antimony	**12.4**	**34.5**	**11.5**	**40-65**	**Water Board, DLM**
Naphthalene	0.39	5	82.9	40-65	Water Board, DLM
Phenanthrene	0.1	5	82.9	40-65	Water Board, DLM
Benzo(a)pyrene	0.081	0	82.9	40-65	Water Board, DLM
Boron	27.5	15	NA[1]	NA[1]	NA[1]
Cadmium	1.1	34.5	43.7	40-65	Water Board, DLM
Molybdenum	1.2	9.5	95	40-65	Water Board, DLM
Soil Gas (µg/L)					
***cis*-1,2-DCE**	**300**	**40**	**4.4**	**40-50**	**VLEACH2**
TCE	0.27	20	10.6	20-30	VLEACH2
PCE	3.9	40	4.8	40-50	VLEACH2
Vinyl Chloride	282.5	20	286.5	10-20	VLEACH2

[1]WQSA threshold not developed for Boron

Human Health Risk Assessment: A summary of the SRA findings for the CVLFB is provided below:

CVLFB - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
3.3×10^{-6}	0.01

Based on the SRA results, an HHRA was conducted for CVLFB. A summary of the QRA findings for CVLFB is provided below:

CVLFB - Human Health Risk Assessment Summary - HHRA			
Adult Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
6.2×10^{-6}	0.1	**2.1×10^{-6}**	0.004
Child Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
6.4×10^{-6}	0.3	**1.9×10^{-6}**	0.02
Occupational Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
7.7×10^{-7}	0.0003	1.3×10^{-7}	0.0002

The maximum cumulative residential risk was 6.4×10^{-6}. The primary compound contributing to the surface soil risk was benzo(a)pyrene, which contributed approximately 78 percent of the cumulative risk. For subsurface soil, the primary risk contributor was 1,4-dichlorobenzene. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Site COCs and RAOs:

1. Benzo(a)pyrene and 1,4-dichlorobenzene are applicable COCs based on the BHHRA assuming the residential surface and subsurface pathway scenarios, respectively.

2. An RAO for each COC identified by the WQSA was proposed for CVLFB. Three contaminants, copper, manganese, and antimony were applicable to soil or waste materials to the depth of groundwater at CVLFB. Soil RAOs were used as cleanup standards and acceptance criteria for wastes being consolidated into LF4. Based on the WQSA, soil or waste materials that exceed the RAO are designated wastes and were not consolidated on site. *Cis*-1,2-DCE to 50 feet bgs is a soil gas COC. RAOs for soil gas COCs were established as cleanup standards but did not apply as acceptance criteria since soil gas is not a material waste that was excavated or consolidated.

The remedial decision for CVLFB was driven by BHHRA and WQSA goals. Specific remediation targets addressed included the following:

CVLFB – Remediation Targets		
COC	*RAO*	*Basis*
1,4-Dichlorobenzene	6.0 mg/kg	BHHRA, subsurface, residential
Benzo(a)pyrene	0.095 mg/kg	BHHRA, surface, residential
cis-1,2-DCE	0.008 mg/kg	VLEACH2, 10-20 feet bgs
cis-1,2-DCE	0.005 mg/kg	VLEACH2, 20-30 feet bgs
Copper	244 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Manganese	1100 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Antimony	11.5 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs

Response Action: Based on the Castle Reuse Plan, the residential exposure scenario was appropriate for CVLFB. Since the cumulative risk was only marginally greater than the 1 x 10^{-6} threshold, CVLFB presented minimal risk to human health. However, considering the uncertainties associated with the investigation of landfills and community concerns for residential reuse, remedial alternatives were developed for CVLFB. Under removal action authority the landfill was excavated and placed in Landfill 4. Since all waste was removed from CVLFB and confirmation samples showed that site cleanup was complete, this former landfill does not require ICs and will be open for unrestricted reuse (JEG, 2000c). The EPA, DTSC, and RWQCB closure acceptance letters were dated August 24, 2000; July 24, 2000; and July 11, 2000; respectively.

In the absence of RAOs for VOCs, cleanup confirmation samples for VOC COCs were compared to WQSA VLEACH2 values. The Air Force does not accept VLEACH2 for VOC RAOs but utilized these values to secure regulatory concurrence with Removal Action site cleanup at CVLFB. Confirmation sampling indicated that all selected analytes were below remedial action objectives (RAO) except for arsenic. Arsenic is a naturally occurring soil mineral with a local threshold background (TBV) value of 9.74 mg/kg. In the 25 excavation confirmation soil samples within Castle Vista Landfill B the maximum concentration of arsenic found was 2.55 mg/kg. Seven other samples exceeded the RAO for residential use of 1.0 mg/kg. Those seven samples had concentrations of 1.1 mg/kg, 1.21 mg/kg, 1.22 mg/kg, and 1.44 mg/kg, 1.6 mg/kg, 2.09 mg/kg and 2.50 mg/kg.

5.2.4.6 Discharge Area 3 (DA-3)

The following discussion represents the evaluation of this site as presented by the 1996 SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Although the overall conclusions regarding this site have not changed, the reader is referred to Appendix E for a more current risk assessment for this site.

DA-3 is located in the MBS (T10 and T11, Plate 5-1 in Appendix C) near Building 850 and consists of a ditch that receives runoff from the former civil engineering washrack and sump. Potential contaminants at the site include petroleum hydrocarbons and other vehicle-related waste streams. This site is located in an area that has a future use designated as commercial.

Runoff from the washrack flowed into two sumps. The sumps often became clogged, and runoff from the washrack flowed over the ground surface directly into the ditch. Areas of shallow lead contamination were identified during the SCOU RI and SCOU Data Gap Investigation. Soil boring data showed no detectable contamination for VOC, SVOC, or PCB/pesticides. TEPH and lead contamination in soils were found at two hand auger locations. None of the downhole soil gas samples contained detectable VOC.

The human health risk assessment conducted for the DA-3 site showed that the maximum cumulative risk for the residential and occupational scenarios was less than the 1×10^{-6} threshold and the hazard quotient was less than the 1.0 threshold. The estimated blood-lead level exceeded the California EPA threshold in the case of the surface-soil, child residential exposure scenario but not for the occupational exposure scenario. In order to avoid ICs at DA-3, soil containing a lead level of 400 mg/kg or higher was removed.

From June 1 to August 29, 2000, soils with lead concentrations exceeding RAO were removed from DA-3 by excavation. Asphalt concrete was saw-cut and removed. Approximately 170 CY of soil were removed using a backhoe and front loader. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. Four confirmation samples were collected from the bottom of the excavated area. The results varied from background to 42.6 mg/kg. Two stockpiles of excavated material were sampled and analyzed. These excavation samples met the landfill acceptance criterion of 855 mg/kg and the stockpiles were transported to LF4 for disposal.

The excavation was backfilled with clean soil to the original grade and repaved with asphalt concrete on August 28, 2000. Following closure of the site as indicated within Action Memorandum for CERCLA Excavation Sites, ETC-2, ETC-8, DA-3, and Building 1344 at Castle Airport (JEG, 2000f) and follow-up Closure Report for CERCLA and Petroleum Hydrocarbon - Contamination Excavation Sites (JEG, 2000b), a determination of NFA was made for DA-3 based on the analytical results of the confirmation samples.

5.2.4.7 Discharge Area 8 (DA-8. Includes B1550, SS6, and SS7)

DA-8 is located in the southeast part of Castle AFB in the MBS (R13, Plate 5-1 in Appendix C) and includes B1550 and its associated facilities and Sanitary Sewer Segments SS6 and SS7. This site is located in an area that has a future use designated as aviation support.

An abandoned washrack (Structure 1552) and an OWS, both associated with DA-8, are located southwest of B1550. A 5,200-gallon UST of unknown use was located east of the washrack but was removed in April of 1991. B1550 was part of the 93rd Munitions Maintenance Squadron. Prior to 1976, TCE was used in an ultrasonic cleaner and disposed of directly into the storm water canal. Runoff within B1550 was discharged via a floor drain into the storm water canal located south of the building. Other chemicals were also discharged into the canal. From 1986 to 1995, B1550 was used for bomb trailer maintenance. Solvents, oil, grease, paints, and brake and hydraulic fluids were used during maintenance. Bomb trailers were washed at the washrack

southwest of B1550 and the wastewater was discharged into the nearby OWS and then to the sanitary sewer. The washrack was abandoned in August of 1991.

SS-6 and SS-7 consist primarily of 5-foot-long sections of vitreous clay pipe with some concrete pipe sections. Industrial wastes, including discharge from sumps, OWSs, floor drains, and washracks were discharged to SS-6 and SS-7. The potential contaminants of concern at the sewer segment sites include fuels, solvents and oils.

Groundwater and soil response actions have been implemented in the DA-8 area. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. Groundwater remedial actions at Castle AFB are being implemented pursuant to the Final Comprehensive Basewide Part 1 Record of Decision (ROD). DA-8 overlies a portion of the plume addressed by the OU-1 treatment plant and associated well network. Extraction well EW04, in particular, is down gradient of DA-8 and captures groundwater that passes underneath the site.

Prior to the finalization of the SCOU ROD, the Air Force elected to implement removal actions at selected sites, including DA-8, that posed the highest risk to human health or that had the greatest potential to impact groundwater. In order to address VOCs at DA-8, an SVE system was installed in January 1997 and operated, with several temporary shutdown periods, through August 1998.

The CERCLA VOC cleanup goal for sites remediated by SVE at Castle AFB is the lowest cleanup level technically and economically achievable to protect human health and the environment, including groundwater quality (Castle Remedial Project Managers [RPMs], 1999). The Castle RPMs have established a process, referred to as the SVE Termination or Optimization Process (STOP), by which attainment of the cleanup goal is to be evaluated. STOP was established by consensus of the RPMs and is herein applied at DA-8 as a test case to determine the practicality of the approach.

In accordance with STOP, determinations are made regarding the maximum leachate concentrations expected from the sites, whether these maximum concentrations will exceed the established aquifer cleanup level, and (under conditions when the leachate concentration exceeds the aquifer cleanup level) whether continued SVE operations at the site will result in attaining the aquifer cleanup level more cost effectively than with the existing groundwater extraction and treatment system alone. For DA-8, the maximum leachate concentration of TCE (40.5 μg/L) exceeds the aquifer cleanup level. However, due to the relatively small mass estimated to remain at DA-8 (2333 grams of TCE), fate and transport modeling results indicate very little impact on groundwater concentrations in the DA-8 area. Using VLEACH vadose zone model results and groundwater fate and transport modeling, the analysis establishes that the additional cost anticipated to achieve the aquifer cleanup level with groundwater extraction is less costly than extending SVE operations at DA-8 in combination with groundwater extraction. Therefore, in accordance with the STOP, a determination of NFA has been made for this site. Regulatory agencies concurred with the Air Force's decision to terminate operation of SVE as documented in

the CERCLA Closure Report for VOC Contamination at Discharge Area 8/Sewer Segment 6, Final, (JEG, 2000a). This action was taken in accordance with the Action Memorandum Removal Action for Discharge Area 8 (Castle Air Force Base, 1996a).

5.2.4.8 Earth Technology Corporation 2 (ETC2)

ETC-2 is located in the MOBS at the southern portion of the base (T12, Plate 5-1 in Appendix C) and in an area that has a future use designated as industrial. ETC-2 is a large unpaved area of about 5 acres that was used as a skeet range for an unspecified period of time. Clay shards were found in an area from the former shooting stand throughout an arc from due west to due north to a distance of 250 feet.

A site walk revealed black clay pigeon fragments and heavy vegetation, but no observable lead shot. The results of the SCOU RI/FS and SCOU Data Gap Investigation showed the presence of PAHs including benzo(a)pyrene at concentrations exceeding the occupational RAO. Lead was found at concentrations exceeding background threshold limits but far below values constituting a threat to human health in a residential setting. Therefore, benzo(a)pyrene and related PAHs were the principal COCs. The removal action focused on PAH contamination of surface and near-surface soils.

Data gap sampling was used to define the area for excavation. Contaminated soil was removed by surface scraping to an average depth of two feet. Several iterations of surface scraping and confirmation sampling were needed before all confirmation samples were below RAOs. In all, 2,286 CY of soil were excavated from May 30 through August 30, 2000. The stockpiles of contaminated soils were sampled and analyzed and found to be well below the landfill acceptance criterion for benzo(a)pyrene. The excavated material was transported to LF4 for disposal. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. The site was graded to allow for positive drainage and native grass coverage within the next growing season. Following closure of the site as indicated within Action Memorandum for CERCLA Excavation Sites, ETC-2, ETC-8, DA-3, and Building 1344 at Castle Airport (JEG, 2000f) and follow-up Closure Report for CERCLA and Petroleum Hydrocarbon - Contamination Excavation Sites (JEG, 2000b), a determination of NFA has been made for this site based on the confirmation sample analyses. The initial risk assessment results were from the 1996 SCOU ROD. A change in toxicity factors for constituents of concern for this site necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

5.2.4.9 Reserved

This section serves as a placeholder to maintain the original organization of the SCOU ROD Part 1 from earlier versions. The site originally referenced here, Earth Technology Corporation 10 (ETC-8), has been deferred to a subsequent ROD.

5.2.4.10 Reserved

This section serves as a placeholder to maintain the original organization of the SCOU ROD Part 1 from earlier versions. The site originally referenced here, Earth Technology Corporation 10 (ETC-10), has been deferred to a subsequent ROD.

5.2.4.11 Firing Range

The Firing Range is a 3-acre parcel located in the EBS (L16, Plate 5-1 in Appendix C), in an area that has a future use designated as public/recreation. The site was used for rifle and small arms target shooting from the 1960s until base closure in 1995. The site consisted of a soil berm system having two backstops shielded by three arms, as in the letter E. The backbone of the berm was approximately 250 feet long and 50 feet high. The arms extended 70, 100 and 140 feet from the backstops. The feature of primary interest was the main backstop (target face), which contained lead slugs, bullet fragments, and particulate lead. Other potential contaminants of concern included antimony, arsenic, copper, and zinc.

Excavation began in early August 1999 with the removal of bullet-laden soils from the target face, backside tongue, stockpiles, and flight path that were destined for treatment or off-site disposal. Soils removed from the target face and flight path were stockpiled to the southwest of the shooting stand. Soils removed from the backside tongue were stockpiled to the northeast. The small stockpiles to the east of the main berm system were excavated and included with the backside stockpile.

These excavations were accompanied by visual inspection for the presence of slugs and screening by X-Ray Fluorescence Spectrometry (XRF) to assure completeness of removal. If concentrations of lead exceeding 855 mg/kg were found by XRF, excavation was continued until all soil exceeding the on-site landfill acceptance limit had been removed and stockpiled. Although the transition from high-level to low-level contamination was generally sharp, some soil with lead in the 350-855 mg/kg range was encountered. Scrapings from the flight path, for example, fell within this intermediate range. Since the acceptance limit for on-site landfill disposal was in question at the time of these excavations, such scrapings were placed in a third stockpile pending a final decision. When a final acceptance limit of 855 mg/kg for on-site landfill disposal finally received agency concurrence, this provisional stockpile was transported with the remaining berm soils to LF5. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted.

Once all high-level soils had been stockpiled in preparation for on-site treatment or offsite disposal, confirmation samples were collected from the soils remaining and submitted for definitive laboratory analysis. When these showed that lead residues within the remainder of the berm system met acceptance limits for on-site landfill disposal, these soils were excavated, loaded on trucks, and delivered to LF5.

The volume of high-lead soils was approximately 1,500 CY, 12 percent of the total volume of 12,400 CY removed from the site. Due to the relatively small volume coupled with fixed mobilization and equipment rental costs, on-site treatment proved costly compared to direct off-

site disposal. The stockpiles of high-lead soil were trucked directly to the off-site Class 1 landfill at Kettleman Hills. Waste removal was completed during the second week of September 1999.

Following the removal of the stockpiles, but prior to final grading of the site, ten confirmation surface soil samples plus one composite sample consisting of five discrete samples from the footprint of the northeast stockpile were collected for laboratory analysis. The results of these analyses showed that the site posed no unacceptable threat to water quality, human health, or the environment. This site has been remediated to residential cleanup standards. Since all wastes have been removed and since the site contains neither critical habitat nor any unique habitat that is not present at numerous other areas throughout the base, it is anticipated that all ecological concerns will have been addressed as well. The site was closed as detailed within the Action Memorandum for the Firing Range at Castle Airport, Atwater, CA, Draft Final (JEG, 1999b) and follow-up Landfill 1, Landfill 3, and Firing Range Removal Action Completion Report Final (JEG, 2000e). The residual risk was considered acceptable and was approved by the regulatory agencies. Based on the confirmation sample analyses and information provided above, a determination of NFA has been made for this site.

5.2.4.12 Landfill 1 (LF1 Including Disposal Pits 1, 2, and 3)

The following discussion represents the evaluation of this site as presented by the 1996 SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Although the overall conclusions regarding this site have not changed, the reader is referred to Appendix E for a more current risk assessment for this site.

LF1 occupied approximately 34 acres of land in the SBS (U13, Plate 5-1 in Appendix C), in an area that has a future use designated as commercial. The landfill contained several trenches and three disposal pits that were used for the disposal of general municipal waste. Specific information on the types of hazardous materials that might have been buried in the disposal pits is lacking. However, the following unconfirmed, anecdotal evidence, cited in the RI/FS, provided a starting point for the investigation: (1) refuse was buried or burned in the trenches, (2) DP1 reportedly received low-level radioactive tubes sealed in pipes with concrete, (3) DP2 received sludge from a small cadmium plating operation and cyanide wastes from a small metal parts heat treatment plant, and (4) an unspecified number of drums containing unspecified waste materials were placed in DP3.

To ease property transfer concerns and reduce potential human exposure risks, waste from LF1 was excavated and disposed of at LF4, with the exception of three small radioactive sources, which were disposed of off base. Work at LF1 was accomplished under Removal Action authority and was completed in July of 1999. Removal activities at LF1 consisted of resolving data gaps, conducting exploratory trenching, removing wastes via surface scrapes and excavation, confirmatory sampling, and backfilling and grading.

Exploratory trench and test pit digging occurred in July 1998. Clean fill material was removed from portions of LF1 during August and September 1998. Excavation began in January 1999. A

total of 120,649 CY of waste and soil were removed. About 24,600 CY of clean fill were used to backfill the trenches. A total of 28 confirmation samples were collected and analyzed. Results were below residential RAOs except for beryllium and manganese, which were within the range of natural variability for these metals.

LF1 has been closed in accordance with the approved Final CPCMP. Post-closure maintenance activities are not required because: (1) waste and residual contaminated soils have been removed, (2) identified data gaps have been closed, (3) residential cleanup standards were achieved, and (4) the site poses no unacceptable threat to water quality, human health, or the environment. Ecological concerns will be addressed in the CB ROD Part 2. Since all waste has been removed from the site and excavations have backfilled with clean soil, and since the site contains neither critical habitat nor any unique habitat that is not present at numerous other areas throughout the base, it is anticipated that all ecological concerns have been addressed as well. Following closure activities as detailed within the Final Action Memorandum for Landfill 1, 2, 3, and 5 (JEG, 1998d) and follow-up Landfill 1 and Landfill B Closure Report Final, September (JEG, 2000d), the residual risk was considered acceptable and was approved by the regulatory agencies. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. The Final Closure Report was accepted by the regulatory agencies in July 2000. Based on analytical results of confirmation samples taken at the site, a determination of NFA has been made for this site.

Additional Background Information: The following information pertaining to LF1 is included within this ROD for background purposes only.

LF1 was a large, unpaved, triangular, open area covered by native vegetation and bordered on the east and west by drainage ditches. The disposal pits and trenches occupied only the southeastern portion of the area. The unlined landfall contained waste material in trenches extending to a depth of approximately 16 feet bgs. VOCs, including PCE (up to 10.2 µg/L) and xylenes (1.6 µg/L), were detected in six of the shallow (less than 20 feet bgs) soil gas samples. Low concentrations of several other VOCs were also detected at several other locations. O-xylene was the only VOC detected in the deep downhole (20-40 feet bgs) soil gas samples. Total volatile petroleum hydrocarbons (TVPHs) (up to 310 mg/kg) and TEPHs (up to 3,500 mg/kg) were detected in soil samples. VOCs such as naphthalene (up to 0.00002 mg/kg), 1,4-dichlorobenzene (up to 0.59 mg/kg), and toluene (up to 0.007 mg/kg), and SVOCs such as *bis*(2-ethylhexyl)phthalate (10.0 mg/kg) were also detected. Several metals and gross alpha activity (up to 64.6 pCi/g at 19 feet bgs) were detected at concentrations above TBVs. Dioxins/furans were detected at concentrations above the reporting quantitation limits in the two composite surface scrape samples (collected near DP2).

Water Quality Impacts: The maximum allowable soil concentrations for TEPH/TVPH, lead, thallium, copper, antimony, zinc, manganese, and mercury were exceeded in the vadose zone screening analysis. A summary of LF1 COCs compared to VLEACH2 and DLM screening levels is provided below.

LF1 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TVPH	**310**	**14.5**	**100**	**0-20**	**Water Board, DLM**
TEPH	**3,500**	**14.5**	**1,500**	**0-20**	**Water Board, DLM**
BIS2EHP	10	14.5	82.9	0-40	VLEACH1
Naphthalene	0.00002	14.5	82.9	10-20	VLEACH2
1,4-DCB	0.59	14.5	195	10-20	VLEACH2
Toluene	0.007	14.5	75.4	10-20	VLEACH2
Lead	**2,680**	**16**	**855**	**40-65**	**Water Board, DLM**
Thallium	**45.5**	**9.5**	**20**	**40-65**	**Water Board, DLM**
Copper	**269**	**9.0**	**244**	**40-65**	**Water Board, DLM**
Antimony	**33.6**	**16**	**11.5**	**40-65**	**Water Board, DLM**
Zinc	**1,120**	**16**	**319**	**40-65**	**Water Board, DLM**
Manganese	**345**	**14.5**	**228**	**40-65**	**Water Board, DLM**
Mercury	**0.22**	**0**	**0.1**	**40-65**	**Water Board, DLM**
Soil Gas (µg/L)					
PCE	10.2	10	19	10-20	VLEACH2
Xylenes	1.6	10	37,525	10-20	VLEACH2

Human Health Risk Assessment: During the RI/FS process, an SRA and an HHRA were conducted for LF1. These assessments were conducted in accordance with EPA Superfund Risk Assessment guidance. A summary of the SRA findings for LF1 is provided below:

LF1 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
3.5×10^{-6}	**8.6**

Based on the SRA results, an HHRA was conducted for LF1. As part of the QRA, LF1 was divided into three areas. The approximate locations of these areas are shown on Plate 5-1 in Appendix C. A summary of the QRA for these areas is provided below. Since subsurface contamination was not identified at Area 3, the QRA for Area 3 was conducted for surface soil only.

LF1 - Human Health Risk Assessment Summary – HHRA					
Adult Residential Scenario					
LF1 - Area 1		**LF1 - Area 2**		**LF1 - Area 3**	
Surface Soil					
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
6.8×10^{-6}	0.7	8.8×10^{-7}	0.1	**1.8×10^{-6}**	0.4
Subsurface Soil					

LF1 - Human Health Risk Assessment Summary – HHRA					
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
3.1×10^{-7}	**4.2**	9.0×10^{-8}	**1.9**	NA	NA
Child Residential					
LF1 - Area 1		**LF1 - Area 2**		**LF1 - Area 3**	
Surface Soil					
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
6.8×10^{-6}	**3.5**	7.9×10^{-7}	0.5	**1.8×10^{-6}**	**2.4**
Subsurface Soil					
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
2.8×10^{-7}	**23.2**	7.8×10^{-8}	**9.2**	NA	NA
Occupational					
Surface Soil					
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
8.0×10^{-7}	0.03	3.4×10^{-8}	0.001	1.0×10^{-7}	0.03
Subsurface Soil					
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.5×10^{-8}	0.3	7.4×10^{-9}	0.1	NA	NA

For surface soils, the primary risk drivers were polyaromatic hydrocarbons (PAHs) in Area 1, 1,2-dichloroethane (DCA) in Area 2, and 1,2-DCA and dioxin in Area 3. Methylene chloride was the primary risk driver for subsurface soil. Thallium was the primary contributor to the elevated HI estimation for subsurface soils in Areas 1 and 2. Estimated blood-lead levels for all areas were below the target of 10 µg/dL. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Site COCs and RAOs:

1. Lead was an applicable COC for LF1 based on the BHHRA assuming the occupational exposure scenario. However, because the WQSA RAO for lead is more protective and stringent, it was accepted as the RAO for LF1. Additional information on WQSA RAOs is provided below.

2. TEPH/TVPH, lead, mercury, and antimony were COCs that applied to soil or waste materials down to 20 feet at LF1. Soil screening values were used as RAOs, cleanup standards, and acceptance criteria for wastes taken to the base consolidation landfills. Based on the WQSA,

soil or waste materials that exceed the RAO screening values are designated wastes and were not disposed of at the on-base consolidation landfills.

3. No WQSA soil gas COCs were identified at LF1.

Specific screening RAOs included the following:

LF1 – Remediation Targets		
COC	*RAO*	*Basis*
TVPH	100 mg/kg	WQSA, Water Board, DLM, soil, 0-20 feet bgs
TEPH	1,500 mg/kg	WQSA, Water Board, DLM, soil, 0-20 feet bgs
Lead	855 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Mercury	0.1 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Antimony	11.5 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs

Risk Management Decision: The occupational exposure scenario was considered appropriate for LF1 because the proposed reuse was industrial/commercial. Based on the HHRA, for the occupational exposure scenario, LF1 did not present an unacceptable risk to human health. However, because all waste was subsequently excavated and removed from the site under Removal Action authority, ICs are not required and the site is available for unrestricted reuse.

Dioxins/furans were not included as LF1 COCs because they were below EPA Region IX Preliminary Remediation Goals (PRGs). Also, the inorganics, copper, zinc, manganese, and thallium, which were found above WQSA screening levels, were not included as LF1 COCs. Copper and zinc are essential nutrients and were not considered detrimental contaminants. The isolated detection of manganese above the TBV were considered to be a natural variation in site background and were not anthropogenic. Thallium, commonly used in rodenticides, was not considered a COC because there were no records of thallium-based rodenticides being used at Castle. However, Castle records indicate copper-based rodenticides were used at the base.

5.2.4.13 Landfill 2 (LF2)

The following discussion represents the evaluation of this site as presented by the 1996 SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Although the overall conclusions regarding this site have not changed, the reader is referred to Appendix E for a more current risk assessment for this site.

LF2 was an inactive landfill located at the south end of the base in the SBS (T14, Plate 5-1 in Appendix C) and in an area that has a future use designated as industrial. The landfill was operated between 1951 and 1953 and covered approximately 5 acres and contained three disposal trenches, each approximately 400 feet long by 15 feet wide by 10 feet deep. LF2 received an estimated 60,000 CY of waste consisting of general refuse and possibly small quantities of waste chemicals. (Engineering Science [ES], 1983). Contamination at the site slightly exceeded the 1×10^{-6} carcinogenic risk threshold and the 1.0 hazard quotient for the residential risk scenario,

based on the presence of benzo(a)pyrene, a class B2 carcinogen. In 1997 and 1998, all waste at LF2 was excavated and consolidated at LF4 under Removal Action authority.

The LF2 Removal Action was needed to satisfy state regulatory landfill closure requirements, address community concerns for potential residential reuse, reduce the land area impacted by contamination, and for cost-effectiveness (by conducting the work concurrently with the consolidation of LF4).

Waste removal began in December 1997 with the surface scrape area in the northern portion of the site and continued throughout the site. Initially, 32 confirmation soil samples were collected and analyzed. TEPH was detected above WQSA screening limits in the initial confirmation samples collected at one location, and elevated readings were also detected at two nearby locations. Therefore, additional scraping was performed, and the three locations were re-sampled. Approximately 9 inches of soil were removed, and TEPH was not detected in the second round of sampling. The removed soil was stockpiled on site, and a composite waste characterization sample from six random locations was collected to determine whether the material met the acceptance criteria for LF4. The results of that sample were below the acceptance criteria specified in the CPCMP for all analyzes and the soil was transported to LF4 for consolidation. Since waste-screening procedures (outlined in SOP 44) did not identify other potentially hazardous, designated and/or radioactive materials, additional waste characterization samples were not required.

Confirmation sample results were generally below RAOs. Concentrations of the metals beryllium, manganese, thallium, and mercury, were above the RAOs. Also, benzo(a)pyrene was detected in a single sample in Trench E (not associated with the PAH scrape area). None of these exceedences presents a risk of affecting groundwater quality, human health, or the environment. A detailed statistical analysis of mercury data was performed; the conclusion was that the average concentration was not likely to exceed the WQSA.

Three soil gas confirmation samples were collected and analyzed by TO-14 in areas where soil gas concentrations exceeding WQSA screening criteria had been identified during the RI/FS. Results for detected analyzes were below RAOs.

As each trench was completed, its excavation was backfilled with material stockpiled on site or imported from areas near LF1. Clean soil was used from the perimeter berms that surrounded the LF1 area, and in LF1 areas where trenches were not present and SCOU RI sampling results indicated no contamination. All material was clean and met the specifications required in the CPCMP. Clean fill was placed in loose lifts of 12 inches on average, but not greater than 18 inches, visually estimated. Proper compaction was achieved, and the site was graded to provide drainage. A large swale was constructed to promote runoff toward the drainage canal to the southwest of the site. Construction was completed in October 1998.

LF2 has been closed in accordance with the approved Final CPCMP. Post-closure maintenance activities are not required at this site because (1) waste and residual contaminated soils have been removed, (2) identified data gaps have been closed, and (3) the site posed no significant threat to

water quality, human health, or the environment. Following closure activities as detailed within the Final Action Memorandum for Landfill 1, 2, 3, and 5 (JEG, 1998d) and follow-up Castle Vista A and Landfill 2 Closure Report, Final, May (JEG, 1999c), the residual risk was considered acceptable and was approved by the regulatory agencies. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. The Final Closure Report was accepted by the regulatory agencies in May 1999, and based on the analytical results of confirmation samples, a determination of NFA has been made for this site.

Additional Background Information: The following information pertaining to LF2 is included within this ROD for background purposes only.

During the course of performing the removal action at LF2, it was found that the only soil gas VOCs detected above WQSA screening levels were Freon 12 at a concentration of 246.7 µg/L at 10 feet bgs and carbon tetrachloride at a concentration of 226 µg/L at 20 feet bgs. Lead was detected at levels up to 231 mg/kg and cadmium was detected at levels up to 2,930 mg/kg in soil samples. Additionally, benzo(a)pyrene (at 0.67 mg/kg) and other PAHs were detected in a surface scrape sample at LF2ER01. Field work at LF2 was completed in October of 1998. The Final Closure Report was accepted by the regulatory agencies in May 1999, therefore a determination of NFA has been made for this site.

Water Quality Impacts: A summary of COCs compared to appropriate WQSA screening levels is provided below. The maximum allowable soil concentrations of carbon tetrachloride, copper, and cadmium were exceeded in the vadose zone screening analysis.

LF2 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Cadmium	**2,930**	**16**	**43.7**	**40-65**	**Water Board, DLM**
Lead	231	0	855	40-65	Water Board, DLM
Copper	**17,500**	**16**	**244**	**40-65**	**Water Board, DLM**
1,2,4 Trimethybenzene	0.005	9	293	0-10	VLEACH2
Benzo(a)pyrene	0.67	0	82.9	0-40	VLEACH1
Soil Gas (µg/L)					
Freon 12	246.7	10	620.6	10-20	VLEACH2
Carbon tetrachloride	**226**	**20**	**10.6**	**20-30**	**VLEACH2**

Human Health Risk Assessment: A SRA was conducted for LF2. A summary of the SRA findings for LF2 is provided below:

LF2 - Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
2.7×10^{-5}	0.1

Based on the SRA results, further QRA was conducted for LF2. As part of the QRA, LF2 was divided into two areas. The approximate location of the areas is shown on Plate 5-1 in Appendix C. A summary of the QRA for these areas is provided below:

LF2 - Human Health Risk Assessment Summary - HHRA			
Adult Residential			
LF2 - Area 1		LF2 - Area 2	
Surface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
9.3×10^{-8}	0.4	**5.1×10^{-5}**	0.4
Subsurface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.1×10^{-7}	0.01	7.4×10^{-8}	0.02
Child Residential			
Surface Soil			
LF2 - Area 1		LF2 - Area 2	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
8.1×10^{-8}	0.5	**5.4×10^{-5}**	**1.8**
Subsurface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
9.6×10^{-8}	0.1	6.5×10^{-8}	0.1
Occupational			
Surface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
7.7×10^{-9}	0.002	**7.1×10^{-6}**	0.01
Subsurface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
8.6×10^{-9}	0.001	6.1×10^{-9}	0.002

The maximum cumulative residential risk was 5.4×10^{-5}, based on subsurface soil concentrations, and the maximum cumulative occupational risk was 7.1×10^{-6}. The primary COPC contributing to the risk was benzo(a)pyrene. Under the occupational scenario, the HI was

less than 1.0. Estimated blood-lead levels for both areas were below the target of 10 µg/dL. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Site COCs and RAOs:

1. Benzo(a)pyrene was an applicable COC for LF2, based on the BHHRA using the assumption of the occupational surface exposure pathway scenario.

2. An RAO for each metal and SVOC COC identified by the WQSA was proposed for LF2. Two contaminants, cadmium and copper were applicable to soil and/or waste materials to the depth of groundwater at LF2.

3. Soil gas RAOs were used as cleanup standards for LF2. However, because residual soil gas was released during excavation and consolidation of LF2 soils, soil gas RAOs were not applicable nor relevant and appropriate as acceptance criteria for the consolidation landfill.

4. All waste and soil removed from LF2 as part of the Removal Action complied with the Landfill Acceptance Criteria contained in the Long-term Operation and Maintenance Plan for LF4. All hazardous and designated wastes were characterized and taken off site for disposal.

Specific remediation targets addressed include the following:

LF2 – Remediation Targets		
COC	*RAO*	*Basis*
Benzo(a)pyrene	0.12 mg/kg	BHHRA, surface, occupational
Cadmium	43.7 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Copper	244 mg/kg	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Carbon Tetrachloride	10.6 µg/L	VLEACH2, soil gas 20-30 feet bgs
Freon 12	10.6 µg/L	VLEACH2, soil gas, 10-20 feet bgs

Response Action: The remedial decision for LF2 was driven by the BHHRA and WQSA goals. The occupational exposure was considered appropriate for LF2 because the proposed future land use was industrial/commercial. Under removal action authority the landfill was excavated and placed in Landfill 4. Since all waste was removed from LF2 and confirmation samples showed that site cleanup was complete, this former landfill does not require ICs and will be open for unrestricted reuse (JEG, 1999c).

In the absence of RAOs for VOCs, cleanup confirmation samples for VOC COCs were compared to WQSA VLEACH2 values. This comparison confirmed that VOC remediation was complete. The Air Force does not accept VLEACH2 for VOC RAOs, but used these values to secure regulatory concurrence with Removal Action site cleanup at LF2.

5.2.4.14 Landfill 3 (LF3)

The following discussion represents the evaluation of this site as presented by the 1996 SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Although the overall conclusions regarding this site have not changed, the reader is referred to Appendix E for a more current risk assessment for this site.

LF3 was a 13-acre site located in the EBS (K16, L16, Plate 5-1 in Appendix C), in an area that has a future use designated as public/recreation. The site consisted of a large, unpaved, open area covered with native vegetation. The landfill was operated from 1954 to 1956, during which time general refuse and some chemical wastes were placed into shallow trenches. Field observations indicated that the materials disposed of at LF3 included composite roofing materials, wood, nails, concrete, and other hard fill items. There are no known records of specific types of chemicals that might have been disposed of at LF3. The trenches are visible, due to differential soil settling and exposed refuse. The landfill was closed after two years of operation because of poor drainage, which was attributed to the presence of a hardpan layer at approximately 8 feet bgs. An aerial photograph taken in 1970 shows that surface drainage from the landfill accumulated along the western boundary and drained southward into a low area east of FTA1.

LF3 is part of a land parcel that has been transferred to the Federal Bureau of Prisons, Department of Justice. To ease property transfer and reduce risks from potential human exposure to site contaminants, waste from LF3 was excavated and disposed of at LF5. This work was accomplished under Removal Action authority and was completed in April of 1999. Clean closure of LF3 allows for unrestricted reuse of the site. The landfill was investigated, data gaps filled, waste was excavated, the area was scraped and confirmation samples were taken and analyzed. Field monitoring results during trench excavation were below SOP 44 action levels at all times throughout waste excavation, except in the case of the black semi-solid believed to be roofing tar and a container of caustic waste. Based on spotters' visual observations and field screening results, no other potential hazardous, designated, and/or radioactive wastes were identified during excavation, and all waste was disposed of at LF5 or, in the case of hazardous waste, at an off-site Class I disposal facility. As-built surveys indicate that approximately 57,000 CY of soil, waste, and construction debris were excavated from trenches and transported to LF5. Another 14,200 CY of clean fill were used to backfill the trenches.

Fifteen confirmation soil samples were taken on a 100-foot grid after scraping activities and analyzed for VOC, SVOC, and metals. Only beryllium and manganese were found at concentrations exceeding applicable RAOs in trench confirmation samples. Beryllium concentrations of 0.93 mg/kg and 0.47 mg/kg were reported and compared against the RAO of 0.39 mg/kg. Only one result exceeded the TBV for beryllium in silt, 0.89 mg/kg. The lone marginal excedence is not considered significant. Manganese is not considered a site contaminant. All lead, arsenic, and antimony results were below RAOs. No metals, other than those cited above, were found at concentrations above RAOs.

LF3 trenches were backfilled with clean soil from other base locations. Backfill was topped with 4-6 inches of topsoil obtained from the prison site. All material met the specifications as required in the CPCMP.

LF3 has been closed in accordance with the approved Final CPCMP. All waste areas have been removed and backfilled with clean soil. Post-closure maintenance activities are not required because: (1) waste and residual contaminated soils have been removed, (2) identified data gaps have been closed, and (3) the site poses no unacceptable threat to water quality or human health. The site has been remediated to residential cleanup standards. Ecological concerns will be addressed in the Comprehensive Basewide (CB) Record of Decision (ROD) Part 2 that will be supported by the continuing investigations that are being conducted with regard to ecological concerns. Although vernal pools within a natural wetland border the western edge of the site, site contaminants, such as lead, carrying the greatest potential ecological impact have been cleaned to background or near background levels. Therefore, it is anticipated that ecological concerns will have been addressed as well. Following closure activities as detailed within the Final Action Memorandum for Landfill 1, 2, 3, and 5 (JEG, 1998d) and follow-up Landfill 1, Landfill 3, and Firing Range Removal Action Completion Report, Final (JEG, 2000e), the residual risk was considered acceptable and was approved by the regulatory agencies. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. The Final Closure Report was accepted by the regulatory agencies in July 2000, and based on analytical results of confirmation samples at the site, a determination of NFA has been made for this site.

Additional Background Information: The following information pertaining to LF3 is included within this ROD for background purposes only.

Contaminants identified at LF3 include TEPH at concentrations up to 52 mg/kg. Metals and several SVOCs were also detected in surface soil samples. VOCs detected in shallow surface soil samples include xylenes (2.07 µg/kg), toluene (0.81 µg/kg), and trichlorofluoromethane (Freon 11) at 1.8 µg/kg. While no TEPH, TVPH, or VOCs were detected in test pit soil samples collected from LF3, several SVOCs such as benzo(b)anthracene (up to 2.7 mg/kg), fluoranthene (up to 3.7 mg/kg), and phenanthrene (up to 2.5 mg/kg) were detected. Additionally, benzo(a)pyrene was detected in surface samples from two borings at concentrations of 0.066 mg/kg and 0.89 mg/kg. Benzo(a)pyrene was also found in shallow soil samples from Test Pit A at concentrations of 0.27 mg/kg at 3 feet bgs and Test Pit B at concentrations of 1.9 mg/kg at 2 feet bgs. No VOCs were detected in soil gas samples. Twelve metals, including lead at levels up to 41,200 mg/kg (28,500 mg/kg in a duplicate sample), were detected in soil samples at concentrations above TBVs.

Water Quality Impacts: The maximum allowable soil and soil gas screening concentrations for VOCs were not exceeded; however, the WQSA PRAO for arsenic, antimony, and lead were exceeded.

LF3 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH	52	0	1,500	0-10	Water Board, DLM
Xylenes	0.00207	0	293	0-10	VLEACH2
Toluene	0.00081	0.5	315	0-10	VLEACH2
Freon 11	0.0018	0.5	0.009	0-10	VLEACH2
Benzo(b)anthracene	2.7	2	82.9	0-40	VLEACH1
Fluoranthene	3.7	2	82.9	0-40	VLEACH1
Phenanthrene	2.5	2	82.9	0-40	VLEACH1
Benzo(a)pyrene	1.9	2	82.9	0-40	VLEACH1
Lead	**41,200**	**0**	**855**	**40-65**	**Water Board, DLM**
Antimony	**523**	**0**	**11.5**	**40-65**	**Water Board, DLM**
Arsenic	**330**	**0**	**20**	**40-65**	**Water Board, DLM**

Human Health Risk Assessment: An SRA was conducted for LF3. A summary of the SRA findings for LF3 is provided below:

LF3 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
7.3×10^{-4}	**10.6**

Based on the SRA, an HHRA was conducted for LF3. As part of the QRA, LF3 was divided into two areas. The approximate location of these areas is shown on Plate 5-1 in Appendix C. A summary of the QRA for these areas is provided below. Since subsurface contamination was not identified at Area 2, the QRA for Area 2 was conducted for surface soil only.

LF3 - Human Health Risk Assessment Summary – HHRA			
Adult Residential			
LF3 - Area 1		LF3 - Area 2	
Surface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
2.1×10^{-3}	**10.6**	**1.0×10^{-4}**	0.1
Subsurface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.7×10^{-4}	0.01	NA	NA
Child Residential			
Surface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
2.2×10^{-3}	**55.6**	**1.1×10^{-4}**	0.6
Subsurface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.8×10^{-4}	0.04	NA	NA
Occupational			
Surface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
9.9×10^{-5}	0.6	**1.3×10^{-5}**	0.01
Subsurface Soil			
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
2.2×10^{-5}	0.0006	NA	NA
Estimated Blood Level (µg/dL)			
Area	Child Residential	Occupational	Level of Concern
1- Surface Soil	**481.8**	**32.7**	10
2- Subsurface Soil	**4.4**	**2.2**	10
2- Surface Soil	**4.7**	**2.2**	10

The maximum cumulative residential risk was 2.1×10^{-3} and the maximum cumulative occupational risk was 9.9×10^{-5}. The principal COPCs contributing to the risk were arsenic (approximately 100 percent of surface soil risk in Area 1) and benzo(a)pyrene (approximately 50 to 70 percent of the surface soil risk in Area 2 and the subsurface soil risk in Areas 1 and 2). Blood-lead estimates for surface soil in Area 1 exceeded Cal/EPA threshold levels. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk

assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Site COCs and RAOs:

1. Arsenic and benzo(a)pyrene were applicable COCs for LF3 based on the BHHRA. Arsenic applied to Areas 1 and 2 based on the residential surface pathway scenario. Benzo(a)pyrene applied to Area 1 based on the residential subsurface pathway scenario and to Area 2 based on the residential surface pathway scenario.

2. WQSA RAOs for lead, antimony, TVPH, and TEPH were proposed for LF3. Arsenic exceeded WQSA screening levels, but because the BHHRA RAO for arsenic is more stringent, a WQSA RAO for arsenic was not proposed. WQSA RAOs for lead and antimony extended to the depth of groundwater. The TVPH RAO extended to 20 feet bgs. Each of the COCs applied to soil or waste materials at LF3.

   WQSA soil screening values were accepted as RAOs for SVOCs and inorganics and were used as acceptance criteria for wastes being consolidated on site. RAOs for VOCs were not established. However, based on Air Force and regulatory agency agreement, VLEACH2 screening levels were used as cleanup standards during landfill excavation and as acceptance criteria at the consolidation landfills. Soil or waste materials that exceeded the RAOs for SVOCs and metals, and VLEACH screening levels for VOCs, were considered designated wastes and were not consolidated on site.

3. There were no soil gas COCs identified for LF3 by the WQSA.

Specific remediation targets addressed include the following:

LF3 - Remediation Targets		
COC	*RAO (mg/kg)*	*Basis*
TEPH	1,500	WQSA, Water Board, DLM, soil, 0-20 feet bgs
TVPH	100	WQSA, Water Board, DLM, soil, 0-20 feet bgs
Lead	855	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Arsenic	1.0	BHHRA, surface, (Area 1&2), residential
Antimony	11.5	WQSA, Water Board, DLM, soil, 40-65 feet bgs
Benzo(a)pyrene	0.095	BHHRA, surface (Area 2), residential
Benzo(a)pyrene	0.095	BHHRA, subsurface (Area 1), residential

Response Action: The remedial decision for LF3 was driven by the BHHRA and WQSA goals. The occupational exposure was considered appropriate for LF3 because the proposed future land use was industrial/commercial. Under removal action authority the landfill was excavated and placed in Landfill 5. Since all waste was removed from LF3 and confirmation samples showed that site cleanup was complete, this former landfill does not require ICs and will be open for unrestricted reuse (JEG, 2000e).

5.2.4.15 Polychlorinated Biphenyls Site 9 (PCB9)

PCB9 is a site where an undetermined quantity of PCB spilled on a concrete floor from a leaking transformer near Building 1213 in the MBS (N9, Plate 5-1 in Appendix C). It is located in an area that has a future use designated as industrial. The PCB spill occurred in May 1983 and was reportedly cleaned up in one day. PCBs (at a maximum of 2.8 mg/kg) were detected in three soil samples collected for the SCOU RI. No TEPH compounds were detected. Based on the Castle Reuse Plan, the occupational exposure is appropriate for PCB9.

Additional Background Information: The following information pertaining to PCB9 is included within this ROD for background purposes only.

Water Quality Impacts: The maximum allowable thresholds for PCBs were not exceeded in the vadose zone screening analysis.

Human Health Risk Assessment: A SRA was conducted for PCB9. A summary of the SRA findings for PCB9 is provided below:

PCB9 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
6.4×10^{-5}	**2.8**

Based on the SRA results, further QRA was conducted. A summary of the QRA for these areas is provided below.

PCB9 - Human Health Risk Assessment Summary - HHRA			
Adult Residential			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.1×10^{-4}	**1.8**	**8.7×10^{-6}**	0.2
Child Residential			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.1×10^{-4}	**9.5**	**8.4×10^{-6}**	0.8
Occupational			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.3×10^{-5}	0.3	3.4×10^{-7}	0.01

The maximum cumulative residential risk was 1.1×10^{-4} and the maximum cumulative occupational risk was 1.3×10^{-5}. Depending on the scenario, PCBs contributed 83 to 92 percent

of the residential surface soil risk with the remaining risk contributed by chlordane (α and γ), DDE and DDD. For the subsurface adult residential scenario, heptachlor epoxide and PCBs contributed 72 and 27 percent respectively while for the child residential subsurface scenario, heptachlor epoxide and PCBs contributed 70 and 30 percent respectively. The maximum HI values are for the adult (1.8) and child (9.5) surface soil residential scenario. In each case PCBs contribute 75 percent of the hazard, with the remaining hazard contributed by α-chlordane (15 percent), γ-chlordane (9 percent) and DDT (1 percent). The surface soil HI for occupational exposure was 0.3. Heptachlor epoxide contributed approximately 75 percent of the HI. Surface soils present the greatest risk because heptachlor epoxide (0.0045 mg/kg) was detected at 4.5 feet bgs. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

Site COCs and RAOs:

1. Although PCB-9 is located in the industrial/commercial reuse area of Castle Airport, attainment of residential RAOs precludes the need for institutional controls. Accordingly, residential RAOs for chlordane (α and γ), DDE, DDT, PCBs and heptachlor epoxide were identified based on the BHHRA

2. No COCs were identified by the WQSA at PCB9.

The remedial action for this site is driven by BHHRA concerns resulting from PCB1260 in surface soil. A COC/RAO summary is provided below:

PCB9 - Human Health Risk Assessment Summary BHHRA		
COC	*RAO*	*Basis*
PCB1260	0.72 mg/kg	BHHRA, surface soil, occupational

5.2.4.16 Sanitary Sewer 6 (SS6)

See Section 5.2.4.7, Discharge Area 8.

5.2.4.17 Sanitary Sewer 7 (SS7)

See Section 5.2.4.7, Discharge Area 8.

5.2.4.18 to 5.2.4.48 Stains 1 - 32

Stains 1 through 31 are located on the northwest side of the flightline in the WFLS, while Stain 32 is located in the MBS (H7, H8, J8, J9, K8, K9, L9, L10, M10, and M11, Plate 5-1 in Appendix C). These sites are located in an area that has a future use designated as airfield.

Unpaved buffer strips surround the flightline area. These unpaved areas are graded to direct storm runoff to the storm drain system. For the most part, these stains represent areas where combusted jet fuel was blown out from jet engines or where incidental spills from aircraft

fueling/maintenance operations have been released to the parking aprons. To characterize the stains, scrape samples were collected from the stains and from soil downgradient. Although the stains on cement contained elevated levels of PAH, only chemicals that have run off to bare soil on the periphery of the flightline provide conditions for completion of an exposure pathway or the opportunity for leaching into groundwater.

Stain 11 was selected as being representative and was used to characterize maximum potential contamination for the Stains 1 through 32. One scrape sample and seven soil samples from downgradient hand auger borings were collected to characterize Stain 11.

Laboratory analyses of soil samples collected from runoff areas associated with Stain 11 indicated the presence of several PAH contamination constituents. However; PAHs were not identified in the deeper samples collected from 5 feet bgs. During the RI/FS, the Stains were included in the Miscellaneous Sites group (Category 8). Alternatives considered for the Miscellaneous group included No Action and ICs. Based on the WQSA and Risk Evaluation findings, the No Action alternative was selected for these sites.

Water Quality Impacts: A summary of the analytical results, compared to the VLEACH1 screening levels, is provided below. Based on the analytical results, the site does not pose a risk to water quality.

Stain 11 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Benzo(a)pyrene	8.2	0	82.91	0-40	VLEACH1
Benzo(b)fluoranthene	11	0	82.91	0-40	VLEACH1

Human Health Risk Assessment: Since Stains 1 through 32 were located on concrete and the only complete pathway for exposure was through soil impacted by stain runoff, only the soil samples were considered during risk evaluation. A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk evaluation results as detailed within Installation Restoration Program Castle Airport, Source Control Operable Unit Remedial Investigation/Feasibility Study, Part 2-Baseline Human Health Risk Assessment (JEG, 1997c), the site does not pose a risk to human health, and a determination of NFA has been made for this site.

Stain 11 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.9×10^{-8}	0.00003

5.2.4.49 Structure T85

Structure T85, also referred to as Building T85, was located in the MBS (R11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. The site was originally sampled in 1993 and was grouped with Building 84 (photo laboratory and graphics support area) based on proximity and past use. Structure T85 was used as a photo laboratory and was constructed in 1942, but no longer exists. Silver recovery was performed as part of the photo developing process prior to the discharge of wastewater to the sanitary sewer. Material handled on site included silver, benzene, toluene, ethylbenzene, and xylene. As part of the SCOU RI, an electromagnetic survey was conducted and one soil boring was installed to investigate the site. Three soil samples (5.5, 10.5, and 20.5 feet bgs) and one soil gas sample 21.5 feet bgs) were collected from the soil boring. The electromagnetic survey identified no evidence of an underground storage tank or piping. Toluene (0.75 µg/kg at 10 feet and 0.51 µg/kg at 20.5 feet) and 1,1,1-tricbloroethane (1.8 µg/kg at 20.5 feet) were detected in the soil samples. No other VOCs or TPH compounds were detected. All metal concentrations were below established Castle TBVs. Trichlorofluoromethane (1.1 µg/L) was detected in the soil gas sample but at levels below the reporting limit. No other VOCs were noted in the soil gas samples.

During the RI, silver was not detected in soil at or above the TBV. However, it is possible that low concentrations of silver were not detected due to matrix interference during sample analysis. During the 1997 Data Gap Investigation, one hand auger boring (BT85HA01) was installed at the site and sampled. Samples were collected from 2 and 6 feet bgs. Evaluation of the samples found a maximum of 1.63 mg/kg at 6 feet bgs.

Water Quality Impacts: A summary of the analytical results, compared to the water Board DLM screening level, is provided below. Based on this evaluation, the site does not present a threat to groundwater quality, and a determination of NFA has been made for this site.

Structure T85 Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Silver	1.63	5.5	6,000	0-10[1]	Water Board, DLM
Toluene	0.00075	10.5	75.4	10-20	VLEACH2
1,1,1-TCA	0.0018	20.5	10.2	20-30	VLEACH2

[1]Silver RAO based on attenuation factor of 1,000 and TBV value of 6 µg/L

Human Health Risk Assessment: Structure T85 was included in the B84 Risk assessment. Silver was the only COPC in surface soil that was evaluated. Since silver is not classified as a carcinogen by the EPA, a carcinogenic risk estimate for surface soil was not calculated. However, a HI was calculated for three exposure scenarios (child residential, adult residential, and occupational). A summary of the HI calculation results is provided below. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. Based on the HI results, the site does not pose a risk to human health, and a determination of NFA has been made for this site.

Structure T85 - Human Health Risk Assessment Summary – HHRA			
Adult Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
N/A[2]	0.003	4.6×10^{-8}	0.0002
Child Residential Scenario			
Surface Soil	*Subsurface Soil*		
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
N/A[2]	0.02	4.0×10^{-8}	0.001
Occupational Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
N/A[2]	0.0003	3.7×10^{-9}	0.00001

[1]Structure T85 risk assessment was conducted in conjunction with Building 84
[2]Silver, which is noncarcinogenic, was the only COPC identified in surface soil

Changes from Prior CERCLA Documentation: Since SCOU RI sampling was not adequate to fully characterize site conditions, a preferred remedial alternative for Structure T85 was not specified in the SCOU RI/FS. Since Data Gap sampling had not been completed by the time the SCOU Proposed Plan was issued, the Proposed Plan listed Excavation and On-site disposal as the preferred alternative for Structure T85. This alternative was considered appropriate if Data Gap sampling indicated remediation was warranted. Based on the results of the Data Gap sampling as detailed within Installation Restoration Program Castle Airport, Source Control Operable Unit Remedial Investigation/Feasibility Study, Part 2-Baseline Human Health Risk Assessment (JEG, 1997c), it was determined that site contamination did not present a threat to human health or water quality, and the selected remedy presented in this was changed to a determination of NFA for this site.

5.2.4.50 SWMU 4.1

SWMU 4.1 is located in the MBS (Q13, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The SWMU included hazardous waste storage pads that were associated with Buildings 1524 and 1526. Reportedly, waste fuel, oils, paints, solvents, plating wastes, alkalis, cyanide, PCBs, asbestos, and pesticides were stored at the site. The pads were removed and confirmation soil samples were collected in January of 1997. The NFA determination was based on the results of the confirmation sample analyses as presented in the Final Site Characterization Letter Report (JEG 97i) and concurred with by DTSC in a letter dated 6/25/99.

5.2.4.51 SWMU 4.2

SWMU 4.2 is located near HWS4 in the MBS (K8, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. SWMU 4.2 and HWS4 are enclosed within a concrete bermed containment area. The SWMU, which included two 20-foot by 8-foot, aluminum JP-5 ASTs, was investigated as part of the HWS4 RI. The ASTs have been left in place for possible reuse. Eight soil gas probes, two hand auger borings, and three soil borings were installed to assess conditions associated with HWS4 and SWMU 4.2. Details of the RI findings are provided in the NFA summary for HWS4 (see Section II, Subsection 5.2.3.19). Based on the findings documented in the RI, SWMU 4.2 does not pose a threat to water quality or human health, and a determination of NFA has been made for this site.

5.2.4.52 SWMU 4.9 (B325)

SWMU 4.9 was an oil water separator located on the northern side of B325 in the MBS (R11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. The SWMU consists of a concrete vault used to collect wastes from B325 floor drains prior to discharge to the sanitary sewer. SWMU 4.9 was removed on March 28, 1996. Closure documentation for SWMU 4.9 was included in the Final Closure Certification Report (Laguna 1997). Activities conducted at B325 included vehicle maintenance, paint spray booth, washrack, and battery shop. During the B325 RI, five soil borings and two soil gas samples were located within 50 feet of SWMU 4.9. Laboratory analyses of soil samples collected from these borings indicated no TPH, BTEX, or SVOCs. Low levels of VOCs in soil and soil gas were noted adjacent to the OWS. These low levels suggest a minor leak in sewer lines since VOCs were not detected in the soil samples near the OWS. The detected VOCs were all below WQSA and Risk Threshold levels. A comparison of maximum site contaminants to appropriate WQSA screening levels is provided below.

SWMU 4.9					
Sample Depth	*COC*	*Maximum (µg/kg)*	*Screening Level (µg/kg)*	*Depth (ft)*	*Basis*
Soil					
15 feet bgs	1,2 Dichlorobenzene	0.63 “j”	195,050	10-20	VLEACH2
15 feet bgs	1,4 Dichlorobenzene	0.7	195,050	10-20	VLEACH2
15 feet bgs	Trichloroethene	1.1 “j”	18.3	10-20	VLEACH2

Changes from Prior CERCLA Documentation: SWMU 4.9 is associated with B325, a known VOC contamination site. Since VOC contamination levels at B325 fell between VLEACH1 and VLEACH2 screening criteria, it was eligible for further Technical and Economic Evaluation to determine the need for remediation. Since the SCOU Proposed Plan was issued prior to completion of the B325 Technical and Economic Evaluation, the Proposed Plan listed SVE as the preferred active alternative for B325. Since SWMU 4.9 was associated with B325, it was assumed that the same remedy would be appropriate for SWMU 4.9. Further evaluation of site data, after the Proposed Plan was issued, found that SWMU 4.9 was not related to the B325 VOC release, and a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft FinaI SCOU ROD Part l had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, and upon evaluation of the March 1999 Draft Final SCOU ROD Part 1, which proposed a decision for NFA for this site (which was supported by the agency comment letters which did not raise any issue for this site specific to characterization as an NFA site), the RPMs determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.53 SWMU 4.10 (B325)

SWMU 4.10 was an OWS located on the northwestern side of B325 in the MBS (R11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. The SWMU was a concrete vault used to collect wastes from a vehicle washrack prior to discharge to the sanitary sewer. Activities conducted at B325 included vehicle maintenance, paint spray booth, washrack, and battery shop. The SWMU was removed on March 28, 1996. Significant contamination was observed at the site after OWS removal. Additional excavation of contaminated soil at SWMU 4.10 was undertaken as part of Remedial Actions at B325. All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted. Site contamination levels compared to Water Board DLM screening levels are provided below.

SWMU 4.10					
Sample Location	*COC*	*Maximum (mg/kg)*	*Screening Level (mg/kg)*	*Depth (ft)*	*Basis*
Soil					
Excavation Base	TVPH	1	100	0-20	Water Board, DLM
B325SB02-25 feet bgs	**TVPH**	**240**	**30**	20-30	**Water Board, DLM**
North End, Test Pit 3	TEPH	30	1500	0-20	Water Board, DLM
Center, Test Pit 2	TEPH	30	1500	0-20	Water Board, DLM
Stockpile	TEPH	140	1500	0-20	Water Board, DLM

Changes from Prior CERCLA Documentation: SWMU 4.10 is associated with B325, a known VOC contamination site. Since VOC contamination levels at B325 fell between VLEACH1 and VLEACH2 screening criteria, it was eligible for further Technical and Economic Evaluation to determine the need for remediation. Since the SCOU Proposed Plan was issued prior to completion of the B325 Technical and Economic Evaluation, the Proposed Plan listed SVE as the preferred active alternative for B325. Since SWMU 4.10 was associated with B325, it was assumed that the same remedy would be appropriate for SWMU 4.10. Further evaluation of site data, after the Proposed Plan was issued, found that SWMU 4.10 was not related to the B325 VOC release, and a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.54 SWMU 4.11

SWMU 4.11 was an OWS located on the western side of B325 in the MBS (R11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. One soil boring installed as part of the B325 RI was installed within 50 feet of the OWS. Laboratory analyses of soil samples collected from this boring indicated no TPH, BTEX, VOC, SVOC, or metals above Castle background levels.

The OWS was removed in March of 1996. Evidence of soil contamination was noted during excavation work. The OWS was removed under the Castle UST removal program. Six confirmation soil samples were collected after the OWS was removed. One sample was from the bottom of the excavation (approximately 12.5 feet bgs), three samples were collected from beneath the product line, and two samples were collected from the associated stockpile. Laboratory analyses of the soil samples indicated a maximum of 560 mg/kg total TEPH (C8-C41) in the stockpile samples but no detectable TEPH in the excavation sample. TEPH levels in the pipeline samples ranged from 7.7 to 10 mg/kg. Low levels of VOCs, 1.9 µg/kg butanone, 0.6 µg/kg 1,2-DCB, 0.7 µg/kg 1,4-DCB, and 0.4 µg/kg methylene chloride were detected in the excavation sample. However, because acetone and benzene were also detected in the associated blanks, the low levels were rejected as site COPCs. A comparison of site contamination levels and Water Board DLM screening levels is provided below.

SWMU 4.11					
Sample Location	*COC*	*Maximum (mg/kg)*	*Screening Level (mg/kg)*	*Depth (ft)*	*Basis*
Soil					
Stockpile (clean)	TEPH	560	1500	0-20	Water Board, DLM
Stockpile (dirty)	TEPH	170	1500	0-20	Water Board, DLM
Excavation	TEPH	ND	1500	0-20	Water Board, DLM
Product Line 1	TEPH	10	1500	0-20	Water Board, DLM
Product Line 2	TEPH	7.7	1500	0-20	Water Board, DLM
Product Line 3	TEPH	9.8	1500	0-20	Water Board, DLM

No further action is needed for SWMU 4.11.

5.2.4.55 SWMU 4.12

SWMU 4.12 is an OWS located in the MBS (S11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. The SWMU includes a 415-gallon OWS and is associated

with Building 340, which is located at the intersection of E and 13th Streets. The OWS is a two-part system including a receptor vault and a UST. The OWS handled organic effluent, which was gravity fed into the waste oil UST. The UST was a double-walled tank with leak detection. By BCT consensus, the unit will remain operational providing it can be secured against unauthorized use and a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.56 SWMU 4.13

SWMU 4.13 was an OWS located in the MBS (S12, Plate 5-1 in Appendix C), in an area that has a future use designated as public/recreation. The SWMU was associated with fuel pipelines, Building 508, and the PFFA. The pipeline was removed and sampled during May of 1996. The OWS was removed under the Castle UST removal program. A total of five soil samples were collected after the OWS and pipeline were removed. Four soil samples were collected from the excavations and one was collected from the soil stockpile. The samples were submitted for TEPH (EPA8015M), VOCs, waste oil metals (cadmium, chromium, lead, nickel, and zinc), and leachable TEPH. Analyses of the soil samples indicated low levels of TEPH. A comparison of site contamination levels and Water Board DLM screening levels is provided below.

SWMU 4.13					
Sample Location	*COC*	*Maximum (mg/kg)*	*Screening Level (mg/kg)*	*Depth (ft)*	*Basis*
Soil					
Excavation Base	TEPH	4.8	1500	0-20	Water Board, DLM
Excavation Base	Cadmium	4.3	43.7	40-65	Water Board, DLM
Excavation Base	Chromium	8.6	2,500	40-65	Water Board, DLM
Excavation Base	Lead	9.2	855	40-65	Water Board, DLM
Excavation Base	Nickel	8.1	1,167	40-65	Water Board, DLM
Excavation Base	Zinc	44	319	40-65	Water Board, DLM

Closure is documented in Closure Certification Volume 2, Tab 8. Based on the sampling results, only lead was slightly above Castle Airport Waste Management Plan levels. However, because

there were no other elevated levels of contamination associated with this sample, it is likely that the elevated lead levels are not related to a contaminant release at the site. Based on the above findings, SWMU 4.13 does not pose a risk to water quality or human health, and a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.57 SWMU 4.19

SWMU 4.19 is an OWS located adjacent to B1324 in the MBS (N10, Plate 5-1 in Appendix C) and in an area designated for use as aviation support in the FEIS. The OWS consisted of an in-ground, 6-inch thick, concrete vault, approximately 3 feet square and 5 feet deep with a capacity of 150 gallons. The OWS is not scheduled for removal. As part of the SCOU RI, one soil boring (B1324SB03) was installed adjacent to SWMU 4.19. Three soil samples (from 5.5 feet, 10.5 feet, and 20.5 feet bgs) were collected from this boring and analyzed for TPH (as diesel, gasoline, and jet fuel), metals (including lead), SVOCs, and VOCs. Maximum site contamination levels compared to Water Board DLM and VLEACH2 screening levels are provided below.

SWMU 4.19					
Sample Depth	*COC*	*Maximum (mg/kg)*	*Screening Level (mg/kg)*	*Depth (ft)*	*Basis*
Soil					
5.5	TEPH (gas)	980	1500	0-20	Water Board, DLM
10.5	TEPH (gas)	1	1500	0-20	Water Board, DLM
10.5	Benzene	0.0028	0.068	10-20	VLEACH2
10.5	Toluene	0.001	75	10-20	VLEACH2
5.5	Xylenes	0.013	293	0-10	VLEACH2
5.5	TMB-1,2,4	11	293	0-10	VLEACH2
5.5	TMB-1,3,5	5.6	NA[1]	NA[1]	NA[1]
5.5	Naphthalene	0.28	82.9	0-40	VLEACH1
5.5	**Manganese**	**295**	**228**	40-65	**Water Board, DLM**

[1]WQSA Screening Levels were not developed for TMB-1,3,5

Based on the analytical results, the only contaminant that exceeded guidance thresholds was manganese. However, because manganese was only slightly above WQSA screening levels and because there are no other metals that exceeded guidance levels, it is likely that the manganese levels are naturally occurring and not anthropogenic. Based on the analytical results, it has been

determined that this site does not pose a threat to groundwater quality or human health and a determination of NFA has been made for this site.

Changes from Prior CERCLA Documentation: SWMU 4.19 is associated with B1324, a known petroleum hydrocarbon contamination site. SWMU 4.19 was not sampled as part of the SCOU RI, and the SCOU RI/FS did not include a preferred alternative for SWMU 4.19. During preparation of the SCOU Proposed Plan, it was assumed that the preferred alternative recommended for B1324 (Intrinsic Remediation) would also be applicable for SWMU 4.19. However, further evaluation of site data after the Proposed Plan was issued found that SWMU 4.19 was not related to the B1324 petroleum hydrocarbon release. This site does not pose a threat to groundwater quality or human health and a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including is one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.58 SWMU 4.20

SWMU 4.20 is an OWS and associated holding tanks located west of B1509 on the southern end of the aircraft operation apron (east of DA-5 area) in the MBS (Q13, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The OWS and tanks remain in place. As part of RI activities, one hand auger and three soil borings were installed at the site. A total of 15 soil samples and 12 soil gas samples were collected and analyzed from these borings. The only contaminant identified during this sampling was lead. A summary of the maximum contaminant level compared to cleanup criteria is provided below. Based on the sampling results, a determination of NFA has been made for this site.

SWMU 4.20					
Sample Depth	*COC*	*Maximum (mg/kg)*	*Cleanup Levels (mg/kg)*	*Depth (ft)*	*Basis*
Soil					
0	Lead	26	855	40-65	Water Board, DLM

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.59 SWMU 4.24 (B1182)

SWMU 4.24 was a silver recovery unit at an x-ray facility, which was located in Building 1182 (hospital) in the MBS (Q8, Plate 5-1 in Appendix C). It is located in an area that has a future use designated as institutional (medical). After silver recovery had been completed, the unit discharged waste to the sanitary sewer. The unit was removed in 1995 in accordance with requirements for RCRA Conditionally Exempt sites. New sewer connections have recently been installed under wing No. 2 of the facility. Contractors inspected the sewer lines and crawl spaces for leaks during the RI and no leaks were found. Based on a records review and a field inspection, it was determined that no field sampling was required for this SWMU (11 March 1994 SCOU FSP Conversation Confirmer, JEG, 1997b) and a determination of NFA has been made for this site.

5.2.4.60 SWMU 4.25 (B84)

SWMU 4.25 was a silver recovery unit located at Building 84 (photo lab), which is located in the MBS (R11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. The unit was removed in 1995 in accordance with requirements for RCRA Conditionally Exempt sites. As part of the RI, eight soil borings and four soil gas probes were installed at B84. A total of 22 soil samples and six soil gas samples were collected. Analyses of these samples indicated low levels of TCE and PCE in soil gas and trace levels of boron, cadmium, cobalt, chromium, antimony, and molybdenum that were above TBVs. These sample results are not evaluated in this section as they are only located in the general vicinity of SWMU 4.25 and are evaluated in the B84 section (5.2.5.1). During 1997, additional hand auger soil samples were collected near the sewer inlet as part of a Data Gap Investigation. A total of three soil samples were collected from these borings. Silver levels in the soil samples ranged from 1.43 to 2.46 mg/kg, below WQSA and human health risk levels. Based on this information and data gathered during the RI, a determination of NFA has been made for this site. More information on the B84 investigation can be found in Section II, Subsection 5.2.5.1.

Changes From Prior CERCLA Documentation: SWMU 4.25 was associated with the B84 Data Gap Site. Since SCOU RI sampling was not adequate to fully characterize site conditions, a preferred remedial alternative for B84 and SWMU 4.25 was not specified in the SCOU RI/FS. Since Data Gap sampling had not been completed by the time the SCOU Proposed Plan was issued, the Proposed Plan listed Excavation and On-site Disposal as the preferred alternative for both B84 and SWMU 4.25. This alternative was considered appropriate if Data Gap sampling indicated remediation was warranted. Based on the results of the Data Gap sampling, it was determined that site contamination did not present a threat to human health or water quality, and the selected remedy presented in this ROD was changed to a determination of NFA for this site.

5.2.4.61 SWMU 4.26

SWMU 4.26 is a solvent distillation unit located on the east side of Building 1253 (B1253) in the MBS (R11, R12, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. B1253 is associated with the Building 51 (B51) Group that is recommended for VOC remediation. Based on soil and soil gas sampling conducted as part of the SCOU RI, TCE

contamination in the vicinity of SWMU 4.26 was found in excess of VLEACH2 WQSA Vadose zone screening assessment criteria. Human health risk assessment criteria were not exceeded at this site. The B51 group, including B1253, was evaluated in the SCOU FS for remediation of solvent contaminated soil and SVE was the selected remediation method. SWMU 4.26 was previously removed and closed in accordance with RCRA requirements in 1993 and documented in the Final Report Paint Booth Sump Tank #17 Building #1253 Castle Air Force Base Merced County, California (CI,1994) and a determination of NFA has been made for this site.

5.2.4.62 SWMU 4.27

SWMU 4.27, also known as the Tank 17 Spray Booth Sump, is located in the MBS (R11, R12, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The SWMU is associated with B1253, which was investigated during the RI as part of the B51 Group. SWMU 4.27 was part of the system used to remove contaminants from the air in a spray paint booth. The SWMU held water contaminated with paint overspray and VOCs. The water was manually removed every 3 months. The unit has been removed and closed in accordance with RCRA requirements in 1993 and documented in the Final Report Paint Booth Sump Tank #17 Building #1253 Castle Air Force Base Merced County, California (CI, 1994) and a determination of NFA has been made for this site.

5.2.4.63 SWMU 4.28 (DBF)

SWMU 4.28 was an open burn/detonation pit located in the eastern portion of the base in the MOBS (H14, Plate 5-1 in Appendix C), in an area that has a future use designated as public/recreation. The SWMU consisted of an unlined earthen pit that was 24 feet in diameter and 5 feet deep. The area was first checked for unexploded ammunition and the pits were then filled and brought to grade in 1994. Confirmation samples collected from the area during 1996 did not detect COCs. This site was evaluated as part of the DBF section (5.2.5.6) and the NFA decision was documented in an RPM Consensus Statement dated July 23, 1996, and in a letter from the DTSC dated August 26, 1996.

5.2.4.64 SWMU 4.30

SWMU 4.30 was a 90-day Hazardous Waste Accumulation Point located in the MBS (R11, R12, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The SWMU is located on the east side of B1253, between the building and a fence to the east. B1253 is associated with the B51 Group that has been recommended for SVE remediation of VOC contaminated soil. The SWMU consists of a bermed concrete drum storage pad. Based on a BCT field inspection on 22 April 1997, the concrete pad was found to be in good condition and absent of cracks. During RI activities, two soil borings, six soil gas probes, and one hand auger boring were installed at the site. Soil samples were collected and analyzed for TEPH, TVPH, VOC, and SVOC. VOCs were detected in soil and soil gas samples from the borings/probes. VOCs are being addressed separately through remedial actions for Site B-51. However, based on the BCT visual inspection, it was determined that the concrete pad was not the source of VOC contamination and that SWMU-specific sampling was not needed. NFA is required at this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.65 SWMU 4.31

SWMU 4.31 was a 90-day Hazardous Waste Accumulation Point located on the northeastern corner of Building 1350 (B1350), which is located in the MBS (Q12, Plate 5-1 in Appendix C), in an area that has a future use designated as airfield. The unit consists of a small, bermed, concrete pad. The pad has not been removed. One soil boring and one soil gas probe (B1350SB07 and B1350SG16), installed as part of the RI activities at B1350, were located in the vicinity of SWMU 4.31. Analyses of soil samples from SB07 indicated no TEPH or VOC contamination. Low levels of TCE (4.7 µg/L) were identified in the 5-foot sample from SG16. The site TCE detection compared to the appropriate VLEACH2 screening level is provided below.

SWMU 4.31					
Sample Depth	*COC*	*Maximum (µg/L)*	*Screening Levels (µg/L)*	*Depth (ft)*	*Basis*
Soil Gas					
5 feet	TCE	4.7	49.6	0-10	VLEACH2

Based on the sampling data, it was determined that SWMU 4.31 did not pose a threat to water quality or human health and a determination of NFA was made for this site.

Changes from Prior CERCLA Documentation: SWMU 4.31 was not sampled as part of SCOU RI activities, and the RI/FS did not present a preferred alternative for this site. In preparation of the SCOU Proposed Plan, old meeting minutes were reviewed, which indicated ICs should be applied at this site. This recommendation was reflected in the SCOU Proposed Plan. However, further evaluation of site data after the Proposed Plan had been released, could not confirm the need for ICs. Based on this reevaluation of site information, the selected remedy presented in this ROD was changed to a determination of NFA for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD l.

5.2.4.66 SWMU 4.32

SWMU 4.32 was a 90-day Hazardous Waste Accumulation Point located in the MBS (R13, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The SWMU

is a small, beamed, concrete pad located at the edge of the parking area east of Building 1532. The concrete pad remains in place but is not in use. Visual observation indicated no obvious signs of contamination. The BCT has concurred with a determination of NFA for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.67 SWMU 4.33

SWMU 4.33 was a 90-day Hazardous Waste Accumulation Point located in the MBS (R13, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The SWMU is a small, fenced, concrete pad located near the southeast corner of Building 1550 (B1550), which is associated with DA-8. Sampling results from the RI of B1550 did not exceed vadose zone screening assessment requirements. Field observation by the BCT on 22 April 1997 found no evidence of contaminant release and the facility was in good repair. Based on the RI and visual observation by the BCT, a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.68 SWMU 4.34

SWMU 4.34 was a 90-day Hazardous Waste Accumulation Point located in the WBS (L9, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The SWMU is a bermed, concrete pad located to the northwest of Building 1319 (B1319) and included several storage sheds. The pad was evaluated as part of the B1319 RI (B1319SB09 and B1319SG10) and remains in place. Trace levels of xylenes (0.002 mg/kg) and lead above TBV but below risk and WQSA screening levels were identified in the soil samples. No VOC contamination was found in the soil gas samples. Site contamination levels compared to the appropriate VLEACH2 and Water Board DLM screening levels are provided below.

SWMU 4.31					
Sample Depth	*COC*	*Maximum (mg/kg)*	*Screening Levels (mg/kg)*	*Depth (ft)*	*Basis*
Soil					
5.5 feet	Xylenes	0.002	293	0-10	VLEACH2
5.5 feet	Lead	15.6	855	40-65	Water Board, DLM

Based soil sample analyses it was determined that the site did not present a risk to water quality or human health and a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.69 SWMU 4.35

SWMU 4.35 was a 90-day Hazardous Waste Accumulation Point located in the MBS (R11, S11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. The SWMU is a bermed, concrete area located southwest of B325 that was assessed during the RI conducted for B325. Soil boring B325SB02 and soil gas probes B325SG04 and SG05 were installed to investigate potential contamination associated with this SWMU. No TEPH/TVPH, VOCs, or SVOCs were identified in the shallow (l0-foot) soil samples. Lead, at 6.9 mg/kg, was identified in the 5.5-foot soil sample. Trace levels of TCE (0.75 µg/L) were identified in a 21.5-foot soil gas sample collected from SB02. No VOCs were identified in the shallow soil gas probe samples. Based on these findings, it has been determined that SWMU 4.35 does not present a threat to water quality or human health and a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.70 SWMU 4.36

SWMU 4.36 was a 90-day Hazardous Waste Accumulation Point located in the MBS (N10, Plate 5-l in Appendix C), in an area that has a future use designated as airfield. The SWMU is located adjacent to Building 1324 (B1324) and consists of a bermed, concrete pad. The pad has not been removed. During the RI, three soil gas probes (B1324SG09, 10, 11) and one soil boring (B1324SB05) were installed in the vicinity of SWMU 4.36, as part of the B1324 investigation. The soil samples were analyzed for TVPH, TEPH, metals (including total lead), VOCs, and SVOCs. Trace levels of chlorobenzene (0.00062 mg/kg) were identified in the soil samples. No SVOCs above PQLs or metals above TBV were noted. Low levels of ethylbenzene (1.1 µg/L) and xylenes (2.5 µg/L) were identified in the l0-foot soil gas sample from SG10. Based on these findings, it has been determined that SWMU 4.36 does not present a threat to water quality or human health and a determination of NFA has been made for this site.

Changes from Prior CERCLA Documentation: SWMU 4.36 is associated with B1324, a known petroleum hydrocarbon contamination site. SWMU 4.36 was not sampled as part of the SCOU RI, and the SCOU RI/FS did not include a preferred alternative for SWMU 4.36. During

preparation of the SCOU Proposed Plan, it was assumed that the preferred alternative recommended for B1324 (Intrinsic Remediation) would also be applicable for SWMU 4.36. However, further evaluation of site data after the Proposed Plan was issued found that SWMU 4.36 was not related to the B1324 petroleum hydrocarbon release. Therefore, a determination of NFA has been made for this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.4.71 SWMU 4.37

SWMU 4.37 is located in the BWS and encompasses the industrial sewer system pipeline from OWS 59, 79, 508, 1260, 1541, 1509, and 1523 draining to the treatment plant at OWS 927 (SWMU 4.15). The pipeline was constructed of steel and has been closed in place. During the SCOU RI conducted on the Industrial Waste Line, three soil borings (IWLSB04, SB05 and SB06) were installed in key "elbow" areas along the steel portion of the pipeline. Nine soil samples from 9, 19, and 29 feet bgs were collected from each boring. Laboratory analyses of the soil samples indicated no TPH, VOC, or SVOC contamination. Based on these findings, it has been determined that SWMU 4.37 does not present a threat to water quality or human health and a determination of NFA has been made for this site.

5.2.4.72 SWMU 4.38

SWMU 4.38 is a catchment basin located in the MBS (Q13, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The SWMU is located between OWS 1509 and 1523, and is 25 feet wide by 75 feet long by 3 feet deep, and is recessed in soil with a partial asphalt embankment. The basin was used to capture liquid fire retardant. During the SCOU RI, two hand auger borings and seven soil gas probes were installed at the site. Four soil samples (from 0-3.5 feet bgs) and 14 soil gas samples (from 5 and 10 feet bgs) were collected from the borings/probes. Analyses of the soil samples indicated no VOC, SVOC, TPH, or metals above TBV. Analyses of the soil gas samples indicated low levels of benzene, 1-1-DCE, ethylbenzene, and xylenes. A summary of soil gas findings compared to the appropriate VLEACH2 screening levels is provided below:

SWMU 4.38					
Sample Depth	*COC*	*Maximum (µg/kg)*	*Screening Levels (µg/kg)*	*Depth (ft)*	*Basis*
Soil Gas					
5 feet	Benzene	1.8	292	0-10	VLEACH2
5 feet	1-1-DCE	1.2	282	0-10	VLEACH2
5 feet	Ethylbenzene	2.0	48,785	0-10	VLEACH2
5 feet	Xylenes	3.2	56,439	0-10	VLEACH2

Based on these findings, it has been determined that SWMU 4.38 does not present a threat to water quality or human health. NFA is required at this site.

The RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 had agreed through several working group meetings to characterize certain sites as not requiring further action. After further evaluation of the data following completion of the RI/FS and specific site conditions, they determined that NFA was appropriate for those sites, including this one, and that their agreements would be documented in the SCOU ROD 1.

5.2.5 Risk Management Decision No Further Action Sites

A total of 20 NFA sites did not meet either the WQSA or Human Health screening requirements for NFA. However, based on further evaluation of environmental conditions at these sites, it was determined that the screening results did not accurately assess site risks and that no further action (NFA) was needed to protect human health or water quality. These determinations are termed Risk Management Decisions.

Site summaries for the 20 Risk Management Decision NFA sites are provided below. For 12 of these sites, the NFA decision was made after completion of the SCOU FS. For these sites, additional information regarding remedial alternatives that were considered, comparison of these alternatives, and the basis of the Risk Management Decision is provided on Plates 5-2-2 and 5-2-3 in Appendix C.

Risk Management NFA (20 Sites)			
B84	DBF	FTA2	Storm Drain System
B1335	DP7	PCB1, 2, 3	ST1201
B1404	DP10	PCB8	ST1206
B1405	ETC7	SS1	UFL4
B1529	ETC11	SA B1	DA-2

Site-by-site summaries of the Risk Management NFA sites are provided below.

5.2.5.1 Building 84 (B84)

B84 was located in the MBS (R11, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. The building, which was part of the 93rd Combat Support Group and was used as a photo laboratory and graphics support area, was removed in 1996. Silver recovery, as part of the photo developing process, was completed prior to discharge of wastewater to the sanitary sewer. Material handled on site included silver, benzene, toluene, ethylbenzene, and xylene.

As part of the SCOU RI, two soil borings and four soil gas probes were installed at the site. A total of 22 soil samples (10.5 to 59 feet bgs) and six soil gas samples (10 and 21.5 feet bgs) were collected from the borings/probes. Toluene (2.9 µg/L) and TCE (1.9 µg/L) were detected above the reporting limit and PCE and xylenes were reported at the reporting limit (1.0 µg/L) in the 10-

foot soil gas samples. No VOCs were identified in the downhole (21.5 feet) soil gas sample. Several metals including antimony, chromium, cobalt, boron, nickel vanadium, zinc, barium, beryllium, cadmium, copper, manganese, and molybdenum were reported above TBVs in the soil samples. Most detections were in silt-rich sediments at 39 feet bgs. Of the metals detected, only manganese exceeded the WQSA screening level. No VOCs were reported in the soil samples. Of the metals, antimony (7.7 mg/kg at 39 feet bgs), chromium (26.2 mg/kg at 59 feet bgs), cobalt (14.3 mg/kg at 24 feet bgs), and molybdenum (1.3. mg/kg at 59 feet bgs) are of potential concern. Silver has not been detected in soil at reporting limits exceeding the TBV.

During 1997, Data Gap sampling was conducted to further evaluate potential silver contamination at the site. Of particular interest was subsurface soil near a previously existing drainpipe of the silver recovery unit located at B84. Two hand auger borings were installed at the site as close as possible to the previously existing silver recovery unit and drainpipe connections. These borings were augered to total depths of one and four feet. A total of three soil samples were collected from these borings. Silver levels in the soil samples ranged from 1.43 to 2.46 mg/kg. Based on the newly acquired data, the WQSA and risk assessments were reevaluated, and a determination of NFA has been made for this site.

Water Quality Impacts: A summary of the analytical results compared to appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based on the analytical results, only manganese may pose a risk to water quality. Manganese was the only constituent identified in site soil samples that exceeded screening levels. However, because of the limited distribution and lack of associated contaminants, it was concluded that thus metal was naturally occurring and did not warrant remediation.

B84 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Silver	2.46	1 to 3	6,000	0-10[1]	Water Board, DLM
Cobalt	14.3	24	349	40-65	Water Board, DLM
Chromium	26.2	59	25,000	40-65	Water Board, DLM
Molybdenum	1.3	59	95	40-65	Water Board, DLM
Antimony	7.7	39	11.5	40-65	Water Board, DLM
Manganese	**528**	**39**	**228**	**40-65**	**Water Board, DLM**
Soil Gas (µg/L)					
TCE	1.9	10	49.6	0-10	VLEACH2
PCE	1.0	10	49.6	0-10	VLEACH2
Toluene	2.9	10	138,540	0-10	VLEACH2
Xylene	1.0	10	56,439	0-10	VLEACH2

[1]Silver RAO based on attenuation factor of 1,000 and TBV value of 6 µg/L

Human Health Risk Assessment: Silver was the only COPC in surface soil that was evaluated after the 1997 sampling event. Since silver is not classified as a carcinogen by the EPA, a

carcinogenic risk estimate for surface soil was not calculated. However, the HI was calculated for three exposure scenarios (child residential, adult residential, and occupational). A summary of the HI calculation results is provided below. Based on the HI results, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B84[1] - Human Health Risk Assessment Summary – HHRA			
Adult Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
N/A[2]	0.003	4.6×10^{-8}	0.0002
Child Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
N/A[2]	0.02	4.0×10^{-8}	0.001
Occupational Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
N/A[2]	0.0003	3.7×10^{-9}	0.00001

[1]Building 84 risk assessment was conducted in conjunction with Structure T85
[2]Silver, which is noncarcinogenic, was the only COPC identified in surface soil

Changes from Prior CERCLA Documentation: Since SCOU RI sampling was not adequate to fully characterize site conditions, a preferred remedial alternative for B84 was not specified in the SCOU RI/FS. Since Data Gap sampling had not been completed by the time the SCOU Proposed Plan was issued, the Proposed Plan listed Excavation and On-site Disposal as the preferred alternative for B84. Thus alternative was considered appropriate if Data Gap sampling indicated remediation was warranted. Based on the results of the Data Gap sampling, it was determined that site contamination did not present a threat to human health or water quality and the selected remedy presented in this ROD was changed to a determination of NFA.

Risk Management Decision: Manganese was the only constituent identified in site soil samples that exceeded screening levels. However, because of the limited distribution and lack of associated contaminants, it was concluded that this metal was naturally occurring and did not warrant remediation. Excavation and On-site Disposal and NFA were the two remedial alternatives considered for B84. The alternatives were considered based on potential silver contamination. However, after the last Data Gap sampling event, a determination of NFA was made for this site because silver did not exceed screening levels.

5.2.5.2 Building 1335 (B1335)

B1335 was located in the MBS (P11, Plate 5-1, in Appendix C), in an area that has a future use designated as aviation support. B1335 was constructed in 1955 and was used as a photo lab, an electronics countermeasures facility, and a defense fire control facility. Work undertaken at the fire control facility involved dismantling guns, dipping parts in solvent tanks for cleaning and in heated oil tanks to prevent corrosion. B1335 is identified as a potential source of contamination due to heavy use of solvents and the use of an oil water separator, which was removed in September of 1995. A 2,000-gallon heating oil UST was reportedly located at the south corner of the building.

A total of six soil borings and 13 shallow soil gas probes were installed at the site as part of the RI. Thirteen soil samples, 22 shallow gas samples, and seven downhole gas samples were collected from the borings/probes. TCE in soil gas was identified at several intervals within the soil column. At a depth of 10 feet, soil gas TCE ranged up to 34.5 µg/L. At 40 feet bgs, TCE levels diminished to 12 µg/L. Trace amounts of Freon (Freon 11, Freon 12, Freon 113), 1,1,1 trichloroethane, and xylenes were also identified in soil gas samples, but at levels below reporting limits. Soil samples did not show the presence of TPH, or aromatic, or halogenated hydrocarbons. Results of metals and lead analyses were below Castle Airport background levels.

Water Quality Impacts: A summary of the analytical results compared to the VLEACH2 screening levels is provided below.

B1335 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil Gas (µg/L)					
TCE	**34.5**	**10**	**19**	**10-20**	**VLEACH2**
TCE	**12.0**	**40**	**4.8**	**40-50**	**VLEACH2**

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk evaluation results, the site does not pose a risk to human health, and a determination of NFA has been made for this site.

B1335 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
2.1×10^{-8}	0.00003

Risk Management Decision: WQSA risk at B1335 is driven by TCE in soil gas. However, based on further evaluation of the site data, it was determined that TCE contamination was most likely the result of groundwater off-gassing. VOC contamination in groundwater is being addressed in the CB Part 1 ROD. Based on this conclusion, a Risk Management Decision was made for NFA. Since the Risk Management Decision was made prior to the Feasibility Study, Remedial alternatives were not considered or developed for this site.

5.2.5.3 Building 1404 (B1404)

B1404 is located in the WFLS (K10, Plate 5-1 in Appendix C), in an area that has a future use designated as airfield. The building was used as a parts storage facility. Records research indicated that, from 1947 through 1972, the building was used for maintenance, engine conditioning, and as a guided air missile test cell. Floor drains at B1404 were connected to an on-site septic tank. An 800-gallon heating oil UST was also located at the site. Potential COCs included solvents, oil, grease, stoddard solvent PD-680 (mineral spirit and degreaser mixture), and possibly paints.

As part of the SCOU RI, five soil borings, two hand auger borings, and five soil gas probes were installed at the site. Eighteen soil samples (surface to 39 feet bgs) and ten soil gas samples (10 to 40 feet bgs) were collected from the borings/probes. Analyses of the samples indicated low concentrations of BTEX and TCE in soil gas and 13 mg/kg TEPH in one surface soil sample. In addition, silver, cadmium, molybdenum, manganese, beryllium, antimony, nickel, lead, and vanadium were detected above threshold background levels. Of these contaminants, only manganese exceeded screening levels.

Water Quality Impacts: A summary of the analytical results compared to appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based an the analytical results, only manganese in one hand auger boring exceeded WQSA thresholds.

B1404 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Silver	0.35	4.5	6,000	0-10[1]	Water Board, DLM
Cadmium	0.53	0	43.7	40-65	Water Board, DLM
Manganese	**398**	**0**	**228**	**40-65**	**Water Board, DLM**
Molybdenum	0.59	4	95	40-65	Water Board, DLM
Nickel	5.6	39	1,167	40-65	Water Board, DLM
Vanadium	54.2	39	629	40-65	Water Board, DLM
Lead	9.4	10.5	855	40-65	Water Board, DLM
TEPH	13	0	1,500	0-20	Water Board, DLM
Antimony	5.5	39	11.5	40-65	Water Board, DLM
Beryllium	0.3	39	7.6	40-65	Water Board, DLM
Soil Gas (µg/L)					
Benzene	0.045	21.5	20.1	20-30	VLEACH2
Toluene	0.098	21.5	9,495.3	20-30	VLEACH2
TCE	13.6	10	49.6	0-10	VLEACH2
Xylenes	3.3	10	56,439	0-10	VLEACH2

[1]Silver RAO is based on an attenuation factor of 1,000 and TBV value of 6 µg/L

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk evaluation results, the site does not pose a risk to human health and a determination of NFA has been made for this site. The risk assessment

results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B1404 - Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.6×10^{-8}	0.0001

Risk Management Decision: Manganese in surface soil at 398 mg/kg exceeded water quality screening level of 228 mg/kg at 40-65 ft. bgs. However, the criteria level used is very conservative since surface concentrations are being compared to 40-65 ft. bgs depths which are closer to the groundwater table. Taking everything into consideration along with the fact that the difference in values are not that great, an NFA determination was made for B1404 because Manganese does not pose a threat to groundwater quality. Since the risk management decision was made prior to the Feasibility Study, remedial alternatives were not considered or developed for B1404.

5.2.5.4 Building 1405 (B1405)

B1405 is located in the WFLS (L10, Plate 5-1 in Appendix C), in an area that has a future use designated as airfield. The building was used as a Field Maintenance Squadron battery recharging shop and engine repair facility. Small mobile tank trailers (bowsers) used for the temporary storage of liquid wastes were located at the site. One known UST, a 500-gallon heating oil UST, and one potential UST were located southwest of the site. Waste oils, fuels, hydraulic fluid, and battery acids were handled at the site. Reportedly, neutralized battery acid was disposed of in the sanitary sewer, which is connected to a septic tank and leach field.

A geophysical ground penetrating radar (GPR) survey was conducted to confirm that USTs and associated piping had been removed from the southwest side of the building. Four soil borings, seven hand auger borings, and six soil gas probes were installed to further assess site conditions. A total of 11 soil samples from the soil borings (depths ranging from 5.5 to 60.5 feet bgs),16 soil samples from the hand auger borings (depths ranging from 0 to 4.5 bgs), 14 soil gas samples (depths ranging from 5 to 61.5 feet bgs), and one HydroPunch water sample (from 69.5 feet bgs) were collected from the borings/probes.

The GPR survey confirmed that the USTs had been removed from the site. TCE (6.02 µg/L), acetone (0.0173 µg/L), benzene (0.0035 µg/L), and toluene (0.0038 µg/L) were detected above reporting limits in the shallow gas samples collected from depths ranging from 5 to 10 feet bgs. Benzene, toluene, xylenes, and TCE were reported in several of the soil gas samples. Soil gas levels ranged from 520 µg/L for xylene to 0.049 µg/L for toluene. Of these soil gas detections, only benzene at 1.5 µg/L exceeded WQSA screening criteria.

Elevated levels of TEPH as diesel were noted in the soil samples taken from SB01 which was located in a leach field near the FS4 surface fuel spill. The 30-foot sample indicated a maximum

of 3,000 mg/kg while the 20-foot sample had a maximum of 1,000 mg/kg. Shallow soil contamination levels ranged from 63 mg/kg TEPH at the surface to 5.6 mg/kg TEPH at 3.5 feet bgs. Cadmium, silver, molybdenum, zinc, and lead were detected above TBVs in eight soil samples. However, because elevated levels of metals were not noted in samples collected above or below the elevated detections, it is likely that the above TBV metals are a result of natural background variation and were not caused by a contaminant release at the site. No TPH or VOC contamination was noted in the HydroPunch groundwater sample.

Water Quality Impacts: A summary of the analytical results compared to the Water Board DLM and VLEACH2 screening levels is provided below. Benzene in soil gas and TPH in soil exceeded WQSA screening levels.

B1405 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH (diesel)	1,100	20.5	See Note[3]	See Note[3]	See Note[3]
TVPH (gas)	530	20.5	See Note[3]	See Note[3]	See Note[3]
Silver	0.43	1.5	6,000	0-10[1]	Water Board, DLM
Cadmium	0.6	10.5	43.7	40-65	Water Board, DLM
Molybdenum	0.78	10.5	95	40-65	Water Board, DLM
Zinc	73	20.5	319	40-65	Water Board, DLM
Lead	156	0	855	40-65	Water Board, DLM
Soil Gas (µg/L)					
Benzene[2]	**1.50**	**41**	**1.4**	**40-50**	**VLEACH2**
Toluene	0.049	21.5	9,495	20-30	VLEACH2
TCE	6.02	10	19	10-20	VLEACH2
Xylenes[2]	520	21.5	10,512	20-30	VLEACH2

[1]Silver RAO based on attenuation factor of 1,000 and TBV value of 6 µg/L
[2]These compounds were also noted in blank samples
[3]TVPH and TEPH Screening Values not developed for depths greater than 20 feet

Human Health Risk Assessment: Lead in soil was the only COPC that exceeded DTSC's 120 mg/kg screening level of concern. Risks associated with exposures to lead were evaluated using Cal/EPA blood-lead biokinetic model (DTSC,1992). This was done because most human health effects data are estimated on blood-lead concentrations rather than on the external dose. Based on the blood level calculations, the site does not pose a risk to human health, and a determination of NFA has been made for this site. The risk assessment results in this section are the 1996 SCOU ROD values, A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

B1405 - Human Health Risk Assessment Summary – Lead Screening and HHRA			
Maximum Concentration	*Calculated Blood-Lead Level*	*Level of Concern*	*Basis*
Lead-156 mg/kg	6.7 µg/dL	10 µg/dL	Cal/EPA & EPA

Risk Management Decision: The highest levels of soil contamination at B1405 were found in boring B1404SB01, which was installed 275 feet northeast of B1405 in the general vicinity of the FS4 contamination plume. Although this boring was drilled as part of the B1405 RI, it was evaluated as part of FS4 in the SCOU RI/FS. Since shallow soil contamination at the site is relatively minor, it is likely that the high levels of benzene contamination found in SB01 were a result of the FS4 plume and are not related to the Building 1405 site. Based on the analytical results, and the association of B1405SB01 to the FS4 contamination plume, B1405 itself does not pose a risk to water quality. Site FS4 is a PHO site (section 8.1.24) impacted by constituents of concern that are not subject to CERCLA requirements. SVE is the remedial decision for the soil vapor plume at FS4 and is being implemented under requirements of the RWQCB. Since the Risk Management Decision was made prior to the Feasibility Study, Remedial alternatives were not considered or developed for this site.

5.2.5.5 Building 1529 (B1529)

B1529 is located in the MBS (Q12, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The building was used as the 93rd Field Maintenance Squadron aircraft service dock/washracks. Two washracks were located at this facility. The primary washrack was installed in the mid-1980s and used a steam cleaner, aircraft soap, and Citri Kleen to wash aircraft. All wastewater from this washrack was discharged to an OWS before being combined with wastewater from the secondary washrack. The secondary washrack is located outside and had a 1-inch crack in its concrete pad. Materials handled at this site included solvents, waste oils, grease, and fuel.

As part of the SCOU RI investigation, 14 soil gas probes, two soil borings, and one hand auger boring were installed at the site and then sampled. A total of 17 shallow soil gas samples (5 to 10 feet bgs), eight downhole gas samples (20-21.5 feet bgs), and three soil samples were collected from the borings/probes. In addition, one gas sample was collected near the building floor drain. Results of soil samples collected from the soil borings and hand auger location indicated low levels of TEPH (<20 mg/kg). VOCs were not detected in any of the soil samples, but lead was detected below background values. TCE and low levels of BTEX were identified in soil gas samples collected along the sewer line on the southwest side of the building. A maximum of 39.7 µg/L TCE was noted at 10 feet bgs in B1529SG03. With the exception of 1.3 µg/L dichlorodifluoromethane (Freon 12) at 20 feet bgs, no VOCs were found in the deeper shallow gas probes.

In l997, as part of the SCOU Data Gap Investigation, three additional soil borings were installed at the site to determine the vertical extent of petroleum-hydrocarbons in soil and of BTEX and TCE in soil gas. A total of 12 soil samples and 10 soil gas samples were collected from the new borings. In general, the borings confirmed that TEPH (diesel) soil contamination extended from

the surface to groundwater in one boring. In addition, BTEX or TCE contamination was noted in soil gas samples from depths 20 to 58 feet bgs. Both TEPH (soil) and TCE (soil gas) levels increased with depth. Since there is a known TCE groundwater plume beneath the site, it is likely that the elevated TCE soil gas levels are a result of off-gassing from the plume. VOC contamination in groundwater is being addressed in the CB Part 1 ROD. Since the soil gas levels were below WQSA Screening thresholds, the TEPH contaminant levels were low, and TEPH is relatively immobile in nature, it was determined that the site did not pose a threat to groundwater and a determination of NFA was made for this site.

Water Quality Impacts: A summary of the analytical results compared to the appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

B1529 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Lead	2.7	20.5	855	40-65	Water Board, DLM
TEPH	11	20.5	NA[1]	NA[1]	NA[1]
TEPH	17	50	NA[1]	NA[1]	NA[1]
Soil Gas (µg/L)					
Benzene	2.4	10	282	0-10	VLEACH2
Ethylbenzene	4.8	10	48,785	0-10	VLEACH2
Freon 12	1.3	20	286.5	20-30	VLEACH2
TCE	39.7	10	49.6	0-10	VLEACH2
Xylenes	10.8	10	56,439	0-10	VLEACH2

[1]Screening Levels have not been developed for TEPH below 20 feet bgs

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Since all of the soil samples collected as part of the data gap evaluation were from depths greater than 15 feet bgs, the human health risk was not re-evaluated during the SCOU Data Gap Investigation.

B1529 - Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
7.5×10^{-9}	0.00001

Changes from Prior CERCLA Documentation: During the SCOU RI/FS process, it was concluded that VOC and BTEX contamination at B1529 did not pose a significant threat to human health or groundwater, and the site was recommended for NFA. However, because data gaps had been identified during review of the RI information, the NFA, determination was considered provisional pending completion of the Data Gap Investigation. Since the B1529 Data Gap Investigation had not been completed by the time the SCOU Proposed Plan was issued, the Proposed Plan listed SVE and Intrinsic Remediation as the preferred alternative for this site. This

alternative was considered appropriate if the Data Gap Investigation confirmed remediation was warranted. The results of the Data Gap Investigation determined that site contamination did not present a threat to human health or water quality, and the selected remedy presented in this ROD was changed to a determination of NFA for this site.

Risk Management Decision: During the RI/FS process, B1529 was included with Category 1, Engine Maintenance facilities. No Action, SVE, Thermally Enhanced SVE, Bioventing, Excavation, and LTU were the considered alternatives for Category 1 sites. A summary of alternative comparison for B1529 is provided on Plate 5-2-3 in Appendix C. Since VOC contamination at the site did not exceed screening levels, remediation was not required. Remediation of the low levels of petroleum hydrocarbons (TEPH) was also considered for the site. However, because TEPH, which is relatively immobile in the subsurface, was identified in downhole samples from only one boring, and because TVPH was not detected in any of the soil samples, a Risk Management decision of NFA was made for the site. Details of the B1529 Data Gap Investigation can be found in the Draft Final Data Gap Investigation Report, dated July 1998.

5.2.5.6 Detonation and Burn Facility (DBF)

The DBF is located in the eastern portion of the NBS (H14, Plate 5-1 in Appendix C), in an area that has been transferred to the Bureau of Prisons. A correctional facility has been constructed over this site. The DBF was composed of two unlined detonation and burn pits and was used to detonate unserviceable or unsafe ammunition. The pits were approximately 12 feet in diameter by 5 feet deep and were surrounded on three sides by an eight-foot high sand berm.

As part of the SCOU RI, two soil borings and two surface scrapes were planned at the DBF. After the surface samples were taken, but before the soil borings were drilled, abandoned ammunition was removed and a Certificate of Safety and Clearance from the Castle AFB Explosives Safety Board was issued. Clearance of the DBF for drilling was accomplished under the Range Decontamination Plan, which involved removal of burnt grass, excavation of the entire bermed area to approximately three feet bgs, soil sifting, and screening the surface soils with a metal detector. After clearance the soil borings were completed. A total of six soil samples, four from the soil borings (10.5 and 20.5 feet bgs) and the two surface scrapes and two downhole gas samples (20 feet bgs) were submitted for analyses.

With the exception of one sample (TEPH 6.8 mg/kg at 20.5 bgs), VOC and TPH contamination was not noted in the soil samples. The only SVOC noted was di-n-Butylphthalate (maximum 0.42 mg/kg at 10.5 feet). Manganese (258 mg/kg at 20.5 feet bgs) and molybdenum (maximum 0.92 mg/kg at 10.5 feet) were the only metals above TBV. Both surface scrapes indicated the presence of dioxins. One explosive compound, 2,4-dinitrotoluene (6.1 mg/kg) was noted at 0.5 feet bgs. Trace levels of benzene, toluene, xylenes, and PCE were detected in the downhole soil gas samples, but at levels below screening levels.

Additional Background Information: The following information pertaining to the DBF is included within this ROD for background purposes only.

During the RI/FS process, the DBF was included with the Category 7, Surface Release and Fire Training Area, group of sites. Remedial alternatives considered for Category 7 sites included No Action, Solidification/Stabilization, Soil Washing, and Excavation/On-site Disposal. A summary of how these alternatives could be applied at the DBF is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for the DBF is provided on Plate 5-2-3 in Appendix C,

Water Quality Impacts: A summary of the analytical results compared to the appropriate Water Board DLM, VLEACH2, and Cal/EPA screening levels is provided below. Based on this evaluation, manganese exceeded WQSA threshold levels.

DBF - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Manganese	**258**	**20.5**	**228**	**40-65**	Water Board, DLM
Molybdenum	0.92	10.5	95	40-65	Water Board, DLM
TEPH	6.8	10.5	100	10-20	Water Board, DLM
RDX	0.10	0	NA[1]	NA[1]	NA[1]
2,4-DNT	6.1	0.5	15	NA	Cal/EPA
1,2,3,4,6,7,8-HpCDD	0.00037	0.5	0.0038	NA	Cal/EPA
OCDD	0.0012	0	0.038	NA	Cal/EPA
Soil Gas (µg/L)					
Benzene	0.0048	20	66.3	10-20	VLEACH2
Toluene	0.038	20	33,150	10-20	VLEACH2
Xylenes	0.02	20	37,525	10-20	VLEACH2
PCE	0.0027	20	19	10-20	VLEACH2

[1]WQSA screening level not developed for RDX. Health screening level is 4.4 mg/kg

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. These calculations were based on the initial RI sampling results. Since contamination was not identified after removal of the site structures and soil sifting had been completed, further quantitative risk evaluation was not conducted. The risk exceeded human health screening level, and was due largely to levels of 2,4-DNT and 1,2,3,4,6,7,8-HpCDD in soils.

DBF - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
5.8×10^{-6}	0.1

Changes from Prior CERCLA Documentation: The preferred alternative of Excavation and Disposal was specified for the DBF in the SCOU RI/FS. This remedy was based on initial

sampling results that indicated site remediation was needed. After the DBF buildings had been removed and remnants of ammunition and explosives removed from associated soil, confirmation samples indicated the site no longer posed a threat to human health or water quality, and a determination of NFA was made for this site. The SCOU Proposed Plan and this ROD reflect this NFA decision.

Risk Management Decision: with the exception of manganese at 20.5 ft bgs, no contaminants exceeded WQSA vadose zone screening levels. Since elevated levels of manganese were only slightly above the TBV (258 mg/kg vs. TBV of 228 mg/kg) and because elevated manganese levels were not noted in the up-hole soil samples, it is likely that the 258 mg/kg represents a background anomaly rather than a release of contaminants at the site. Based on the analytical results, the site does not pose a risk to water quality, and a determination of NFA for water quality impacts has been made for this site.

Response Action: Under removal action authority a follow up investigation was conducted in December 1995 and January 1996 to confirm previous results and fully characterize the site for installation of a cap (Action Memorandum dated September 7, 1995). This investigation included the collection of 11 additional surface soil samples, 3 hand augers, and 1 soil boring. Eleven samples were submitted for dioxin and furan analyses and 18 samples were submitted for explosives analyses. Laboratory analyses indicated no dioxin or furan contamination and only one sample indicated a trace (0.10 mg/kg) of the explosive hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX). The RDX detection (0.1 mg/kg) was well below the cancer PRG of 4.0 mg/kg for residential soil described in the Environmental Protection Agency Region 9 list of PRGs dated May 1998. The PRG Tables were updated in 2000 with a new value of 4.4 mg/kg for RDX. The RDX PRG corresponds to fixed levels of risk (i.e., a one-in-one million [10^{-6}]). Based on the findings of the investigation, there was no evidence that contaminants above human health risk levels remained at the site and there was no need to conduct Remedial Actions. The NFA decision was documented in an RPM Consensus Statement dated July 23, 1996, and in a letter from the DTSC dated August 26, 1996.

5.2.5.7 Disposal Pit 7 (DP7)

DP7 is located adjacent to LF5 in the NBS (F10, Plate 5-1 in Appendix C), in an area that has a future use designated as public/recreation. DP7 was included as part of the LF5 RI/FS investigation. A total of 17 soil gas probes and 17 soil borings were drilled as part of the DP7 evaluation. A total of 53 soil gas samples (from 5 to 20 feet bgs), 56 soil samples (from 9 to 19 feet bgs) and two surface scrape samples were collected at the site. Soil gas was analyzed for VOCs; surface soil was analyzed for organic lead and SVOCs; subsurface soils were analyzed for metals, lead (organic and inorganic), VOCs, and SVOCs.

Soil gas analyses indicated low levels of benzene, toluene, and ethylbenzene. Inorganic analyses detected silver, arsenic, molybdenum, nickel, lead, and zinc slightly above TBVs. No contamination was found in the surface scrape samples.

Water Quality Impacts: A summary of the analytical results compared to appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

DP7 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Silver	0.69	9	6,000	0-10[1]	Water Board, DLM
Arsenic	19.7	9	20	40-65	Water Board, DLM
Molybdenum	1.10	9	95	40-65	Water Board, DLM
Nickel	41.2	19	1,167	40-65	Water Board, DLM
Lead	8.6	19	855	40-65	Water Board, DLM
Zinc	79.10	19	319	40-65	Water Board, DLM
Beryllium	0.84	9	7.6	40-65	Water Board, DLM
Soil Gas (µg/L)					
Benzene	1	5	282.2	0-10	VLEACH2
Toluene	22	5	138,540	0-10	VLEACH2
Ethylbenzene	9.0	5	48,785	0-10	VLEACH2

[1] Silver RAO based on attenuation factor of 1,000 and TBV value of 6 µg/L

Human Health Risk Assessment: Since contaminants were not identified in the surface soil samples, an HHRA was conducted for subsurface soils only. In addition, calculated blood-lead levels for all receptors were below the 10 µg/dL level of concern. A summary of the risk assessment is provided below. Risk calculations for the residential exposure scenarios exceed 1 x 10^{-6} levels. The risk assessment results in this section are the 1996 SCOU RI/FS values. A change in toxicity factors for constituents of concern for this site necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E, and discussed in the *Changes from Prior CERCLA Documentation* section.

DP7 - Human Health Risk Assessment Summary – HHRA					
Adult Residential		*Child Residential*		*Adult Occupational*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.1 x 10^{-5}	0.05	**1.2 x 10^{-5}**	0.2	6.4 x 10^{-7}	0.0004

DP7 – Human Health Risk Assessment Summary – Lead Screening & HHRA				
Maximum Concentration	*Calculated Blood-Lead Level–Child Residential*	*Calculated Blood-Lead Level–Adult Residential*	*Blood-Lead Level of Concern*	*Basis*
Lead-8.6 mg/kg	4.4 µg/dL	2.2 µg/dL	10 µg/dL	Cal/EPA & EPA

Changes from Prior CERCLA Documentation: The discussion above represents the evaluation of this site as presented in the SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Due to changes in the oral cancer slope factor for beryllium (96% of risk), the risk decreased from 1.1×10^{-5} to 7.5×10^{-6}, and the Non-Cancer Hazard Index increased to 0.09. Beryllium is the only contaminant that exceeds the 1×10^{-6} cancer risk. The updated risk assessment results do not change the conclusion of NFA for this site.

Risk Management Decision: DP7 was included with the Landfill Group (Category 3) during the RI/FS process. Remedial alternatives considered for the Landfill group included No Action, Excavation and On-site Disposal, Class III Capping, ET Capping, and Zoned Capping. A summary of how these alternatives could be applied at DP7 is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for DP7 is provided on Plate 5-2-3 in Appendix C.

96% of the cancer risk at DP7 is from Beryllium. The maximum detected value for Beryllium was 0.84 mg/kg, at 9 feet, which is below the TBV of 0.89 mg/kg. Since the levels detected were below the TBV, it was determined that the site did not present a credible risk to human health. Based on this determination, a determination of NFA has been made for this site.

5.2.5.8 Disposal Pit 10 (DP10)

DP10 is located east of LF5 in the NBS (E12, Plate 5-1 in Appendix C), in an area that has a future use designated as public/recreation. DP10 was included as part of the LF5 RI/FS investigation. A total of 17 soil gas probes and 14 soil borings were drilled as part of the DP10 evaluation. A total of 31 soil gas samples (from 10 to 20 feet bgs), 30 soil samples (from 9 to 19 feet bgs), and one surface scrape sample were collected at the site.

Analyses of the soil gas samples indicated trace levels of benzene, toluene, Freon 12, PCE, TCE, and xylenes. 1,4-diclorobenzene (DCB). VOCs were not found in the soil samples, however, silver, molybdenum, nickel, and zinc were detected above TBV.

Water Quality Impacts: A summary of the analytical results compared to appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

DP10 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Beryllium	0.81	0	7.6	40-65	Water Board, DLM
Silver	0.89	19.5	6,000	40-65	Water Board, DLM
Molybdenum	1.1	19.5	95	40-65	Water Board, DLM
Nickel	34.6	14.5	1,167	40-65	Water Board, DLM
Zinc	121	19.5	319	40-65	Water Board, DLM

DP10 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil Gas (µg/L)					
1,4-DCB	2.7	20	54.6	20-30	VLEACH2
Benzene	1.0	5	282.2	0-10	VLEACH2
Toluene	22	5	138,540	0-10	VLEACH2
Freon 12	9.0	5	2001	0-10	VLEACH2
PCE	0.69	9	49.6	0-10	VLEACH2
TCE	0.0102	20	19	10-20	VLEACH2

Human Health Risk Assessment: DP10 was included as part of the LF5 Area 2 QRA. Risk under the residential scenario exceeded 1 x 10^{-6} levels. However, for surface soils, beryllium, which was the primary risk driver for all three exposure scenarios, was below the TBV. For subsurface soils, the VOC 1,4-Dichlorobenzene was the primary COPC contributing to site risk.

DP10 - Human Health Risk Assessment Summary - Screening						
	Adult Residential		*Child Residential*		*Adult Occupational*	
	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
Surface	**1.3 x 10^{-5}**	0.3	**1.4 x 10^{-5}**	0.6	7.4 x 10^{-7}	0.001
Subsurface	**8.0 x 10^{-5}**	0.07	**7.2 x 10^{-5}**	0.05	4.9 x 10^{-7}	0.002

Risk Management Decision: DP10 was included with the Landfill Group during the RI/FS process. Remedial alternatives considered for the Landfill group included No Action, Excavation and On-site Disposal, Class III Capping, ET Capping, and Zoned Capping. A summary of how these alternatives could be applied at DP10 is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for DP10 is provided on Plate 5-2-3 in Appendix C. DP10 was included as part of the LF5, Area 2 Risk Assessment. Risks at LF5, Area 2 were primarily driven by the VOC 1,4-dichlorobenzene, which was found in LF5 Area 2 Trenches B and D, but not at DP10. Based on this evaluation, it was determined that DP10 did not present a significant threat to human health and a determination of NFA has been made for this site.

5.2.5.9 Earth Technology Corporation 7 (ETC7)

ETC7 is an Area of Concern located in the MOBS (P10, Plate 5-1 in Appendix C), in an area that has a future use designated as institutional (educational). The ETC7 area was used as a truck parking area near the PFFA and was noted during EPA's review of historical aerial photographs (EPA, 1991). The site was located north of Building 175 between Apron Avenue and A Street. Reportedly, heavy oil was spread over the site to protect soil from spills from fuel trucks. The

site is currently covered with asphalt, concrete, and buildings. Buildings 18 and 19 were once located at ETC7, but only foundation pads remain.

The pre-RI investigation noted elevated levels of TCE in soil gas (2,550µg/L) from a soil gas probe installed near 4th Ave and A Street (IT, 1987). Laboratory analyses of a groundwater sample from a down-gradient monitoring well indicated elevated levels of benzene (1.1 µg/L), toluene (2.2 µg/L), ethylbenzene (0.6 µg/L), xylenes (2.3 µg/L), and TCE (0.8 µg/L).

Water Quality Impacts: Based on pre-RI data, TCE in soil gas at the site exceeded both VLEACH1 and VLEACH2 WQSA screening levels of 1,040 and 19 µg/L, respectively.

ETC7 – Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil Gas (µg/L)					
TCE	**2550**	**10-20**	**19**	**10-20**	**VLEACH2**

Human Health Risk Assessment: Contamination noted during pre-RI work was determined to be related to Sanitary Sewer 2 (SS2). Based on this conclusion, risk assessments were not conducted for this site.

Changes from Prior CERCLA Documentation: Pre-RI data indicated elevated levels of TCE in soil gas at the site. Since follow up sampling was not conducted during the RI, ETC7 was considered a Data Gap Site and a preferred alternative was not specified in the RI/FS. Since the ETC7 Data Gap Investigation had not been completed by the time the SCOU Proposed Plan was issued, the Proposed Plan listed SVE as the preferred alternative for this site. This alternative was considered appropriate if the Data Gap Investigation confirmed remediation was warranted. After the Proposed Plan was issued, the RPMs visited ETC7 and determined that TCE found in the pre-RI investigation was most likely from SS2 and not a result of a TCE release at ETC7. The final remedial decision for SS2 will be included in the SCOU ROD Part 2.

Risk Management Decision: TCE in soil gas at 2550µg/L detected at 10-20 ft. bgs in ETC-7 exceeded water quality screening level of 19 µg/L at 10-20 ft. bgs. A field visit to ETC-7 convinced the regulatory agencies that TCE releases at ETC-7 are unlikely and that the likely source of the TCE is from the contaminated groundwater plume and Sanitary Sewer 2, an adjacent site to be addressed in a subsequent ROD. The extraction and treatment system for contaminated groundwater is currently in full operation, and the TCE concentration in soil gas at ETC-7 will ultimately dissipate as a result. Data procured subsequent to the pre-RI 1987 data has since shown minimal TCE soil gas in the vadose zone. With this in consideration, it was determined that ETC-7 does not pose a threat to human health. Thus, an NFA determination was made for ETC-7.

5.2.5.10 Earth Technology Corporation 11 (ETC11)

ETC11 is located north of LF3 in the EBS (J16, Plate 5-1 in Appendix C), in an area that has a future use designated as public/recreation. The site, which is currently covered with grass, was identified as a disturbed area during review of a 1958 aerial photograph. Interviews and a records search did not identify any additional facts or suspected chemical usage regarding the site.

As part of the initial site investigation, a geophysical survey was conducted at ETC11 to identify magnetic anomalies and potential areas of buried waste. Based on the EM31 findings, a total of 18 soil gas probes and two soil borings were installed at the site. A total of 38 soil gas samples, 18 from 5 feet bgs, 18 from 10 feet bgs, and two from 20 feet bgs, and four soil samples were collected from the probes/borings.

Maximum soil gas levels (0,024 µg/L benzene and 0.045 µg/L toluene) were found in the 10-foot soil gas probes ETC11SG01 and SG04. No VOCs or TPH were identified in soil samples collected at the site. Cobalt (13.8 mg/kg), beryllium (1.1 mg/kg), chromium (30.8 mg/kg), and cadmium (0.83 mg/kg) were found above TBVs in the 4.5-foot sample from ETC11SB02.

Water Quality Impacts: A summary of the analytical results compared to appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

ETC11 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Cobalt	13.8	4.5	349	40-65	Water Board, DLM
Beryllium	1.1	4.5	7.6	40-65	Water Board, DLM
Chromium	30.8	4.5	2,500	40-65	Water Board, DLM
Cadmium	0.83	4.5	43.7	40-65	Water Board, DLM
Soil Gas (µg/L)					
Benzene	0.024	10	66.3	10-20	VLEACH2
Toluene	0.045	10	33,150	10-20	VLEACH2

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below.

ETC11 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
7.7×10^{-6}	0.003

Based on elevated risk levels noted during the SRA process, an HHRA was completed for subsurface soils at ETC11.

ETC11 - Human Health Risk Assessment Summary – HHRA					
Adult Residential		*Child Residential*		*Adult Occupational*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.8×10^{-5}	0.002	**1.9×10^{-5}**	0.01	9.9×10^{-7}	0.001

Elevated levels of beryllium and chromium noted in the site soil samples drove human health risks at ETC11.

Risk Management Decision: Based on the evaluation of the RI data, it was determined that elevated metal levels in the site soil samples were a result of a natural variation in site lithology, and not a result of a contaminant release. Based on a Risk Management Decision, a determination of NFA has been made for this site. Since the Risk Management Decision was made prior to the Feasibility Study, Remedial alternatives were not considered or developed for this site. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

5.2.5.11 Fire Training Area 2 (FTA2)

FTA2 is located south of LF4 in the WBS (H6, J6, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. FTA2 was reportedly used for fire training exercises from 1962 through 1967. The burn area is unlined, with no surface fluid collection system. Unknown quantities of fuel, waste oil, and solvents were reportedly used as combustibles in the training exercises. No evidence of burned residues was noted during site visits. However, numerous pieces of broken asphalt were observed. Reportedly, the FTA2 area was covered with asphalt after fire training exercises had been discontinued.

During the RI, low concentrations of PAHs were detected in the surface soil. Benzo(a)pyrene was detected at the surface at a concentration of 0.11 mg/kg in soil boring FTA2SB01, and phenanthrene was detected at a concentration of 0.62 mg/kg in a surface scrape. No SVOCs were detected in samples collected at depth. Also, no TPHs were detected in the soil samples, and historical detection of TPH was not confirmed by SCOU RI sampling. TCE (at a maximum concentration of 5.2 µg/L) was detected in soil gas samples.

During 1997, the lateral extent of SVOCs was further defined as part of the SCOU Data Gap Investigation sampling effort. This work included the installation of 13 hand auger borings to approximately 3 feet bgs and collection of near-surface scrape samples from each boring location. A total of 26 soil samples from the borings were collected and submitted for laboratory analyses. Visual inspection of samples was conducted to ensure that surface asphalt or surface sealant were not part of the samples. Laboratory analyses of soil samples indicated PAH contamination in seven of the 13 soil borings. With the exception of one boring (FTA2HA03), the vertical extent of the PAH contamination was 2 feet or less.

Water Quality Impacts: A summary of the analytical results compared to the appropriate VLEACH1 and VLEACH2 screening levels is provided below. Based on the analytical results, the site does not pose a risk to water quality.

FTA2 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
PCE	0.0017	34	0.006	30-40	VLEACH2
Anthracene	0.14	0	82.91	0-40	VLEACH1
Benzo(a)anthracene	0.23	0	82.91	0-40	VLEACH1
Benzo(a)pyrene	0.11	0	82.91	0-40	VLEACH1
Benzo(b)flouranthene	0.28	0	82.91	0-40	VLEACH1
Benzo(k)flouranthene	0.33	0	82.91	0-40	VLEACH1
Crysene	0.15	0	82.91	0-40	VLEACH1
Fluorene	0.11	0	82.91	0-40	VLEACH1
Fluoranthene	0.54	0	82.91	0-40	VLEACH1
Napthalene	0.1	0	82.91	0-40	VLEACH1
Pyrene	0.37	0	82.91	0-40	VLEACH1
Soil Gas (µg/L)					
TCE	5.2	10	19	10-20	VLEACH2

Human Health Risk Assessment: The Human Health Risk Assessment for FTA2 was reevaluated based on information collected during the Data Gap Evaluation. A summary of the risk assessment findings is provided below. HI estimates for all three scenarios were less than 1. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

FTA2 - Human Health Risk Assessment Summary - HHRA			
Adult Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.0×10^{-5}	0.009	**5.0×10^{-6}**	0.0002
Child Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.1×10^{-5}	0.004	**5.3×10^{-6}**	0.001
Occupational Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
1.4×10^{-6}	0.00006	7.0×10^{-7}	0.00001

Based on the revised risk assessment, surface and subsurface soil presented an unacceptable risk level under the residential scenario. These risk values were heavily influenced by PAHs found in one sample (FTA2SB01), which was collected from soil containing surface asphalt.

Changes from Prior CERCLA Documentation: During the SCOU RI/FS process, Excavation and On-site Disposal was listed as the preferred alternative for FTA2. This decision was based on the presence of PAHs, primarily benzo(a)pyrene in a single sample. Due to the uncertainties associated with this single detection, the site was recommended for further data gap sampling. Since the FTA2 Data Gap Investigation had not been completed by the time the SCOU Proposed Plan was issued, the Proposed Plan listed Excavation and On-site Disposal as the preferred alternative for this site. This alternative was considered appropriate if the Data Gap Investigation confirmed remediation was warranted. The results of the Data Gap Investigation determined that site contamination did not present a threat to human health or water quality, and the selected remedy presented in this ROD was changed to a determination of NFA for this site.

Risk Management Decision: FTA2 was included with the Surface Releases and Fire Training Area group (Category 7) during the RI/FS. Remedial alternatives considered for Category 7 sites included No Action, Solidification/Stabilization, Soil Washing, and Excavation/On-site Disposal. A summary of how these alternatives could be applied at FTA2 is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for FTA2 is provided on Plate 5-2-3 in Appendix C. Risk at FTA2 is driven by the presence of PAHs. The elevated PAH levels are most likely the result of asphalt mixing with the surface soil. Due to the uncertainty concerning the sample composition, the calculated risk levels most likely over estimate actual risks. Lower PAH levels, found in the Data Gap samples collected from beneath the surface soil layer impacted by asphalt, are likely more representative of actual site conditions. Based on this

determination, the existing PAH concentrations in shallow soil pose a minimal threat to human health, and a determination of NFA has been made for this site.

5.2.5.12 Polychlorinated Biphenyls Sites 1, 2, 3 (PCB1, 2, 3)

PCB1,2,3 is located in the WBS (M8, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. PCB1,2,3 was part of Fire Training Area 3 and was used as a transformer shed and yard area. Three separate spill events were recorded from October 1982 through February 1984 at the site. The spills occurred at HWS6 located in Building 1203. HWS6 was a PCB and chemical storage area from 1989 to 1990. The amount of spilled material has not been determined. Preliminary investigations reported PCB concentrations in soil up to 17,000 mg/kg. Five cleanup efforts were conducted from 1983 through 1985 to remove the contaminated soil during which a total of 162 barrels (55-gallon drums) of contaminated soil were removed and replaced with clean fill material. The highest level of PCBs detected in the soil in the confirmation sampling event immediately following the last cleanup event (1985) was 27 mg/kg at 5 feet bgs. An additional sampling event was conducted in 1990 which indicated PCB concentrations of 2.2 mg/kg at 15 ft bgs and 2 mg/kg at 10 feet bgs. The most recent results were relied upon for determining potential water quality impacts from residual PCBs remaining in the soil at this site.

Water Quality Impacts: A summary of the analytical results compared to the VLEACH1 screening level is provided below. Based on the analytical results, the site does not pose a risk to water quality.

PCB1, 2, 3 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
PCB	2.2	15	82.9	0-40	VLEACH1

Human Health Risk Assessment: During July of 1998, the EPA reevaluated the site risk based on sample data collected after the final soil removal was completed (see Appendix F for a summary of EPA findings). This evaluation used an average contamination level from a total of ten soil samples. Because of the relatively small size of the site (6119 ft^2, the site area net of building coverage), the average concentration of 0.75 mg/kg was used to calculate a cancer risk of 1.3×10^{-6} (based upon the Castle AFB RAO for PCBs of 0.57 mg/kg). A summary of confirmation sampling data is provided below.

PCB1, 2, 3 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.3×10^{-6}	Not Calculated

Changes from Prior CERCLA Documentations: Based on pre-RI investigation and cleanup, PCB1, 2, 3 was included in the SCOU RI/FS as an NFA site. However, after the RI was issued, further review of confirmation sample data indicated PCBs at levels (up to 2.2 mg/kg) in excess of RAOs (residential 0.57 mg/kg, occupational 0.72 mg/kg) remained at the site. Since the site did not meet unrestricted reuse requirements, the SCOU Proposed Plan recommended a preferred alternative of ICs. Because of community concerns regarding ICs and their desire for unrestricted reuse, the EPA reevaluated all of the available site data. The EPA concluded that the site did not pose a significant threat to human health or water quality under the current and projected future land use plans and that no further remedial action or ICs are required at this site.

Risk Management Decision: PCB1,2,3 was included with the Surface Releases and Fire Training Area group (Category 7) during the RI/FS. Remedial alternatives considered for Category 7 sites included No Action, Solidification/Stabilization, Soil Washing, Excavation/On-site Disposal, and ICs. A summary of how these alternatives could be applied at PCB1,2,3 is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for PCB1,2,3 is provided on Plate 5-2-3 in Appendix C.

Based on the review of available data, it is likely that only a small amount of soil containing PCBs remains at the site after the five excavation efforts. Since confirmation samples are usually taken at the bottom of the excavation, it likely that PCB levels noted in the confirmation samples are not the levels at present surface soils posing a risk. In addition, the risk to human health falls within the acceptable risk range. Thus, it was determined that PCB1,2,3 does not present a threat to human health. No further remedial actions or ICs are required at this site as per BCT consensus at the May 21, 1998 RPM meeting. Regulatory concurrence with this decisions is documented in the EPA letter dated July 10, 1998.

5.2.5.13 Polychlorinated Biphenyls Site 4 (PCB4)

This section serves as a placeholder to maintain the original organization of the SCOU ROD Part l from earlier versions. The site originally referenced here, Polychlorinated Biphenyls Site 4 (PCB4), has been deferred to a subsequent ROD.

5.2.5.14 Polychlorinated Biphenyls Site 5 (PCB5)

This section serves as a placeholder to maintain the original organization of the SCOU ROD Part 1 from earlier versions. The site originally referenced here, Polychlorinated Biphenyls Site 5 (PCB5), has been deferred to a subsequent ROD.

5.2.5.15 Polychlorinated Biphenyls Site 6 (PCB6)

This section serves as a placeholder to maintain the original organization of the SCOU ROD Part 1 from earlier versions. The site originally referenced here, Polychlorinated Biphenyls Site 6 (PCB6), has been deferred to a subsequent ROD.

5.2.5.16 Polychlorinated Biphenyls Site 8 (PCB8)

PCB8 is located near Building 360 in the MBS (R11, Plate 5-1 in Appendix C), in an area that has a future use designated as institutional (educational). A transformer oil spill occurred in May 1982 at this site. Based on available records, the spill was limited to a paved area and did not impact soil. At the time of the spill, May 26, 1982, analysis of a transformer oil sample indicated a PCB concentration of 7 mg/kg. This concentration is less than the concentration of 50 mg/kg specified by the Toxic Substances Control Act (TSCA) to define a PCB transformer. Accordingly, no additional samples were collected and no remediation pursuant to TSCA was conducted. On this basis, PCB-8 was originally considered as an NFA site prior to the SCOU RI.

Water Quality Impacts: A summary of the analytical results compared to the VLEACH1 screening level is provided below. This comparison makes the assumption that site contamination is equal to the PCB concentration found in the released transformer fluid. Based on this assumption, the site does not pose a threat to water quality.

PCB8 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
PCB	7	0	82.9	0-40	VLEACH1

Human Health Risk Assessment: During July of 1998, the EPA reviewed the available data to determine if the site posed a threat to human health that would require implementation of ICs (see Appendix F for a summary of EPA findings). Since the spill was reportedly confined to a paved area and did not impact soil, and because the PCB level of the transformer oil was well below the Toxic Substance Control Act (TSCA) levels that define a PCB transformer (50 mg/kg), a determination of NFA was made for this site.

Changes from Prior CERCLA Documentations: Based on pre-RI investigation and cleanup, PCB8 was included in the SCOU RI/FS as an NFA site. Review of confirmation sample data after the RI was issued indicated PCB levels in excess of residential RAOs remained at the site. Since the site did not meet unrestricted reuse requirements, the SCOU Proposed Plan recommended a preferred alternative of ICs. Because of community concerns regarding ICs and their desire for unrestricted reuse, the nature of the site, and BCT consensus, the EPA reevaluated all of the available site data and concluded that the site did not pose a significant threat to human health or water quality and that further remedial actions or ICs would not be needed at the site. Based on the above factors, an NFA determination was made for this site.

Risk Management Decision: PCB8 was included with the Surface Releases and Fire Training Area group (Category 7) during the RI/FS. Remedial alternatives considered for Category 7 sites included No Action, Solidification/Stabilization, Soil Washing, Excavation/On-site Disposal, and ICs. A summary of how these alternatives could be applied at PCB8 is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for PCB8 is provided on Plate 5-2-3 in Appendix C.

Since the release was confined to a paved area and the PCB levels in the released transformer oil were below TSCA cleanup trigger levels (50 ppm), a determination of NFA has been made for this site as agreed to by BCT consensus at the May 21, 1998 RPM meeting. Regulatory concurrence with these decisions was documented in the EPA letter of July 10, 1998 (Appendix F) which commented on Remedial Decisions for Source Control Operable Unit Polychlorinated Biphenyl Sites 1,2,3,4,5,6,and 8, Castle Airport.

5.2.5.17 Sanitary Sewer 1 (SS1)

A network of sanitary sewer lines serves most of Castle Airport and the off-base housing areas. SSl is a portion of this network that is located in the BWS near the corner of A Street and SAC Street, by buildings 1230, 1231, and 1234 (Q10, Plate 5-1 in Appendix C). The lines are located in an area that has a future use designated as institutional (educational). Liquids suspected to be present in the sewer lines included fuels, solvents, and oils. As part of the SCOU RI, five soil borings were installed in the vicinity of SS1. A total of ten soil samples (from 0 to 19 feet bgs) and four soil gas samples (20 feet bgs) were collected from the borings.

Water Quality Impacts: A summary of the analytical results compared to the appropriate Water Board DLM screening levels is provided below.

SS1 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH (diesel)	63	15.5	1,500	0-20	Water Board, DLM
TVPH (gas)	9.8	15.5	100	0-20	Water Board, DLM
Barium	111	9	2,775	40-65	Water Board, DLM
Manganese	**241**	**9**	**228**	**40-65**	**Water Board, DLM**
Antimony	6.8	19	11.5	40-65	Water Board, DLM

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site. Based on the risk evaluation results, the site does not pose a risk to human health.

SS1 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
3.1×10^{-8}	0.001

Risk Management Decision: Based on a review of site data, it was determined that manganese levels in excess of WQSA screening levels were naturally occurring and not anthropogenic. Based on a Risk Management Decision, a determination of NFA has been made for this site. Since the Risk Management Decision was made prior to the FS, Remedial alternatives were not considered or developed for this site.

5.2.5.18 Storage Area B1 (SA B1)

SA B1 was a 90-day Hazardous Waste Storage Site adjacent to DA-3 in the MBS (T11, Plate 5-1 in Appendix C), in an area that has a future use designated as commercial. The facilities at SA B1 included several storage bays within Building 850 (B850) and the paved vacant lot east of B850. The facility was designated as a 90-Day Hazardous Waste Storage Site in 1991 for all hazardous waste except PCB, and was used as such until base closure in 1995. The site was used for staging and temporary storage of 55-gallon drums containing liquid waste collected from various generating areas throughout the base. The drums were delivered to the asphalt-paved lot prior to placement onto bermed, concrete-lined areas inside the east wing of B850. Materials handled at the site included diesel fuels, oils, greases, paints, SVOCs, solvents, metals, and pesticides. Prior to 1989, SA B1 was used for equipment storage. Assuming light maintenance was conducted at the site, minor petroleum releases could have penetrated weakened areas of the parking lot. A diesel AST was located on the east edge of the parking lot. Although the AST has been removed, it still represents a potential source area for petroleum hydrocarbons.

SA B1 was not sampled during the first phase of RI activities. During 1997, a Data Gap Investigation was conducted to assess potential contamination associated with cracks in the asphalt staging area, stained areas, and low lying run-off areas at the site. Six hand auger borings were installed at the site during the Data Gap Investigation. A total of 12 soil samples were collected from these borings at depths ranging from 0.5 to 3.5 feet bgs. Laboratory analyses of soil samples collected from the borings indicated aluminum, beryllium, manganese, selenium, silver, and zinc above the TBV levels. Pesticides, including DDT, were identified in surface soils from three of the borings, and low levels of TEPH (diesel) were noted in all of the borings.

During the RI/FS process, SA B1 was included with the Category 7, Surface Release and Fire Training Area, group of sites. Remedial alternatives considered for Category 7 sites included No Action, Solidification/Stabilization, Soil Washing, and Excavation/On Site Disposal. A summary of how these alternatives could be applied at SA B1 is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for SA B1 is provided on Plate 5-2-3 in Appendix C.

Water Quality Impacts: A summary of the analytical results compared to the appropriate Water Board DLM and VLEACH1 screening levels is provided below. Manganese levels exceeded the WQSA screening thresholds.

SA B1 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Aluminum	10,300	3.5	71,103	40-65	Water Board, DLM
Beryllium	0.48	3.5	7.6	40-65	Water Board, DLM
Manganese	**287**	**3.5**	**228**	**40-65**	**Water Board, DLM**
Selenium	12.2	3.5	32	40-65	Water Board, DLM
Silver	3.46	3.5	6,000	40-65	Water Board, DLM
Zinc	36.1	3.5	319	40-65	Water Board, DLM
DDT	0.097	0.5	82.91	0-40	VLEACH1
TEPH (diesel)	5.8	3	1,500	0-20	Water Board, DLM

Human Health Risk Assessment: The SA B1 risk assessment was conducted based on data gathered during the Data Gap Investigation Study. A summary of the findings is presented below. The risk assessment results in thus section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site.

SA B1 - Human Health Risk Assessment Summary – HHRA			
Adult Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
3.7×10^{-6}	0.05	**6.5×10^{-6}**	0.1
Child Residential Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
4.1×10^{-6}	0.3	**7.0×10^{-6}**	0.6
Occupational Scenario			
Surface Soil		*Subsurface Soil*	
Cancer Risk	Non-Cancer Hazard Index	Cancer Risk	Non-Cancer Hazard Index
2.1×10^{-7}	0.004	3.6×10^{-7}	0.009

The contaminants in soils at SA B1 pose a potential risk to human health. Beryllium in soil at 0.48 mg/kg is the primary contributor to human health risk.

Changes from Prior CERCLA Documentation: Since SA B1 was in operation during the SCOU RI, it was not sampled as part of RI activities. Since SA B1 was not sampled, the RI/FS did not specify a preferred alternative for the site, and it was included as a Data Gap Site. Because the SA B1 Data Gap Investigation had not been completed by the time the SCOU Proposed Plan was issued, the Proposed Plan listed Excavation and Disposal as the preferred alternative for this site. This alternative was considered appropriate if the Data Gap Investigation confirmed remediation was warranted.

Risk Management Decision: Manganese in soil at 287 mg/kg at 3.5 ft. bgs exceeded the 228 mg/kg at 40-65 ft bgs screening level for water quality. This is not a concern because the exceedence is slight and the screening criteria used is quite conservative. Beryllium in soil at 0.48 mg/kg at 3.5 ft. bgs raised some concern and is the primary contributor to risk to human health, but the risk is within acceptable risk range. The 0.48 mg/kg level of Beryllium found is below the 0.39 mg/kg background level for Beryllium in sand lithology at the site and is also within the 0.26-0.89 mg/kg range of Beryllium background levels found at Castle. With this in consideration, it was concluded that Beryllium in soils does not pose a threat to human health. Thus, results of the Data Gap Investigation showed that the site does not pose a threat to human health or water quality. The selected remedy presented in this ROD is changed to an NFA determination.

5.2.5.19 Storm Drain System (SDS)

The SDS is located in the BWS and consists of SDS1 and SDS2. SDS1 receives runoff from the flight line area, while SDS2 receives runoff from LF1 and LF2, the PFFA, and the industrial areas of the MBS.

The Air Force adopted ICs for SDS 1 and 2 based on the results of a human health risk assessment performed in 1996. However since the 1996 risk assessment, LF1 and LF2 have been clean closed. Additionally a re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. The reader is referred to Appendix E for a more detailed discussion of the risk assessment for this site.

Surface Soil Quality Impacts: Seven surface soil samples were collected at SDS1 and analyzed for metals and organics. Six of the samples had cadmium concentrations ranging from 0.6 mg/kg to 2.3 mg/kg. With the exception of the maximum concentration of cadmium detected at sample location SDSE09 (65.6 mg/kg), the cadmium-related health HI is less than 1.0. SDSE09 also had the highest detected concentrations of PAHs, SVOCs, and other metals including chromium (151 mg/kg), lead (1,100 mg/kg), and molybdenum (167 mg/kg). Six of the seven samples had detected lead concentrations ranging from 17.2 mg/kg to 53.9 mg/kg, well below the 288 mg/kg concentration considered safe for a child. With the exception of sample SDSE09, all other reported PAH and SVOC detections were estimated concentrations below their respective quantitation limits. Based on the analytical results, the maximum reported COPC concentrations at SDSE09 are not representative of metal, PAH, or SVOC concentrations in surface soil at SDS1. The location of SDSE09 was determined not to be representative of the SDS since it was located in an interceptor box in a pipe section connecting B1350 to the SDS. The material in the interceptor box, from which SDSE09 was obtained, was removed and disposed of by the Air Force on October 3, 2001 as a routine operations and maintenance activity.

A summary of the analytical results for surface soil samples at SDS1 is presented below.

SDS1 – Surface Soil Quality Impact							
	*Storm Drain Sample Locations**						
COPC	***09 (mg/kg)***	***10 (mg/kg)***	***11 (mg/kg)***	***12 (mg/kg)***	***13 (mg/kg)***	***14 (mg/kg)***	***15 (mg/kg)***
Metals							
Cadmium	65.6	1.2	1.5	2.3	0.81	0.48	0.6
Chromium	151	21.4	21.5	18.1	15.4	9.2	8.8
Cobalt	6.6	2	5.5	2.5	2.8	0.4	3
Lead	1100	42.9	28.6	53.9	50.3	21.2	17.2
Molybdenum	167	0.64	0.87	0.8	0.6	0.39	0.47
Selenium	2.8	<0.58	0.74	0.41	0.51	0.41	0.59
Silver	0.49	<0.58	<0.61	<0.64	<0.59	<0.64	<0.63
PAHs							
Acenapthene	0.078	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42
Anthracene	0.22	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42
Benzo(a)anthracene	0.62	<0.38	<1.6	<2.1	<1.9	<0.42	0.042
Benzo(a)pyrene	0.46	<0.38	<1.6	<2.1	<1.9	<0.42	0.033
Benzo(b)flouranthene	0.95	<0.38	<1.6	<2.1	0.21	0.033	0.048
Benzo(g,h,i)perylene	0.14	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42
Chrysene	0.84	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42
Fluoranthene	1.3	<0.38	<1.6	<2.1	0.22	0.033	0.065
Fluorene	0.16	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42
Phenanthrene	1.5	<0.38	<1.6	0.14	0.095	0.022	0.02
Pyrene	1.7	<0.38	<1.6	<2.1	0.15	<0.42	0.039
SVOCs							
Bis(2-ethylhexyl)phthalate	3.2	0.19	<1.6	0.32	0.15	<0.42	<0.42
Butylbenzylphthalate	0.43	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42
Di-n-octylphthalate	0.15	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42
4-Methylphenol	0.12	<0.38	<1.6	<2.1	<1.9	<0.42	<0.42

*All sample location IDs begin with SDSE
Shaded values represent the maximum reported concentration

Water Quality Impacts: A summary of the analytical results compared to the appropriate Water Board DLM and VLEACH1 screening levels is provided below. Cadmium, lead, and molybdenum were the only constituents identified in site soil samples that exceeded screening levels. With the exception of sample SDSE09, all other reported results were below screening levels. The location of SDSE09 was determined not to be representative of the SDS since it was located in an interceptor box in a pipe section connecting B1350 to the SDS. The material in the interceptor box, from which SDSE09 was obtained, was removed and disposed of by the Air Force on October 3, 2001 as a routine operations and maintenance activity.

SDS Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
Cadmium	**65.6**	**0**	**43.7**	**40-65**	**Water Board, DLM**
Chromium	151	0	2500	40-65	Water Board, DLM
Cobalt	6.6	0	349	40-65	Water Board, DLM
Lead	**1100**	**0**	**855**	**40-65**	**Water Board, DLM**
Molybdenum	**167**	**0**	**95**	**40-65**	**Water Board, DLM**
Selenium	2.8	0	32	40-65	Water Board, DLM
Silver	0.49	0	6000	0-10[1]	Water Board, DLM
Acenapthene	0.078	0	Note 2	0-40	VLEACH1
Anthracene	0.22	0	83	0-40	VLEACH1
Benzo(a)anthracene	0.62	0	83	0-40	VLEACH1
Benzo(a)pyrene	0.46	0	83	0-40	VLEACH1
Benzo(b)flouranthene	0.95	0	83	0-40	VLEACH1
Benzo(g,h,i)perylene	0.14	0	Note 2	0-40	VLEACH1
Chrysene	0.84	0	83	0-40	VLEACH1
Fluoranthene	1.3	0	83	0-40	VLEACH1
Fluorene	0.16	0	83	0-40	VLEACH1
Phenanthrene	1.5	0	83	0-40	VLEACH1
Pyrene	1.7	0	83	0-40	VLEACH1
Bis(2-ethylhexyl)phthalate	3.2	0	83	0-40	VLEACH1
Butylbenzylphthalate	**0.43**	0	Note2	0-40	VLEACH1
Di-n-octylphthatlate	**0.15**	0	Note2	0-40	VLEACH1
4-Methylphenol	**0.12**	0	83	0-40	VLEACH1

[1]Silver RAO is based on an attenuation factor of 1,000 and TBV value of 6 µg/L
[2]A WQSA screening level was not developed for Acenapthene, Benzo(g,h,i)perylene, Butylbenzylphthalate, or Di-n-octylphthalate

Human Health Risk Assessment:
A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. The reader is referred to Appendix E for a more detailed discussion of the risk assessment for this site.

SDS Area 1 - The cancer risk for SDS Area 1 was 3.8E-05 in the 1996 risk assessment and increased to 1.2E-03 in the 2001 updated results. Cadmium had previously contributed <1 percent risk to Area 1, while in the updated results, cadmium contributes 97 percent. Cadmium, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene each contribute risk in excess of

1.0E-06. The hazard for SDS Area 1 was 7.3 in the 1996 risk assessment and increased to 14.4 in the 2001 updated results, as a result of revised reference doses for cadmium, cobalt, chrysene and phenanthrene. Cadmium is the largest contributor to hazard in the both assessments. The Area 1 sampling location used for the exposure point concentrations (SDSE09) was a grated interceptor box in a pipe section that leads from B1350 to the SDS. Sediment from the B1350 lateral presumably collected in the box. The highest cadmium result within Area 1 was 65.6 mg/kg, detected at SDSE09. The next highest was 2.3 mg/kg at SDSE12, which was taken in an open stretch of the SDS. The SDSE12 value is above background but considerably lower than the SDSE09 value. The material in the interceptor box, from which SDSE09 was obtained, was removed and disposed of by the Air Force on October 3, 2001 as a routine operations and maintenance activity.

Since SDSE09 drives the risk at SDS1 and the sample location is outside of the SDS, a revised risk assessment was performed for SDS1 without this sample result (Table 11 of Appendix E). The revised cancer risk and non-cancer hazard are 7.9E-05 and 0.8, respectively for SDS1. Based on these revised results, SDS1 does not exceed the decision criteria for non-cancer hazard but still exceeds the decision criteria for cancer risk.

For both the original and updated risk assessment cancer risk values, a high proportion of the risk (91 percent) is associated with the produce pathway. Without consideration of the produce pathway, which is not used in the Castle RAO calculation and should be considered an unlikely pathway for the SDS, the updated cancer risk result for SDS1 is 7.2E-06. The updated non-cancer hazard, without consideration of the produce pathway, is 0.1. Given these results, SDS Area 1 can remain as NFA in the SCOU ROD 1. Despite the cancer risk at SDS Area 1 being slightly greater than the decision criterion of 1.0E-06, NFA is appropriate because the assumptions for an adult residential scenario for the SDS would be very conservative (i.e., exposure duration at the SDS would not be as high as under the residential scenario).

SDS Area 2 - The cancer risk for SDS Area 2 was 1.4E-07 in the 1996 risk assessment and increased to 6.8E-05 in the 2001 updated results. Cadmium had contributed 1 percent of the cancer risk to Area 2, while in the updated results cadmium contributes 100 percent. Cadmium is the only COC contributing risk in excess of 1.0E-06. The non-cancer hazard at SDS Area 2 was 0.6 in the 1996 risk assessment and increased to 1.0 in the updated results, as a result of revised reference doses for cadmium and cobalt. Cadmium is the largest contributor to hazard in the both assessments.

For both the original and updated risk assessment cancer risk values, a high proportion of the risk (99 percent) is associated with the produce pathway. Without consideration of the produce pathway, which is not used in the Castle RAO calculation and should be considered an unlikely pathway for the SDS, the updated cancer risk result for SDS2 is 8.9E-07. The non-cancer hazard, without consideration of the produce pathway, is 0.01. Given these results, SDS Area 2 can remain as NFA in the SCOU ROD 1.

Changes from Prior CERCLA Documentation: The SCOU Proposed Plan recommended a preferred alternative of ICs for the SDS. The remedy has changed to NFA based on a risk management decision, considering a re-evaluation of the actual risk at the site.

Risk Management Decision: Based on the unrealistic and overly conservative assumptions used to generate the 1996 Risk Assessment values and a reevaluation of the risk, cancer risk is likely to be less than 1.0E-06. Therefore a determination of NFA has been made for this site.

5.2.5.20 Structure 1201 (ST1201)

ST1201 was located down gradient from Building 1205 (B1205) in the MBS (M8, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. ST1201 was constructed between 1989 and 1990 and was used as an auto maintenance shop. A 15-foot deep, unlined storm water retention pond is associated with the structure. The surrounding area is unpaved and is adjacent to an asphalt parking lot. Based on a review of aerial photographs, a building and storage yard used by the Defense Reutilization and Marketing Office (DRMO) was located in the area now occupied by Structure 1201. No additional information on past uses or contaminants of concern is available.

Previous investigations had identified VOCs in soil gas in the vicinity of the site. The highest level of VOC contamination was 310 µg/L of TCE at 94 feet bgs. This sample was collected from the saturated zone.

To further evaluate VOC contamination at the site, five soil gas probes were installed and a geophysical survey was conducted at the site. Analyses of ten soil gas samples collected from depths of 10 and 20 feet bgs did not indicate the presence of TCE. The geophysical survey did not identify any magnetic anomalies and confirmed that there were no abandoned USTs or piping at the site.

Water Quality Impacts: A summary of the analytical results compared to the appropriate VLEACH2 screening levels is provided below. TCE at 94 feet bgs exceeded WQSA threshold values.

ST1201- Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil Gas (µg/L)					
TCE	**310**	**94**[1]	**1.8**	**50-60**	**VLEACH2**
TCE	ND	10-20	49.6	10-20	VLEACH2

[1]Elevated TCE levels at depth a result of groundwater plume off-gassing

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below.

ST1201 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.6×10^{-9}	0.002

Risk Management Decision: Water quality risks at ST1201 were driven by the presence of TCE in soil gas at 94 feet bgs. Since TCE was not found in shallow soil samples from the site, it was determined that the elevated levels of TCE at depth were a result of the Wallace Road VOC groundwater contamination plume off-gassing and was not caused by activities at ST1201. VOC contamination in groundwater is being addressed in the CB Part 1 ROD. Based on this assessment, a decision of NFA was determined for this site to protect groundwater quality or human health. Since the Risk Management Decision was made prior to the Feasibility Study, Remedial alternatives were not considered or developed for this site. The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. Based on the risk evaluation results, the site does not pose a risk to human health, and a determination of NFA has been made for this site.

5.2.5.21 Structure 1206 (ST1206)

ST1206 was located down gradient of B1205 in the MBS (M8, Plate 5-1 in Appendix C), in an area that has a future use designated as industrial. ST1206 was constructed between 1989 and 1990 and was used as an auto maintenance shop. This structure was investigated in conjunction with Structure 1201 and Buildings 1204, 1205, and 1207. A 15-foot deep unlined storm water retention pond is associated with the Structure 1201. The surrounding area is unpaved and is adjacent to an asphalt parking lot. Based on the review of aerial photographs, a building and storage yard used by DRMO was located in the area now occupied by Structure 1201. No additional information on past uses or contaminants of concern is available.

Previous investigations had identified VOCs in soil gas in the vicinity of the site. The highest level of VOC contamination came from a head space test of a groundwater sample collected from 94 feet bgs. This test method yielded a TCE level of 310 µg/L.

As part of the SCOU RI, five soil gas probes were installed and a geophysical survey was conducted at Structure 1201. Analyses of ten soil gas samples collected from depths of 10 and 20 feet bgs did not indicate the presence of TCE. Based on this information, it was determined that the VOC contamination identified during the previous investigation was a result of the Wallace Road VOC groundwater contamination plume off-gassing and was not caused by activities at ST1201 or ST1206. The geophysical survey did not identify any magnetic anomalies and confirmed that there were no abandoned USTs or piping at the site.

Water Quality Impacts: A summary of the analytical results compared to the VLEACH2 screening level is provided below. The lack of TCE in the shallow vadose zone suggests the elevated TCE levels are a result of groundwater plume off-gassing. Based on this evaluation, the site does not present a threat to groundwater quality and a determination of NFA has been made for this site.

ST1206 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil Gas (µg/L)					
TCE	**310**	**94** [1]	**1.8**	**50-60**	**VLEACH2**
TCE	ND	10-20	19	10-20	VLEACH2

[1]Elevated TCE levels at depth a result of groundwater plume off-gassing

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk evaluation results, the site does not pose a risk to human health, and a determination of NFA has been made for this site.

ST1206 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.6×10^{-9}	0.002

Risk Management Decision: Water quality risks at ST1201 were driven by the presence of TCE in soil gas at 94 feet bgs. Since TCE was not found in shallow soil samples from the site, it was determined that the elevated levels of TCE at depth were a result of the Wallace Road VOC groundwater contamination plume off-gassing and was not caused by activities at ST1201. Based on this assessment, a determination of NFA has been made for this site. VOC contamination in groundwater is being addressed in the CB Part 1 ROD. Since the Risk Management Decision was made prior to the Feasibility Study, Remedial alternatives were not considered or developed for this site.

5.2.5.22 Underground Fuel Leak (UFL4)

UFL4 is located in the MBS (N11, Plate 5-1 in Appendix C), in an area that has a future use designated as aviation support. The site consists of Building 1337 (B1337), a JP-4 hydrant storage tank group, and six 50,000-gallon USTs, one 2,000-gallon UST, and an aboveground pump-and-transfer facility. Materials handled at the site included fuels and solvents. A soil gas survey and soil sampling effort that included a collection of nine soil gas samples and 12 soil samples were conducted at the site in 1988 (ITT, 1988). The soil gas survey indicated a maximum of 16 µg/L TCE and 4 µg/L TPH. Laboratory analyses of 12 soil samples indicated a maximum of 0.038 mg/kg toluene and 91.1 mg/kg TPH from a depth of 6 feet bgs. One monitoring well (MW-130) was installed within the site boundary west of B1337. Laboratory analyses of a groundwater sample from this well indicated 2.1 mg/L TPH. No VOCs, SVOCs, or lead were detected.

To further evaluate the site, 11 soil borings were installed as part of the SCOU RI. A total of 31 soil samples and 19 downhole soil gas samples were collected from these borings. Soil analyses indicated trace levels (less than 2 µg/kg) BTEX, 19 µg/kg 1,2,4-trimethylbenzene, and elevated levels of TPH (up to 91.1 mg/kg at 6 feet). Lead levels were less than TBV.

Downhole soil gas samples indicated the presence of low levels of TCE, l,1-DCE, and BTEX. A maximum of 10.4 µg/L toluene was noted in the 20-foot sample of SB1. All other BTEX soil gas detections were less than 4 µg/L. Soil gas TCE was noted in five of the borings (SB5, 8, 9, 10, and 11). TCE concentrations ranged from 1.2 µg/L (at 20 feet bgs in SB5) to 8.4 µg/L (at 40 feet bgs in SB8). However, soil samples from 19.5 feet bgs in SB5 and 34.5 feet bgs in SB8 did not indicate the presence of TCE. Since TCE was not identified in shallow gas samples, the isolated downhole TCE soil gas detection suggest that the TCE is attributable to a deeper source, possibly in groundwater.

Water Quality Impacts: A summary of the analytical results compared to the appropriate Water Board DLM and VLEACH2 screening levels is provided below. TCE and ethylbenzene in one downhole soil gas sample exceeds VLEACH 2 screening levels.

UFL4 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH	91.1	6	1,500	0-20	Water Board, DLM
Toluene	0.0017	14.5	75.4	10-20	VLEACH2
1,2,4 TMB	0.0019	19.5	195	10-20	VLEACH2
Soil Gas (µg/L)					
Benzene	2.7	20	20.1	20-30	VLEACH2
Toluene	10.4	20	9,495	20-30	VLEACH2
1,1 DCE	1.4	40	NA[1]	NA[1]	NA[1]
Ethylbenzene	**1.7**	**20**	**1.4**	**40-50**	**VLEACH2**
TCE	**8.4**	**40**	**4.8**	**40-50**	**VLEACH2**
Xylenes	3.9	20	10,512	20-30	VLEACH2

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. Based on the risk evaluation results, the site does not pose a risk to human health, and a determination of NFA has been made for this site.

UFL4 - Human Health Risk Assessment Summary - Screening	
Cancer Risk	*Non-Cancer Hazard Index*
4.8×10^{-9}	0.00001

Risk Management Decision: UFL4 was included with the Storage Tank and Tank Farm Group (Category 4) during the RI/FS process. Alternatives considered for remediation of Category 4 sites included No Action, SVE/Bioventing, Thermally Enhanced SVE, Intrinsic Remediation, and LTU. A summary of how these alternatives could be applied at UFL4 is provided on Plate 5-2-2 in Appendix C. A summary of alternative comparison for UFL4 is provided on Plate 5-2-3 in Appendix C. Water quality risk at UFL4 is driven by the presence of TCE in a soil gas sample from 40 feet bgs. However, because no shallow source of TCE contamination was identified, it was reasoned that VOC soil gas contamination is the result of the groundwater plume off-gassing and is not representative of vadose zone contamination from this site. VOC contamination in groundwater is being addressed in the CB Part 1 ROD. Based on this evaluation, the site does not pose a risk to water quality, and a determination of NFA has been made for this site.

5.2.5.23 Discharge Area 2 (DA-2)

DA-2 is located in the WFLS (Plate 5-1, M10 in Appendix C) adjacent to Hardstand No. 6, in an area that has a future use designated as aviation support. DA-2 is associated with a non-powered washrack that was used to clean aircraft support equipment. From about 1960 to 1983,

wastewater was discharged from the washrack to a concrete sump located approximately 50 feet away.

Petroleum hydrocarbons in soil, fuel-related VOCs and low levels of halogenated VOCs in soil gas were detected in vadose zone samples. TEPH (at a maximum concentration of 17,000 mg/kg at 1.5 feet bgs) and TVPH (at a maximum of 950 mg/kg at 1.5 feet bgs) appear to be concentrated in the shallow soil. Low levels of BTEX were detected in downhole soil gas from sample locations DA2SB06, DA2SB07, and DA2SB08. Total nonmethane hydrocarbons as hexane (NMOC) were reported in the 5-, 10-, and 20-foot samples at sample location DA2SB09 (to a maximum concentration of 1,800 µg/L at 20 feet). Low concentrations of TCE were detected in shallow soil gas survey samples (at a maximum of 12.9 µg/L at approximately 10 feet bgs) and in downhole soil gas samples to 20 feet bgs (at a maximum concentration of 0.21 µg/L). However, TCE was not detected in post RI soil gas profile sampling, and the data suggest that the site was not associated with significant TCE releases, and was most likely related to off-gassing of the Main Base Plume. The data also suggest that shallow releases in the vicinity of the JP4 fuel line may be a source of petroleum hydrocarbons. Lead (at a maximum concentration of 639 mg/kg in surface soil) is present above the TBV and was probably introduced to the site in runoff from the nearby aircraft parking apron.

Water Quality Impacts: A summary of the analytical results compared to the appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based on the analytical results, this site does not pose a risk to water quality, since the area of the petroleum contamination has been removed, as discussed in the *Changes from Prior CERCLA Documentation* section.

DA-2 - Water Quality Impact					
	Sample Results		*WQSA Screening*		
COC	Conc.	Depth (ft)	Limit	Depth (ft)	Basis
Soil (mg/kg)					
TEPH	**17,000**	**1.5**	**1,500**	**0-20**	**Water Board, DLM**
TVPH	**950**	**1.5**	**100**	**0-20**	**Water Board, DLM**
Cadmium	9.1	0	43.7	40-65	Water Board, DLM
Lead	639	0	855	40-65	Water Board, DLM
Soil Gas (µg/L)					
TCE	12.9	10	49.6	0-10	VLEACH2
TCE	0.21	20	19.0	10-20	VLEACH2

Human Health Risk Assessment: A summary of the cancer risk and non-cancer hazard index calculations is provided below. The risk assessment results in this section are the SCOU RI/FS values. A change in toxicity factors for constituents of concern for this site necessitated a recalculation of more current risk assessment values, which are found in Table 10 of Appendix E, and discussed in the *Changes from Prior CERCLA Documentation* section.

DA-2 - Human Health Risk Assessment Summary – Screening	
Cancer Risk	*Non-Cancer Hazard Index*
1.8×10^{-8}	0.3

Changes from Prior CERCLA Documentation: The discussion above represents the evaluation of this site as presented in the SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Due to changes in the oral cancer slope factor for cadmium, the risk increased from 1.8×10^{-8} to 2.1×10^{-6}. The percentage contribution of cadmium to total risk increased from 15 to 100 percent due to this change. Cadmium is the only contaminant that exceeds the 1×10^{-6} cancer risk. Since the RI/FS was completed the area of the petroleum contamination has been removed.

Risk Management Decision: Petroleum contamination was identified at DA-2 but was removed as detailed within Closure Report for CERCLA and Petroleum Hydrocarbon - Contamination Excavation Sites Final (JEG 2000b). While the risk is slightly above 1×10^{-6} (2.1×10^{-6}), Cadmium, the risk driver, was only detected at two locations immediately adjacent to each other. The estimated risk at DA-2 is at the lower end of the risk management range. The areal extent of cadmium above TBVs is limited to two borings approximately two feet apart, making it unlikely that any person would be exposed to elevated levels of cadmium for a sustained period of time as was assumed in the risk assessment. Based on an evaluation of this information, the site does not pose an unacceptable risk to water quality nor to human health, and a determination of NFA has been made for this site.

5.2.6 Statutory Determinations for No Further Action Sites

5.2.6.1 Protection of Human Health

The 137 CERCLA SCOU NFA sites at Castle do not pose a current or future risk to human health or to water quality. At the majority of the sites, contamination noted was below the WQSA and human health risk threshold levels, based on RI data. For sites that did not meet WQSA and risk thresholds, documentation of the basis for the NFA Risk Management Decision has been provided in Section II, Subsections 5.2.3 and 5.2.4, and with Plates 5-2-1, 5-2-2, and 5-2-3 in Appendix C.

5.2.6.2 Attainment of ARARs

Since it has been determined that the NFA sites do not pose a threat to human health or water quality, no remedial actions are necessary, and there are no ARARs for these sites. However, for all sites for which removal actions were conducted, all ARARs were complied with as identified within Action Memoranda. The removal actions were documented in the appropriate closure reports.

5.2.6.3 Cost Effectiveness

There are no additional costs associated with the NFA alternative.

5.2.6.4 Use of Permanent Solutions, Alternative Treatment Technologies, and Resource Recovery Technologies to the Maximum Extent

Not Applicable for NFA sites

5.2.6.5 Preference for Treatment that Reduces Toxicity, Mobility of Volume (TMV) as a Principal Element

Not Applicable for NFA sites

Section III

Section III. Applicable Or Relevant And Appropriate Requirements

6.0 Applicable or Relevant and Appropriate Requirements (ARARs)

CERCLA requires that remedial actions conform to all applicable or relevant and appropriate state and federal environmental or facility siting laws. These are commonly known as ARARs. Pursuant to the National Contingency Plan, the Air Force requests at several stages in the cleanup process that the relevant state and federal regulators provide their proposed ARARs for the particular cleanup. The Air Force and the regulators then come to an agreement on the substantive requirements that apply to the cleanup. Because the sites included within the SCOU ROD Part 1 are characterized as NFA sites, no ARARs are required for this ROD. However, for all sites for which removal actions were conducted, all ARARs were complied with as identified within Action Memoranda. The removal actions were documented in the appropriate closure reports.

In the original version of the SCOU ROD Part l, two sites, LF4 and LF5, were the only sites for which ARARs were required and both federal and state ARARs applicable to those sites were developed and included in early drafts within Appendix D. In order to maintain a document structure that facilitates tracking changes in versions of the ROD from initiation to completion, Appendix D is retained as a placeholder where Plates 6-1 (federal ARARs for landfills) and 6-2 (state ARARs for landfills) had been included prior to removal of LF4 and LF5 from the ROD.

Section IV

Section IV. Source Control Operable Unit

7.0 Source Control Operable Unit (SCOU) Proposed Plan Responsiveness Summary

7.1 Introduction

The purpose of this responsiveness summary is to identify the selected remedies for the Source Control Operable Unit (SCOU) sites, present concerns and issues raised during the SCOU Proposed Plan public comment period, and provide Air Force responses to those concerns. All of the comments received were carefully reviewed during the decision process for the site remedies final selection and have been addressed in this responsiveness summary. The Air Force responses document how the Air Force has considered public comments during the decision making process and provide responses to those public comments.

The SCOU is comprised of 233 individual sites. A total of 169 of the 233 SCOU sites are included in this ROD. This includes 137 sites requiring NFA. For tracking purposes, this ROD also includes 32 petroleum hydrocarbon sites that are not subject to CERCLA. Final remedial decisions for these sites will be addressed under RCRA Subtitle I and the authorized State of California UST Program. Final decisions for the remaining 64 sites will be presented in the SCOU ROD Part 2, the CB ROD Part 2, or other subsequent ROD. The Air Force will release a revised Proposed Plan with preferred alternatives for the CB Part 2 sites. The public will have an opportunity to comment on this Proposed Plan. The Air Force will issue a revised Proposed Plan for SCOU ROD 2 sites.

7.2 Selected Remedies

The Air Force has selected several alternatives for remediation of the SCOU sites. Brief descriptions of the selected remedies are provided in the table below, Description of SCOU Selected Remedies. Detailed descriptions of the remedies are provided in this ROD. A listing of the SCOU ROD Part 1 site groups and selected remedies is provided below.

<u>SCOU ROD 1:</u>

- ***No Further Action (NFA) sites***: No remediation needed

- ***Petroleum Hydrocarbon Only sites***: NFA under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), but remain to be closed by RCRA and state requirements

Description of SCOU Selected Remedies

Remedy	Description
TREATMENT	
Soil Vapor Extraction (SVE)	Applies a vacuum through a network of extraction wells to enhance volatilization and physically remove contaminants. Off-gases may require treatment to remove contaminants.
Bioventing	Forces air through contaminated soils to increase the oxygen content of soil and promotes biodegradation.
Intrinsic Remediation (IR)	IR processes include natural attenuation, chemical transformation, and biodegradation. IR is considered a viable option if the rate of contamination degradation exceeds the rate of contaminate migration. It requires sampling and analysis of the soil and ground water to determine if conditions are suitable for IR and to calculate attenuation rates. If monitoring data indicates that IR will not be capable of meeting cleanup requirements, then a predetermined active remedial alternative would be enacted as specified in the IR work plan.
REMOVAL	
Excavation and disposal at on-site consolidation landfill	Waste is excavated and then temporarily stockpiled so that it can be characterized. Non-hazardous waste is disposed of at an on-site consolidation landfill. If hazardous waste is identified, then it would be disposed of at an off-site hazardous waste landfill.
CONTAINMENT	
Zoned Capping with Institutional Controls and Long-term Monitoring	Non-hazardous waste materials are consolidated within a much smaller area within the landfill boundary. If hazardous waste is identified, then it would be disposed of at an off-site hazardous waste landfill. A zoned cap is constructed with up to three differing levels of protection. This zoned cap would provide maximum protection for areas where risk-based contaminants have been identified (Class III flexible membrane liner cap) and lesser degrees of protection over low-risk areas. Institutional controls are established to restrict access to the area, prevent unsuitable reuse, protect the cap, and maintain access to monitoring points. The AFBCA management strategy for implementation, monitoring, and enforcement of institutional Controls will be described in the SCOU part 2 ROD. The cap will be inspected periodically and maintained as needed.

INSTITUTIONAL CONTROLS	
Deed Restriction	Information is added to the property deed that notifies the public and future owners or tenants of potential health threats associated with the site. Deed restrictions will be enforced, and the Air Force will monitor their effectiveness.
Access Restriction	Signs with hazard notification are posted and/or fences are installed to restrict access to the site. Access restrictions at capped landfills are required by the RWQCB. They are primarily intended to protect the remedy (the landfill cap) and include such things as restricted site access and prohibitions on activities detrimental to the integrity of the cap. Access restrictions will be enforced, and the Air Force will monitor their effectiveness. Further details regarding access restriction can be found in the *Closure/Post Closure Maintenance Plan* for LF4 and LF5.
NO ACTION	
No Further Action	Under NFA, ground water sampling and analyses is undertaken to monitor the ground water conditions related to the site. This is accomplished through the long-term basewide-monitoring program. No other remedial actions would be undertaken to clean up or restrict access to the site.

The final SCOU RI/FS (RI/FS) was released in May 1997, and the SCOU Proposed Plan was released on August 15, 1997. In response to community concerns and/or additional data gathered since the RI/FS or Proposed Plan, the selected remedies for several SCOU sites have been modified or changed. For discussion on sites that have been modified due to community concerns, see Section 5, Modifications Resulting from Public Comments. In addition, there are sections in this ROD that explain why remedies have been modified. They can be found in NFA Section 5.2.1. A summary of the remedy changes for the SCOU ROD 1 sites is provided in the following table.

Summary of Remedy Changes

(See Section II, Decision Summary, for Details)

Site	RI/FS Preferred Alternative	Proposed Plan Preferred Alternative	ROD Selected Remedy
NO FURTHER ACTION SITES			
Building 84	Not specified (Data Gap site)	Excavation and On-site Disposal	No further action
Building 871	Land Treatment Unit	Excavation and On-site Disposal	No further action

Summary of Remedy Changes (See Section II, Decision Summary, for Details)			
Site	**RI/FS Preferred Alternative**	**Proposed Plan Preferred Alternative**	**ROD Selected Remedy**
Building 1344	Institutional Controls	Excavation and On-site Disposal	No further action
Building 1529	Not Specified (Data Cap Site)	SVE and Intrinsic Remediation	No Further Action
Building 1532	Not Specified (Technical and Economic Evaluation Site)	No Further Action	No Further Action
Building 1550	SVE	SVE	No Further Action
CVLFA	Excavation and On-Site Disposal	Excavation and On-Site Disposal	No Further Action
CVLFB	Excavation and On-Site Disposal with SVE	Excavation and On-Site Disposal with SVE	No Further Action
Detonation and Burn Facility (DBF)	Excavation and Disposal	No Further Action	No Further Action
DA-3	Excavation and On-Site Disposal of Metals, Intrinsic Remediation with Backup of Land Treatment Unit for Petroleum Hydrocarbons	Excavation and On-Site Disposal of Metals, Intrinsic Remediation with Backup of Land Treatment Unit for Petroleum Hydrocarbons	No Further Action
DA-8	SVE	SVE	No Further Action
DP1	Zoned Capping with Institutional Controls	Zoned Capping with Institutional Controls	No Further Action
DP2	Zoned Capping with Institutional Controls	Zoned Capping with Institutional Controls	No Further Action
DP3	Zoned Capping with Institutional Controls	Zoned Capping with Institutional Controls	No Further Action
ETC2	Not Specified (Data Gap Site)	Excavation and On-Site Disposal	No Further Action
ETC7	Not Specified (Data Gap Site)	SVE	No Further Action
Firing Range	Excavation and On-Site Disposal	Excavation and On-Site Disposal	No Further Action
FTA2	Excavation and Disposal (Data Gap Site)	Excavation and On-Site Disposal	No Further Action
LF1	Zoned Capping with Institutional Controls	Zoned Capping with Institutional Controls	No Further Action
LF2	Excavation and On-Site Disposal	Excavation and On-Site Disposal with Institutional Controls and SVE	No Further Action
LF3	Zoned Capping with Institutional Controls	Zoned Capping with Institutional Controls	No Further Action
PCB1, 2, 3	No Further Action	Institutional Controls	No Further Action

Summary of Remedy Changes (See Section II, Decision Summary, for Details)			
Site	**RI/FS Preferred Alternative**	**Proposed Plan Preferred Alternative**	**ROD Selected Remedy**
PCB8	No Further Action	Institutional Controls	No Further action
PCB9	Excavation	Excavation and Institutional Controls	No Further Action
SS6	SVE	SVE	No Further Action
SS7	SVE	SVE	No Further Action
Storage Area B1 (SAB1)	Not Specified (Data Gap Site)	Excavation and On-Site Disposal	No Further Action
SDS	Institutional Controls	Institutional Controls	No Further Action
Structure T85 (B84)	Not Specified (Data Gap Site)	Excavation and On-Site Disposal	No Further Action
SWMU 4.9 (B325)	Not Specified (Technical & Economic Evaluation Site)	SVE	No Further Action
SWMU 4.10 (B325)	Not Specified (Technical & Economic Evaluation Site)	SVE and Intrinsic Remediation	No Further Action
SWMU 4.19 (B1324)	Not Specified	Intrinsic Remediation	No Further Action
SWMU 4.25 (B84)	No Further Action (Data Gap Site)	Excavation and On-Site Disposal	No Further Action
SWMU 4.31	Not Specified	Institutional Controls	No Further Action
SWMU 4.36 (B1324)	Not Specified	Intrinsic Remediation	No Further Action
DA-2	Not Specified	Petroleum Hydrocarbon Only Site	No Further Action

There are a total of 64 SCOU sites that have not been addressed in SCOU ROD 1. Final decisions for these sites will be contained in SCOU ROD 2, CB Part 2 ROD, or other subsequent ROD. A listing of these sites organized by decision document can be found in the table, Sites Addressed in Future Decision Documents.

Sites Addressed in Future Decision Documents Site (Associated Site)		
Building 51	Hangar F4	Structure T66 (B54 Group)
Building 52 (B51 Group)	SAB3 (B54 Group)	Structure T67 (B54 Group)
Building 53 (B51 Group)	Sanitary Sewer 2	SWMU 4.3 (B1521)
Building 54	Sanitary Sewer 4 (UFL2)	SWMU 4.4 (PFFA)
Building 1253 (B51 Group)	Stain 33 (11, 41)	SWMU 4.5 (PFFA)
Building 1260 (B54 Group)	Stain 34 (11, 41)	SWMU 4.6 (B88)
Building 1266 (B54 Group)	Stain (11, 41)	SWMU 4.7 (B175)
Building 1314 (DA4)	Stain 36 (Building 1325)	SWMU 4.8 (B175)
Building 1344	Stain 37 (Building 1325)	SWMU 4.14 (B551)

Sites Addressed in Future Decision Documents Site (Associated Site)		
Building 1350	Stain 38 (11, 41)	SWMU 4.15 (PFFA)
Building 1541	Stain 39 (11, 41)	SWMU 4.16 (B956)
Building 1709	Stain 40 (11, 41)	SWMU 4.17 (B54 Group)
Building 1762	Stain 41	SWMU 4.18 (B54 Group)
Discharge Area 4	Stain 42 (11, 41)	SWMU 4.21 (DA5)
Discharge Area 5	Stain 43 (11, 41)	SWMU 4.22 (ST1571)
ETC5 (B54 Group)	Stain 44 (11, 41)	SWMU 4.23 (B1541)
FTA1	Structure 55 (B54 Group)	SWMU 4.29 (B1260)
Disposal Pit 5 (LF4)	Disposal Pit 6 (LF4)	Disposal Pit 8 (LF5)
Disposal Pit 8A (LF5)	Disposal Pit 9 (LF5)	Landfill 4
Landfill 5	Landfill 5 Trenches	ETC-8
ETC-10	PCB 4	PCB 5
PCB 6		

Preferred Remedies

As determined from comments received during the SCOU Proposed Plan public comment period, the community generally supports treatment activities such as SVE. The community prefers the removal and off-site disposal for the landfills and sites with contaminated soil. The Merced County Department of Health strongly supports excavating and removing the seven landfills from the county.

7.3 Background on Community Involvement

Community concern over Castle environmental problems increased in February 1984 when on-base and off-base residents were notified that trichloroethylene (TCE) levels in ground water from several water supply wells exceeded the state action level of 5 parts per billion (ppb). The base took immediate corrective action by providing affected residents with bottled water or installing carbon filter systems. In addition, the Air Force funded a new well for the City of Atwater, and Castle Mobile Home Park residents were hooked up to municipal water.

The Air Force established a Restoration Advisory Board (RAB) in 1994. The RAB provides a forum through which members of nearby communities can provide input to decision makers. It meets regularly to discuss and exchange information regarding the base cleanup program. The RAB consists of representatives from the following:

- Communities of Atwater, Merced, and Winton
- Air Force Base Conversion Agency (AFBCA)
- U.S. Environmental Protection Agency (Region IX, USEPA)
- California Environmental Protection Agency (Cal/EPA)—Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB)
- City of Atwater
- Merced Public Health Department
- Castle Joint Powers Authority (JPA)

The community has several key issues and concerns regarding Castle Airport:

- redevelopment and reuse of base property
- unemployment rates and jobs for the community
- economic impact of base closure on the City of Atwater (base closed in September 1995)
- Air Force base's future commitment to cleanup and future available funding and resources for cleanup; the community feels they should not inherit an expensive cleanup problem
- cleanup of the base (specifically the landfills)
- providing access and use of off-base property for construction of a ground water treatment plant and property wells
- value of residential property and ability to sell it
- foul odor and taste of tap water
- impact of base contamination on base reuse, surrounding communities, and resale value of property

7.4 Public Participation Activities

A public comment period for the SCOU Proposed Plan was held from August 15 through October 15, 1997. Three public hearings were held to explain the proposed plan and provide opportunities for public comment: two on August 26 and one on September 23, 1997. The agencies were concerned that the Proposed Plan distribution list did not include enough people and that the community was provided an inadequate review period prior to the first public hearing. In response, the Air Force extended the public comment period 30 days and held a third public hearing to provide additional time and opportunity to review and comment on the proposed plan. The Air Force has modified and or changed site remedies based on public comments as presented below.

7.5 Modifications Resulting from Public Comments

In response to community concern, the Air Force has modified the following site remedies:

- Landfills - The RI/FS recommended zoned capping and institutional controls for all seven of the base landfills. The zoned capping alternative would consolidate waste into a smaller area, dispose of any hazardous or designated waste off site, and comply with RCRA requirements for Long-term Monitoring. The community supports excavation and removal of the seven landfills. The community would prefer that all waste be taken off site for disposal. In

response, the Air Force has agreed to remove five of the landfills—LF1, LF2, LF3, CVLFA, and CVLFB. These landfills will be excavated and consolidated on base at LF4. During excavation, the materials will be screened, and contaminated material will be stockpiled separately, classified, and transported off site to an appropriate EPA-approved waste disposal site. To date, all the waste from CVLFA, CVLFB, and LF2 have been removed, and these sites have been backfilled with clean material and seeded with grass. The Air Force began work on LF 1 during the fall of 1998 and completed in July of 1999.

- Polychlorinated Biphenyl (PCB) sites - The Proposed Plan recommended institutional controls as the sole remedy for five PCB sites (PCB1, 2, 3; PCB4; PCB5; PCB6; and PCB8). The sites closed in the early 1990s under old RCRA rules. However, the rules have since been rewritten, and the site closures do not meet the new RCRA rules. The community is against institutional controls or any other alternative restricting reuse of land. In response, EPA conducted risk assessments and reevaluated the site data and determined that these PCB sites did not pose a significant threat to human health and that no further remedial actions were required. Therefore, the five PCB sites have been changed to no further action sites in the SCOU ROD l.

Also in response to community concerns, the Air Force is in the process of reviewing remedial decisions for the following site:

- FTA1 - In the SCOU Proposed Plan, the proposed remedy for FTA1 is SVE for VOCs and capping and institutional controls for metal contamination. As part of SVE operations, the Air Force has installed a cap at FTA1. The Air Force would like to maintain the cap as a containment measure for shallow soil that is impacted by lead. The community does not support capping and leaving the waste in place or having deed restrictions. Rather, they would like the contamination to be completely cleaned or removed. The regulatory agencies are opposed to the FTA1 cap because this alternative was not considered during FTA1's feasibility study and was not evaluated using the CERCLA criteria. The agencies are also concerned that the cap may not cover all of the contaminated soil. Because storm water runoff from FTA1 drains to a wetland area, the contaminated soil is of particular concern. Based on these concerns, the Air Force is further studying the capping alternative and is reviewing other remedial options. The *FTA1 Closure Report, Vol. 1: Final Remedy for Non-VOC Contamination* was issued in February 1998 and includes added justification for the capping remedy. FTA1 has been removed from SCOU ROD 1 and will be addressed in Comprehensive Basewide (CB) Part 2 ROD. The Air Force will release a CB Part 2 Proposed Plan with preferred remedies for the CB Part 2 sites. The public will have an opportunity to comment on this Proposed Plan. Then final remedial decisions for FTA1 will be documented in the CB Part 2 ROD, which is scheduled for release in August 2004.

7.6 Summary of Comments Received and Air Force Responses

Comments received during the public comment period and other community concerns regarding the selection of remedies for the SCOU sites are summarized below. Also included are responses to ROD comments received from Kleinfelder, the Technical Assistance Grant (TAG) contractor recently hired by Castle Now and Beyond, a local citizen organization. An Air Force response follows each comment presented. The Air Force responses document how the Air Force has considered public comments during the decision making process and provide responses to those public comments. Comments are categorized by the following related topics:

A. Remedial Alternative Preferences
B. Remedial Investigation
C. Language Used in Proposed Plan or Record of Decision
D. Contaminants of Concern
E. Future Base Reuse Issues
F. Public Participation Process
G. RAB Assistance
H. Decision Process
I. Off-Base Property

The 15 comments found in the first draft of the Responsiveness Summary can be cross-referenced back to their original comment number by the italicized notation preceding those comments.

A. Remedial Alternative Preferences

Draft Responsiveness Summary comment #1

(1) A RAB member questioned the use of personnel protective gear as a method to control risks to on-site workers for sites where Excavation and On-site Disposal and zoned capping had been selected as the preferred alternative. The concern was that if the handling of the waste required protective gear, then the waste should be too dangerous for on-site disposal.

Air Force Response: Both the excavation/on-site disposal and Zoned Capping alternatives require that all waste be characterized prior to on-site disposal. Waste that is characterized as hazardous or designated will be taken to an appropriate off-site landfill for disposal. Waste that is characterized as non-hazardous will be disposed of in the base consolidation landfill. The State of California and Air Force contractors will be involved in the waste characterization process. Personal protective gear is required by the Occupational Safety and Hazard Administration (OSHA) to protect these on-site workers from potential hazards associated with handling this material.

Hazardous waste is defined as a waste material that may pose a threat to human health or the environment. Hazardous wastes are disposed of in a Class I Landfill, which is designed specifically for hazardous wastes and includes a liner, leachate collection system, and many other safeguards.

Designated waste can be two kinds of waste: l) hazardous waste that has been granted a variance from hazardous waste management requirements, or 2) non-hazardous waste that contains pollutants that could be released in concentrations exceeding water quality objectives or that could affect beneficial uses of state waters as defined in the state water quality control plan. Designated wastes are disposed of in a Class II Landfill, which is designed specifically for designated wastes and is similar to a Class I landfill but has fewer safeguards.

Non-hazardous wastes', including most municipal waste, is waste material that does not pose a threat to human health or the environment. Municipal solid waste includes non-hazardous waste generated in households, commercial and business establishments, institutions, and light industrial process wastes, agricultural wastes, mining waste, and sewage sludge. These wastes are disposed of in a Class III Landfill, which is designed specifically for municipal and other nonhazardous wastes. It does not have a liner but collects leachate on an as needed basis. This is the type of landfill that Castle will use for LF4 and LF5.

After all non-hazardous/municipal waste has been moved to LF4, a Zoned Class III Cap will be constructed over the waste. The zoned cap alternative includes consolidating waste into a smaller area, segregating and disposing of any hazardous or designated waste off-site in a Class I or Class II landfill, and constructing a Class III flexible membrane line (FML) cap over areas were waste is deposited, with lesser degrees of protection over adjacent outlying areas. Deed and access restrictions will be set in place to prevent potential damage to the cap or unauthorized access. A 30-year ground water and cap-monitoring program will be initiated to confirm that the landfill is not impacting ground water and to maintain the cap integrity.

Draft Responsiveness Summary comment #5

(2) Several RAB members expressed concern over the use of deed restriction as a preferred alternative for selected SCOU sites. The community has long-stated opposition to deed restrictions (because they hinder reuse of the site) and prefers that they not be implemented.

Air Force Response: Institutional controls include deed restrictions and access restrictions. For a deed restriction, information is added to the property deed to notify the public and future new owners or tenants of potential health threats associated with the site. For an access restriction, signs with hazard notification are posted and/or fences are installed to restrict access to the site.

Non-engineering mechanisms (such as institutional controls) are included in a remedy to complement and supplement the remedial action. Institutional controls are implemented using various methods and tools. The AFBCA will implement institutional controls at Castle using the layering approach. Various methods will be used to protect the remedial action. In addition, Federal and state regulations have requirements for landfills closed by capping (such as LF4 and LF5).

In the SCOU ROD l, institutional controls are recommended for a total of eight sites:

- Three landfill sites (LF4, LF5, and LF5 Trenches)
- Five disposal pit sites (5, 6, 8, 8A, and 9) associated with LF4 and LF5

Though considered long-term for the landfill sites (since 30-year monitoring is required for landfills closed by capping), deed restrictions are not necessarily permanent. To remove deed restrictions, the property owners or potential property owners would need to prove that the site no longer poses a threat to human health or the environment. It is likely active remediation would be required to remove these restrictions. Also, approval from the Air Force, the California Department of Toxic Substances Control, California Regional Water Quality Control Board, and U.S. Environmental Protection Agency would be required.

Purpose of Institutional Controls

Institutional controls at Landfills 4 and 5 support and complement the remedial action. For LF4 and LF5 and associated disposal pit sites, the remedy includes Zoned Capping with Institutional Controls and Long-term (30 years) Monitoring.

The goals and objectives of institutional controls at the landfill sites include: 1) protecting the cap from damage, 2) preventing potential human exposure to waste buried at the site, and 3) maintaining Air Force and regulator access for periodic cap and ground water maintenance work. There are also Federal state closure/post closure regulatory requirements that apply to Landfills 4 and 5.

Site That No Longer Include Institutional Controls and Sites Removed From SCOU ROD 1

In the Proposed Plan, institutional controls including deed restrictions were recommended for a total of 36 SCOU sites:

- Seven landfill sites (1, 2, 3, 4, 5, Landfill 5 Trenches, and Castle Vista B)
- Eight disposal pit sites (1, 2, 3, 5, 6, 8, 8A, and 9) associated with LF1, LF4, and LF5
- Twelve stain sites (Stains 33–44)
- One fire training area site (FTA1)
- Six PCB sites (PCB1, 2, 3; PCB4; PCB5; PCB6; PCB8; and PCB9)
- One solid waste management unit site (SWMU 4.31)
- One Storm Drain System (SDS) site

There are several SCOU ROD 1 sites where the remedy has been modified and no longer includes institutional controls. These sites include:

- SWMU 4.31 - Based on further review, it was determined that SWMU 4.31 did not present a threat to human health or the environment; therefore, SWMU 4.31 is no longer listed for deed restrictions and has been recommended for no further action.
- PCB sites - Further evaluation of the PCB sites by the USEPA indicated that five PCB sites (PCB1, 2, 3; PCB4; PCB5; PCB6; and PCB8) did not pose a significant threat to human health and are now no further action sites.
- Landfill sites - The selected remedy for four landfill sites (LF1, LF2, LF3, and Castle Vista B) and three disposal pits (1, 2, and 3) have been changed to Excavation and On-site Disposal and no longer warrant institutional controls.

With the exception of LF4 and LF5 (capped landfills) and associated disposal pit sites, all SCOU sites that had been recommended for institutional controls in SCOU ROD Version 3 have been removed from ROD 1. Institutional controls were listed as the selected remedy for the Storm Drain System (SDS) and Stain 33-44 and as part of the selected remedy for FTA1 in SCOU ROD Version 3. In response to community and agency concerns, data and remedial decisions for these sites are under further review and are not included in SCOU ROD 1. Final decisions for these sites may or may not include institutional controls.

Final decisions for the SDS and Stain sites will be documented in SCOU ROD 2. The preferred alternative for FTA1 will be presented in the SCOU Part 2 Proposed Plan, and the community will have the opportunity to comment on this Proposed Plan. After the Air Force has responded to community comments, the final decision for FTA1 will be documented in the SCOU Part 2 ROD.

Draft Responsiveness Summary comment #7

(3) A RAB member indicated that the community does not want restrictions that will be in place for generations. The RAB would like the need for deed restrictions to be periodically reviewed at each site until the site is ready for reuse and requested that the Air Force assume responsibility for insuring that deed restrictions are removed as soon as possible.

Air Force Response: Except for landfill sites (LF4 and LF5) where institutional controls are considered permanent (since 30-year monitoring is required for landfills closed by capping), property owners or potential property owners can seek to have deed restrictions removed if the site no longer poses a threat to human health or the environment. Removal of the deed restriction would be possible once the Air Force, California Department of Toxic Substance Control, California Regional Water Quality Control Board, and U.S. Environmental Protection Agency concur that the site no longer poses a potential threat.

In addition, as part of the CERCLA process, all selected remedies are reviewed during a five-year review. The need for deed restrictions is also reevaluated as part of this review process. Since institutional controls are the remedy for the stain sites and part of the selected remedies at the landfill sites, they will be subject to review during the next five-year review in 2003.

(4) A RAB member pointed out that the state guidance letter has provisions for removing institutional controls and asked how the state policy would affect a federally mandated deed restriction on a federally supplied deed.

Air Force Response: The Department of Toxic Substances Control will provide an explanatory letter to the RAB on how the process works.

Draft Responsiveness Summary comment #8

(5) Two RAB members expressed concern regarding the capping alternative for metals and dioxin-contaminated soil at the FTA1 site. They indicated that the community wanted the site excavated and removed from the base. The community feels that capping the area will create another unusable area similar to the landfills. One RAB member provided an

estimate that it would cost only an additional 2.5 million dollars to excavate and dispose of the contaminated soil and indicated that was not a substantial amount considering over 100 million dollars had been spent studying the base and only 15 million dollars had been budgeted for restoration.

Air Force Response. The FTA1 has been removed from the SCOU ROD 1 pending resolution of issues regarding the agency concerns over the selected remedy and community concerns regarding institutional controls/deed restriction. The FTA1 site will be addressed in the CB Part 2 ROD, which is scheduled for release in September 1999. The Air Force will release a CB Part 2 Proposed Plan with the preferred alternative for FTA1. The public will have an opportunity to comment on this Proposed Plan before the remedial decision for FTA1 is finalized.

(6) *The Merced County Department of Public Health submitted the following letter dated August 25, 1997 to the Air Force at the August 26, 1997 public hearing.*

The Division of Environmental Health has reviewed the document *Proposed Cleanup of Soil Contamination at Castle Airport* and has the following comments:

1. It is our understanding that the Restoration Advisory Board (RAB) was not mailed the proposed plan until Friday, August 22, 1997. With the public hearing scheduled for August 26, 1997, the RAB members did not have very much time to evaluate one of the most important documents relating to cleanup at Castle Airport.

2. The following list describes the preferred alternatives for cleanup of the landfills:

Landfill #1	Excavation to Landfill #4
Landfill #2	Excavation to Landfill #4
Landfill #3	Zoned Cap
Landfill #4	Zoned Cap/Consolidated landfill
Landfill #5	Zoned Cap
Castle Vista A	Excavation to Landfill #4
Castle Vista B	Excavation to Landfill #4

This office has taken a position that the landfills should be completely excavated and removed for the following reasons:

A. Complete excavation eliminates the possibility of currently unknown environmental problems at the landfills from leaching into the ground water.

B. Complete excavation allows full reuse of the parcel without any deed restrictions.

C. The long-term costs of capping and monitoring are eliminated.

D. Full reuse of the adjacent property is not impacted by closed landfills.

This position has been stated many times (see enclosed documents). Therefore, we once again suggest that the best long-time solution in addressing the landfills and disposal pits at Castle is complete excavation and removal. Capping and monitoring is not adequately protective of human health and the environment.

The total cost of the excavation/disposal on-site in a consolidated landfill of all seven landfills is $15,781,016 according to Plate 5-2-3 of the SCOU RI/FS. The total cost of the Department of Defense preferred option of zoning is $13,010,165. It would appear that for approximately $2.5 million in additional cost, the majority of the landfills could be excavated and the land returned to full productive reuse.

The Department of Defense initial position on landfills was to cap and monitor all seven landfills. The current position is to excavate four landfills. We are hopeful that continued progress can be achieved to protect human health and the environment and reuse of land at the base.

3. The proposed plan lists the preferred alternative for Fire Training Area 1 (FTA1) as zoned capping. This office concurs with Cal/EPA in considering the alternative unsuitable since the Base Closure Team chose this alternative without performing a detailed analysis using the seven criteria as required by CERCLA. We suggest for the same reasons listed in item #2 that FTA1 be excavated and removed.

4. PCB sites are listed as sites that will have institutional controls protective of human health and the environment through deed and access restrictions. What are the specific deed and access restrictions and how will those impact the health of the people using the property and long-term reuse of the sites? The proposed plan also states that these measures are designed to limit current and future use of the land. What are those limitations? If the Limitations limit the reuse of the property or endanger the health of individuals using the property, we would recommend the PCB contamination be removed.

Air Force Response: In response to comment 1, the SCOU Proposed Plan public comment period was extended 30 days and a third public hearing was held on September 23, 1997 to provide additional time and opportunity to review and comment on the proposed plan.

In response to comment 2, the SCOU RI/FS recommended Zoned Capping with Institutional Controls for all seven of the landfill sites. The cap remedy meets state and CERCLA requirements and addresses the human health risk, which is greater than one in one million ($1X10^{-6}$). Under CERCLA. the remedial preference for landfills is on-site disposal and treatment. EPA's presumptive remedy for landfills is capping. In response to community concern, the

selected remedy for CVLFA, CVLFB, LF1, LF2, and LF3 has been changed to Excavation and On-site Disposal. These landfills will be clean closed, which involves digging down until you stop finding trash, to allow unrestricted reuse. To facilitate this process, non-hazardous, non-designated, and municipal waste removed from the excavated landfills will be taken to either LF4 or LF5 for consolidation and capping. Designated and hazardous wastes will be taken to appropriate off-site landfills for disposal. The SCOU ROD 1 selected remedy for LF4 and LF5 is Zoned Capping with Institutional Controls and Long-term Monitoring.

In reference to item 2A, many measures will be taken to prevent leaching of landfill contaminants into the ground water. Following is text from the *Record of Decision for Comprehensive Basewide - Part I Groundwater* document regarding remedial actions for ground water in the Landfill 4 and 5 areas.

> **2.4.4 Selected Remedy: Other Plumes**
> The AF, with the concurrence of the EPA and Cal/EPA, has determined that active remediation of the North Base [Landfill 5], Landfill 1, and Landfill 4 Plumes is not warranted at this time because action is being taken to remediate the sources, and because removing the low concentration contaminants from the ground water would provide little benefit while incurring high costs. Because several of the contaminants are above primary drinking water standards, institutional controls will be implemented to prevent the installation of ground water supply wells on Castle Airport that would jeopardize public health or the environment from North Base [Landfill 5], Landfill 1, or Landfill 4 Plumes. Additionally, Long-term Monitoring will be performed under the Long-term Ground water Sampling Plan to monitor contaminant concentrations in these plume areas. Contaminant concentration levels in the ground water will be reevaluated annually. If the contaminant concentration levels drop below the MCL and beneficial use concentrations for one year, any institutional controls may be removed. If, at any time, monitoring or modeling indicates that the contaminants will not meet the MCL and beneficial use concentrations within a reasonable time, or at least forty years from the date of the ROD, or that significant migration of the contaminants may occur at levels above the MCL and beneficial use concentrations which impact public health or the environment, active remediation will be considered.

In reference to items 2B and 2D, there are potential reuse possibilities for the capped landfills as open areas open areas. In addition, the locations of on-site consolidation landfills are in areas where further development is unlikely and where there are limited future prospects. The alternative of Excavation and Off-site Disposal for these landfill sites is not preferable because of its high cost. The Air Force is excavating and removing all landfills located in areas with significant development opportunities.

In reference to item 2C, the long-term cost of operation and maintenance (O&M) is included for both options: 1) zoned capping and 2) excavation/on-site disposal. The total cost of zoned capping for all seven landfills is $13 million, as referenced in the SCOU RI/FS. Capping costs

9.6 million and long-term operation and maintenance (O&M) costs $3.4 million. Therefore, the O&M costs arc included in the $13 million estimate. The total cost of the excavation/disposal on-site of all seven landfills in a consolidated landfill is $15.8 million. This remedy also includes costs for O&M. The cost for excavation and disposal is approximately $14.2 million, and the cost for O&M is $1.6 million.

In response to comment 3, the proposed remedy for FTA1 in the SCOU Proposed Plan is SVE/bioventing, flexible membrane liner (FML) capping, and institutional controls. However, FTA1 has been removed from ROD 1 and will be addressed in CB Part 2 ROD. The Air Force will release a CB Part 2 Proposed Plan with preferred alternatives for the FTA1 site. The public will have an opportunity to comment on this Proposed Plan. The final remedial decision for FTA1 will be documented in the CB Part 2 ROD, which is scheduled for release in September 1999.

The Air Force already installed a cap over FTA1 to cover areas contaminated with lead, and they would like to maintain the cap as a containment measure. Based on community and regulator concerns, the Air Force is further studying the capping alternative and is reviewing other remedial. options. The *FTA1 Closure Report, Vol 1: Final Remedy for Non-VOC Contamination* was issued in February 1998 and includes added justification for the capping remedy.

In response to comment 4, five PCB sites (PCB1, 2, 3; PCB4; PCB5; PCB6; and PCB8) were recommended for institutional controls as the sole remedy in the SCOU Proposed Plan. Further evaluation of site data and risk assessment by the USEPA found that human health risk at these five PCB sites fell within an acceptable range and that no further remedial action was required. Therefore, these sites as well as PCB7 are listed as no further action sites in the SCOU ROD 1. PCB9 will be addressed in SCOU ROD 2, which is scheduled for release in September 1999.

Draft Responsiveness Summary comment #9

(7) One RAB member questioned the purpose of "Data Gap Sites." He indicated that the title suggested that something was missing and was concerned that if new contamination was discovered after the ROD had been finalized, the Air Force would not be obligated to clean it up.

Air Force Response: Based on information developed in the SCOU RI/FS, it was determined that 24 SCOU sites required additional evaluation. These sites have been termed "Data Gap" or "Technical and Economic Evaluation" sites depending on what type of evaluation is needed. These sites were either not sampled during the RI, or the data collected was not adequate to fully determine the extent, concentrations, or impact of the contamination.

Cleanup alternatives for these sites have been selected based on what is currently known. The additional evaluation will be used to confirm that cleanup is needed. If unexpected contaminants are identified during the Data Gap or Technical and Economic Evaluations, and these contaminants make the selected remedial alternative inappropriate, the Air Force would develop a new remediation plan for the site using a CERCLA provision known as an Explanation of Significant Difference (ESD). The ESD would explain the nature of the site contamination and

why it was necessary to revise the selected remediation alternative. The Air Force is committed to restoration of Castle Airport and will remain flexible to meet any potential changes in cleanup requirements, even after the ROD has been finalized.

Further discussion regarding the need for ESD can be found in the SCOU ROD 1 Landfill Section 5.1.2 and the NFA Section 5.2.1. Further discussion on the basis for the NFA ESDs is included in the site summary discussions.

Draft Responsiveness Summary comment #13

(8) A former base employee stated a concern regarding solvent disposal at a disposal pit north of Landfill 1. He indicated on a map the approximate location of the pit.

Air Force Response: Based on the map location, the referenced site may be part of the Test Cell Center 1 (TCC1)/Building 950, Building 951, Discharge Area 1 (DA1) SCOU site. Petroleum hydrocarbons have been identified at this site, and it is recommended for intrinsic remediation (IR). IR processes include natural attenuation, chemical transformation, and biodegradation. Because petroleum hydrocarbon contamination is not covered under CERCLA, the Petroleum Hydrocarbon Only sites are included in ROD 1 for tracking purposes only. Final decisions for the Petroleum Hydrocarbon Only sites will be addressed in a separate RCRA decision document.

Another potential site that fits the general "North of LF1" description is Disposal Pit 4A/4B. This site was located north of LF1 and was investigated as part of the LF1 Remedial Investigation. However, based on sampling results, no significant contamination was found at Disposal Pit 4A/4B. This site has been recommended for NFA, and ROD 1 addresses this selected alternative in Section 5.6, No Further Action Sites.

Draft Responsiveness Summary comment # 15

(9) A citizen expressed satisfaction with the planned removal of Landfill 1.

Air Force Response: The selected remedial alternative for Landfill 1 is Excavation and On-site Disposal at Landfill 4.

(10) *The Atwater Chamber of Commerce submitted the following letter dated August 26, 1997 to the Air Force at the August 26, 1997 public hearing.*

> The Atwater Chamber of Commerce along with many community leaders hereby supports this past week's announcement to totally clean up Landfill Number 1. We understand that the contents would be relocated to another site on base known as Landfill Number 4. We feel the benefits of cleaning Landfill. Number 1 far exceed the negative effects of consolidation at Landfill Number 4. The utilization of the area known as Landfill Number 1 is essential to optimurn reuse efforts. For more than 50 years the business community has supported the partnership between Atwater and the U.S. United States military. We look forward to working with the Air Force Base Conversion Agency as we travel down this environmental remediation process to protect our community.

Air Force Response: The selected remedial alternative for Landfill 1 is Excavation and On-site Disposal at Landfill 4.

(11) The RAB member asked about the cost of cleaning up the various PCB sites rather than putting deed restrictions on them. He would prefer that the Air Force clean these sites up.

Air Force Response: As referenced in the October 28, 1997 RAB minutes, the estimated cost of cleaning up the PCB sites is $690,000. However, based on recently completed risk assessment work by the USEPA, it was determined that the PCB sites did not pose a significant threat to human health and require no further action.

(12) The RAB would like cleanup issues addressed regarding landfills, PCB sites, and FTA1. The RAB prefers the removal of FTA1 and PCB sites and the consolidation/removal of landfills.

Air Force Response: The RI/FS recommended zoned capping and institutional controls for the seven base landfills. The zoned capping alternative would consolidate waste into a smaller area, dispose of any hazardous or designated waste off site, and comply with RCRA requirements for Long-term Monitoring. The Air Force recognizes that the community supports excavating and removing the seven landfills and consolidating them into one so that the land can be reused. The Air Force has agreed to remove five of the landfills—LF1, LF2, LF3, CVLFA, and CVLFB. These landfills will be excavated and consolidated on base at LF4 and LF5. During excavation, the materials will be screened, and any hazardous material identified will be transported off site to an EPA-approved hazardous waste disposal site.

The Proposed Plan recommended institutional controls for five PCB sites (PCB1, 2, 3; PCB4; PCB5; PCB6; and PCB8). The Air Force recognizes that the community is against institutional controls or any other alternative restricting reuse of land. Based on recently completed risk assessment work by the USEPA, it was determined that these PCB sites did not pose a significant threat to human health and require no further action.

The proposed remedy for FTA1 was SVE/bioventing, flexible membrane liner (FNL) capping, and institutional controls. However, FTA1 has been removed from ROD 1 and will be addressed in CB Part 2 ROD. The Air Force will release a CB Part 2 Proposed Plan with preferred alternatives for the FTA1 site. The public will have an opportunity to comment on this Proposed Plan. The final remedial decision for FTA1 will be documented in the CB Part 2 ROD, which is scheduled for release in September 1999.

As part of SVE operations, the Air Force has already installed a cap over FTA1. For soil contaminated with lead, the Air Force has recommended maintaining the cap as a form of containment. Cap maintenance would also require the use of deed restriction. The Air Force recognizes that the community would like the contamination to be removed so that deed restrictions can be lifted. The regulators are opposed the FTA1 cap because this alternative was not considered during FTA1's feasibility study and was not evaluated using the CERCLA

criteria. The regulators are also concerned that the cap may not cover all of the lead-contaminated soil. Surface soil contamination is of particular concern at FTA1 because runoff from the site goes into a wetlands area. Based on these concerns, the Air Force is further studying the capping alternative and is reviewing other remedial options.

B. Remedial Investigation

Draft Responsiveness Summary comment #12

(1) A RAB member expressed concern regarding remedial investigation conducted at the landfill sites. He indicated that if your borings were not in the right places, you could miss something.

Air Force Response: Based on similar work undertaken at other Air Force Bases, it is anticipated that less than five percent of the landfill waste will be classified as hazardous or designated. However, the excavation/disposal alternatives provide for the characterization of waste prior to disposal. This will ensure that any hazardous or designated waste will be identified and disposed of off site. Health and safety plans and personnel protective equipment, if needed, will be used at the excavation site to ensure worker safety and to comply with OSHA requirements.

Landfill screening is being performed in accordance with the Base Cleanup Team (BCT)-approved *Closure/Post Closure Maintenance Plan.* There are two full-time spotters employed as part of the landfill Excavation and On-site Disposal remedy. One spotter, stationed at the landfill being excavated, visually inspects waste as it is excavated. The second spotter, stationed at the receiving/consolidation landfill (LF4), visually inspects waste as it is removed from the haul trucks. Both spotters screen waste for the following:

- volatile organics using a flame ionization and photoionization detection equipment,
- radiation using a Geiger Counter, and
- oxygen and explosiveness using an oxygen/explosimeter.

When suspected hazardous or designated wastes are identified, it is segregated and characterized by collection and laboratory analyses of samples. Confirmation samples are also being collected. Confirmation samples are soil samples collected from the bottom of the excavation that are used to confirm that remaining soil meets landfill remedial action objectives (RAOs).

Waste removal has been completed at CVLFA, CVLFB, and LF2, and these landfills have been backfilled with clean material and seeded with grass. It is estimated that less than one percent of this waste has been characterized as hazardous or designated waste. The majority of waste found at these sites included decomposed non-hazardous municipal waste, such as old newspapers, bottles, cans, etc. The Air Force will begin work on LF1 during the fall of 1998.

C. Language Used in Proposed Plan or Record of Decision

Draft Responsiveness Summary comment #6

(1) Several RAB members expressed concern regarding a statement in the SCOU Proposed Plan that indicated there would be "no new construction" at the institutional control/deed restriction sites.

Air Force Response: One of the nine criteria for selecting a remedial alternative is short-term effectiveness. The comment in the Proposed Plan table under short-term effectiveness was "no new construction." The "no new construction" statement does not apply to reuse, but rather to no new construction required for remediation purposes.

The SCOU PART 1 ROD will not preclude future construction at the affected sites. 40 CFR Section 258.61, however, precludes any post-closure use of the site property if the use would disturb the integrity of the final cover, the integrity of the landfill containment, or the function of the monitoring systems. The state may approve any other disturbance if the owner or operator demonstrates that disturbance of the final cover, components of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment.

(2) Several community members requested that the Air Force include the actual deed restriction language for each site with institutional controls in the SCOU ROD. RAB members requested information about specific limitations for each site by deed restrictions and what standards the community will need to meet in the future?

Air Force Response: With the exception of LF4 and LF5 (including LF5 Trenches and Disposal Pits 5, 6, 8, 8A, and 9), all institutional control sites have been removed from SCOU ROD 1. Actual institutional control language for the landfill sites will be developed in accordance with state and federal requirements. A description of the AFBCA management strategy for on institutional controls is presented in Section 5.1.3.9 of this ROD.

D. Contaminants of Concern

Draft Responsiveness Summary comment #2

(1) One private citizen reported that he had seen a written report concerning buried cadmium cyanide sludge at the former Castle Air Force Base (AFB).

Air Force Response: Cadmium cyanide sludge is a waste product at plating facilities. Because plating was undertaken at Castle AFB, cadmium was included as a contaminant of concern during development of the Remedial Investigation sampling and analyses plan. Based on review of Castle records and interviews with base personnel, sites that had potential for cadmium contamination were identified and cadmium analyses were included for the soil samples collected at those sites. These sites included landfills, discharge areas, fire training areas, and buildings located in the industrial areas of the base. Based on analyses of soil samples collected

from these areas, low levels of cadmium were detected at the Landfill 2 (LF2), Storm Drain System (SDS), and Fire Training Area 1 (FTAl) sites.

The selected alternative for contamination at LF2 is Excavation and On-site Disposal. Information addressing the remedial alternative for LF2 can be found in ROD 1 Section 5.2, Landfills. The ROD 1 addresses the risks for LF2 in Section 5.2.2.2, Summary of Risks, Landfill 2.

The FTA1 and SDS sites have been removed from ROD 1 while undergoing further review and reevaluation of the proposed remedies. In the SCOU Proposed Plan, the proposed remedy for FTA1 was SVE/bioventing, FML capping, and institutional controls and the proposed remedy for SDS was institutional controls. The SDS will be addressed in SCOU ROD 2, and FTA1 will be addressed in the CB Part 2 ROD. The Air Force will release a CB Part 2 Proposed Plan with preferred alternatives for FTA1. The public will have an opportunity to comment on this Proposed Plan before the FTA1 remedial decision is finalized.

In addition, ground water samples collected from the base monitoring wells are periodically analyzed for cadmium contamination. To date, no cadmium contamination has been identified in the base ground water samples.

Draft Responsiveness Summary comment #3

(2) One private citizen stated a concern regarding potential use and disposal of mercury at the former Castle Air Force Base.

Air Force Response: Mercury was used in the past at the base for a variety of industrial and medical purposes. Mercury was identified as a potential contamination of concern during the human health risk assessment at Castle AFB. Based on review of Castle records and interviews with base personnel, sites that had potential for mercury contamination were identified and mercury analyses were included for the soil samples collected at those sites. Elevated levels of mercury were not identified in the soil samples collected from these sites.

Inorganic contaminant screening including mercury analyses was performed for all Castle SCOU sites. Two landfill sites—LF1 and CVLFB—had mercury levels above the threshold background levels, and mercury was included as a potential contaminant.of concern for these sites.

The selected alternative for LF1 and CVLFB is Excavation and On-site Disposal and consolidation at LF4. A site-specific summary of alternatives considered for the landfill sites can be found in the SCOU ROD 1 on Plate 5-2-2. A summary of comparative analyses for these alternatives can be found on Plate 5-2-11. General descriptions of the considered alternatives can be found in SCOU ROD 1, Section 5.2.3, Alternatives for Landfill Sites.

In addition, ground water samples collected from the base monitoring wells are periodically analyzed for mercury contamination. To date, no mercury contamination has been identified in the base ground water samples.

Draft Responsiveness Summary comment #10

(3) A private citizen wanted to know if private or municipal water wells had been impacted by TCE contamination related to the base, and if so, why carbon filters were not being installed to filter the City drinking water.

Air Force Response: One municipal water well (AM-6) has been impacted by trace levels of *cis* 1, 2 dichloroethene (DCE). *Cis* 1,2 DCE is a volatile organic compound commonly associated with the natural degradation of TCE. Levels of *cis* 1,2 DCE contamination in this well are below the maximum contaminant levels (MCLs) allowed in drinking water by the California Department of Health Services (DHS) and U.S. Environmental Protection Agency. Water samples are collected from this well on a monthly basis to monitor the *cis* 1,2 DCE levels. Based on the monitoring data, carbon filters are not required by DHS at this well. The final determination of whether or not wellhead treatment will be implemented is still under discussion between the Air Force and the regulatory agencies. Final decision on AM-6 will be documented in the CVLFB ground water remedial action workplan addendum, which is scheduled for finalization in fall of 1998.

A total of eight domestic water wells have been impacted by contamination from the base. Three of these wells have TCE contamination less than MCLs and five have TCE contamination above MCLs. These wells with contamination above MCLs have been equipped with Granular Activated Carbon (GAC) filters that remove the TCE.

On a periodic basis, ground water samples are collected from all municipal, domestic, and irrigation wells within approximately 1,200 ft. of the base ground water contamination plume. Laboratory analyses of these samples are used to monitor ground water quality.

To control ground water plume migration and remediate contaminated ground water, four separate ground water pump and treat systems have been installed at Castle Airport. Ground water is currently being treated at ground water Operable Units 1 and 2, Phase II, and Castle Vista pump and treat projects.

E. Future Base Reuse Issues

(1) One community member raised the concern that the hazardous materials warning signs the Air Force intends to post at sites with deed restrictions may deter prospective lessees from leasing property at these sites.

Air Force Response: The Air Force does not want to alarm reuse prospects. However, the purpose of posting signs with hazard notification is to restrict access to the site and make the public aware of potential health threats associated with the site. Signs will be as unobtrusive as possible.

(2) The RAB would like assurance that the Air Force has looked at the future use of land such as the runway and the southwestern corner of the base. The RAB feels the southwestern corner is a great redevelopment value, but it is currently slated for deed restrictions.

Air Force Response: As described in the Base Reuse Plan, the Air Force has considered past uses of property in determination of the future reuse options. The runaway, flightline, and stain areas southwest of the runway were used for industrial purposes when the base was in operation. Therefore, future reuse of these areas will be industrial. Institutional control/deed restriction proposed for these areas would only prohibit residential reuse. Construction and operation of industrial facilities in these areas would be acceptable under the proposed institutional control/deed restriction remedy.

F. Public Participation Process

Draft Responsiveness Summary comment #4

(1) A RAB member questioned why the final SCOU Proposed Plan had not been distributed to all of the RAB members prior to the public hearings.

Air Force Response: The final SCOU Proposed Plan was released on August 15, 1997. It was distributed to a group of RAB members but not to all of the RAB members. The agencies were concerned that the final Proposed Plan was not distributed to enough people and that the community was provided an inadequate review period prior to the first public hearing. Therefore, to allow more time for review of the final Proposed Plan, the public comment period was extended 30 days to October 15, 1997. In addition, a third public hearing was held on September 23, 1997 to discuss any further questions concerning the SCOU cleanup alternatives. Also, copies of the final Proposed Plan were available for distribution at the three public hearings.

G. RAB Assistance

(1) RAB members would like the County to hire a contractor to serve as the RAB's technical expert. The RAB would also like information on funding mechanisms like the TAG grant and TAPP program.

Air Force Response: Technical Assistance Grants (TAGs) provide resources for community groups to hire technical advisors. These advisors can assist them in interpreting technical information concerning the assessment of potential hazards and the selection and design of appropriate remedies at sites eligible for cleanup under the Superfund program. TAGs are only available to incorporated non-profit organizations. The RAB is ineligible for a TAG since some of its members are government employees. Castle Now and Beyond—a local citizen organization—has been awarded a TAG, and they have hired Kleinfelder to provide them with technical advice on environmental projects at Castle Airport.

The Air Force will provide all primary Castle SCOU documents to Castle Now and Beyond's TAG contractor Kleinfelder for review and comment. Kleinfelder's role is to evaluate data presented in the documents, appraise the technical content, and help explain the issues to the community. The Air Force will address and consider comments from Kleinfelder and Castle Now and Beyond in the same manner as comments received from the agencies. The Air Force's goal is to achieve site cleanup and reach decisions that are mutually acceptable to all parties.

In addition, funding is available for Technical Assistance for Public Participation (TAPP) program, a new Department of Defense (DoD) program to help community members of RABs participate more effectively in the restoration program. This program allows community members to obtain funding for community assistance contracts for objective, independent analysis of topics such as the hazards present at a site and potential health and environmental effects. This assistance will be provided by the DoD installation through government purchase orders issued to small businesses. The contracting under the TAPP program is done by the Air Force contracting function rather than the community. In addition, the funding comes from the same money supply as the environmental restoration funds. Projects eligible for TAPP assistance include technical assistance in understanding technical environmental documents. An organization can get a TAPP even if they have a TAG. However, DoD prefers the community pursue other sources of funding first.

(2) RAB members feel that a local, county representative should receive funding to help agencies represent the community. They would like the regulatory agencies to describe alternatives and ramifications, advise the community on the issues behind each cleanup alternative, and recommend community positions.

Air Force Response: The Air Force provides funding to the state DTSC to provide representation for the base cleanup. DTSC is responsible for representing the state's interests.

(3) *On August 20, 1998, Kleinfelder submitted the following preliminary set of comments on the Version 3 Draft of the SCOU ROD. The specific comments in the Kleinfielder letter have been labeled a, b. c, etc. to facilitate Air Force response.*

KLEINFELDER COMMENTS AND QUESTIONS
ON THE JUNE, 1998 VERSION 3 "DRAFT"
SOURCE CONTROL OPERABLE UNIT
RECORD OF DECISION
CASTLE AFB

GENERAL COMMENTS

A Record of Decision (ROD) is a legal decision document, which summarizes the remedial investigation and the feasibility study at a CERCLA site and provides a brief description of the selected process for accomplishing the needed cleanup. The remedial investigation is performed to find out the entire extent of contaminants at a CERCLA site and the feasibility study looks at a number of alternatives to cleanup the contamination. The ROD confirms the choice of cleanup method and the objectives of the cleanup. In reviewing the ROD for the Restoration Advisory Board (RAB), Kleinfelder will focus on goals of the community and seek to identify if the ROD is in concert with those goals.

This ROD is called the source control operable unit which means it is not comprehensive but is limited to selected sites, primarily soil sites. Also certain of the more difficult sites have been left out to be decided at a future time. However the objectives for cleanup set by this ROD (a.k.a. the Remedial Action Objectives

or RAOs) will likely become precedent for the program. Kleinfelder considers this document of critical importance to the RAB. One of the parameters of importance to the RAB is cleanup levels, which is discussed in more detail below.

Cleanup Levels

Cleanup levels are a simplified way of looking at the objective of a remedial action. Cleanup levels are residual concentrations that can be left in the soil or water after the remediation process concludes. Kleinfelder notes that RAB goals naturally include requesting as low of a cleanup level as feasible, hopefully zero. Cleanup to zero or background, naturally occurring levels is an ideal goal but is simply not technically feasible for larger sites and for many contaminants. Additionally, with so much cleanup needed nationwide, no one site is entitled under the law to more cleanup than is necessary. Instead cleanup levels are set by a process, which includes risk assessment. The risk assessment is intended to ensure that the prescribed cleanup level is so low as to pose no human health concerns. Risk assessments are generally theoretical, that is, while no actual risk is occurring, they assume worst-case conditions such as resident living all their life at the site and exposed every day to the higher concentrations of contaminants. Risk assessments are usually prepared assuming a land use of either residential or industrial. Assuming industrial use allows a higher cleanup level. However land cleaned up for industrial use should not then be used for residential.

In California, risk assessment is not the only input to deciding a cleanup level. An assessment must also be made on the desired water quality for the site and on the potential for contaminants in the soil to degrade the ground water below the desired water quality. For this purpose leaching models may be used which predict the movement of contaminants through soil and into ground water. Soil must be cleaned up to levels, which protect the ground water quality. In addition to human health risk and water quality assessment, several other factors may affect the final choice of a cleanup level.

Data Gaps

The ROD makes mention of certain data gaps. Data gaps are areas where it is judged that additional data is needed to support the conclusions made for a site. Since the ROD is a decision document, data gaps should be minimal. If data is missing, a decision could be made which is based on partial, incomplete information. During the RAB meeting of July 28 it was stated that a data gap report was in preparation. The RAB should comment as to its desire review the data gap report prior to finalizing RAB comments on the ROD. Having said this, we should add that in Kleinfelder's experience, in many cases, the new data does not in any way change the assumptions made when preparing the ROD.

Ecological Risk Assessment

It appears the ROD is moving forward without the benefit of an ecological risk assessment. An ecological risk assessment would evaluate the risks posed by the current level of contaminants and also by the planned remediation activity to the animal and plant life. The RAB should decide if an ecological risk assessment is of interest to the community. If so, the implications of proceeding with signing of the ROD without an ecological risk assessment should be further explored.

SPECIFIC COMMENTS

VOC Sites (Section 5.1)

(a) The ROD identifies 23 VOC sites. To the newcomer there is considerable confusion as the ROD then mentions 22 sites, sites that are grouped together, 7 sites with petroleum hydrocarbons, 6 sites under removal action, etc. Please clarify this introductory section.

(b) The primary VOCs of concern at these sites, TCE, PCE, and cis 1,2-DCE, are likely to also be primary constituents of concern, which are contaminating the ground water. Cleanup of these sites is critical to success in cleaning the ground water to water quality objectives. Since ground water remediation is already underway, cleaning the VOC sites quickly is likely to save money and reduce risk in the long run. Kleinfelder recommends the RAB request an expedited end to the referenced "VOC Cleanup dispute".

(c) One of the outstanding issues for the ROD appears to be the cleanup level for the VOCs (hence the dispute). Cleanup levels are important to future land use and protection of water quality. A ROD without cleanup levels is not really a decision document in our opinion. The RAB should request the opportunity to review in detail the VOC cleanup level agreed for each site.

(d) The ROD recommends that six sites are undergoing cleanup under removal action. What is the cleanup level for these sites if the definition of closure is under dispute? Are the six sites under a removal action NFA sites? We recommend the RAB request that remediation of these six sites be agreed to in the ROD to the needed cleanup level to protect human health and the ground water.

(e) The ROD states that seven sites have combinations of VOCs and petroleum hydrocarbon contamination and that the petroleum hydrocarbon cleanup will be decided by a RCRA Corrective Action Plan. This seems somewhat cumbersome at best. Cleanup should be accomplished in one RD/RA process. Kleinfelder recommends the RAB question if somehow the cleanup levels and the remediated process for each site can be spelled out in one document. If not possible, perhaps both the CAP and the ROD should be made available for simultaneous review. Finally the RAB should question if the cleanup will occur at one time both to expedite cleanup and to the disruption to the community caused by the remedial activity.

(f) For VOC group B51, a cleanup level of 0.12 mg/kg for benzo(a)pyrene is identified. This is an industrial cleanup level and the RAB should be aware that residential use will be excluded. There are data gaps, which have the possibility of significantly changing the remediation process. Metals contamination could not be remediatcd by the soil venting process chosen for the group. Since metals are a data gap, is it prudent to identify "trigger level" or cleanup level for metals, which would become part of the ROD. If not in the ROD, then by amendment if significant metals levels are found. The RAB should understand these issues and be comfortable with what is happening.

(g) For VOC group B54, it is stated that the remedy for certain SWMUs will be provided in CB Part 2 RI/FS. Kleinfelder is unclear as to why these SWMUs are listed with this VOC group and why the remedy is being delayed. The same data

gap for metals exists at this site and there is also a risk-based cleanup for 1,4-dichlorobenzene to industrial levels.

(i) For the other VOC sites, the only cleanup needed is removal of VOCs. There is no agreed cleanup level however. The technology choice of SVE is logical.

The RAB should consider how the SVE will be implemented. Much of this will be the subject of the remedial design but some thoughts could be included in the ROD. For example, will the piping need to be underground to facilitate traffic use of the site? Will the blowers require noise controls? Noise from blowers has been a problem at some sites. Will the equipment be designed to blend in visually or will it stand out? The RAB may wish to express an opinion on these implementation factors on a site-by-site basis now so that they can be planned for in the design phase.

Landfill Sites (Section 5.2)

LF1: A detection of gross alpha activity of 64.6 pCi/g is reported at LF1. Background reports that the landfill received concrete-sealed tubes of low-level radioactive material. The planned remedy for LF1 is to excavate and move the debris to a consolidation area. The RAB should obtain assurances that radioactive sources will be handled properly if unearthed and during transfer of LF1.

(h) With regard to the radioactivity:

- What are the ARARs applicable to disposing of the tubes onsite?
- Has the State of California DHS been involved with approval of the remedy selection?
- What steps will be taken to monitor for radioactivity during transfer of the landfill debris?
- Is there a remedial action objective for radioactivity?

(j) With regard to VOCs: Was an investigation for VOCs using soil gas continued below the landfill? Investigation under a landfill is difficult. Since the landfill is to be excavated, a better investigation can be conducted after the debris is moved. If VOCs were found for example, a soil venting system could be used to complete remediation at the site. Is such an investigation planned?

(k) The RAO for the landfill is based solely on lead. Often the plan is to look only at the constituents of concern to verify cleanliness. However, excavating a landfill can lead to many surprises. The RAB may wish to request that the sampling and analysis after excavation of the landfill be for more than lead. This may already be planned but the question should be asked and it may be useful to mention in the ROD that analysis for all detected constituents will be performed to verify a clean site after excavation.

(l) LF 2: Since the cleanup goals for VOCs are yet to be determined, it is not known if all of the remediation at this site is complete (since it is listed as a removal action landfill site). The RAB should be aware that depending on future decisions, other effort such as soil venting might be needed at LF2.

(m) LF 3: The RAO for the landfill is based solely on lead, arsenic, antimony, and benzo(a)pyrene. Often the plan is to look only at the constituents of concern to

verify cleanliness. Similar to LF1, the RAB may wish to request that the sampling and analysis after excavation of the landfill be for more than the above. This may already be planned but can be confirmed in the ROD. Note that the cleanup levels discussed for the ROD are “occupational pathway”. We assume this refers to “industrial” risk assessment levels, but this is unclear. Therefore even if the landfill is excavated, the site use should be for industrial.

(n) LF 4: We do know if this landfill excavation is complete or not (since it is listed as a removal action landfill site). Comments made concerning Landfills 1 and 2 also apply to LF4. The cleanup level is not yet determined. RAOs are based on industrial reuse. After excavation, sampling and analysis should be for all possible constituents, especially in areas where leaks may have occurred as guided by observations made during the excavation. Also a deep soil investigation for VOCs may be warranted.

(Review discontinued due to notification of retraction of the ROD)

COMMENTS AND QUESTIONS FROM REVIEW OF MATERIALS PRESENTED AT THE 28 JULY RAB MEETING

Site FS2

(o) Site FS2 was shown during the 28 July RAB meeting as in closure. However the removal from the site was only 4 pounds. Kleinfelder recommends the RAB ask as to how much removal was expected from the site and whether 4 pounds is enough to provide a site that can now be closed. We have no information to assume otherwise but would recommend the RAB obtain a more detailed briefing on this site.

Landfill 3

Landfill 3 is apparently going to be excavated in October and the debris moved to Landfill 5. The RAB was happy to learn of the change of plans to excavate the debris from this landfill rather than cap it. The RAB should consider the details of this excavation.

(p) The RAO for the landfill is based solely on lead, arsenic, antimony, and benzo(a)pyrene. Often the plan is to look only at the constituents of concern to verify cleanliness. The RAB may wish to request that the sampling and analysis after excavation of the landfill be for more than the above. This may already be planned. Note that the cleanup levels discussed for the ROD are “occupational pathways”. We assume this refers to industrial risk assessment levels, but this is unclear. Therefore even if the landfill is excavated, the site use should be for industrial.

(q) One frequent concern for landfills is that contaminants may migrate from the debris in the landfill downward into native soils. It should be documented during excavation whether mobile contaminants appears to ever have been released. Investigation under a landfill is difficult. Now that the landfill is to be excavated, a better investigation of the soil under the landfill can be conducted. If VOCs

were found for example, a soil venting system could be used to complete remediation at the site. Is such an investigation planned?

Air Force Response:

(a) The 23/22 VOC sites have been removed from SCOU ROD 1. Final decision for these sites will be documented in SCOU ROD 2. The SCOU ROD 2 text will be revised to clarify the grouping of the VOC sites.

(b) The Air Force would like to resolve the VOC cleanup dispute as rapidly as possible. The primary VOC cleanup issue involves the legal interpretation of the applicable, relevant, and appropriate requirements (ARARs) of the California Water Quality Act. However, resolution of this dispute will require a substantial effort on the part of the Air Force and regulatory agencies. Until all parties agree to the interpretation, the Air Force cannot clean up to levels that are not mandated by ARARs.

(c) For sites included in ROD 1 that are impacted by VOCs, the Air Force and regulatory agencies have agreed to compare site VOC contamination levels to conservative cleanup values that are anticipated to satisfy final VOC RAO requirements.

(d) Removal actions have been undertaken at a total of 13 SCOU sites. Additional removal actions are scheduled to begin during the fall of 1998 at LF1 and LF3. A summary of SCOU removal actions grouped by contaminant characteristic and selected removal action is provided below:

- Petroleum hydrocarbon only sites (SVE and intrinsic remediation)
  - Fuel Spill (FS) 1
  - FS 2
- Volatile organic compound sites (SVE)
  - Discharge Area (DA) 4
  - DA 8
  - Castle Vista Landfill B
- Mixed plume sites including VOCs and metals (SVE and capping)
  - Fire Training Area (FTA) 1
- Shallow contamination sites (Excavation and On-site Disposal)
  - Detonation and Burn Facility
  - Building 871
  - Earth Tech Corporation (ETC) 10
  - Polychlorinated Biphenol (PCB) 9

- Landfills (Excavation and On-site Disposal)
  - Landfill 2
  - Castle Vista Landfill A
  - Castle Vista Landfill B
- Landfill (zoned capping, institutional controls, Long-term Monitoring)
  - Landfill 4

SVE removal actions are on going. These systems will remain operational until VOC issues are resolved or until remediation becomes economically impractical. Excavation work at the shallow contamination and the landfill sites is complete. Confirmation samples collected at these sites, after excavation work was complete, confirmed site cleanups were complete. The confirmation samples were submitted for a variety of contaminants including VOCs, semivolatile organic contaminants (SVOCs), and inorganics (metals). These sample results were compared to SVOC and inorganic RAOs and VOC Preliminary Remedial Action Objectives (PRAOs). The Air Force and regulatory agencies are in agreement that the conservative nature of the VOC PRAOs will be adequate to satisfy final VOC RAO requirements.

(e) The referenced sites include DA4, DA8, and Building 1350. SVE remediation of VOC contaminants at DA4 and DA8 has already begun under removal action authority. Remediation at Building 1350 will not begin until after the VOC issues have been resolved. VOC contamination is covered under CERCLA. Because petroleum hydrocarbon contamination is not subject to the provisions of CERCLA, final decisions for petroleum contaminants at these sites will require a separate RCRA decision document. It is anticipated that CERCLA and RCRA remediation efforts will be undertaken simultaneously and will not result in cleanup delay.

(f) The Building 51 VOC site has been removed from SCOU ROD 1. Data Gaps and "trigger levels" for this site will be finalized in SCOU ROD 2.

(g) The Building 54 VOC site has been removed from SCOU ROD 1. Issues regarding SWMUs and Data Gaps associated with this site will be discussed and resolved in SCOU ROD 2.

(h) The Air Force will make every effort to make the SVE systems as unobtrusive as possible. These questions will be addressed further in the SCOU ROD 2.

(i) No evidence of radioactivity was found during exploratory work conducted in the landfill area suspected of containing the burial tubes. Safety precautions for monitoring radioactivity levels during landfill excavation work are specified in the *Landfill Closure/Post Closure Maintenance Plan,* standard operating procedure (SOP) 44. The California Department of Toxic Substance Control (DTSC) is designated to represent the state at the Landfill 1 excavation project. If the disposal tubes are found, they can not be disposed of in the on-base consolidation landfill unless they meet the acceptance criteria of non-hazardous and non-designated waste. RAOs for radiation have not been yet been established. If radiation is found, it must be speciated to a specific isotope to determine the appropriate RAO level.

(j) Based on data collected during the SCOU RI, SVE was developed as part of the selected remedy for VOCs at the LF5 and Castle Vista Landfill B sites. If confirmation sampling identifies significant VOC contamination at LF1 or LF3, which is above water quality site assessment (WQSA) or risk PRAOs, the Air Force would be required to evaluate and select remedial alternatives appropriate for site conditions. If additional remedial actions are

required at the landfill sites, ROD 1 will have to be amended to reflect the added VOC cleanup requirements. VOCs were not found in confirmation soil samples collected after excavation work was completed at Castle Vista Landfill A or at Landfill 2. SVE VOC remediation is underway at the former Castle Vista Landfill B site.

(k) Confirmation sampling will target not only site contaminants of concern (COCs), but also a wide variety of other potential contaminants. The confirmation-sampling suite will include: metals (SW6010A), mercury (SW7470), SVOCs (SW8270B), VOCs (SW8260), and TEPH/TVPH (SW8015).

(l) Confirmation samples collected at Landfill 2 after excavation work was completed found no elevated levels of VOCs. Because the project is being undertaken as a Removal Action, the Air Force and regulatory agencies have agreed to use conservative values for VOC cleanup standards. These conservative values are anticipated to satisfy final VOC RAO requirements.

(m) Confirmation sampling at LF3 will target not only site COCs, but also a wide variety of other potential contaminants. The confirmation-sampling suite will include: metals (SW6010A), mercury (SW7470), SVOCs (SW8270B), VOCs (SW8260), and TEPH/TVPH (SW8015). With regard to the reference to occupational cleanup levels: the Version 3 Draft of the SCOU ROD was issued prior to changing the selected remedy. The occupational cleanup standards were applicable for Zoned Cap remedy. However, because the selected remedy at LF3 has been changed to Excavation and On-site Disposal, it is anticipated that residential, unrestricted standards can be met.

(n) Landfill 4 is one of the on-base “consolidation” landfills. The selected remedy for LF4 is zoned capping. Work at the LF4 site has not been completed. It is anticipated that waste from LF1 will be disposed at LF4 prior to capping. Because LF4 is to be capped, confirmation samples will not be collected at this site. RI sampling at the site found several VOCs in soil and soil gas. Of the detected VOC compounds, only freon (FC12) exceeded the WQSA screening levels. Risk at the site fell into the acceptable range for occupational/industrial reuse. Risks were primarily driven by the SVOC benzo(a)pyrene. Because the landfill is to be capped, the occupational/industrial exposure scenario was considered appropriate. Long-term cap and ground water monitoring will be used to maintain cap integrity and document the cap effectiveness.

(o) The SVE system installed at FS2 was a demonstration project. The low amount of removed VOCs confirmed that SVE was not a practical remediation method for this site.

(p) Confirmation sampling at LF3 will target not only site COCs, but also a wide variety of other potential contaminants. The confirmation-sampling suite will include: metals (SW6010A), mercury (SW7470), SVOCs (SW8270B), VOCs (SW8260), and TEPH/TVPH (SW8015). With regard to reference to occupational cleanup levels: the Version 3 Draft of the SCOU ROD was issued prior to changing the selected remedy. The occupational cleanup standards were applicable for zoned cap remedy. However, because the selected remedy at LF3 has

been changed to Excavation and On-site Disposal, it is anticipated that residential, unrestricted standards can be met.

(q) Confirmation sampling at LF3 include VOCs (SW8260). If confirmation samples indicate VOC contamination above WQSA PRAOs or Risk RAOs, the Air Force would be required to evaluate and select remedial alternatives appropriate for site conditions. If additional remedial actions are required at LF3, ROD 1 would have to be amended to reflect the added VOC cleanup requirements.

H. Decision Process

(1) RAB members would like the Air Force to include the community in information sharing and decisions making of every option considered, in advance and before technical decisions have been made. Members stated that the way the document review process is set up, the community is the last on the list for reviewing the document and doesn't get to make input as the plans are being developed.

Air Force Response: A remediation plan must be workable and technically sound before it is presented to the community. However, the Air Force and regulatory agencies make very effort to share important information about cleanup activities with the community as soon as possible and will continue to do so. The most important mechanism for this is the Restoration Advisory Board (RAB) meetings and the newsletters and fact sheets that are mailed to the community.

The Air Force provides information to the community through the RAB, public meetings, and the Information Repository located at the Merced County Library. Before any remediation is considered, a site must be studied to determine the nature and extent of contamination, if any. The results of these studies limit the possible remedial actions, since each type of remedial action is specific to a particular contaminant. The preferred alternative presented by the Air Force in the Proposed Plan is only the preferred remedy; an actual remedy has not yet been selected at that time. The preferred alternative is based on the legally mandatory CERCLA remedy evaluation criteria, and it is presented to the public before and during the Proposed Plan public meeting. The remedy selection is not finalized until after the public has an opportunity to review and comment on the plan and the verbal and written comments are addressed by the Air Force.

(2) RAB members perceive that there are "back door agreements" between the Air Force and regulatory agencies in regards to selecting alternatives and stated that the community would like discussions and negotiations between the Air Force and agencies to be in a public forum rather than at the Remedial Project Managers (RPM) meetings.

Air Force Response: RPMs from the Air Force and regulatory agencies meet regularly to discuss the base cleanup program. RPM technical working groups often meet every week and usually have a conference call once a week.

RPM meetings are a forum for the Air Force and regulators to discuss and review extensive, highly technical data. These discussions require a significant time commitment by the

participants in order to come to a common understanding about technical issues and the feasible options available. RPM meetings do not result in "back door agreements," rather they enable the Air Force and regulators to review, digest, and then disseminate large quantities of information to the public (e.g., during RAB meetings) in an understandable format. Because of the concern that there are perceived "back door agreements" between the Air Force and the agencies, RAB members are routinely provided copies of RPM meeting minutes. Also, representatives of the RAB have an open invitation to all RPM meetings and have often attended.

I. Off-Base Property

(1) RAB members stated concerns about putting deed restrictions on off-base property. In reference to one of the landfill restrictions/institutional controls that there will be no drilling within the landfill site boundary or no extracting ground water from the shallow aquifer within 500 feet of the site boundary, they asked if affected landowners would be compensated for the restrictions since there are a lot of agricultural wells used near the base. They also asked whether drinking water wells could be installed.

Air Force Response: The Air Force can seek, if necessary, an easement with the property owner that would preclude well drilling. The property owner would be compensated for the fair market value of the easement.

Merced County has jurisdiction over water well permitting in the vicinity of Castle Airport. Because off-base wells could adversely impact effective plume capture, the Air Force has discussed modifying the permitting process to set out a "consultation zone" that would include the Castle ground water plumes and adjacent areas. This potential modification of the county water well permitting procedure is still in the discussion phase. Because water well policy involves ground water, it will be addressed in either CB Part 2 ROD or as an amendment to the CB Part 1 ROD.

(2) A RAB member questioned whether the ROD calls for clean closure of CVLFA only on Air Force property, or clean closure of the entire landfill. RAB members stated a concern about the Air Force removing CVLFA only up to the property boundary even though the waste may extend outside of their property. One member felt that if the Air Force is cleaning up contaminated ground water off base, then they should clean up landfills off base as well.

Air Force Response: The southern property boundary at CVLFA has been established, and the Air Force has no permission nor intent to operate outside of the property line. The Environmental Protection Agency stated that if the Air Force did not create the landfill but rather purchased the property with the waste already on it, then the Air Force, as the property owner, is only responsible for the waste it purchased. Since the Air Force never owned the land beyond their property line, then the Air Force is not responsible for that waste off base.

While the Air Force is <u>not</u> responsible for solid waste off base, the Air Force is partially responsible for off base ground water contamination because part of the contamination source area (CVLFB) is located on base.

7. Remedial Design/Remedial Action Concerns

Draft Responsiveness Summary comment #11
(1) One citizen asked what happened to soil and waste that was excavated from sites.

Air Force Response: All soil and waste excavated from landfill sites has been characterized to determine if it is designated, hazardous, or non-hazardous. Designated and hazardous materials was taken off site for disposal at permitted Class I or Class II landfills located in the Kettleman Hills area. Through March 5, 1999, no excavated landfill waste has required off-site disposal. Non-hazardous material will be taken to the on-base consolidation landfill for disposal.

Hazardous waste is defined as a waste material that may pose a threat to human health or the environment. Hazardous wastes are disposed of in a Class I Landfill, which is designed specifically for hazardous wastes and includes a liner, leachate collection system, and many other safeguards.

Designated waste can be two kinds of waste: 1) hazardous waste that has been granted a variance from hazardous waste management requirements, or 2) non-hazardous waste that contains pollutants that could be released in concentrations exceeding water quality objectives or that could affect beneficial uses of state waters as defined in the state water quality control plan. Designated wastes are disposed of in a Class II Landfill, which is designed specifically for designated wastes and is similar to a Class I landfill but has fewer safeguards.

Non-hazardous wastes, including most municipal waste, is waste material that does not pose a threat to human health or the environment. Municipal solid waste includes non-hazardous waste generated in households, commercial and business establishments, institutions, and light industrial process wastes, agricultural wastes, mining waste, and sewage sludge. These wastes are disposed of in a Class III Landfill, which is designed specifically for municipal and other non-hazardous wastes. It does not have a liner but collects leachate on an as needed basis. This is the type of landfill that Castle will have for LF4 and LF5.

After all non-hazardous/municipal waste has been moved to LF4, a Zoned Class III Cap will be constructed over the waste. The zoned cap alternative includes consolidating waste into a smaller area, segregating and disposing of any hazardous or designated waste off-site in a Class I or Class II landfill, and constructing a Class III flexible membrane line (FML) cap over areas were waste is deposited, with lesser degrees of protection over adjacent outlying areas. Deed and access restrictions will be set in place to prevent potential damage to the cap or unauthorized access. A 30-year ground water and cap monitoring program will be initiated to confirm that the landfill is not impacting ground water and to maintain the cap integrity.

Draft Responsiveness Summary comment #14
(2) *The Air Force received the following written comment dated October 10, 1997 from a neighbor of the base.*

I have attended numerous meetings conducted by the Air Force Base Conversion Agency. Your staff members have always conducted themselves in a professional manner. In my opinion, I believe the Air Force is doing a good job of the cleanup of the former Castle AFB. Initially we didn't believe the cleanup was going to affect our lives. That changed when the pipeline installation on Leslie Drive was initiated. Then the construction of a treatment system pad began to emerge almost directly behind our home. Some of the structures are not more than 100 feet from our home backyard fence (see enclosed photographs). Our home borders Castle Vista Landfill B, which is the largest landfill to be removed. The landfill is 7.5 acres with the amount of refuse/soil at 59,000/19,000 yd3 which is to be excavated. The primary reason for this letter is that in the near future we are contemplating the selling of our home, which we purchased on December 1982. I retired from Castle AFB on May 1984. With all the activity and structure erection taking place behind our backyard, one has to wonder what potential house buyer would want to purchase our home. If we were unable to have our home sold, or were unable to receive the Market Value on our home, is there an agency Federal-State that could or would provide restitution? Your assistance in this dilemma would be appreciated.

Air Force Response: *The Air Force responded by writing a letter dated November 5, 1997 as follows.*

We appreciate your kind words regarding the professionalism of the Air Force Base Conversion Agency staff and vote of confidence for doing a good job on the cleanup of the former Castle AFB.

In response to your comments and questions regarding the water treatment system installed on Government property adjacent to yours, this is a temporary system and is not believed to be needed as, nor intended to be, a permanent operation. We understand and appreciate your concern over the impact the environmental cleanup actions on adjacent Government property might have on the resale value of your property in an already depressed market following the closure of Castle AFB. Be assured the government will meet its obligations under applicable Federal and State law in accomplishing environmental cleanup of the former Castle AFB.

In response to your questions regarding what Federal or State programs exist to provide restitution to you if you are unable to sell your home, or receive fair market value from a sale of your home, I am not aware of any State program in California that covers this situation. However, the U.S. Army Corps of Engineers (ACOE) administers the Department of Defense Homeowners Assistance Program (HAP) which is a special relief program designed to provide benefits to eligible homeowners to offset real estate losses suffered as a result of certain base closure or reduction actions. The program applies to active military personnel and Federal civilian employees, except temporary employees serving under a time

limitation. Accordingly, it appears you would not qualify for this program. However, you can obtain additional information and a HAP package from the ACOE by calling them at their toll free number, 1-800-811-5532, or by writing to the ACOE at the following address: Army Corps of Engineers, Homeowners Assistance Program, 1325 "J" Street, Sacramento, CA 95814.

Additionally, if you believe you have been damaged by the Government through some form of negligence in its handling of hazardous substances or wastes on the former Castle AFB, then you could proceed administratively by filing a claim again the Government on a Standard Form 95 under the Federal Tort Claims Act, 28 U.S.C. 2671 et seq. If you believe the Government has "taken" your land or diminished its value through Government action, you should seek legal advice from a civilian attorney of your own selection. If you decide to proceed with an administrative claim in this matter, the Air Force does not solicit claims and cannot advise you on what legal theories, if any, support your position in a claim against the Government. As you undoubtedly surmise, you need to seek advice from a civilian attorney of your own selection in preparing any claim you sought to present to the Government.

I regret that I do not have better news for you regarding the Federal and State programs that would be available to assist you in the event you are not able to sell you home or receive fair market value from such sale allegedly due to Air Force environmental contamination on the former Castle AFB.

(3) *The Air Force received the following letter dated February 1, 1998 from a neighbor of the base.*

I want to take the opportunity to thank you for your letter of November 5, 1997 which answered some of the questions of my October 10, 1997 letter.

This letter is in reference to the accumulation of water behind our home which resembles a "lake." When Castle Vista Landfill B was excavated, the contaminated soil was replaced. Rain water is not seeping through the replaced soil. It is my belief that the replaced soil has a hardpan which is impenetrable by water.

My concern is that if we get the heavy rains which have been predicted, a lot of homes to include ours are going to be flooded because the elevation of Castle Vista Landfill B is about 3 feet higher than our backyard.

I would appreciate it if you would address this problem and come up a solution to prevent flooding.

Air Force Response: *The Air Force responded by writing a letter dated February 6, 1998 as follows.*

> We appreciate your letter dated February 1, 1998, and the call you placed to our office on February 2, 1998 regarding your concern for the drainage from the Castle Vista area onto your property. After receiving your call, members of my office went to the site to investigate the situation. Water was indeed ponding near your property. Based on the topography, it did not appear there was any immediate danger of overflowing onto your property. However, on Monday as a precaution, we had our contractor bring a construction piece to the site and create a drainage path away from your property. Our contractor is currently evaluating a permanent solution that will divert standing water away from the western edge of Castle Vista. The final grading will not be performed until the area is drier.
>
> Thank you for your cooperation in our remediation efforts and please continue to keep us informed of any problems you encounter with our efforts.

(4) The community has expressed concern that installation and maintenance of SVE systems at the Hangar F4 and Building 1260 (Building 54 Group) will disrupt current reuse activities. RAB members stated concerns about drilling the SVE well location in the midst of a productive manufacturing activity since Allco's manufacturing line is on both sides of the proposed well site. The RAB opposes having any well inside of buildings and thinks that slant drilling would work. They requested the Air Force make every effort to exhibit flexibility and avoid conflict with and disruption of the work going on in the building.

Air Force Response: Every effort will be made to accommodate current and potential reuse opportunities. It is estimated that SVE at the Building 54 group will operate approximately 24 months. The time frame for SVE at Hangar F4 has not been estimated yet, but most likely would be less than 24 months. Operation and maintenance of the SVE system may cause temporary inconvenience, but installation and completion of SVE is required by state law to protect ground water quality.

In regards to moving the proposed well location, the further the well is from the contaminated spot, the less effective it is.

(5) One RAB member feels that the Air Force is removing a lot of soil and not that much waste at the LF sites that are currently being removed and asked where the dirt is being taken. He believes that the Air Force should segregate the waste and leave the soil behind because he feels it is a waste of money to move good dirt. A RAB member also asked whether sampling has been done at CVLFA, and if the soil is not contaminated, why is the Air Force removing it?

Air Force Response: During landfill removal, the top layer of soil above the trash is removed and set aside first to reduce what has to be excavated. The landfill trenches were constructed in

lifts (i.e., a layer of garbage covered by a layer of soil) to minimize odors. This resulted in a lot of dirt being mixed with waste. The Air Force is trying to clean close the landfill, which involves digging down until you stop finding trash. During removal operations, it would be very time consuming and expensive to segregate the waste and soil and to sample/analyze the dirt for contaminants. In order to leave the soil behind, it would require a large amount of confirmation sampling to insure that the segregated soil was clean.

The dirt is being used as base material for the Landfill 4 cap on base.

In regards to CVLFA, the Air Force has conducted characterization of the excavated waste. While no hazardous material has been found during the removal process, all debris must be removed to legally clean-close the landfill.

Section V

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1A	It is EPA's understanding that the Air Force intends to clean up SCOU sites with petroleum contamination only in accordance with the State of California's authority under the Resource Conservation and Recovery Act (RCRA), and to address these sites in a separate chapter of the SCOU ROD. EPA understands that, for simplicity, these sites have been tracked with other SCOU sites through the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. EPA would prefer that sites with petroleum contamination only be addressed in a decision document that is separate from the SCOU ROD and that represents an agreement exclusively between the Air Force and the State.	Based on Air Force and EPA agreements, the "Petroleum Only" sites have been included as a separate section in the ROD (Section 5.0). This section includes a clear statement indicating that these sites will be required to meet Resource Conservation and Recovery Act (RCRA) and State of California requirements but are considered for No Further Action with regard to CERCLA. Descriptions and comparisons of alternatives considered for restoration of the "Petroleum Only" sites are <u>not</u> included with the ROD. For sites that are impacted by Petroleum Hydrocarbons and Volatile Organic Compounds (VOCs), the ROD includes discussion of alternatives and the selected alternative for the VOC impacted portions of these sites only. The ROD specifies that the portion of the site that is impacted by Petroleum Hydrocarbons will meet Resource Conservation and Recovery Act (RCRA) and State of California requirements but are considered for No Further Action with regard to CERCLA.
1B	Natural attenuation (i.e., intrinsic remediation) is identified as the preferred alternative for the majority (if not all) of the sites with petroleum contamination only. Since the Air Force intends to clean up these sites under the State's authority, the Air Force will need to meet state requirements. However, should the Air Force decide it would prefer to clean up sites with petroleum contamination only under CERCLA, it will need to meet EPA's requirements for monitored natural attenuation.	The Air Force decision is to address the "Petroleum Hydrocarbon Only" sites through RCRA and State requirements and consider the "Petroleum Hydrocarbon Only" sites for No Further Action with regard to the CERCLA process and the Record of Decision.
1C	A response to the Office of Regional Counsel's (ORC) comments on the SCOU RI/FS Report should be provided with the draft ROD. The Air Force's January 1997 response to EPA's November 29, 1996 comments on the draft final SCOU RI/FS stated that ORC's comments would be addressed in the SCOU ROD.	The ORC comments on the SCOU RI/FS have been addressed in the Draft ROD.
2A	Section 2.7, Description of the Alternatives; Section 2.8, Detailed and Comparative Analysis of Alternatives; Section 2.9, Selected Remedies; Section 2.10, Statutory Determinations The use of the "representative site approach" should be eliminated from the SCOU ROD. Although this approach may have been acceptable for the SCOU FS, it is unsuitable for the SCOU ROD. Sections 2.7 through 2.10 of the SCOU ROD should be revised accordingly.	Changes have been made in the ROD approach to Sections 2.7, 2.8, 2.9, and 2.10. The most fundamental change involved how the sites were grouped. Now, instead of the sites being grouped by past uses (i.e., Category 1 through 8) the sites recommended for remedial action are grouped by common contaminants or site characteristics. The new Remedial Action Groups and selected remedies include

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		VOC sites (SVE/Bioventing), Landfill sites (Zoned Capping, Excavation/On-site disposal, and SVE), Shallow Contamination (Excavation/On-site Disposal) sites, Miscellaneous sites (Institutional Controls), and Multiple Contaminants (SVE/Bioventing, Excavation/On-site Disposal, Capping). Comparison of alternatives was undertaken on a site-by-site basis. Because all of the alternatives considered met Threshold Criteria (Overall Protection of Human Health and ARAR requirements) further discussion of these criteria were not included. Summary tables for the comparison of Balancing and Modifying Criteria were developed and included with the Decision Summary data for each Remedial Action Group The selected remedy section was modified to include detailed information regarding contaminants of concern, cleanup requirements, cost estimates for each site. Where appropriate, contaminated soil volumes, unit cost of remediation, Institutional Control and Deed Restriction specifics, and major treatment components included as part of the selected remedy are included with the summary. The Statutory Determinations section was rewritten to emphasize the selected remedial alternative and what were the key factors that led to selection of the remedial alternative.
2B	Sections 2.7 through 2.10 of the SCOU ROD are inconsistent with EPA's ROD guidance (Interim Final Guidance on Preparing Superfund Decision Documents), and should be revised accordingly. Additional information needs to be added for the non-representative sites. The following deficiencies were identified with Sections 2.7 through 2.10 of the SCOU ROD: A) Section 2.7 presents generic, rather than site-specific, descriptions of alternatives (not even representative sites are addressed). Section 6.3.7 (Description of Alternatives) and Appendix C (Sample Description of an Alternative) of the EPA guidance specify that a description of each alternative	A) The descriptions of alternatives for VOC, Landfill, and Multiple Contaminant sites have been revised to include site specific summaries of how each considered alternative will be applied. Information regarding the application of Excavation and On-site

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	should be presented for each site.	Disposal and Institutional Controls/Deed Restriction has been modified to provide more information regarding alternative application, but has not been developed on an individual site basis.
	B) Section 2.8 presents a comparative analysis of the representative sites only. Section 6.3.8 (Summary of the Comparative Analysis of Alternatives) of the EPA guidance specifies that the comparative analysis of alternatives should apply to each site.	B) As suggested the comparison of alternatives has been conducted on a site-by-site basis and presented in a table format.
	C) Section 2.9 presents a generic, rather than a site-specific, listing of remedies (the entire section is only one page in length). Section 6.3.9 (The Selected Remedy) of the EPA guidance specifies that the selected remedy should be described for each site.	C) The Selected Remedy section has been revised to include more site specific components for the selected remedy at each site.
	D) Section 2.10 of the SCOU ROD does not present a site specific evaluation of the five criteria for statutory determination. In fact, no justification is presented to support the preferred remedies for the non-representative sites. Section 6.3.10 (Statutory Determinations) of the EPA guidance specifies that the discussion of the selected remedy for each site should address how the selected remedy satisfies the five criteria for statutory determination.	D) The Statutory determinations section was modified to better explain how the selected alternative satisfies the five criteria for Statutory Determination. In most cases, the same alternative was selected for all of the sites within a Remedial Action Group. To avoid redundancy, site by site summary of the five criteria was not included. For situations were the remedy involves more than one technology or process (i.e., Landfills, Multiple Contaminant sites), each portion of the remedy was addressed separately in the five criteria evaluation.
	E) This comment may be partially addressed by including summary tables from the SCOU Proposed Plan (e.g., Table 6) in the ROD. However, additional information will need to be added to the ROD.	E) Table 6 has been modified and included as a summary table in the SCOU ROD.

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2C	For numerous sites, multiple technologies or approaches will be used for remediation. For example, sites which are targeted for intrinsic remediation may require the use of a backup active alternative, such as soil vapor extraction (SVE). The ROD should present the combined technologies or approaches for these sites as a single remedy.	Because the "Petroleum Only" sites are considered for No Further Action with regard to CERLA and the ROD, discussion of the Intrinsic Remediation was not included with the ROD.
3	All references to T&E evaluation as a remedial alternative, including those in Sections 2.7.8, 2.9, and 2.10.8, and Table 2-14, should be deleted. T&E evaluation is not a remedial alternative, but rather, a part of the evaluation process to identity alternatives. The Air Force should complete its T&E evaluation before revising the SCOU ROD in order to justify the selected remedy for applicable sites.	Technical and Economic Evaluation has been retained as a contingency option for VOC sites that exceeded WQSA no mixing zone scenario (VLEAC2) clean up levels but did not exceed the mixing model (VLEACH1) levels. Remedial alternatives have been selected for the Technical and Economic sites. The evaluation will be used to confirm remediation is needed.
4	The modifying criteria, "agency acceptance" and "community acceptance," must be addressed in the comparative analysis in the draft ROD for all considered and selected remedies. The ROD should describe how state and community acceptance were factored into the decision-making process.	Regulatory and community acceptance has been addressed in the Comparison of Alternatives tables.
5	The information presented in Tables 2-15 through 2-19 is very general. Virtually all of the ARARs are listed as either *potentially* applicable or *potentially* relevant and appropriate. The Air Force, in conjunction with the BRAC Cleanup Team, should identify and summarize specific SCOU ARARs and TBCs before submitting the draft ROD. This will greatly facilitate review of the draft ROD. Additionally, the Air Force should provide a justification to explain its reason(s) for believing a given ARAR does not apply. In the table provided by WPI, the Air Force shaded ARARs that it believes do not apply, however, the Air Force did not provide any rationales for its conclusions. EPA cannot evaluate the appropriateness of the Air Force's position without this information.	ARARs tables have been restructured to include all of the ARARs from the Mather AFB SCOU ROD and ARARs that were referenced in the Castle Landfill Action Memos that were completed during the summer of 1997. Each ARAR has been modified to include which landfills or remediation action group for which they apply.
6	A responsiveness summary of public comments on the SCOU Proposed Plan must be included in the draft ROD. EPA will not accept an incomplete draft ROD for review.	A Responsiveness Summary is included with the revised ROD. The Responsiveness Summary includes responses to comments received from the ORC on the RI/FS, from the community during the public hearings and comment period, and from the EPA on the Preliminary Draft ROD.

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7	The SCOU ROD should clarify how the ecological risks evaluated in the Phase I and Phase II Ecological Risk Assessments (ERAs) have been (or have not been) integrated into the SCOU ROD. It is EPA's understanding that the ERA is being performed under the Comprehensive Basewide (CB) Part 1 and 2, and not as part of the SCOU. The text in Section 2.6 (page 1-38, fourth paragraph) implies that the results of an ERA (Phase II) could not be considered in the selection of remedies, since the ERA was not completed when the SCOU RI/FS Report and the preliminary draft ROD were prepared. However, in some cases, the results of the Phase I ERA are cited in the text (see Landfill 5, Section 2.6.3.1, fourth paragraph). It is unclear to what extent the selection of remedies in the SCOU ROD has considered ecological risks. The text in Section 2.2 of the SCOU ROD should be expanded to clarify the evaluation of ecological risks in connection with the SCOU.	The incorporation of the ERA into the SCOU ROD is a relatively recent development made possible by the extended schedule of the SCOU and the concurrent finalization of the ERA. The ERA had previously been planned to be part of the CB Part 2 because the original ERA schedule did not allow its full consideration in the SCOU RI/FS. Since both the SCOU and the ERA ended up being finalized in the same timeframe, the SCOU FS identified sites with ecological concerns and specified that such sites would need to consider the ecological risks during implementation of the remedial action (SCOU FS, Section 2 and 7.3). Due to the availability of the final ERA and the extended schedules of the SCOU and CB Part 2, the Air Force considers it appropriate and preferable to integrate ERA issues into the SCOU ROD since ERA issues are associated with the contaminants at SCOU sites. This approach would result in more comprehensive solutions for the affected SCOU sites and also avoids the 17 month delay resulting from the revised CB Part 2 schedule. The ERA was not associated with nor relevant to the CB Part 1 because all of the ERA concerns are related to contaminants in the top five feet of soil and not with the groundwater. Recently, significant progress has been made by Air Force and Agency representatives in addressing how ERA issues should be addressed, in a practical sense, for the affected SCOU sites. Initially, this initiative had been pursued by the Air Force relative to the determination of appropriate remedial action objectives to address ecological impacts. It appears that the consensus of ERA representatives is that the ecological remedial action objective should be qualitative and be directed towards protection of sensitive habitat and species. Based on the input of the ERA representatives, such qualitative objectives would be developed for each of the affected SCOU sites, included in the SCOU ROD, and then formulated into the RD/RA Work Plans for agency review and approval. This is the approach that is being developed for inclusion in the Draft SCOU ROD. However, the best method to document the consideration of the ERA into the remedy selection has yet to be determined and will require the cooperative efforts of the parties involved to be completed successfully.

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8	The ROD should clarify what is implied throughout the document by evaluation of risks to or protection of human health "and the environment" as applied to the SCOU. It is unclear whether "the environment" is meant to encompass ecological receptors and critical habitats or groundwater or all of these. Section 2.2 (page 1-8, second bullet) of the ROD states that one of the objectives of the SCOU RI/FS was to "[a]ssess risks posed by contaminated soil to human health *and the environment*." Similarly, other sections of the SCOU ROD (including Sections 2.8.1.1, 2.8.2.1, 2.8.3.1, etc., which are titled "Overall Protection of Human Health and the Environment"; and Sections 2.10.1.1, 2.10.2.1, 2.10.3.1, etc., which are titled "Protection of Human Health and the Environment") imply that risks to the environment were considered in the selection of the remedy(ies) for individual SCOU sites. Section 6.3.6.2 (Environmental Risks) of the EPA guidance requires that risks to the environment (including impacts on critical habitats) be addressed in the ROD. However, given the confusion concerning the application of the ERA to the SCOU (refer to Other Concern 1A above), the scope of the determination of risks to the environment should be clarified.	"The environment" encompasses ecological receptors, critical habitats, and groundwater. Evaluation of risks to ecological receptors and critical habitats was presented in the Phase 1 and 2 ERAs, which the Air Force proposes to incorporate into the SCOU ROD. Evaluation of present groundwater risks were presented in the CB Part 1 RI/FS, while future groundwater risks were presented in the SCOU RI/FS (by virtue of the WQSA). See also the response to Comment #7.
8A	Throughout Section 2.6, each site is addressed under a category titled "Risk Assessment/Risk Management." This section should address risk assessment only, not risk management. Risk management considerations should be addressed, as appropriate, for individual sites in Section 2.8, Detailed and Comparative Analyses of Remedial Alternatives.	As suggested, the "Risk Assessment/Risk Management" section has been re-titled "Risk Assessment". Risk management issues are addressed under Short Term Effectiveness in the Comparison of Alternatives tables.
8B	The text in Section 2.6 (p. 1-36) states that during risk characterization, chemical-specific toxicity information is compared against both measured and predicted (determined through fate and transport modeling) contaminant levels. The ROD should cite the name of the fate and transport model that was used and the document in which the fate and transport modeling results are presented.	For Technical and Economic Evaluation sites, the computer programs VLEACH, coupled with MODFLOW and MTD3 have been used to characterize vadose zone migration of contaminants. The ROD has been revised to include this information.
9	[Table 2-1, Summary of Site Evaluation for Consideration in FS] The fourth column (titled, "Included in FS") in Table 2-1 of the SCOU ROD should be modified to specify the selected remedy (if any) for each of the SCOU sites evaluated in the FS. This column should be renamed "Selected Remedy." Sites	Table 6 from the SCOU Proposed Plan has been modified and included with the revised ROD. This Table organizes the sites by remedial action group, includes selected remedy for each site, and is consecutively numbered.

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	that were eliminated from the FS, and, therefore, do not have selected remedies, should be identified as such. Additionally, it would be helpful if the sites listed in Table 2-1 were consecutively numbered.	
10A	Table 2-14, Selected Remedy Summary] Table 2-14 presents information for only 63 sites, while Table 2-1 lists 218 SCOU sites, of which 166 were evaluated in the SCOU FS. Table 2.14 should account for all SCOU sites, or at minimum, the 166 sites evaluated in the SCOU FS.	Plate 2-5 includes the 231 sites that have been referenced in the SCOU RI/FS and Proposed Plan.
10B	The cost estimates for each site should be presented in greater detail. Section 6.3.9 (The Selected Remedy) and Exhibit 6-6 (Example Cost Summary for the Selected Remedy) of the EPA guidance should be referred to for clarification.	Detailed cost estimates from the SCOU RI/FS has been included with the revised ROD. The cost estimates cover the majority of the sites and alternatives considered. However, cost estimates for the contingency sites will be developed during RD/RA, after data gap or T&E evaluations have been completed.
10C	Table 2-14 lists the total costs for sites selected for “institutional controls” as “nominal.” This is unacceptable. Cost estimates should be provided for these sites.	Cost estimates for Institutional Controls have been included with the revised ROD.
10D	“T&E Eligible” is shown in the “Major Comments” column for Building 1762, DA-4, DA-8, B1350, B-51 Group, and B-54 Group. T&E evaluation should not be considered a remedial alternative.	Technical and Economic Evaluation has been removed as a contingency evaluation option for Building 1762, DA-4, DA-8, B1350, B-51 Group, and B-54 Group sites.
11	All references to “preferred alternatives” (e.g., p. 1-62, second paragraph; p. 1-93, third paragraph) should be removed from the ROD. The ROD should address selected remedies for all sites.	The term preferred alternatives has been removed from the ROD text.
12A	The text in the first paragraph of Section 2.3 should cite the most recent revision (March 1997, draft, or final, if superseded) of the Community Relations Plan.	As suggested, the Community Relations Plan portion of the ROD has been updated to reflect the most recent changes.
12B	The text in the second, third, and fourth paragraphs of Section 2.3 should be revised to describe the completed public comment period on the SCOU Proposed Plan. The draft ROD should not be submitted prior to this public comment period, nor without a responsiveness summary of public comments on the Proposed Plan.	As suggested, the revised ROD includes reference to the Public Comment Period that ran from August 15 to October 15, 1997. The Responsiveness Summary includes Air Force responses to comments received during this period.

RESPONSES TO DTSC COMMENTS ON November 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM
California Department of Toxic Substance Control

ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
1	1	**GENERAL CONCERNS**	Organization and Completeness of the SCOU ROD document: Remedial Action sites: The current organization of the SCOU ROD provides five separate section (Volatile Organic Compounds (VOC) sites, Landfills, Shallow Contamination sites, Miscellaneous Sites, Multiple Contaminant Sites, and Removal Action sites) for the remedial actions. The last section, Removal Action Sites, constitutes a combination of other remedial actions and removal actions completed or in progress. This section is duplicative of other sections and does not provide any additional information. We recommend that these sites be incorporated with the other sections and any information regarding the removal actions should be discussed in the site characterization section. Specific comments are provided below. Risk Assessment/Risk Management: The risk assessment section (Sections 3.x.2.x) for the remedial action sites present the results of Human Health Risk Assessment (HHRA). This section also provides risk management decisions as part of the risk assessment. The risk assessment provides scientifically driven quantitative risk numbers representing the actual risk to a receptor. Risk management decisions are made by the Base Closure Team (BCT) considering reuse plans and community input. We recommend that these two topics be presented separately. Additionally, as discussed in our January 9,1998 letter, Air Force must provide justification for any risk management decision made with risks that fall in the risk range of 10^{-4} and 10^{-6}.	The SCOU ROD provides descriptions of activities the BCT desires to be restricted for each affected site. Actual "Deed Language" is developed upon transfer and is not available at this time. As suggested, the Risk Assessment/Risk Management sections of the site summaries have been broken out into two separate sections, Human Health Risk Assessment (HHRA) and Risk Management Summaries(RMD). The HHRA presents the estimations of the risk, hazard, and where applicable blood-lead calculations. The RMD sections present information on the appropriate reuse scenario and a summary of factors used to make decisions for sites that did not meet the HHRA standards of $1X10^{-6}$ or HI of <1.

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2	2		Solid Waste Management Units (Previously submitted comment): The SCOU ROD included several SWMUs (4.1, 4.3, 4.6, 4.7, 4.8, 4.11, 4.13, 4.14, 4.16, 4.22, 4.29) as no further action sites. This is not appropriate. The limited sampling performed at these sites is not adequate to support a Remedial Investigation (RI), risk assessment and Feasibility Study (FS). It is imperative that the RI/FS and proposed plan be completed for these sites before being included in a ROD. As agreed at the September 3, 1997 meeting, the Air Force will complete the RI/FS and any other closure activities associated with these sites before they can be considered closed. Additionally, the AF stated that a contractor is being sought to complete this task. We recommend that the AF complete the agreed upon tasks and include them in the Comprehensive Basewide Part 2 (CB Part 2) RI/FS and ROD.	Information of SCOU SWMUs has been revised based on recent Air Force/Agency agreements. SWMUs 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.14, 4.16, 4.17, 4.18, 4.21, 4.22, 4.23, 4.29 have been removed from the ROD and will be finalized during CB Part 2.

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3	3		Sites with Ecological Risk (Previously submitted comment:) These sites (FTA-1, LF-5, SDS, DA-1, ETC-10, FR, LF-1, LF-2, LF-3, and LF-4) which have potential ecological risks were included in the SCOU ROD. However, the Ecological Risk Assessment (ERA) was not completed in time to be evaluated in the May 1997 Final SCOU RI/FS. Consequently, the ERA finding was not presented in the proposed plan and public comments were not solicited. We recognize that the AF is devoted to reaching quick resolutions for these sites but the approach does not substantially follow the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process in that it does not allow for community input. We recommend that the AF conduct an FS evaluation as part of the CB Part 2 RI/FS as originally planned. However, if the Air Force intends to include the ecological risk sites as part of the SCOU, then we recommend that a focused FS be prepared with a proposed plan to allow the public to comment on the selected preferred alternatives.	Based on Air Force/Agency agreement, the SCOU ROD presents selected remedial actions that will protect human health and water quality. Ecological Risk issues and potential modification of selected remedies will be developed and finalized during the CB Part 2.

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4	4		Contingency Sites Further Action Data Gap (FADG) and Technical and Economic (T&E) Evaluation sites required further evaluations (scheduled to be completed in January 1997) that were not completed in time to have a single remedial action in the Proposed Plan and draft SCOU ROD. The Agencies agreed with the AF that this is an acceptable approach as long as the AF Provides contingencies in the ROD and they are satisfactory to the BCT. However, the language for the contingencies provided in the ROD are deficient, vague or non-existent. For example, Plates 3-1-7 a, b, and c are intended to provide the decision process for remedy selection at these sites. These plates present results of VLEACH 1 modeling and EPA's published Preliminary Remedial Action Objectives (PRGs). The use of VLEACH 1 results and published PRGs for use in remedy selection has never been accepted by the State. Since the results from the FADG/T&E evaluation report is forthcoming (due January 30, 1998) We propose that a single remedial action be selected in the ROD, In lieu of rewriting the contingency language. Additionally, the ROD indicates that T&E evaluations for several of the IRP sites (Bldg 1709, Hanger F-4) have been completed. These should be presented to the agencies.	The ROD has been updated with information from the Draft Data Gap Investigation report (February, 1998). Based on information provided in this report, the contingency status of the FADG and T&E sites has been removed.

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5	5		Deed restriction language The SCOU ROD fails to provide site specific deed restriction descriptions and mechanisms to implement them. DTSC has requested in the past, as has the community, that the AF provide this language. Attached, you will find deed restriction language from the Mather AFB ROD. It should be used as a model for Castle specific language in the SCOU ROD. We request that the AF present some "strawman" language to initiate this process. This could be done in parallel to the SCOU ROD review process. Polychlorinated Biphenyls (PCB sites): Despite DTSC's previous agreement with the Air Force that institutional controls would be an acceptable remedy, the final remedy for PCB sites still remains unresolved. Since this initial agreement, strong community objections have arisen. As a result, USEPA is in the process of evaluating whether these sites require institutional controls. The USEPA toxicologist is examining the usability of the available data for conducting a risk assessment (see EPA comments). It is essential that the AF participate in assisting the EPA by providing all the available data and any resources needed. The ROD should be revised to incorporate the findings of the risk assessment and accommodate community reuse needs.	The SCOU ROD provides descriptions of activities the BCT desires to be restricted for each affected site. Actual "Deed Language" is developed upon transfer and is not available at this time. The remedial decision for the PCB sites has been changed to NFA based on reevaluation of the site data and with concurrence of BCT.

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6	6		Fire Training Area 1 (FTA-1) The ROD fails to address previous issues and concerns raised in our August 8, 1997 correspondence (attached). In our correspondence and during several discussions with the BCT, we stated that the new selected remedy (Capping/institutional Controls) must be analyzed and compared with the alternatives already outlined in the Final SCOU RI/FS. Additionally, the closure report/FS which was due to the agencies on November 18, 1997, has not been submitted to the agencies as of this date. This report was intended to justify, with technical detail, how the Air Force was going to convert a cap originally intended to aid soil vapor extraction to a cap which constitutes a permanent remedy to contain underlying metals and dioxin contaminated soils. Without providing the closure report to DTSC, we are reluctant to accept AF's selected remedy for this ROD. To expedite the review process for the SCOU ROD, it is expected the analysis to be conducted in a FS type report (closure report/FS) using the criteria outlined in CERCLA process.	FTA1 has been removed from the SCOU ROD pending resolution of selected remedy issues. The final decision for remedial actions at FTA1 will be documented in the CB Part 2 ROD.

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7	7		Remedial Action Objectives (RAOs) Previous to submitting the draft SCOU ROD, the AF with its contractor and the agencies spent a substantial time and effort in preparing the Remedial Action Objectives (cleanup numbers). This information has not been included or discussed in the SCOU ROD. However the SCOU ROD presents non-site specific screening level data (Plates 3-1-7 a, b, and c), Preliminary Remediation Goals (PRGs) and VLEACH modeling results, as the remedial action objectives. The levels provided in the tables should be used for planning purposes and not in the ROD. The draft RAOs provided in your September 24, 1997 letter should be finalized and used in the SCOU ROD. The final RAO tables and narrative must incorporate the suggestions and comments made by the Agencies during the technical working sessions held in San Francisco on October 9, 1997. It should also incorporate the response to Agency comments prepared by Jacobs engineering (Transmittal date December, 8 1997 and received 1/28/98).	Narrative and summary tables from the Jacobs RAO Summary document have been incorporated into the COC/RAO summary for each remedial action site. An RAO summary is being prepared and will be submitted for Agency review.

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ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
8	1	**SPECIFIC COMMENTS**	Section 1, Site Name and Location, Page 1-1 Please insert the former name of site in parenthesis "Castle Air Force Base" next to the new facility name.	Change made as suggested.
9	2		Sections 2.1, and 2.2 These sections do not provide the most current description, history and environmental investigations at Castle AFB. For example, section 2.2.1, Castle Environmental Investigation, provides a discussion of environmental investigations only up to the 1991. Please revise this section to provide up to date information.	Section 2.1 has been updated to include completion of IT Corporation's limited records search (1991), the Draft Castle Environmental Impact Statement (1994), RI/FS (May, 1997), Preliminary Draft and Draft ROD (January and November, 1997), the SCOU Proposed Plan (August, 1997), Draft Data Gap Technical Report (January 1998), and FTA Closure Report (February, 1998)
10	3		Section 2.4, Scope and Role of SCOU ROD, Page 2-8 The text states "34 sites were impacted by petroleum hydrocarbon contamination only and are required to meet State of California and RCRA requirements but are considered for NFA with respect to the CERCLA process and this ROD." The text is unclear and confuses the reader since it discuss issues in sweeping terms. It is not clear how RCRA sites could be considered for NFA with respect to CERCLA since many RCRA sites, such as the Solid Waste Management Units, are considered CERCLA sites. Please revise the text to be more specific as to which particular requirements of RCRA or state law apply to which particular sites.	To clarify the status of petroleum only sites, the following information has been added to the Scope and Role of the SCOU ROD section (Section 4.3) "Because Petroleum Hydrocarbons are exempt from CERCLA, these sites are considered NFA with respect to the CERCLA process and this ROD, but will be required to meet State of California and RCRA closure requirements."

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11	4		Section 2.4, Scope and Role of SCOU ROD, Page 2-8 This section does not include the ecological risk assessment as part of it scope. If the Air Force chooses to address the ecological risk assessment in this ROD, then the scope and role of the SCOU ROD should be expanded to provided a detailed discussion on how the ecological risk sites are being incorporated into this ROD, including a discussion of a focused feasibility study for these sites.	The Scope and Role of the SCOU ROD text has been revised to state that "ecological risk assessments (ERAs) were conducted for selected sites with sensitive environmental habitat. The Ecological Risk Assessment for Castle Airport will be completed as part of the CB Part 2 ROD. See Section 4.2.1.
12	5		Section 2.4.1, SCOU Risk Assessment The Water Quality Site Assessment (WQSA) is inappropriately included in this section. These two processes have different objectives. The objective of the WQSA to protect the water quality, which is different from the objectives of the HHRA. The SCOU RI/FS conducted the WQSA and HHRA as parallel processes and they should be discussed separately.	The Decision Summary format has been revised to include separate discussions of WQSA (4.3.1) and HHRA (4.3.2).
13	6		Section 2.4.1.2, Human Health Risk Assessment, Page 2-10 The text states that Plate 2-10 lists the results of the quantitative human health risk assessment, but list the results for only a few sites. Please revise the plate to include all SCOU sites.	SRAs were conducted for nearly every SCOU site. QHHRAs were conducted for 28 SCOU sites that had SRA occurrence of cancer risk greater than 1 X 10-6 and or Hazard Index greater than 1. Summary tables of the QHHRRA and SRAs findings have been included in the site summary text.

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14	7		Section 2.4.1.2, Human Health Risk Assessment, Page 2-12 The last Paragraph. The text states "the guidance for calculating risks to human population uses a range of cancer risk as a target for establishing health protection goals. The target risk range for cancer is between in ten thousand (10^{-4}) and one in one million (10^{-6})." This section does not provide a complete discussion of the guidance (the text does not provide any references). By using a selected portion of the guidance, the paragraph makes it appear that the risk range is used exclusively in establishing health protection goals without any further analysis. The text in 40 CFR 300.430 states that 10^{-6} risk level should be used as a point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure. In our January 9, 1998 letter we stated that a remedy in the risk range of 10^{-4} and 10^{-6} may be acceptable, with justification. Each selected remedy within that risk range must be evaluated individually to assure that it is protective of the human health and the environment. Please revise this section to provide a comprehensive discussion of the risk assessment results.	To clarify issues associated with HHRA, the following statement has been added to Section 4.3.2.4.1 "Based on 40 CFR 300.430, the 10^{-6} risk level has been used as a point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure. This ROD provides justification for all remedies that do not meet 10^{-6} risk goals. This justification can be found in the Risk Management discussions for applicable sites.

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15	8		Section 2.4.1.2, Human Health Risk Assessment, Page 2-13 Remove the third paragraph that starts the "Due to the conservative nature of risk assessment,..." The basis for the statement is not clear. If the AF wishes to include this paragraph, please provide justification for this statement.	This statement has been removed from the ROD.
16	9		Section 2.4.1.3, Ecological Risk Assessment, Page 2-14 This section lacks any useful information. The intent of the section is not clear since none of the information is used to select remedial actions. Terms such as No Further Environmental Investigation/Risk Management and Phase II Verification/Validation are used without providing definitions in this SCOU ROD or their intended use. If the Air Force intends to include Ecological Risk Assessment in this ROD, then the following must be accomplished: 1) Complete and finalize the remedial action objectives 2) Conduct a focused feasibility study; 3) Prepare a proposed plan 4) Public notice and provide for a public hearing; 5) Publish findings in SCOU ROD; and 6) Prepare a responsiveness summary. To meet the SCOU ROD time frames, the AF must work closely with the BCT in every step of the process.	The summary of the Castle Ecological Risk Assessment has been revised to provide an overview of the Ecological Risk Assessment. Final decisions for Ecological Risk issues will be completed as part of the CB Part 2 RI/FS.

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17	10		Plate 2-4 Plate 2.4 provides a plume delineation map from three years ago (Second quarter 1994) for TCE in the Shallow Hydrostratgraphic Zone. This map is outdated and does not demonstrate current plume definitions. Please provide a larger map clearly indicating all plumes within each hydrostratgraphic zone. We suggest that figures from the 1997 annual report be used to demonstrate plume configurations.	As suggested, a Fourth Quarter 1997 Map ground Water Plume map has been include with the ROD.
18	11		Tables 2-8(a-c) These tables should be revised to include the actual RAOs prepared by Jacobs Engineering Group.	Tables 2-8a, b, and c have been updated to include VLEACH1 and VLEACH2 values for VOCs (See Plate 4-10a). Narrative and RAO tables from the Jacobs RAO Summary have been incorporated into the site summary risk sections.
19	12		Section 3.1, Volatile Organic Compound Sites, Page 3-2 SMWU 4.9, SWMU 4.10, and SWMU 2.23 have been erroneously included as part of the *VOC and Petroleum Hydrocarbon T&E Evaluation Contingency Site Groups.* As discussed above in the general comments, the investigation for these sites are incomplete. The data gaps are indicated in the revised Draft Final SCOU RI/FS Data Gap Spreadsheet (11/19/97). Please revise the SCOU ROD to indicate that these sites need additional work.	SWMUs 4.9, 4.10, and 4.23 have been removed from the VOC remedial action group. SWMUs 4.9 and 4.10 have been recommended for No Further Action, SWMU 4.23 has been removed from the SCOU ROD and will closed out in the CB Part 2 ROD.

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20	13		Section 3.1.1.4, Building 1709, Page 3.-5 The text states that the T&E evaluations for these sites have been completed, but the results were not presented. These results must be presented in the SCOU ROD.	The SCOU ROD is a decision document. Conclusions of the B1709 T&E evaluation have been included. For more information on the B1709 T&E evaluation, the ROD references the Draft CB Part 2 RI/FS.

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21	14		Section 3.1.3, Description of Alternatives for VOC Sites, Page The text states that cost information for application of alternatives at Building 1709, Hanger F4, will be developed as part of the RD/RA and the cost information for ETC-7, Building 1529, Sanitary Sewer 2, and Building 551 will be developed after the FADG/T&E evaluations have been completed. The cost comparison for the alternatives should be completed and included in the SCOU ROD. Also, as discussed in the general comments, all FADG/T&E evaluations should be completed before the SCOU ROD is accepted as final.	Of the sites listed, only B1709, ETC7, and Hangar F4 are now being addressed by the SCOU ROD. SVE is the selected remedy for B1709 and Hangar F4, and ETC7 is recommended for NFA. Costs for remedial alternatives considered for B1709 and Hangar F4 are included with the SCOU ROD. B1529 is impacted by petroleum hydrocarbons only and is required to meet RCRA and State requirements and is NFA with regard to the SCOU ROD. SS2 and B551 have been removed from the ROD and will be finalized in conjunction with CB Part 2.
22	15		Section 3.1.5.1, Further Action Data Gap Sites, Page 3-18 This section provides only a brief description of what would trigger remediation at the data gap sites. This section should be expanded to discuss, in detail, what steps will be taken. At the minimum, this section should state that the process used in the SCOU RI/FS will be used for HHRA, and FS preparation.	The Further Action Data Gap sites have been incorporated into appropriate remedial action groups based on the findings presented in the Draft Data Gap Investigation report (January, 1998). The sites are no longer contingency sites. Reference to remediation “triggers” has been removed from the ROD.

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23	16		Section 3.1.5.1, Technical and Economic Evaluation, Page 3-18. The text states that T&E evaluations will involve detailed fate and transport modeling of VOC contaminants using VLEACH, MODFLOW and MT3D. The information provided is insufficient and fails to provide any specifics on how this will be carried out. DTSC recommends, as discussed in the general comments, that this section should be revised to provide all details including the actual results of the T&E evaluations.	Details of the Castle SVE Shutoff Criteria will be worked out through the formal dispute process. Discussion of T&E evaluation is included in Section 4.3.1.5.
24	17		Section 3.1.5.2, Castle VOC Contaminated Soil Cleanup Standard, Page 3-18. In the first paragraph, the text states, “if at some later date it is determined that it is infeasible to achieve the VOC contaminated soils cleanup standard specified, this issue will be evaluated during the five year review of this SCOU ROD.” We do not believe that the decision for evaluating the feasibility of achieving the cleanup standard should be made at the five year review. Operations of the SVE system and shutdown language should be outlined in the SCOU ROD and described in detail in the operation and maintenance plan.	Details of the Castle SVE Shutoff Criteria will be worked out through the formal dispute process. The Castle VOC Contaminated Soil Cleanup Standard lists the dispute consensus statement.
25	18		Section 3.1.5.2, Castle VOC Contaminated Soil Cleanup Standard, Page 3-18. The SCOU ROD does not provide trigger language for the startup and closure. Operating parameters for sites that require Bioventing in conjunction with Soil Vapor Extraction systems (SVE) are also not included. Please revise the SCOU ROD to include this information.	Details of the Castle SVE Shutoff Criteria will be worked out through the formal dispute process. The Castle VOC Contaminated Soil Cleanup Standard lists the dispute consensus statement.

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26	19		Table 3-1-6 This Table does not provide additional useful information. The Remediation Trigger column for the data gaps sites should be expanded to include a description of the steps which will be taken during the sampling effort and preparing the RAOs.	The Further Action Data Gap sites have been incorporated into appropriate remedial action groups based on the findings presented in the Draft Data Gap Investigation report (January, 1998). The sites are no longer contingency sites. Reference to remediation “triggers” has been removed from the ROD.

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27	20		Plates 3-1-7a, b, c These plates are titled Remedial Action Objectives for VOCs, Semi-VOCs and metals. However, the plates actually provide PRGs and VLEACH1 values for contaminant of concerns (COCs) identified for Castle Airport. The information provided is useful but it should be revised or expanded to include site specific RAOs. Additionally, the Water Quality Site Assessment (WQSA) column provides data from the VLEACH 1 model. These data should be replaced with the VLEACH 2 model results since this is the cleanup standard the AF proposes to be used in the ROD.	Site specific RAOs from the Jacobs RAO Summary document have been included with the site summary information.
28	21		Section 3.2 Landfill Sites Selected for Remedial Action. Please incorporate Landfill 4, Landfill 2, Castle Vista A and Castle Vista B into this section.	Change made as suggested.

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29	22		Section 3.22.2, Landfill 3, Page 3-25 Risk Assessment: The risk assessment portion of this section is confusing and provides contradictory information. At the beginning of the paragraph, the text states that the residential risk is 2.1X 10^{-3} and the occupational risk is 9.9 X 10^{-5}. The text goes on to state that the occupational exposure is appropriate for the Landfill 3 (LF3) site because the proposed reuse is industrial/commercial. In the next sentence, the text states that LF3 presents a significant risk for both residential and occupational exposure because the cumulative risk exceeds 1 X 10^{-5} for all exposure scenarios. Additionally, this risk assessment section inappropriately discusses risk management decisions. This section should be revised to provide an accurate summary of the risk assessment findings. A new section should be added to discuss the risk management decisions. The AF must provide clear justification for any risk management decision made with risks between 10^{-4} and 10^{-6}. Site COCs and RAOs: The last paragraph states "RAOs were not developed for PAHs, barium, aluminum, arsenic, antimony, thallium, and cadmium based on risk management decisions." The risk management decisions made for the ecological risk sites may not be acceptable since the agencies were not involved in the decision process. Risk management decisions should be made along with the agencies during the preparation of the focused feasibility study for the sites with ecological risk assessment concerns.	The text (Section 5.2.1.3) has been revised to state, "The maximum cumulative residential risk was 2.1 X 10^{-3} and the maximum cumulative occupational risk was 9.9 X 10^{-5}. The principal COPCs contributing to the risk were arsenic (approximately 100 percent of surface soil risk in Area 1) and benzo(a)pyrene (approximately 50 to 70 percent of the surface soil risk in Area 2 and the subsurface soil risk in Areas 1 and 2)". Justification of the occupational exposure scenario is provided in a separate Risk Management discussion. The Risk Management discussion of ecological COCs and RAOs has been removed from the ROD. Final decisions on Eco-COCs and RAOs will be included in the CB Part 2 ROD.

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30	23		Section 3.3.2, Risks at Shallow Contamination Sites The risk assessment and Water Quality Site Assessments for the data gap sites are incomplete or not presented. This information should be included after the data gap sampling, risk assessment, and WQSA are completed.	With the exception of SWMU 4.15, Human Health and Water Quality Risk summaries have been included for all of the Shallow Contamination sites. Human Health and Water Quality assessments will be will be completed after SWMU 4.15 is removed and soil samples are collected.
31	24		Section 3.3.2.1, Firing Range, Page 3-41 The text provides conclusions based upon incomplete investigation of this site. The firing range consists of two areas. The risk assessment results presented are for the inactive portion of the firing range. The remedial investigation and risk assessment have not been conducted for the active portion of the firing range. Hence, the risk assessment for this site is incomplete. This section should be revised to incorporate the results of the recent data gap sampling and risk assessment.	The Firing Range consisted of two separate firing areas. During the RI, the range that was not in use was sampled. The conditions at the sampled area were considered to be less contaminated because that portion of the range was less used. This determination was the basis for a risk management decision to remediate the site in lieu of further evaluation.

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32	25		Section 3.4, Miscellaneous Sites Requiring Institutional Controls The text states that based on State of California requirements, institutional controls including deed restriction, must be applied at any contamination site that does not meet residential clean up requirements. In addition to the State of California requirements, the NCP requires institutional controls if cleanup to unrestricted use is not achieved. The text should be revised to present all requirements. Please revise the text to state that Section 25355.5 of the California Health and Safety Code requires land use restrictions as part of the remedial action when cleanup to unrestricted use is not achieved.	Nonconcur. Health and Safety Code, Section 25355.5, discusses when money can be expended from the Hazardous Substance Cleanup Fund and has no relevance to the cleanup actions at Castle. (Section 3.4 has been removed from the ROD and will be addressed during SCOU Part 2 ROD).

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ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
33	26		Section 3.4.1.7, SWMU 4.31, Page 3-51 DTSC does not support implementing institutional controls at this site. This site contains data gaps and the risk assessment is not complete. Please provide the rationale for institutional controls at this site.	The ROD has been revised to move SWMU 4.31 into the NFA category. Justification of the NFA status can be found in Section 5.6.3.64.
34	27		Section 3.4.1.x, Polychlorinated Biphenyls (PCB) Sites 1, 2, 3, 4, 5, 6, 8 Site investigations and risk assessment of these sites were not conducted during the SCOU RI/FS process due to previously made risk management decisions. Because of comments received during the public hearing and strong community objections to the remedial actions, we believe that the Air Force should reevaluate the remedial actions for these sites. The evaluations being conducted by the USEPA should be incorporated in the ROD. Additionally, These results should be presented and discussed with community members before issuance of the ROD.	Due to RAB concern, the BCT reevaluated the need for Deed Restriction at the PCB sites. Based on this reevaluation, the PCB sites are now recommended for No Further Action. The SCOU ROD Responsiveness Summary (Section 7) provides an overview of the community concerns related to the Deed Restrictions, and steps that the Air Force and BCT have taken to respond to these concerns.
35	28		Section 3.4.2.1, Storm Drain System (SDS), Pager 3-53 Ecological Assessment: The text states that the ecological quotients for the aquatic bird receptors are above 1.0, but the principal risk driver is aluminum which is apparently based on an overly conservative critical toxicity value. This is a speculative statement and should not be used to justify inaction. Unless the basis for this statement is provided, it should be removed.	Ecological Risk discussions are on-going. Final decision on Ecological Risk issues will be included in the CB Part 2.

RESPONSES TO DTSC COMMENTS ON November 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM
California Department of Toxic Substance Control

ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
36	29		Section 3.4.5, The Selected Remedy for Miscellaneous Sites, Page 3-58 This section does not provide specific language for the institutional controls and provides only a sample of the deed restrictions language. Attached, you will find deed restriction language from the Mather AFB ROD. It should be used as a model for Castle specific language in the SCOU ROD. We recommend that the AF include the agencies and the Restoration Advisory Board members in reviewing the language specifics.	Applicable portions of the Mather AFB Deed Restriction text has been incorporated into the description of Deed Restriction for the Miscellaneous Site group. However, it should be noted that the Mather text was developed for Landfill, Ground Water, and Soil Contamination sites being remediated through SVE. Only Future Land Use, Construction and Implementation, Site Access, Notification of Transfer, Variance/Termiantion sections apply to the Miscellaneous Site group.
37	30		Section 3.4.5, The Selected Remedy for Miscellaneous Sites, Page 3-58 The text states that the cost estimates (for the Miscellaneous sites) are provided, but are not. Please provide these cost estimates.	Cost estimates for Institutional Controls/Deed Restriction is beyond the scope of this ROD Remedy Selection Decision Document.
38	31		Section 3.6 SCOU Sites Selected for Removal Actions. As discussed in our general comments, the sites within this section should be redistributed among other sections with similar grouping, as appropriate.	As suggested, the Removal Action sites have been incorporated into appropriate remedial action groups.

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CONCERNS AND COMMENTS FROM
California Department of Toxic Substance Control

ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
39	32		Section 3.6.4.3, Description of Alternatives at FTA-1 site, Page 3-83. The description of alternatives (Plate 3-6-15, Plate 3-6-16, and Plates 3-6-17 a, b, c, d, and e) provide an incomplete description and analysis of the alternatives. As discussed in the general comments, this site should be completely reevaluated in the closure report/FS and have agency acceptance before it is incorporated in the SCOU ROD. After the closure report/FS is finalized, this section should be revised accordingly.	FTA1 has been removed from the SCOU ROD and will be finalized as part of the CB Part 2 ROD.
40	33		Section 4.1.5.6, SWMU 4.3, Page 4-2. This site has been inadvertently included as a No Further Action site. The text states “Tank to be removed and confirmation samples collected. To be documented in RCRA Closure Report Volume 2”. The text confirms that additional work is necessary at the site. This site should be included with the data gaps sites identified for SWMUs in section 3 of the SCOU ROD.	SWMU 4.3 as well as 13 other SWMU sites have been removed from the SCOU ROD. Close out of this group of SWMU sites will be finalized in the CB Part 2 ROD.
41	34		Section 5.1.3, SWMU 4.21. The text for this section is missing. Please include the necessary text for this section.	SWMU 4.21 as well as 13 other SWMU sites have been removed from the SCOU ROD. Close out of this group of SWMU sites will be finalized in the CB Part 2 ROD.
42	35		Table 6-2 b, Castle AFB SCOU State Chemical-Specific ARARS, Page 1-3. In the second row, under the Preliminary Determination column, Please delete text and insert “Relevant and Appropriate.”	Air Force response to this comment will be developed during the response period for version 3 of the SCOU ROD.

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CONCERNS AND COMMENTS FROM
California Department of Toxic Substance Control

ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
43	36		Tables 6-3 a, and b. For the "Preliminary Determination" column, please remove the word "preliminary" from the heading. Under the column Preliminary Determination, Please remove the word "Potentially" from all rows. Table 6-3 b, Page 5 of 5. Under the column Preliminary Determination, please remove the text "Potentially relevant and appropriate" for all three entries and insert "Applicable."	Air Force response to this comment will be developed during the response period for version 3 of the SCOU ROD.
44	37		Table 6-5. Please remove the text "Combination Castle Landfill and Mather ARARS" for the title. Please delete the "Source" column.	Air Force response to this comment will be developed during the response period for version 3 of the SCOU ROD.
45	38		Section 7, Responsiveness summary. The AF has not provided an adequate response to the RAB members concerns. The Community is concerned that by capping FTA-1, the AF is creating another unusable area similar to the landfills. Some of these concern are outlined in Mr. Jeff Palsgaard's letter submitted to the Air Force during the August 26, 1997 public hearing. The Air Force must provide clear and detailed responses to the community's comments and concerns.	Responses to this concern are provided in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category A, Remedial Alternative Preferences, comment numbers 5 and 6. Comment 6 includes Mr. Jeff Palsgaard's letter in its entirety.

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CONCERNS AND COMMENTS FROM
California Department of Toxic Substance Control

ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
46	39		Section 7, Responsiveness summary. No response is provided for comment #14. Please provide a response.	A response for this comment is provided in the Responsiveness Summary, Section 5, Remedial Design/Remedial Action Concerns as comment number 2.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
I. Comments from Remedial Project Manager, Lisa N. Hanusiak, submitted on behalf of the USEPA **General Concerns**		
1	[ROD Organization and Format] The draft Record of Decision (ROD) has substantially improved from the preliminary draft version; however, the new format and content of the document often deviate significantly from ROD guidance. This has resulted in missing and/or misplaced information, redundancies and awkward overlaps, inappropriate section titles, and new inconsistencies. Because the draft ROD is hard to read, it is difficult to determine if its contents are adequate. (EPA was not provided an opportunity to review and comment on the new format resulting from the October 9, 1997 Technical Working Group Session [TWGS].) Also, the ROD is intended to be an informational public document, in addition to a legal and technical document. This objective makes its readability particularly important. Detailed discussion of ROD format is presented below in Comments 12 through 16, and 137. These comments include suggestions for restructuring the ROD, while minimizing revisions to the extent possible.	Noted

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
2	[Sites with Ecological Risk Concerns] The ROD needs to be revised to adequately address sites with ecological risk concerns. The Ecological Risk Assessment was not completed in time for consideration in the SCOU Remedial Investigation/Feasibility (RI/FS) and Proposed Plan, and, therefore, it was not considered in remedy selection for the ROD. The Air Force needs to: 1) prepare a focused feasibility study to support the selection of SCOU remedies for applicable sites; 2) prepare a proposed plan; and 3) provide a public comment period and associated public meetings. The feasibility study needs to be completed and the results and public input need to be incorporated into the SCOU ROD before the ROD can be finalized. Further discussion of the necessary ecological assessment is presented below in Comments 15, 17, 18, 30A, and 88 through 100.	In accordance with recent BCT agreements, information on the development of Ecological Risk Assessments for the SCOU sites will be moved to the CB Part 2 discussion. Ecological Risk information has been removed from the site summary data.
3	[Further Action Data Gap and Technical and Economic (T&E) Evaluation Sites] EPA strongly feels that the Air Force should finalize the Data Gap Technical Report and incorporate the final decisions for Further Action Data Gap and T&E Evaluation sites in the ROD. Numerous concerns have been identified, including incomplete cost estimates and comparative analyses, inadequate contingency language, and unresolved evaluations of remedial alternatives. These concerns will be resolved once the Technical Report is available. The second draft of the ROD should incorporate the final site evaluations from the Technical Report. Detailed discussion of Further Action Data Gap and T&E Evaluation sites is presented below in Comments 19, 20, 21, 33, and 41.	Eighteen of the original 24 Data Gap and T&E sites have incorporated into appropriate site groups based on information contained in the Draft Data Gap Investigation report (Feb, 1998). Final decisions on remedial actions at the remaining six data gap/T&E sites (B325, B551, B1541, DA5, FTA3 and SS2) has been postponed until CB Part 2.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
5	[Applicable or Relevant and Appropriate Requirements (ARARs)] The ARARs tables (Tables 6-5 and 6-6) were difficult to review because they are not specific for Castle Airport. ARARs from either the Mather ROD (used as a template) or the Castle Landfills Action Memorandum were reproduced in the SCOU ROD without modifications to the text or explanations of why the listed ARARs apply. The ARARs presented in these tables need to be made specific for the remedial activities and characteristics of the sites in the SCOU ROD. EPA performed as thorough a review as was possible under the circumstances. A more comprehensive review will be performed once the requested information is presented. Additionally, the Air Force agreed to delete Tables 6-1 through 6-4 and to revise Tables 6-5 and 6-6, where appropriate (16 December 1997 TWGS). Tables 6-5 and 6-6 of the ROD should be revised so that they include pertinent information from Tables 6-1 through 6-4 which is currently missing. Detailed discussion of ARARs is presented below in Comments 18, 107, 109, 116A, 119, and 127 through 135.	As requested, the ARAR text and tables have been revised based on input from EPA representative Thelma Estrada and AF Legal Counsel, Eric Bee. Responses to EPA comments on ARARs will be developed during the ROD, Version 3 review period.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
6	[Sites Requiring Institutional Controls] The ROD needs to present institutional control language for-deed restrictions on a site specific basis. This level of detail has not been included in the ROD (per Air Force response to EPA Major Concern 2C of 14 July 1997), despite agency and community requests. Additionally, the ROD does not provide sufficient detail describing the mechanism by which the Air Force will ensure long term effectiveness and permanence of the remedy. This must be addressed. Detailed discussion of sites requiring institutional controls is presented below in Comments 23, 24, 40, 46, 60A, 104, 105, 110, 112, 113, and 115.	The Institutional Control text has been revised to include more information regarding the implementation process, and specifics of what activities would be restricted ate each site. See the SCOU ROD, Section 4.4.
	Additionally, community concerns with the implementation of institutional controls at the Polychlorinated Biphenyl (PCB) sites have prompted EPA to reexamine the proposed remedial action. EPA has attempted to conduct an evaluation (i.e., risk screen) of the existing data for these sites to determine whether the institutional controls are necessary. Although the removal of PCB contaminated soils at these sites was incomplete, EPA's hope is that the remaining PCB concentrations do not warrant the implementation of institutional controls. However, historical site data are required to complete this evaluation. Detailed discussion of EPA's evaluation to date and the data that are needed is presented below in Comment 85. Depending on the outcome of EPA's evaluation, further examination of the remedial actions for the PCB sites may be necessary.	Based on recent reevaluation of site risks and BCT agreement, the PCB sites are now recommended for No Further Action.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
7	[Removal Action Sites] The discussion of removal action sites is presented in insufficient detail in the ROD. EPA realizes that several of the removal actions have been completed or are in progress. However, this does not reduce the required level of detail for evaluating remedial alternatives. Much of the necessary detail is missing. Additionally, the format used for presenting information on removal action sites (i.e., a separate section [3.6] of the ROD) is confusing and inconsistent with the BCT's discussion of ROD organization (9 October 1997 TWGS). The information on removal action sites should be integrated into the appropriate site categories as previously discussed. Detailed discussion of removal action sites is presented below in Comments 14, 16, and 25 through 28.	All removal action sites have been incorporated into appropriate site groups based on site contaminants or other site characteristics. These sites have the same level of detail as other non-removal action sites within the group.
8	[Fire Training Area 1 (FTA-1)] Information from the forthcoming Closure Report for FTA-1 needs to be incorporated in the second draft version of the ROD. Outstanding concerns remain with respect to the selected remedy identified in the ROD for metals contaminated soils at this site (i.e., existing cap installed with soil vapor extraction system). The Closure Report needs to: 1) present an evaluation of the nine criteria under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and a comparative analysis for the cap, which was not considered as a remedial alternative in the SCOU RI/FS; and 2) address the concerns identified in EPA's letter of 14 July 1997 that addressed the Air Force's rationale for designating the existing cap as the final remedy for metals and dioxin contaminated soils. Detailed discussion of the information presented in the ROD on FTA-1 is provided below in Comments 29 and 98.	FTA1 has been removed from the SCOU ROD. Final decisions for remedial actions at the FAT1 site will be documented in the CB Part 2 ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
9A	[No Further Action] Additional information on sites determined to require no further action needs to be included in the ROD to justify this determination. Critical information was omitted from the section on no further action sites. Detailed discussion of these sites is presented below in Comments 30 and 31.	The NFA section has undergone major revisions based on agency comments.
9B	Additionally, the no action alternative should be discussed in the text for all SCOU sites. Although it is unnecessary to include this alternative in the comparative analysis tables for SCOU sites, evaluation of the no action alternative is required under CERCLA.	A brief description of the No Action alternative is included in the development of alternatives section for each remedial action group.
10	[Cost Estimates for Remedial Alternatives] Numerous omissions and discrepancies with the cost estimates for remedial alternatives for various SCOU sites were identified. Also, the use of multiple table formats for presenting cost estimate information is confusing. These problems need to be addressed. Detailed comments on cost estimates are presented below in Comments 29A, and 32 through 41. Additionally, the comparison of alternatives for certain sites states that one alternative is more cost effective than another (e.g., “By far, alternative 1 is the least costly alternative considered.”), although the ROD does not present corresponding cost information to support this conclusion. Supporting cost information needs to be presented for all sites.	Cost tables have been revised and updated to match information presented in the SCOU RI/FS. Costs missing from the RI/FS have been developed and included with the ROD. It should be noted, that no costs have been developed for the Institutional Control alternative, because the AF believes this level of detail is not required in the ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
11	[Responsiveness Summary] The Responsiveness Summary is incomplete and the format is inconsistent with EPA guidance. Technical terms that are not explained or defined are used in many of the Air Force's responses. Also, the Responsiveness Summary does not document how the Air Force has considered public comments during the decision-making process. Overall, the Responsiveness Summary gives the impression that the Air Force has expended only a marginal effort in addressing the community's concerns. Detailed discussion of the information presented in the Responsiveness Summary is provided below in Comments 42 through 53, 136, and 137.	The format has been revised to comply with the 1992 EPA Community Relations Handbook. Technical terms have been defined more clearly in the Air Force responses. The Responsiveness Summary documents how the Air Force has considered public comments in Section 3, Background on Community Involvement.
Detailed Concerns - ROD Organization		
12	[Declaration] In the Declaration, the "Assessment of the Sites," "Description of the Sites," and "Contingency" subsections all address how sites were categorized and how remedies were developed. This awkwardly and redundantly overlaps similar discussion in the Decision Summary (Section 2). Suggestions for reformatting this section are presented in Comment 16B below.	Changes have been made to the Declaration as suggested.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
13	[Section 2, Decision Summary] In the preliminary draft ROD (January 1997), the scope of the Decision Summary (although incomplete) was essentially consistent with EPA ROD guidance. However, in the current draft, information that belongs in the Decision Summary has been moved to other sections (Sections 3, 4, and 6). Per ROD guidance, the Decision Summary should include: site characteristics, a summary of site risks, a description of alternatives, a summary of comparative analysis of alternatives, the selected remedy, and statutory determinations. However, all of this information is missing from the Decision Summary. Suggestions for reformatting this section are presented in Comment 16C below.	Changes made as suggested.
14	[Section 3.6, SCOU Sites Selected for Removal Actions] It is unclear why a separate section was included in the ROD to address removal action sites. “Sites Selected for Removal Actions” was not one of the site grouping categories identified for the ROD by the BCT at the 9 October 1997 TWGS. The information on removal action sites should be placed in other appropriate sections of the ROD by site category, e.g., volatile organic compound (VOC) sites, landfills, etc. Corresponding revisions also should be made to other portions of the ROD that separately address removal action sites (e.g., Declaration, Plate 2-5, etc.).	As suggested, Removal Action sites have been reincorporated into appropriate Remedial Action groups.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
15	[ROD Discussion of Site Risks] Throughout the ROD, the Water Quality Site Assessment (WQSA) is treated as a component of "site risk." For example, in Section 2.4.1.1, the WQSA discussion is a subsection of the SCOU Risk Assessment (Section 2.4.1). Additionally, for the individual site summaries in Section 3, the WQSA results are presented as a subsection of site risks. For example, the WQSA results for Building 51 (Section 3.1.2.1, p. 3-9) are a subset of "Risks at VOC Sites" (Section 3.1.2). This concern applies to all other sites where remedial action is proposed. Suggestions for reformatting these sections are presented in Comment 16C below. Additionally, ecological risk is not addressed under the "risk subsections" of the individual site summaries in Section 3. The discussion of risk at each site should address ecological risk in summary form.	Changes have been made to the Water Quality Assessments as suggested. Ecological Risk summaries have been removed from the SCOU ROD. Final decisions on ecological risk issues will be documented in the CB Part 2 ROD.
16A	[Recommended ROD Organization] The ROD should be organized into the following tabbed sections; this structure is consistent with EPA guidance: Declaration Decision Summary Petroleum Only Sites Responsiveness Summary Response to Agency Comments	The Draft ROD has been tabbed as follows: Declaration Decision Summary Site "Road Map" -VOC Sites -Landfill Sites -Shallow Contamination Sites -Miscellaneous Sites requiring Institutional Controls -No Further Action sites ARAR Responsiveness Summary Response to Agency Comments Petroleum Hydrocarbon Sites Administrative Record

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
16B	[Recommended Format Revisions for Declaration] All discussion of how sites were categorized and how remedies were developed should be moved to the Decision Summary. This will eliminate confusing overlap with text currently in Section 2. For example, text under "Description of the Remedies" should present the selected remedies rather than the process by which remedies were selected. The listing of sites by category on pages 1-2 and 1-3 should be moved to the Decision Summary. Additionally, each listed site should be numbered to facilitate tracking (as in Plate 2-5). The "Contingency Sites" subsection should be deleted; final decisions should be incorporated in the ROD after the Data Gap Technical Report is finalized. Plate 2-5 (Selected Remedies Castle SCOU Site) should be moved from the Decision Summary to the Declaration. Per EPA guidance, it is important that the Declaration provide a listing of selected remedies by site.	Changes made as suggested. A listing of the sites is included in the declaration. This site summary is organized by site group and matches Plate 4-5 from the Decision Summary. Contingency sites have been incorporated into appropriate site groups.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
16C	[Recommended Format for Decisions Summary] The Decision Summary should include the suggested section numbers and titles presented below. (The current section numbers are italicized and listed in parentheses.) The current Section 2.4.2 (SCOU Contingency Sites) should be re-titled "Purpose of SCOU Data Gap Technical Report." The results of the evaluation presented in the Data Gap Technical Report should be incorporated in the second draft version of the ROD. As a result, the information presented in the current Section 2.4.2.1 (Further Action Data Gap Sites), and Section 2.4.2.2 (Technical and Economic Evaluation Sites) can be presented is considerably less detail. The current Section 3.6 (SCOU Sites Selected for Removal Actions) should be deleted and the information for removal action sites should be incorporated in the new Sections 5.1 through 5.5 as applicable. <u>Decision Summary</u>: 1.0 Site Name, Description, and Location (*Section 2.1*) 2.0 Site History and Enforcement Activities (*Section 2.2*) 2.1 Castle Environmental Investigation (*Section 2.2.1*) 3.0 Highlights of Community Involvement (*Section 2.3*) 4.0 Scope and Role of the Operable Unit (new section title) 4.1 Castle Operable Units (*Section 2.2.2*) 4.2 Comprehensive Basewide Program (*Section 2.2.3*)	Changes made as suggested.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
	4.3 Scope and Role of the Source Control Operable Unit (*Section 2.4*; re-titled) *Section 4.3 should include the listing of SCOU sites by category which is currently in the Declaration, pages 1-2 and 1-3.* *The sites should be numbered as in Plate 2-5.* 4.3.1 Water Quality Site Assessment (*Section 2.4.1.1*) 4.3.2 Human Health Risk Assessment (*Section 2.4.1.2*) 4.3.3 Ecological Risk Assessment (*Section 2.4.1.3*) 4.3.4 Purpose of SCOU Data Gap Technical Report (*Section 2.4.2*; re-titled) 5.0 Site Summaries (new section title) 5.1 Volatile Organic Compound Sites (*Section 3.1*) *Subsections should be renumbered accordingly.* *The title, "Risks at VOC Sites," should be changed to "Water Quality Impacts and Risks at VOC Sites." The "Risk Assessment" subsection under this retitled section should be separated into "Human Health Risk Assessment" and "Ecological Risk Assessment." These format suggestions also should be applied to Sections 5.2, 5.3, 5.4, and 5.5 below.* 5.2 Landfill Sites (*Section 3.2*; re-titled) 5.3 Shallow Soil Contamination Sites (*Section 3.3*) 5.4 Miscellaneous Sites Requiring Institutional Controls (*Section 3.4*) 5.5 Multiple Contaminant Sites (*Section 3.5*) 5.6 No Further Active Sites (*Section 4.0*) 5.6.1 NFA Sites Based on a Pre-FS Decision (new subsection) 5.6.2 NFA Sites Based on Evaluation of Alternatives (new subsection) 6. Applicable or Relevant and Appropriate Requirements (*Section 6*)	

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
16D	[Recommended Format for Discussion of Petroleum Only Sites] The discussion of petroleum only sites is currently in Section 5. It should not be included in the Decision Summary, and therefore, it should be a separate section of the ROD.	Change made as suggested.
16E	[Recommended Format for Responsiveness Summary] This text should be placed under a separate tabbed section. Additional discussion of Responsiveness Summary format is provided in Comment 137.	Change made as suggested.
16F	[Recommended Format for Response to Agency Comments] The Response to Agency Comments is currently included in the Responsiveness Summary. However, per EPA Guidance (Section 6.4), the Responsiveness Summary should address comments from the public and the potentially responsible party (PRP). Regulatory agency comments should be addressed in a separate section. Additionally, the ROD should specify that EPA's comments of 14 July 1997 addressed the *Preliminary* Draft ROD (January 1997).	As suggested, responses to agency comments and responses to community comments have been broken into separate sections.
Detailed Concerns - Sites with Ecological Risk Issues		
17	[Sections 3.1.2, 3.2.2, 3.3.2, 3.4.2, 3.5.2, 3.6.2, Risks at Various Sites] Each site specific discussion of risk (Sections 3.1.2, 3.2.2, 3.3.2, 3.4.2, 3.5.2, 3.6.2) should address ecological risk, in addition to human health risk. If the Ecological Risk Assessment (ERA) does not apply to a given site, an explanation should be provided in the site specific discussion.	A discussion of work completed on Ecological Risk issues has been included in the General Decision Summary, Section 4.2.1. This text also states, Feasibility studies for sites with ecological concerns will be completed as part of the Comprehensive Basewide (CB) Part 2 Remedial Investigation/Feasibility Study. Site specific Ecological Risks are not included in the SCOU ROD.
18	[Section 3.6.2.2.1, Risks at Landfill Removal Action Sites, Landfill 2 (p. 3-17); Section 3.6.3.2.2, ETC-10 (Earth Technologies Corporation Site 10)]	The Clean Water Act is an Applicable ARAR for VOC, Landfill, Shallow Contamination, and Multiple Contamination

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
	The text in Sections 3.6.2.2.1 and 3.6.3.2.2 includes the following statement: "RAs (remedial actions) at this site will be coordinated with state and federal agencies so that effects to ecological habitats at the site are adequately addressed in accordance with both the Clean Water and Endangered Species Acts." Compliance with these regulations, which are ARARs, should be considered in the SCOU ROD.	remedial action groups. It is included on the Federal ARARs summary Plate 6-1. Reference to the Clean Water Act has been added to the Statutory Determination ARAR Attainment text. Issues involving the endangered species act and the base environmental risk assessment have yet to be resolved. Final ERA findings, ERA RAOs and other issues associated with the Endangered Species Act will be finalized as part of the CB Part 2 ROD.
Detailed Concerns - Further Action Data Gap and Technical and Economic (T&E) Evaluation Sites		
19	[Section 2.4.2.2, SCOU Contingency Sites, Technical and Economic Evaluation; Section 3.1.5.1.2, The Selected Remedy for VOC Contingency Sites, Technical and Economic Evaluation; Plate 3-1-6, VOC Contingency Action Plate; Plate 3-5-5, Contingency Action Plate for DA-5 Site] The information presented in Plates 3-1-6 and 3-5-5 and in other supporting text provide insufficient information. The decision process for determining whether to implement the selected remedy for each of the Further Action Data Gap and T&E Evaluation sites is inadequately documented. Although specific concerns are identified below, EPA strongly feels that the Air Force should finalize the Data Gap Technical Report and incorporate the final decisions for these sites in the ROD, rather than further develop and refine the contingency language. <u>Specific Concerns</u>: The information detailing vadose zone and groundwater modeling that will be performed for T&E Evaluation sites is insufficient. The specific input parameters and assumptions to support the decision process are not presented. The text in the third column (Goal of Technical and Economic Evaluation) in Plate 3-1-6, under "Technical and Economic Evaluation	As suggested, the ROD has incorporated information from the Draft Data Gap Investigation report dated January, 1998. Reference to "Contingency Sites" has been removed.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
	Sites," describes several expectations of vadose zone and groundwater modeling. The text in Sections 2.4.2.2 and 3.1.5.1.2 provides additional detail. However, this detail is insufficient. It is unclear how the site specific vadose zone and groundwater modeling will be performed (in contrast to the screening level approach used in the SCOU RI/FS). Outstanding issues include: What are the boundary parameters for each T&E Evaluation site? Section 2.4.2.2 (p. 2-15) indicates that groundwater modeling will be conducted using Modflow and MT3D. This implies that downgradient transport will be considered in making a remedial action decision. If so, what are the downgradient receptors of concern and threshold exposure point concentrations at each of the receptors for each site? If not, why is a numerical transport model being used instead of a less complex analytical model? The input parameters and assumptions for the cost analysis portion also are not presented. For example, what are the capital and operating cost assumptions for soil vapor extraction (SVE)/bioventing and groundwater remediation, so that a mutually agreeable cost comparison can be made? What is the assumed time frame for groundwater and SVE/bioventing cleanup in order to perform the cost comparison? Has Cal-EPA previously agreed to these assumptions? In the third column (Target of Data Gap Sampling) in Plate 3-1-6 under "Further Action Data Gap Sites," the source of the various sampling details [e.g., SCOU Field Sampling Plans (October 1997)] is not cited.	
20	Cost estimates are not presented for Further Action Data Gap and T&E Evaluation sites; therefore, the comparative analysis is incomplete. Detailed comments regarding cost estimates are provided below.	With the exception of Institutional Controls, cost estimates are include for all considered alternatives.

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Comment No.	Comment	Response
21	[Section 3.5, Multiple Contaminant Site, Discharge Area 5 (DA-5); Section 3.5.5, The Selected Remedy for Multiple Contaminant Contingency Site] The selected active remedy for metals contaminated soils identified in Section 3.5.5 is excavation and disposal. However, since the full extent and concentration of metals contamination are currently unknown, it is possible that excavation and disposal may not be the optimum active alternative. The purpose of the Further Action Data Gap category (per Section 2.4.2.1) is to determine if either the selected active remedy or no further action is warranted; it is not to determine if another active remedy may be more appropriate. Thus, until the data gap evaluation is complete, there does not appear to be enough information to select the active remedy for the metals contamination at DA-5. EPA cannot sign the ROD if the active remedy for a site is in doubt. The final evaluation for DA-5 should be incorporated in the ROD after the Data Gap Technical Report is finalized.	The DA5 site has been removed from the Castle SCOU ROD. Final decisions on remedial actions at this site will be presented in the CB Part 2 ROD.
Detailed Concerns - Remedial Action Objectives		
22	[Plates 3-1-7a, 3-1-7b, and 3-1-7c, Remedial Action Objectives] The following concerns were identified with Plates 3-1-7a, 3-1-7b, and 3-1-7c. These concerns should be addressed in the Remedial Action Objectives table. Plates 3-1-7a, 3-1-7b, and 3-1-7c present the WQSA threshold and preliminary remediation goal (PRG) threshold for determining if the site warrants remediation. The RAO table should indicate (such as in a footnote) if the WQSA criteria are based on VLEACH1 or VLEACH2. Plates 3-1-7a, 3-1-7b, and 3-1-7c do not clearly distinguish which PRG threshold (i.e., residential or industrial) applies to each of the Further Action Data Gap Sites listed in Plate 3-1-6. The RAO table should clearly indicate for each site, whether residential or industrial PRGs apply. Plate 3-1-7a includes a footnote that states “shaded regions indicate soil gas PRAOs.” The RAO table should present RAOs, not PRAOs. Additionally,	Plates 3-1-7a, 3-1-7b, and 3-1-7c (now 4-10a, 4-10b, and 4-10c) have been revised to show both VLEACH 1 and where applicable VLEACH2 screening levels. Reference to contingency status has been removed from the SCOU ROD. RAOs are presented in the site summary section of the ROD.

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	Plate 3-1-7a does not show shaded portions, or distinguish which values are for soil (mg/kg) or soil gas (g/L).	The RAOs are presented on a site by site basis. PRAO tables are provided on Plates 4-10a, b, and c.
Detailed Concerns - Sites Requiring Institutional Controls		
23	[Section 3.2.5.1, Sample Deed Restriction Language; Section 3.4.1, Miscellaneous Sites Requiring Institutional Control; Plate 3-4-2, Institutional Control Components for Miscellaneous Sites] The text in Section 3.2.5.1 should include *actual* deed restriction language for each site, and not sample deed restriction language. This was requested previously by the agencies and the community.	*Actual* deed restriction language will be developed by AF real estate lawyers. The AF will develop land use restriction language based on information contained in the Findings of Suitability to Transfer (FOST) report. The FOST will be developed by the Air Force and it will contain a full disclosure of environmental conditions at a given site. The FOST is subject to agency comment and review. Actual deed language will not be presented in this ROD and is not feasible at this time or for this remedy selection document. Community participation in the Institutional Control process began at the Proposed Plan stage. At that time the Air Force presented preferred alternatives for all 231 SCOU sites. I/C's was the preferred alternative for 19 sites and was included as part of the remedy for three Landfills and FTA1. Based on community and agency comments, the number of I/C sites has been decreased to 13 (12 Stains sites, the Storm Drain System, Landfills 3, 4, and 5). Also, more specific information concerning Institutional Controls have been incorporated into the SCOU ROD and Responsiveness Summary. Although actual deed restriction language is not included in the ROD or Responsiveness Summary, these documents do contain a summary of the goals, enacting mechanisms, enforcement, variance, and removal provisions, and clear statements describing what types of site activities will be prohibited.
24	Portions of the ROD pertaining to the PCB sites may need to be modified based on the results of EPA's risk screening analysis and the reexamination of remedial alternatives. A summary of EPA's evaluation to date is presented below in Comment 85.	Noted

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Detailed Concerns - Removal Action Sites		
25	[Section 3.6.1, Volatile Organic Compound Removal Action Sites] Costs for the eight VOC removal action sites (Section 3.6.1) are essentially the same between the SCOU ROD and the Feasibility Study (FS). However, the FS (Table 7-4) evaluates two alternatives for Fuel Spill 1 (FS-1) and Fuel Spill 2 (FS-2) which are not evaluated in the ROD, i.e., intrinsic remediation and land treatment unit. The ROD should explain why these alternatives were not evaluated in the ROD, even though they were evaluated in the FS.	Because these sites were impacted by petroleum hydrocarbons only, FS1 and FS2 have been moved to the Petroleum Only section of the SCOU ROD. Petroleum only sites are not subject to CERCLA requirements. Alternatives considered for remediation of Petroleum Hydrocarbons were not developed in the SCOU ROD.
26	[Section 3.6.2, Landfill Removal Action Sites] The alternatives evaluated in the ROD for the landfill and disposal pit sites are similar to those evaluated in the FS, but there are more alternatives in the ROD (e.g., instead of Alternative 3D, the ROD evaluates Alternative 3Da and 3Db). This also is true for the landfill sites discussed in Section 3.2 (Landfill Sites Selected for Remedial Action) of the ROD. The ROD should explain why additional alternatives were evaluated in the ROD (per Section 6.3.11 of EPA guidance, Documentation of Significant Changes). Further discussion of alternatives for landfill sites is included in Comment 38 and 39 below concerning cost estimates for remedial alternatives.	Class III cap requirements are specified in Title 27 CCR. Title 27 requires capping material to form an impermeable (10^{-6} cm/sec) barrier. Alternatives 3a and 3b describe two different approaches for meeting this requirement. Alternative 3a would use imported clay and silt to meet permeability requirements while 3b utilizes a flexible membrane liner (FML). Both approaches were described in the SCOU RI/FS. However, because of problems associated with importing large amounts of clay to the site, alternative 3a was dropped from detailed consideration in the FS. As suggested, information regarding the clay layer approach has been included with the description of the Class III Landfill cap.
27	[Section 3.6.3, Shallow Contamination Removal Action Sites] Some of the alternatives evaluated in the FS for the shallow contamination sites are not included in the ROD. The only alternatives evaluated in the ROD are no further action, excavation and on-site disposal, and excavation and off-site disposal. However, the following alternatives were evaluated in the FS (and costs were provided):	During the RI/FS process, the shallow contamination sites were grouped into several different categories based on past use of the site. Alternatives were developed for a representative site from each category. Unfortunately, in many cases, contaminants at the representative did not match contaminants at other sites within the category. Based on this discrepancy, the ROD provides detailed information for alternatives that were applicable to site contaminants. Alternatives that were considered but were not applicable for site contaminants are mentioned but not developed to the same degree of detail. More information regarding considered alternatives presented in the ROD are provided below.

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	Building 871 (from Table 7-1 of FS): 1) SVE and bioventing 2) thermally enhanced SVE 3) intrinsic remediation 4) land treatment unit ETC-10 and PCB-9 (from Table 7-5 of FS): 1) SVE/bioventing/excavation/disposal/solidification/stabilization 2) SVE/bioventing/soil washing 3) thermally enhanced SVE/solidification/stabilization 4) thermally enhanced SVE/soil washing 5) intrinsic remediation The text should explain why all of these alternatives were not evaluated in the ROD, even though they were evaluated in the FS (per Section 6.3.11 of EPA guidance, Documentation of Significant Changes). Additionally, costs should be provided for the no action alternative.	ROD text describing alternatives considered for Shallow Contamination sites B871, ETC10, and PCB9 has been revised to match the referenced FS tables. However, it should be noted that during the RI/FS, B871 was included as a Category 1 site and ETC10 and PCB9 was included as Category 7 sites. The alternatives listed in the comment 27 were developed for the Building 54 and FTA-1 sites which were the "representative sites" for Categories 1 and 7, respectively. Because FTA-1 and B54 were impacted by a combination of contaminants that included VOCs, petroleum hydrocarbons, and metals, a wide variety of different technologies were developed for these sites. For VOC contamination, developed remedies included SVE and Thermally Enhanced SVE. However, VOCs were not among the contaminants identified at the B871, ETC10, or PCB9 sites. Contaminants found at these sites included metals, PCBs, PAHs, pesticides, and petroleum hydrocarbons. Because SVE and Thermally Enhanced SVE will not effectively remediate metals, PCBs, PAHs, or pesticides it was determined that these "VOC" remedies (i.e., SVE and Thermally Enhanced SVE)., did not meet CERCLA Threshold criteria for overall protection of human health. Based on this criteria, the SCOU ROD does not present further development or comparison of these alternatives for these sites. Also, with regard to Petroleum Hydrocarbon contamination (TEPH) at the B871 site, RI data indicated that TEPH contamination was found in association with PCB

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		contamination that is not readily biodegradable. Based on the sampling results, it was determined that petroleum hydrocarbon remedies (i.e., Intrinsic Remediation) would not meet CERCLA Threshold criteria for overall protection of human health at B871. Based on this criteria, the SCOU ROD does not present further development or comparison of the petroleum hydrocarbon remedies for the B871 site. In addition, a site specific summary table describing how considered alternatives would be applied to each site is provided on Plate 5-3-2.
28	Plate 3-6-3, Discussion of Alternatives for VOC Removal Action Sites] The list of alternatives for Discharge Areas 4 and 8 appears to be incomplete; the text indicates two alternatives were considered. This discrepancy should be clarified. Additionally, the table should be titled "Comparison of Alternatives...," rather than "Discussion of Alternatives..."	In the SCOU RI/FS, two alternatives, No Action and SVE were considered for the DA4 and DA8 sites. The ROD text and tables have been revised to reflect these two alternatives. Information previously contained in Removal Action Plate 3-6-3 has been incorporated into Plate 3-5-3, titled Comparison of Alternatives for VOC sites.
Detailed Concerns - Fire Training Area 1		
29A	[Section 3.6.4, Multiple Contaminant Removal Action Site (FTA-1); Plates 3-6-17a through 3-6-17e, Cost Estimates for FTA-1 Remedial Actions; Plate 3-6-18, Comparison of Alternatives for FTA-1] Remedial alternatives and cost information for FTA-1 are presented in a fragmented and confusing manner. It is unclear which combination of the listed alternatives are the complete alternatives. Present worth costs for complete alternatives also are not presented. Instead, costs for individual components or technologies are presented in a variety of formats. This contrasts with the FS which identifies complete alternatives for FTA-1, and includes costs for each of them (see Table 7-5 in the FS). New tables should be added to the ROD which describe and contrast complete alternatives. Another table should be added which shows the costs for complete alternatives, including the no action alternative.	FTA1 has been removed from the SCOU ROD. Final decisions on remedial actions at this site will be documented in the CB Part 2 ROD.

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29B	The evaluation of the alternatives for dioxin and metals contaminated soils in Plate 3-6-18 under "Regulatory Acceptance" presents an incomplete summary of outstanding agency concerns with the selected remedy for FTA-1. EPA's letter of 14 July 1997 identifies additional concerns. The next version of the ROD should presented an updated evaluation of "Regulatory Acceptance" based on the FTA-1 Closure Report.	FTA1 has been removed from the SCOU ROD. Final decisions on remedial actions at this site will be documented in the CB Part 2 ROD.
29C	The discussion of Alternative 3 (excavation/off-site disposal) for dioxin and metals contaminated soils in Plate 3-6-18 appears to confuse excavation/off-site disposal with excavation/on-site disposal. The following discrepancies were identified: Under "Long Term Effectiveness," the text states that Alternatives 3 and 4 (FML Cap) offer the same protection, which is incorrect; excavation and off-site disposal would ensure better long term effectiveness. Under "Community Acceptance," the text states the community is opposed to Alternative 3. This statement is incorrect; the community has consistently supported excavation and off-site disposal. These discrepancies should be clarified, and the remedial alternatives evaluated should be consistent with those evaluated in the FS and the FTA-1 Closure Report.	FTA1 has been removed from the SCOU ROD. Final decisions on remedial actions at this site will be documented in the CB Part 2 ROD.
Detailed Concerns - No Further Action Sites		
30A	[Section 4, No Further Action (NFA) Sites (pp. 4-1 to 4-36)] The following concerns with Section 4 should be addressed: Risks, in addition to contaminant concentrations, should be presented for the sites determined to require NFA. Risks for NFA sites are inappropriately expressed as contaminant concentrations. For example, for Building 23 (bottom of page 4-1), the site "risk" is expressed as a concentration of 1.3	The NFA text has been revised to include separate discussions of WQSA and Human Health Risk Screening Assessments. The WQSA Evaluation includes a comparison of maximum contaminant levels to appropriate VLEACH1 or VLEACH2

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	mg/kg of 4,4-DDT. A contaminant concentration is not a risk This text should include calculated cancer risks and hazard indices to justify why no action is warranted at these sites.	threshold values. The Human Health Risk Evaluation discussion includes the results of either Screening Risk Assessment or Quantitative Risk Assessment and are presented as expotential incidence of cancer risk and hazard index for non-carcinogenic contaminants.
	Additionally, the placeholders ("-") in the "Risk" column of the tables should be defined, or an explanation should be provided for why no corresponding risk values are presented for certain contaminants. A definition/explanation also should be provided for "Not Listed" in the "WQSA" column.	Placeholders in the risk column have been replaced with expotential incidence of cancer risk and hazard index for non-carcinogenic contaminants.
	The text should address ecological risks associated with the NFA sites.	Ecological concerns at the base will be addressed during the CB Part 2 ROD.
	The text should precisely indicate if each site "passed" VLEACH1 or VLEACH2 WQSA screening criteria. The text provides unnecessary detail on WQSA calculated concentrations of various constituents at various depths (e.g., Table 4-2, Building 47, p. 4-2).	Actual site contamination levels compared to appropriate VLEACH1 or VLEACH2 values have been retained as part of the NFA WQSA Evaluation. The text has been to include a comparison of maximum site contamination to appropriate WQSA screening levels.
	The text should clearly distinguish between sites which were recommended for NFA before the SCOU FS, and sites which were recommended for NFA as a result of the FS evaluation. This distinction is important, as discussed at the October 9, 1997 TWGS. Sites in the latter category should be discussed separately, and a description and comparison of alternatives should be presented for each site.	The NFA section has been divided into three segments, Pre-RI NFAs, Pre-FS NFAs, and Post FS NFAs. For the post FS NFAs, a Remedial Alternative Evaluation section has been added to discuss what remedial alternatives were considered for each site. Full development and comparison of remedial alternatives has been completed for sites recommended for NFA based on risk management decisions. Development and comparison of alternatives for the remaining sites was not needed because these sites did not exceed risk or WQSA levels.

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	Much of the text in Section 4 can be streamlined and replaced by a table which lists the following for each site (where applicable): 1) cancer risk, 2) hazard index, 3) an indication of ecological risk, 4) status of VLEACH1 screening, 5) status of VLEACH2 screening, and 6) whether the site was recommend for NFA before, or as part of, the FS evaluation.	As suggested an NFA Summary Table has been added to the ROD. The table presents a summary of human health risk (cancer risk and hazard index) calculations for each site. Also included is the status (pass/fail) and basis (VLEACH1/VLEACH2) of the WQSA evaluation. Footnotes have been added to the summary table to explain NFA justification for sites that failed WQSA or BHHRA screening. The NFA section and summary table has been divided into three segments, Pre-RI NFAs, Pre-FS NFAs, and Post FS NFAs.
30B	Any site which was not determined to require NFA based on a pre-FS decision should be evaluated in a manner similar to sites in Section 3. This should include an evaluation of alternatives based on the nine criteria and present worth costs for each alternative. Building 1532 appears to fall into this category.	A Remedial Alternative Evaluation section has been added to site summaries for the Post FS NFA sites. This section includes a listing of remedial alternatives considered for each site. However, because contamination levels at these sites did not exceed WQSA or Human Health Risk threshold levels, full comparison of alternatives was not needed. In the case of B1532, the NFA determination was based on the findings of Human Health Risk Assessment and Technical and Economic evaluation. The Screening Risk Assessment indicated cancer incidence at less than $1X\ 10^{-6}$, while T&E evaluation indicated residual vadose contamination would not have an adverse impact on water quality or increase to costs of on-going ground water pump and treat systems.
31	[Section 4.1.20, Characteristics at No Further Action Sites, DP4A/4B; Section 4.1.21, DP7; Section 4.1.22, DP10] Sections 4.1.20, 4.1.21, and 4.1.22 present insufficient information concerning the associated sites. Additional details of the remedial investigation should be provided to support the statement in each section that “based on RI results, NFA is required.”	Supporting text has been added to the DP4A/4B, DP7 and DP10 NFA summaries. The revised text for DP4A/4B can found in Section 5.5.2.15, while the revised text for DP7 and DP10 can be found in sections 5.5.3.5 and 5.5.3.6, respectively.

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Detailed Concerns - Cost Estimates for Remedial Alternatives		
32	[General] The ROD does not provide costs for the no action alternative for many sites, even though these costs were provided in the FS. The costs for the no action alternative presented in the FS should be included in the ROD. This information should be presented in the discussion of the no action alternative for each site.	As suggested, costs for the No Action alternative have been included with the revised ROD.
33	[Section 3.1, Volatile Organic Compound Sites; Section 3.2, Shallow Soil Contamination Sites; Section 3.5, Multiple Contaminant Site] Cost estimates are not presented for Further Action Data Gap and T&E Evaluation sites; therefore, the comparative analysis is incomplete. This information should be incorporated in the ROD once the Data Gap Technical Report is completed.	Cost estimates for remediation of the Data Gap and Technical and Economic evaluation sites have been included in the revised ROD.
34	[Section 3.1, Volatile Organic Compound Sites; Plate 3-1-2, SVE/Bioventing Cost; Plate 3-1-5, Major Treatment Components for VOC Sites] The capital costs for SVE/bioventing listed in Plate 3-1-2 of the ROD are inconsistent with the Final SCOU FS for the following sites. **Cost Estimates** Site — Plate 3-1-2 SCOU ROD — Table 7-1 SCOU FS B51 — $816,000 — $359,000 B1350 — $539,000 — $234,000 B1541 — $292,000 — $140,000 B1762 — $792,000 — $335,000 The costs in the ROD are probably incorrect. This conclusion is based on a comparison of the capital costs listed in the ROD and FS for another alternative (thermally enhanced SVE). For example, the capital costs for thermally enhanced SVE for Site B51 are essentially the same in both the	Cost estimates shown on Plate 5-1-3 (formerly Plate3-1-2) and Plate 5-1-8 (formerly Plate 3-1-5) have been reconciled to be consistent with the SCOU RI/FS.

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	ROD and FS; therefore, there do not appear to be any fundamental changes in cost assumptions. Thus, the capital costs for SVE/bioventing at B51 appear to be incorrect, as stated in the ROD. Additionally, the capital costs presented in Plate 3-1-2 of the ROD are inconsistent with those presented in Plate 3-1-5. These discrepancies between the costs presented in the ROD and FS should be clarified. If, after making any necessary corrections, substantial differences continue to exist, an explanation should be provided in the ROD (per Section 6.3.11 of EPA guidance, Documentation of Significant Changes)	
35	[Section 3.1.6.3, Statutory Determinations for VOC, Cost Effectiveness] The discussion of cost effectiveness presented in Section 3.1.6.3 is inadequate. A discussion of the selected alternative with respect to other alternatives considered should be presented.	The discussion of Cost Effectiveness for VOC alternatives has been modified to include comparison of SVE/bioventing against thermally enhanced SVE only. LTU and Intrinsic Remediation are appropriate for petroleum hydrocarbons only, and did not meet CERCLA "Threshold" Criteria for VOC contamination.
36	[Plate 3-1-2, SVE/Bioventing Cost; Plate 3-1-3, Thermally Enhanced SVE Cost; Plate 3-1-4, Comparison of Alternatives for VOC Sites] The information on Plate 3-1-4 indicates that the cost of thermally enhanced SVE is slightly more than the cost of SVE/bioventing for each site evaluated. However, the information on Plate 3-1-4 is inconsistent with Plates 3-1-2 and 3-1-3. Plate 3-1-3 consistently shows that the cost of thermally enhanced SVE is less than the cost of SVE/bioventing (as shown in Plate 3-1-2) for each of the sites evaluated, which is probably incorrect. This discrepancy should be resolved.	Discrepancies with cost estimates related to the SVE/bioventing and thermally enhanced SVE alternatives has been resolved. For B51, B1350, FS2, and B1762, thermally enhanced SVE was estimated to be more expensive than SVE/bioventing. For B54 and FS1, SVE/bioventing was the more expensive alternative. VOC Comparison of Alternative tables have been revised to reflect these cost estimates.
37	[Section 3.3.3, Description of Alternatives at Shallow Soil Contamination Sites; Plate 3-3-1, Comparison of Alternatives for Shallow Contamination Contingency Sites] Cost estimates need to be completed for all shallow soil contamination sites. Section 3.3.3 indicates that the following alternatives	Nine SCOU sites are included in the Shallow Contamination site group. The SCOU RI/FS contained complete cost estimate data for five of the nine sites (B871, B1344, DA3, ETC10, and PCB9). Excavation/disposal cost estimates for the ETC2,

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	were evaluated for the ten shallow soil contamination sites: 1) no further action; 2) excavation and on-site disposal; 3) excavation and off-site disposal; 4) soil washing; and 5) solidification. However, costs for only one site (Discharge Area 3) and one alternative (excavation and off-site disposal) are presented (Plate 3-3-2, Excavation and Disposal). Total present worth costs should be presented for each site and each alternative, including the no action alternative. Section 3.3.3 should be revised to provide this information and to support the cost effectiveness evaluation presented in Plate 3-3-1.	ETC8, Firing Range, and SWMU 4.15 were developed based the Excavation/On-site Disposal costs developed for the other sites with this group.
	EPA also compared Section 3.3.3 of the ROD to the SCOU FS and SCOU Proposed Plan (PP). EPA's observations are summarized below:	
	Firing Range: In the ROD, costs are not presented. In the FS (Table 5-5), costs are presented only for the no action alternative. In the PP (Table 10), costs are not presented.	Costs have been developed for Excavation/Disposal at theFiring Range site and are included in Section 5.3 and on Plate 5-3-5.
	Discharge Area 3: In the ROD, Plate 3-3-2 presents costs for only the excavation and off-site disposal alternative. In the FS (Table 7-5), costs are presented for four alternatives; however, these alternatives are different from the alternatives presented in the ROD (Section 3.3.3), and none of the four is the selected alternative (excavation and off-site disposal). An explanation should be provided in the ROD for the discrepancy between	In the SCOU RI/FS, costs were developed for excavation/disposal, SVE/Bioventing, and Thermally enhanced SVE. However, because COCs at B1344 included various PAH compounds, that are not readily remediated by SVE/Bioventing or Thermally Enhanced SVE, only the excavation/disposal alternative was fully developed in the
	the alternatives presented in the ROD and FS (per Section 6.3.11 of EPA guidance, Documentation of Significant Changes). In the PP, no costs are presented.	ROD.
	B1344, SAB1, B84, ETC-2, T85, ETC-8, SWMU 4.25, FTA-2: In the ROD, costs are not presented since these eight sites are Further Action Data Gap sites. Both the FS and the PP also lack costs on these sites. Cost information for these sites should be added to the ROD following completion	Of the sites listed, only ETC2 and ETC8 remain in the Shallow Contamination site group. During the RI/FS, these sites were included in Category 7. Alternatives developed for Category 7 sites included SVE/Bioventing, Thermally Enhanced SVE,

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	of the Data Gap Technical Report.	Excavation/Disposal, Solidification/Stabilization, and Soil Washing. RI data suggested that these sites are impacted by PAHs and metals. Because these contaminants are not readily remediated through SVE/Bioventing or Thermally Enhanced SVE, only the Excavation/Disposal, Solidification/Stabilization, and Soil Washing alternatives were fully developed in the ROD.
38	[Section 3.2, Landfill Sites Selected for Remedial Action; Section 3.6.2, Landfill Removal Action Sites] Cost estimates for each of the evaluated alternatives for landfills sites have changed somewhat from the FS due to the re-definition of some alternatives and the greater level of detail in the ROD. However, the ROD does not provide costs for the no action alternative for each site, whereas the FS includes these costs. Costs for the no action alternative should be presented.	As suggested, No Action costs have been included for all of the landfill sites. See Plates 5-2-4 through 5-2-11.
39	[Plates 3-2-2, 3-2-3, and 3-2-4, Cost Estimates for Landfills 1, 3, and 5, respectively; Plates 3-6-6, 3-6-7, 3-6-8, and 3-6-9a, Cost Estimates for Landfills 2, 4, and Castle Vista A and B, respectively] The cost estimates for landfill sites presented in the cited Plates do not appear to include operation and maintenance (O & M) and monitoring costs. This discrepancy should be clarified. O & M costs are provided for the selected remedy only (Plates 3-2-6 and 3-6-11).	As suggested, O&M costs have been included for all of the landfill sites. See Plates 5-2-4 through 5-2-11.
40A	[Section 3.4, Miscellaneous Sites Requiring Institutional Controls; Plate 3-4-2, Institutional Controls Components for Miscellaneous Sites] Present worth cost estimates should be presented for the no action alternative, since it was one of the two alternatives considered for these sites.	This level of detail is not appropriate for the ROD.
40B	Plate 3-4-2 indicates that the cost for institutional controls is $5,000 for each site. The ROD should provide a detailed cost breakdown to clarify how costs were calculated. It is important that cost estimates account for all long term Air Force oversight to ensure that the remedy remains protective of human health and the environment.	This level of detail is not appropriate for the ROD.

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41	[Section 3.5, Multiple Contaminant Site, Discharge Area 5 (DA-5); Plate 3-5-1, Alternative Cross Reference for DA-5 Contingency Site; Plate 3-5-4, Comparison of Alternative for the DA-5 Multiple Contaminant Contingency Site] The cost estimate for DA-5 is incomplete since it is a Further Action Data Gap site. Cost estimates have been developed for remediation of VOC contaminated soils only, and not for remediation of metals contaminated soils. Cost estimates are not presented for treatment of metals by solidification/stabilization, soil washing, or excavation and disposal, although these alternatives are listed in Plates 3-5-1 (p. 3-61) and 3-5-4. Additionally, the cost for the no action alternative presented in the FS (Table 7-1) has been omitted. Also, the FS evaluates intrinsic remediation, and land treatment unit (see Table 7-1 in the FS); these alternatives are not evaluated in the ROD. The text of Section 3.5 should explain why these two alternatives have not been evaluated in the ROD for VOC contamination at DA-5, even though they were evaluated in the FS.	DA5 has been removed from the SCOU ROD. Final decisions on remedial actions at this site will be documented in the CB Part 2 ROD.
Detailed Concerns - Responsiveness Summary		
42	General] The Responsiveness Summary should include the comments submitted by Mr. Jeff Palsgaard of the Merced County Department of Public Health (25 August 1997) and responses to these comments. EPA is aware that the issues raised in these concerns were generally addressed in the Responsiveness Summary. However, the comments should be reproduced in the ROD and detailed specific responses should be provided.	Mr. Jeff Palsgaard's letter is provided its entirety, as well as Air Force responses to his letter, is included in the Responsiveness Summary Section of the ROD.
43	[Comment 2, Regarding Cadmium Contamination] The response to this comment should identify the specific sections of the ROD that address the risks and remedial alternatives for Landfill 2, the Storm Drain System, and FTA-1.	Text to identify the appropriate sections of the ROD has been added to the Responsiveness Summary, Section 4, Summary of Comments Received and Air Force Responses, category D, Contaminants of Concern, comment number 1.

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44	[Comment 3, Regarding Mercury Contamination] The response to this comment should list the sites at which mercury was identified as a potential contaminant of concern and the sections of the ROD that address the remedial decisions for these sites.	Text listing the sites at which mercury was identified as a potential contaminant of concern and text to identify the appropriate sections of the ROD have been added to the Responsiveness Summary, Section 4, Summary of Comments Received and Air Force Responses, category D, Contaminants of Concern, comment number 2.
45	[Comment 4, Regarding Distribution of Final SCOU Proposed Plan] The response to this comment is inadequate. The comment addresses distribution of the *final* SCOU Proposed Plan to members of the Castle Restoration Advisory Board (RAB). However, the Air Force's response discusses distribution of the *draft* SCOU Proposed Plan, which is irrelevant. The final Proposed Plan is the appropriate document for review and comment during the public comment period. The Air Force (Mr. Brad Hicks) agreed to distribute copies of the final Proposed Plan to all RAB members prior to the 26 August 1997 public hearing in response to an agency request (21 August 1997 meeting). The agencies followed up their oral request to the Air Force with a written request on 28 August 1997. EPA had assumed the Air Force would honor its agreement of August 21 to distribute copies of the final Proposed Plan to all RAB members.	This comment has been revised to address the distribution of the Final Proposed Plan and can be found in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category F, Public Participation Process, comment number 1. This concern is also addressed in Section 4, Summary of Comments Received and Agency Responses, category A, Remedial Alternative Preferences, comment number 6.
46A	[Comment 5, Regarding Sites Targeted for Deed Restrictions] The response to this comment should be expanded considerably. It should describe the various considerations that went into the Air Force's decision to leave contamination in place at the applicable sites. The optimum approach would be to address this comment on a site by site basis. Additionally, the response should be written in clearer terms so it is understandable to the public. This comment also applies to the response to Comment 8. Terms such as, "industrial/residential reuse scenario", "more stringent residential cleanup standards"; and "base reuse plan precludes residential reuse"; are industry jargon and may be confusing. Additionally,	The response to this comment has been expanded and is provided in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category A, Remedial Alternative Preferences, comment number 2. The response includes the purpose of institutional controls at the landfill sites, FTA-1, and stain sites. The phrases "industrial/residential reuse scenario," "more stringent residential cleanup standards," and "base reuse plan precludes residential reuse" have been explained in clearer terms. The definitions of institutional controls and deed

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	definitions of institutional controls and deed restrictions, and explanations of the purpose of the base reuse plan and of how it was generated, should be provided.	restrictions and the purpose of the base reuse plan have also been provided.
46B	It should be noted that the requirement to have institutional controls at sites that do not meet residential cleanup requirements is not just based on State of California requirements. CERCLA also requires that non-engineering mechanisms (such as institutional controls) be included in a remedy if the remedy by itself is not protective of human health and the environment.	
46C	Several community members requested that the Air Force include the specific language in the SCOU ROD that will be used in future deeds for sites with institutional controls. However, this concern was omitted from the Responsiveness Summary. This concern should be included and the response should identify the sections of the ROD that provide the requested information.	A new comment and Air Force response regarding this concern has been added to the Responsiveness Summary and is provided in Section 4, Summary of Comments Received and Agency Responses, category C, Language Used in the Proposed Plan or Record of Decision, comment number 2. The response identifies the section of the ROD that addresses deed restrictions.
46D	One community member raised the concern that the hazardous materials warning signs the Air Force intends to post at sites with deed restrictions (Plate 3-4-2, Institutional Control Components for Miscellaneous Sites) may deter prospective lessees from leasing property at these sites. This concern should be addressed.	A new comment and Air Force response regarding this concern has been added to the Responsiveness Summary and is provided in Section 4, Summary of Comments Received and Agency Responses, category E, Future Base Reuse Issues, comment number 1.
47A	Comment 7, Regarding Termination of Site Deed Restrictions] The response to this comment should discuss the planned CERCLA five-year reviews that will be conducted at the site. The need for deed restrictions should be reevaluated as part of these reviews.	Text regarding the CERCLA five-year reviews has been added to this response and is provided in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category A, Remedial Alternative Preferences, comment number 3.
47B	The response to this comment states "A termination clause could be included as part of the deed restriction language." It is unclear from this statement whether the inclusion of such a clause is intended. This issue should be addressed.	Text has been revised to state, "A Termination Clause <u>will</u> be included" and is provided in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category A, Remedial Alternative Preferences, comment number 3.

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Comment No.	Comment	Response
48	[Comment 8, Regarding Remedial Action at FTA-1] The response to this comment should be expanded to address the community's long-standing, repeatedly reiterated position against the Air Force leaving contamination in place, thus essentially creating additional landfills.	Responses to this concern are provided in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category A, Remedial Alternative Preferences, comment numbers 5 and 6.
49	[Comment 10, Regarding Impact of Groundwater Contamination on Private and Municipal Wells] The portion of the response to this comment that addresses the impact of cis-1,2-dichloroethylene (cis-1,2-DCE) contamination from the Castle Vista plume in a municipal well (i.e., AM-6) requires clarification. The discussion includes the following statement: "Based on monitoring data, carbon filters are not needed at this well." It is EPA's understanding that the need for well head treatment at this well remains under consideration by the California Regional Water Quality Control Board.	The text has been revised to read, "Based on the monitoring data, carbon filters are not required by DHS at this well. The final determination of whether or not well head treatment will be implemented is still under discussion between the Air Force and the regulatory agencies. Final decision on AM-6 will be documented in the CVLF-B ground-water remedial action workplan addendum, which is scheduled for finalization fall of 1998." and can be found in the Responsiveness Summary, Section 4, Summary of Comments Received and Air Force Responses, category D, Contaminants of Concern, comment number 3.
50	[Comment 11, Regarding Disposal of Excavated Soil and Waste] The response to this comment includes the following technical terms which should be defined in the text: regulated, hazardous, and non-hazardous/municipal as applicable to waste/materials; Class I, II, and III landfills; and zoned cap. Although these terms may be defined elsewhere in the ROD, they also should be defined in the response to this comment.	The definitions for these technical terms are provided in the Responsiveness Summary, Section 5, Remedial Design/Remedial Action Concerns as number 1.
51A	[Comment 12, Regarding Characterization of Landfill Wastes] The response to this comment should provide additional details regarding the procedures that the Air Force is using at the landfills to characterize the waste (e.g., use of spotters, field screening equipment, etc.) and to ensure that all waste is removed during excavation (e.g., confirmation samples, visual inspection, etc.). Additionally, it would be helpful if a brief summary were provided to describe the types of materials (i.e., non-hazardous) the Air Force has uncovered to date during the landfill removal action.	Text regarding the procedures the Air Force is using at the landfills to characterize the excavated waste as well as information about the types of materials removed thus far has been added and is provided in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category B, Remedial Investigation, comment number 1.

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51B	The statement in the response to Comment 12, "This allows the flexibility for off-site disposal of any contamination that is characterized as hazardous or regulated," should be replaced with "This will ensure that any hazardous or regulated waste will be identified and disposed of off-site."	The text has been revised as noted and is provided in the Responsiveness Summary, Section 4, Summary of Comments Received and Agency Responses, category B, Remedial Investigation, comment number 1.
52	[Comment 13, Regarding Solvent Disposal North of Landfill 1] The response to this comment should identify the appropriate sections of the ROD that identify the remedial actions for the probable area of concern.	Text has been added to the Responsiveness Summary to identify the appropriate sections of the ROD where this data can be found. See Section 4, Summary of Comments Received and Agency Responses, category A, Remedial Alternative Preferences, comment number 8.
53	[Comment 14, Regarding Impact of Remediation Effort on Property Values] The actual text of this comment, which was received in written form, should be reproduced in the Responsiveness Summary. Additionally, a response should be provided. No response was included in the Responsiveness Summary.	Mr. Ruben Lara's letter in its entirety as well as an Air Force response is provided in the Responsiveness Summary, Section 5, Remedial Design/Remedial Action Concerns as comment number 2.
Other Concerns		
54	[Section 3.1.3, Description of Alternatives for VOC Sites, p. 3-14] Section 3.1.3 indicates that the following alternatives were evaluated for the VOC sites: SVE, bioventing, thermally enhanced SVE, and no further action. This is inconsistent with the FS (Tables 7-1 and 7-4) which shows that intrinsic remediation and land treatment unit also were evaluated (and costs were estimated) for the same sites. It is unclear why these alternatives are not evaluated in the ROD. Although there is a separate section in the ROD for "petroleum only sites" in which intrinsic remediation (IR) is the selected remedy, these alternatives were nevertheless evaluated in the FS for each of the sites in Section 3.1. Why are the results of these evaluations not presented in the ROD? Similarly, why are the results of the land treatment unit evaluation not presented in the ROD? If these alternatives were determined to not meet the criteria of overall protection of the environment and compliance with ARARs, this needs to be explained in Section 3.1.3.	LTU and Intrinsic Remediation were developed as potential alternatives for the Storage Tank and Tank Farm group (Category 4). Five VOC Group sites came from RI/FS Category 4. These sites were B1325, FS1, FS2, JP4, and SS4. However, because the remedial alternatives are appropriate for petroleum hydrocarbons only, the ROD does not develop these alternatives for VOC contamination. The remainder of the VOC Group sites came from RI/FS Category 1, Engine Maintenance Shops. The RI/FS presented cost estimates for LTU and Intrinsic Remediation for the Category 1 sites. However, because of technical impracticability, these alternatives were not included for detailed comparison.

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Comment No.	Comment	Response
55	[Sections 3.1.4, 3.2.4, 3.3.4, 3.4.4, 3.5.4, 3.6.3.4, Comparative Analyses of Alternatives; Sections 3.1.6, 3.2.6, 3.3.6, 3.4.6, 3.5.6, 3.6.6, Statutory Determinations] The ROD needs to include a discussion of how each of the considered remedial alternatives meets the CERCLA threshold criteria, overall protection of human health and the environment, and ARAR compliance. The ROD only presents this information for the selected alternatives (Sections 3.1.6, 3.2.6, 3.3.6, 3.4.6, 3.5.6, 3.6.6). Although it is unnecessary to include these criteria in the comparative analyses since all considered alternatives must meet the threshold criteria, it is necessary to provide a justification for why each considered alternative was evaluated as a possible remedial solution. Additionally, footnotes should be added to the comparative analysis tables (e.g., Plate 3-1-4, 3-2-5, 3-3-1, etc.) to identify the corresponding sections in the text that discuss the threshold criteria for the considered and selected alternatives.	With the exception of the No Action alternative, all remedial alternatives included in the ROD meet CERCLA Threshold criteria. Information regarding how each alternative meets the CERCLA Thresholds has been included with the general description of the considered alternatives. For the No Action alternative, a statement has been added to explain that No Action does not meet CERCLA Threshold criteria and that further discussion or comparison of the alternative is not required.
56	[Section 3.1.5.2, Castle VOC Contaminated Soil Cleanup] EPA is still in the process of evaluating the criteria for discontinuing the use of soil vapor extraction systems at VOC contaminated sites. Detailed comments will be provided with EPA's review of the second draft version of the ROD.	The Air Force and regulatory agencies have yet to agree on the Castle VOC Cleanup Criteria. The Final Decisions for VOC Cleanup Criteria will be documented in the CB Part 2 ROD.
57A	[Plate 3-1-4, Comparison of Alternatives for VOC Sites] The only alternative considered for Building 1709 in Figure 3-1-4 is thermally enhanced SVE (second row). This is inconsistent with the footnote to this table which indicates that SVE is the selected alternative based on the outcome of the T&E analysis. This also is inconsistent with the "Cost Effectiveness" (seventh row) criterion, which indicates that two alternatives were considered. This discrepancy should be resolved.	Plate 5-1-7 (formerly Plate 3-1-4) has been revised to include both SVE/Bioventing and Thermally enhanced SVE as considered alternatives.
57B	The evaluations of "Implementability" for Building 1260 (Building 54 Group) and Hangar F4 in Plate 3-1-4 should consider the potential disruption of tenants during remediation activities at these sites. The disruption of tenants was raised as a concern by Mr. Richard Martin (Castle Joint Powers Authority) in a letter to Mr. Brad Hicks dated 22 December 1997.	As requested, the Implementability criteria of the comparative analyses section has been revised to indicate that thermally enhanced SVE would complete remediation in less time and would cause slightly less disruption in current reuse activities. The Community Acceptance criteria has also been modified to note general concern with disruption of reuse activities.

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57C	The discussion of "Community Acceptance" for each site in Plate 3-1-4 includes the statement, "However, because the restriction would prevent only residential or school/ day care facilities...the overall reuse plan for the base would not be effected." This statement is inappropriate in the discussion of "Community Acceptance," which should be limited to the community's opinion of the remedial alternatives. All Air Force justifications for selecting alternatives that are unsatisfactory to the community belong elsewhere in the comparative analysis and in the Responsiveness Summary.	This comment is in reference to Plate 3-4-1, Comparison of Alternatives for Miscellaneous Sites. As requested, "justification" for the Institutional Control remedy that meet CERCLA and State requirements has been deleted from the comparison table.
58A	[Plate 3-2-5, Comparison of Alternatives for Landfill Sites; Plate 3-6-10, Comparison of Alternatives for Landfill Removal Action Sites] The text in Plates 3-2-5 and 3-6-10 appears to confuse Alternative 1 (excavation and on-site disposal) and Alternative 2 (excavation and off-site disposal). The following discrepancies, which should be clarified, were observed.	Cost comparisons presented under the Cost Effectiveness criteria were corrected to reflect costs from the SCOU RI/FS. For LF2 and Castle Vista A & B, Excavation and on-site disposal was the least cost alternative. For LF1, LF3, LF4, and LF5, Zoned Capping was the low cost alternative
	Under "Long Term Effectiveness" and "Reduction of Toxicity, Mobility, or Volume," the text states that Alternative 1 was considered the best "because all contaminants would be removed from the site." This statement is true for Alternative 2, excavation and off-site disposal.	The Comparison of Alternatives table was revised as suggested.
	Under "Cost Effectiveness," the text indicates that Alternative 1 is the most expensive, which is probably not correct.	The Comparison of Alternatives table was revised to show that for LF1 and LF4, excavation and off-site disposal was the most expensive alternative. For LF2, LF3, LF5, and CVLFA and CVLFB, ET Capping was the most expensive.
	Under "Community Acceptance," the text states "The community considers Alternative 1 to be the most acceptable alternative, followed by Alternative 2." However, the community actually considers excavation and off-site disposal the most acceptable remedial alternative.	The Comparison of Alternatives table was revised as suggested.

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Comment No.	Comment	Response
56B	It would be helpful if the numbering used for alternatives considered in Plates 3-2-2, 3-2-3, and 3-2-4 (Cost Estimates for **Landfills** 1, 3, and 5, respectively) were consistent with the numbering in Plate 3-2-5. Plate 3-2-5 numbers the alternatives 1 through 5, while Plates 3-2-2, 3-2-3, and 3-2-4 number the alternatives 3B, 3C, 3Da, 3Db; etc. Similar confusion exists for the numbering used in Plates 3-6-6, 3-6-7, 3-6-8, and 3-6-9a as compared to the numbering used in Plate 3-6-10; the numbering of alternatives should be reconciled.	As suggested, alternatives in the Landfill cost plates have been revised to match numbering scheme from the comparison of alternatives table.
59	[Section 3.3.3.2, Description of Alternatives at Shallow Contamination Sites, Excavate and On-Site Disposal] The text in Section 3.3.3.2 states that waste would be excavated and disposed on-site at either Landfill 3, 4, or 5. Further discussion of planned on-site disposal at Landfills 3 and 5 should be provided.	To further explain the decision to consolidate waste at LF3 and LF5, the following text has been added to Section 5.3.3.2. "During the SCOU RI/FS, Landfill 4 was the designated consolidation landfill. However, based on the recent decision to excavate and dispose of Landfill 1, LF4 will not be large enough to consolidate all base waste materials. Based on this estimation, the Air Force has determined that it may be necessary to use LF 3 and LF5 for consolidation purposes also."
60A	[Section 3.4.6.4, Statutory Determinations for Sites Requiring Institutional Controls, Use of Permanent Solutions...to the Maximum Extent Possible; Plate 3-4-1, Discussion of Alternatives for Miscellaneous Sites] The text in Section 3.4.6.4 and in Plate 3-4-1 under "Long Term Effectiveness" states that institutional controls/deed restrictions offer a permanent solution, effective in the long term. This statement is true only if the property affected by the institutional controls will not be transferred by the Air Force. If the Air Force transfers the property, it cannot guarantee the long term effectiveness of the institutional controls.	The Statutory Determination text (Section 5.4.6.4) has been revised to state, "Institutional Controls offer protection of human health without precluding occupational or industrial reuse options. The Institutional Control remedy may utilize deed restrictions to preclude inappropriate reuse activities and will remain with the site in perpetuity or until the EPA and State of California agree that the site no longer poses a threat to human health or the environment or that a specific restriction is no longer needed. Before site transfer, enforcement of Deed Restriction will be the Air Force responsibility. After transfer, Deed Restriction enforcement will be the responsibility of Merced County. Because there is no break in enforcement responsibility, the Deed Restriction alternative is considered a permanent solution". Plate 5-4-1 has also been revised to drop the word permanent from the solution description.

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Comment No.	Comment	Response
60B	Under "Reduction of Toxicity, Mobility, or Volume" in Plate 3-4-1, the text states "Institutional controls...will not affect TMV." The word "affect" should be replaced with "reduce."	Change made as suggested, See Plate 5-3-1.
60C	Under "Regulatory Acceptance" in Plate 3-4-1, the text states "The State and EPA accept the institutional controls/deed restriction approach for protecting against exposure to potential hazards associated with the sites." The qualifier "with acceptable justification" should be added to the end of this sentence.	Change made as suggested. See Plate 5-3-1.
61	[General] The ROD should discuss the planned five-year reviews	Section 4.5 has been added to the Decision Summary to describe topics related to the SCOU that will be discussed in the planned 5-year review.
Comments		
62A	[Section 1, Declaration] The Declaration should clearly state that the U.S. EPA is not concurring on those portions of the document that address sites with petroleum contamination only.	As suggested the following statement has been added to the Statement of Basis and Purpose, "The U.S. EPA is not concurring on those portions of this document that address sites with petroleum contamination only."
62B	Under "Site Name and Address" (p. 1), the clarification, "(formerly Castle Air Force Base)," should be inserted after Castle Airport.	Addition made as suggested.
62C	The following statement should be inserted at the beginning of the "Statement of Basis and Purpose" section: "This decision document presents the selected remedial actions for the Source Control Operable Unit (SCOU) at Castle Airport, Merced, California."	Addition made as suggested
62D	Under "Assessment of the Sites," the third paragraph starting with "Actual or threatened releases..." should be moved to the beginning of the section.	Change made as suggested.
63	[Section 2.3, Highlights of Community Involvement] The SCOU RI/FS was finalized in May 1997, not in January 1997, as is stated in Section 2.3.	Change made as suggested. See Section 3.0, third paragraph.

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Comment No.	Comment	Response
64	[Section 2.4, Scope and Role of the SCOU ROD; Figure 2-6, SCOU RI/FS and CB Part 2 Decision Flow Chart] Figure 2-6 should be revised to include the SCOU ROD. The text in Section 2.4 refers to Figure 2-6 as "the decision tree for inclusion of sites in the SCOU ROD"; however, the SCOU ROD is not included on this figure. The relationship between the various categories presented in the figure and the SCOU ROD is unclear.	The text has been revised to more accurately describe the information contained on Plate 4-6 (formerly 2-6). The introduction states, "A decision tree that depicts how WQSA and human health risk assessments were incorporated into the SCOU RI/FS process and how the RI/FS integrates with the CB Part 2 and Remedial Design and Remedial Action (RD/RA) activities is shown on Plate 4-6." A second flow chart (Plate 4-7) has been added to the text to illustrate how the SCOU RI/FS relates to the SCOU ROD.
65	[Plates 2-8a through 2-8c, Preliminary Remedial Action Objectives] These figures should include footnotes indicating that WQSA values are based on VLEACH1 (not VLEACH2) and referring the reader to where VLEACH1 is defined in the text.	The PRAO tables (Plates 4-10a, b, and c) have been revised to include VLEACH2 values for selected VOCs and SVOCs. The Metals table (Plate 4-10c) has been revised to include a footnote stating, "Values derived from Water Board, DLM process."
66	[Section 3, Cost Estimate Tables] The various cost estimate tables presented in Section 3 include shading on some rows. This shading is too dark and the values presented are difficult (or, in some cases, impossible) to read. All cost values need to be legible in future drafts of the ROD.	To make the cost tables easier to read, shading weight has been reduced.
67	[Section 3.1.3.3, Description of Alternatives for VOC Sites, Thermally Enhanced SVE] The text of Section 3.1.3.3 is written as though thermally enhanced SVE is the selected remedy, which is not the case. Several sentences use "will", e.g. "Humid air will be injected..." The text in this section should be revised so it does not give the impression that thermally enhanced SVE is the selected remedy.	The text has been revised to include the phrase, "If implemented..." and the word will has been replaced with would.
68	[Section 3.2.6.3, Statutory Determinations for Landfill Sites, Cost Effectiveness] Tables 3-2-7 and 3-2-8, which are referenced in Section 3.2.6.3, appear to have been omitted from the draft ROD. This discrepancy should be addressed.	The ROD has been revised to include cost tables for all landfill sites.

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Comment No.	Comment	Response
69	[Section 3.4.2.7, SWMU 4.31] Subsections to Section 3.4.2.7 have been left blank. An appropriate summary of the WQSA and risk assessment should be included.	Based on BCT concurrence, the SWMU 4.31 has been recommended for No Further Action. See Section 5.6.
70	(Section 3.4.3.2, National Pollutant Discharge Elimination System (NPDES) (p. 3-58)] Section 3.4.3.2 (NPDES) appears to be misnumbered. The preceding section (Description of Alternatives at Miscellaneous Sites Requiring Institutional Controls, Institutional Controls) also is numbered 3.4.3.2.	The SCOU ROD has been edited to ensure that section numbering is sequential.
71A	[Section 3.6.1, Volatile Organic Compound Removal Action Sites] The second sentence in Section 3.6.1 states "These eight sites are grouped into four groups based on proximity to plume boundaries." However, the four groups are undefined. The text following Section 3.6.1 does not appear to provide clarification. An explain of the four groups should be provided and the text should be revised.	The VOC Removal Action sites have been incorporated into the main VOC Group heading. The text has been revised to state, "Based on proximity and contaminant plume boundaries, 21 of these sites have been consolidated into one of five site groups (B51 Group, B54 Group, DA4 Group, DA8 Group, and UFL-2 Group)".
71B	The text in Section 3.6.1 indicates the removal actions as several sites are complete, including Discharge Area 4 (DA-4), Fuel Spill 1 (FS-1) and Fuel Spill 2 (FS-2), although the sites have not been closed. Removal actions are not complete until the agencies have concurred on site closure. The information in this section should be clarified.	The text has been revised to state "Removal Action VOC sites include group sites DA4 and DA8. (FS1 and FS2 are now included with the "petroleum only" group). Remediation equipment has been turned off at DA4. Closure for these sites is pending resolution of the VOC Cleanup dispute."
72	[Section 4.1.17, Characteristics of No Further Action Sites, Building 1562 (p. 4-9)] The number of soil gas samples collected at the site was omitted from the second paragraph, second sentence in Section 4.1.17. This omission should be corrected.	The text was revised to state, "A total of eight soil gas samples from depths of 5 to 10 ft and six soil samples from 0 to 15 ft were submitted for analyses."
73A	[Section 4.1.27, Characteristics of No Further Action Sites, Earth Technologies Corporation Site 6 (p. 4-16); Section 4.1.29, Building 1182 (p. 4-18)] The last sentence in Sections 4.1.27 and 4.1.29 include a reference to "RPM criteria." These criteria should be clarified.	For ETC6, the text was revised to state, "Because of a lack of a specific drilling target, and with concurrence of the BCTs, no further investigation was undertaken, and the site was recommended No Further Action."

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Comment No.	Comment	Response
		For B1182, the text was revised to state, "Developer solution waste was routed through a RCRA permitted solid waste management unit (SWMU 4.24) that recovered silver for recycling. This unit passed periodic inspections before being closed in accordance with RCRA Conditionally Exempt sites in 1995. The BCT concurred that no further investigation was necessary at the B1182 site, and No Further Action was recommended.
73B	The last paragraph of Section 4.1.29 includes the following statement: "It is recommended that monitoring of the USTs (underground storage tanks) be continued and that they be removed in accordance with the long-term Castle Tank Program." It is unclear from this statement whether monitoring and removal of the USTs will be performed.	The text for B1182 was revised to state, "These USTs were removed in July of 1996. Confirmation samples collected from the excavations after the USTs were removed indicated residual contamination was minor and below Castle UST cleanup standards". Monitoring of the USTs is no longer required.
74	Section 4.1.35, Characteristics of No Further Action Sites, Hazardous Waste Site 4; Table 4-26 (p. 4-22)] Data for trichloroethylene (TCE) and tetrachloroethylene (PCE) have been omitted from Table 4-26.	TCE and PCE data from the HWS4 site has been included in the revised WQSA summary table.
75	[Section 4.1.51, Characteristics of No Further Action Sites, SA B2; Section 4.1.52, SA B4 (p. 4-26)] Sections 4.1.51 and 4.1.52 both include the following statement: "Information on materials and specific chemicals handled on-site are unknown." This statement should be clarified; it does not make sense.	The text was revised to state, "Site interviews and research found no information on potential materials or specific chemicals handled at the site".
76	[Section 4.1.54, Characteristics of No Further Action Sites, SWMU 4.1 (p. 4-28)] A statement should be added to Section 4.1.54 to describe the results of the confirmation sampling.	The text was revised to state, "The pads were removed and confirmation soil samples collected in January of 1997. The NFA determination was based on the results of the confirmation sample analyses".

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Comment No.	Comment	Response
77	[Section 4.1.55, Characteristics of No Further Action Sites, SWMU 4.2 (p. 4-28)] The results of the remedial investigation sampling should be described in Section 4.1.55.	The text has been revised to indicate that SWMU 4.2 was linked to HWS4 during the SCOU RI/FS process. The reader is then directed to the HWS4 NFA summary (Section 5.6.2.23) for the RI details. It is also stated that, SWMU 4.2 has been recommended for no further action. based on the findings of the RI sampling.
78	[General] Table 6 (Summary of Alternatives) from the SCOU Proposed Plan should be included in the ROD. This table presents a very useful summary of considered remedial alternatives for all sites. The Air Force's response to EPA's Comment 2B of 14 July 1997 on the preliminary draft SCOU ROD states that this table would be included in the draft ROD; however, it appears to have been omitted. It may be necessary to modify Table 6, since the site categories used in the RI/FS and Proposed Plan have been redefined for the ROD.	A revised version of Table 6 has been incorporated into the SCOU ROD. See Plates 5-1-2. 5-2-2, and 5-3-2. The table has been reorganized based on remedial action group (i.e., VOC sites, Landfill sites, etc.). The purpose of the plate is to present a summary of remedial alternatives considered for each site within the specified group.
Comments from Technical Support Team Regional Toxicologist (Sophia Serda, Ph.D.)		
79	[Plate 2-10, The Summary of Carcinogenic Risks and Noncarcinogenic Hazards] Plate 2-10 must incorporate the information from *Table 9-1a* of the *Final SCOU Risk Assessment* (1/16/97).	As recommended, Table 9-1a has been added to the SCOU ROD. See Plate 4-14.
80	[Section 3.1.2.1, Risks at VOC Sites, Building 51 Group (B51); Section 3.1.2.2 Building 54 Group (B54)] The risk assessment summary must include the results for all buildings or sites within each site group. For example, Building 51 Group (B51) presents the only risk information from Building 1253.	For the B51 group, Screening Risk Assessments (SRAs) were conducted for B51, B52, B53 and B1253, while a Quantitative Risk Assessment (QRA) was conducted for B1253. For the B54 group, SRAs were conducted for B54, B1260, B1266, and Structures 55, T66 and T67 and QRA for B1260. The Human Health Risk evaluation sections for B51 Group and B54 Group have been revised to include the findings of both SRAs and QRAs.
81	[Section 3.2.2.1, Risks at Landfill Sites, Landfill 1] The text should identify that the hazard index (HI) exceeded 1 for the child resident. See Table 9-1a from the *Final SCOU Risk Assessment* (1/16/97).	The Landfill 1 Human Health Risk summary has been revised to show all of the QRA findings that included Hazard Index estimates of greater than one for the child/resident scenario.

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82	[Section 3.2.2.2, Risks at Landfill Sites, Landfill 3] The text should identify that the HI exceeded 1. See Table 9-1a from the *Final SCOU Risk Assessment* (1/16/97).	The Landfill 3 Human Health Risk summary has been revised to show all of the QRA findings. These findings included Hazard Index estimates of greater than one for surface soils in LF3 Area 1 for the child and adult residential exposure scenarios.
83	[Plate 3-3-4, Shallow Contamination Contingency Action Plate] Dioxin was not identified as a chemical of concern for Fire Training Area 2 (FTA-2) in the *Final SCOU Risk Assessment* 1/16/97. The text in Plate 3-3-4 should be corrected.	Based on the findings presented in the Draft Data Gap Investigation Report (January, 1998), FTA2 has been recommended for No Further Action. Reference to Dioxin as a site COC has been removed. See Petroleum Only section.
84	[Plates 3-3-5a, 3-3-5b, 3-3-5c, Remedial Action Objectives] The information from the RAO table worked on by the project team in Fall 1947 should be used.	As suggested, information from the RAO Summary documented developed by Jacobs has been incorporated into the site summary data.
85	[Section 3.4.2.2, Risks at Miscellaneous Sites Requiring Institutional Controls, PCB Sites 1, 2, 3; Section 3.4.2.3, PCB Site 4; Section 3.4.2.4, PCB Site 5; Section 3.4.2.5, PCB Site 6; Section 3.4.2,6, PCB Site 8] Institutional controls for the PCB sites may be unnecessary. EPA is in the process of performing an evaluation of these sites. A description of EPA's evaluation to date is provided below. <u>Evaluation Status</u> *Activities completed*: Reviewed the site description and historical background for each of the PCB sites. Evaluated the previous field investigation information to help identify PCB levels for each site and the depth of contamination.	Because the analytical data from the referenced PCB sites has not been found, the risk evaluations for these sites have not been completed. As a conservative approach, the Air Force originally elected to include the PCB sites in the ROD with selected remedial actions of Institutional Controls. However, based on reevaluation of site conditions, and BCT concurrence, the PCB sites are now recommended for No Further Action.

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	Activities required: Review of the entire set of post remedial sample data to ensure that past remedial/removal actions have been effective in eliminating PCB contamination. The Castle Airport site specific PCB remedial action objective (RAO) of 0.57 mg/kg will be used for the risk screen. *Information required*: The risk screen analysis can be completed only after information on the entire post remedial data set is supplied by the Air Force. Please provide the following information. [PCB Sites 1, 2, 3] Was the July 1990 sampling event conducted in the same area as the 1985 sampling event that recorded a detection of 27 mg/kg? Provide a description of the sampling locations. [PCB Site4] Provide the data set from the October 1982 post cleanup sampling event (N=3). [PCB Site 5] Provide that data set from the December 1981 post cleanup sampling event (N=15). [PCB Site 6] Provide the data set from the July 1983 sampling event (N=4). [PCB Site 8] Provide the results of the cited RCRA facility assessment (1990). This information is the basis for requiring no further action.	

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86A	[Plate 3-6-14, Major Components for Shallow Contamination Removal Action Sites] For ETC-10, the lead RAO of 5725 mg/kg is not protective of human health. A rationale should be provided for supporting this concentration as a RAO.	Two lead RAOs have been developed for the ETC 10 site. One lead RAO, 5,725 mg/kg, is based on CalEPA Blood Lead estimates and an occupational exposure scenario. The second lead RAO is 855 mg/kg and is based on protection of water quality (WQSA/VLEACH1). The basis information has been added to the COC/RAO summary for ETC10. See Section 5.3.2.5.
86B	For building 871 and PCB Site 9, the RAO for PCBs should be 0.57 mg/kg, based on the Air Force's 8 December 1997 memorandum addressing RAOs. This action level is based on a updated cancer slope factor in the current IRIS data base.	Changes made as suggested. See Sections 5.3.2.1 and 5.3.2.7.
87	[Section 4.1, Characteristics of No Further Action Sites] Section 4.1 should identify how the risk threshold levels were calculated. What is the value of these numbers?	Summaries of the Screening Risk Assessments and Quantitative Risk Assessments have been included with the Human Health Risk Evaluation portions of the NFA site summaries. Details on how the SRAs and QRAs were conducted can be found in Section 4.3.2 of the SCOU ROD.
III. Comments from Technical Support Team Regional Ecologist/ Microbiologist (Ned Black, Ph.D.)		
88	[General] Ecological risk is not adequately addressed at the sites discussed in this ROD. This document is unacceptable from an ecological risk perspective; it should state where and how this risk will be addressed in the CERCLA process. EPA's specific comments below are repetitive to emphasize the need to address ecological risk at all pertinent sites considered in this ROD. The issues raised below must be addressed.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
89	[Plate 2-8c, Preliminary Remedial Action Objectives] All RAOs for inorganic contaminants are for ground water at 40 to 65 feet below ground surface (bgs). The RAOs for surface metal contamination need to be presented.	PRAOs developed using the Water Board, Designated Level Methodolgy with the assumption that contaminant depths the depths of 40-65 ft bgs, have been accepted as metals RAOs. Human Health based RAOs for surface soil impacted by metals have been developed and are included on the PRAO summary (Plate 4-10c) and in the COC/RAO summaries for each site. ECO RAOs for metals will be developed as part of the CB Part 2 ROD.

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90	[Section 3.2.2 1, Risks at Landfill Sites, Landfill 1 (p. 3-25)] Ecological concerns are relegated to some future, unspecified process. When and how will this occur and where will this future effort fit into the CERCLA process? The designation of this site for No Further Environmental Investigation/Risk Management (NFEI/RM) in the Phase 1 Ecological Risk Assessment (ERA) (Jacobs, 1995) did not indicate that the ecological concerns were insignificant. Rather, it indicated the Air Force agreed the ecological risks at this site were unquestionably significant and that a remedial management decision would be necessary to address this risk.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
91	[Section 3.2.2.2, Risks at Landfill Sites, Landfill 3 (p. 3-26)] How was the risk management decision made to neglect ecological concerns at this site in this ROD and who is responsible for this decision? How will ecological risk at this site be addressed within the CERCLA process? The designation of this site for NFEI/RM in the Phase 1 ERA (Jacobs, 1995) did not indicate that the ecological concerns were insignificant. Rather, it indicated the Air Force agreed the ecological risks at this site were unquestionably significant and that a remedial management decision would be necessary to address this risk.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
92	[Section 3.2.2.3, Risks at Landfill Sites, Landfill 5 (LF5) (p. 3-26)] The Phase 2 ERA has been concluded (Jacobs, 1997); the results of the Phase 2 study should be reflected in this ROD. The text in Section 3.2.2.3 incorrectly appears to indicate that the Phase 2 ERA has not been completed. Ecological risk which should be addressed was determined to exist at LF5.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
93	[Section 3.3.2.1, Risks at Shallow Contamination Sites, Firing Range (p. 3-42)] Why have no ERA RAOs for cadmium, lead, thallium, and zinc been determined? How was the risk management decision made to neglect ecological concerns at this site in this ROD and who is responsible for this decision? How will ecological risk at this site be addressed within the CERCLA process? The designation of this site for NFEI/RM in the Phase 1	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD,

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	ERA (Jacobs, 1995) did not indicate that the ecological concerns were insignificant. Rather, it indicated the Air Force agreed the ecological risks at this site were unquestionably significant and that a remedial management decision would be necessary to address this risk.	
94	[Section 3.4.2.1, Risks at Miscellaneous Sites Requiring Institutional Control, Storm Drain System (SDS) (p. 3-53)] The Phase 2 ERA has been concluded (Jacobs, 1997); the results of the Phase 2 study should be reflected in this ROD. Ecological risk which should be addressed was determined to exist at the SDS.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
95	[Section 3.6.2.2.1, Risks at Landfill Removal Action Sites, Landfill 2 (p. 3-74)] Ecological concerns are relegated to some future, unspecified process. When and how will this occur and where will this future effort fit into the Superfund process? The designation of this site for NFEI/RM in the Phase 1 ERA (Jacobs, 1995) did not indicate that the ecological concerns were insignificant. Rather, it indicated the Air Force agreed the ecological risks at this site were unquestionably significant and that a remedial management decision would be necessary to address this risk.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
96	[Section 3.6.2.2.2, Risks at Landfill Removal Action Sites, Landfill 4 (p. 3-74); Section 3.6.2.5, The Selected Alternative for Landfill Removal Action Sites (p. 3-76] How will it be determined that the cap proposed for Landfill 4 will address ecological risk at this site?	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
97	[Section 3.6.3.2.2, Risks at Shallow Contamination Removal Action Sites, ETC-10 (p. 3-78)] Ecological concerns are relegated to some future, unspecified process. When and how will this occur and where will this future effort fit into the Superfund process? EPA's letter of 5 December 1997 should be referred to for discussion of EPA's expectations for addressing ecological risks at ETC-10.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.

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98	[Section 3.6.4.2, Risks at the FTA-1 Site (pp. 3-82 to 3-83)] The Phase 2 ERA has been concluded (Jacobs, 1997); the results of the Phase 2 study should be reflected in this ROD. Ecological risk which should be addressed was determined to exist in the aquatic habitats adjacent to FTA-1 which have received run-off from the site.	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco Risk issues will be documented in the CB Part 2 ROD.
99	[Section 5.1.2, Characterization of "Petroleum Only" Sites, Discharge Area 1 (DA-1) (p. 5-2)] As noted, the ecological risk drivers were cadmium and lead. Intrinsic remediation of petroleum will not address this risk. Ecological concerns are relegated to some future, unspecified process. When and how will this occur and where will this future effort fit into the Superfund process?	Issues concerning Eco-Risk have been removed from the SCOU ROD. Final decisions on Eco-Risk issues will be documented in the CB Part 2 ROD.
100	[Vernal Pools] For many of the sites involving ecological risk, the habitat of concern is vernal pools. At these sites, the impact on the pools is sufficient to warrant remediation (Jacobs, 1995; 1997). However, removal of contaminants from the pools would involve destruction of the habitat. As such, the best remedial response to the contaminants is either enhancement or mitigation. Enhancement constitutes a **functional lift** of existing wetlands. It can include: a. re-contouring or removal of introduced sediments to improve the water budget of the pools; sedimentation is a particular problem in pools which have been physically disturbed (the obstacle course pools northwest of FTA-1 are a likely candidate). b. re-inoculation with native plants and possibly invertebrates from nearby healthier pools and subsequent monitoring of the biodiversity. c. slope stabilization of surrounding disturbed uplands to prevent sediment run-off into the pools (again, the pools near FTA-1 are a	Noted

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	candidate; the cap on FTA-1 includes exposed dirt with run-off channels leading into the pools). Enhancement is the recommended alternative for remedial action at most of the impacted vernal pools at Castle Airport. Mitigation involves either on- or off-site restoration or creation of vernal pools, or protection of habitat at some other site. Restoration is the recreation of a pool in an area that historically had wetlands which have been destroyed. It would involve activities similar to those described for enhancement but has a lower chance of success. It is my understanding that this is essentially what the Air Force will be doing for the pool at ETC-10. In addition, if any pools are destroyed as part of the human health remedial action at LF5, they should be recreated. Creation involves construction of vernal pools in areas which have never been wetlands. This procedure has a relatively low chance of success compared to enhancement or restoration. Since there are so many impacted pools on Castle Airport which could benefit from enhancement, EPA recommends that creation not be considered as a remedial action. It must be emphasized that long term monitoring of the health of the pools is a necessary part of enhancement, restoration, and creation. If the pools involved are not viable and thriving communities, then further actions may be necessary. EPA recommends that a reputable contractor with demonstrated experience in managing vernal pools be retained to perform any remedial action chosen. EPA is willing to provide any assistance that is necessary to ensure this occurs. The operations of this contractor and the success of the remedial efforts must be monitored by the Air Force and by the US EPA, the US Fish and Wildlife Service, and the California Department of Fish and Game.	

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	Protection would involve the purchase and protection of similar habitat elsewhere, or payments to some habitat mitigation bank. Again, since there are so many impacted pools on Castle Airport which could benefit from enhancement, EPA recommends that purchase of off-site habitat not be considered as a remedial action. EPA has discussed the above recommendations with Dr. Gerald Chernoff of the California Department of Fish and Game. He is in agreement with the suggestions for remediation of the vernal pools. **References** Jacobs Engineering Group, Inc., 1995. Scoping and Phase I Ecological Risk Assessment, Final, for Dept. of the Air Force, Castle Air Force Base. December 1995. Jacobs Engineering, 1997. Comprehensive Basewide Phase II Ecological Risk Assessment, Final, Dept. of the Air Force, Castle Airport. August 1997.□	

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IV. Comments from Office of Regional Counsel (Thelma Estrada) **General Comments**		
101	[Section 2.4.2.2, SCOU Contingency Sites, Technical and Economic Evaluation (p. 2-15); Section 3.1.5.1.2, The Selected Remedy for VOC Contingency Sites, Technical and Economic Evaluation (p. 3-18)] The ROD should clarify that the sites which require T&E Evaluations fell within the acceptable risk range, but exceeded the WQSA criteria.	The text in Section 2.1 has been revised to clarify how sites qualified for Technical and Economic evaluation. This section states, "Technical and Economic evaluations were conducted for all SCOU sites that were 1) within an acceptable risk range (less than 1 X 10-6 incidence of cancer risk and less than 1 Hazard Index) 2) passed VLEACH1, but 3) failed VLEACH2 WQSA screening." The revised VOC Group test simply states that Technical and Economic evaluation has been undertaken at selected sites, and presents the conclusions of the evaluation.
102	[Section 3.2.2.2, Risks at Landfill Sites, Landfill 3 (p. 3-25)] Under Landfill 3, Site COCs and RAOs, the acronym BHHRA is not in the List of Acronyms at the beginning of the document. Only Baseline Risk Assessment (BRA) is defined.	As suggested, BHHRA has been added to the list of acronyms. Further information on the BHHRA process can be found in Section 4.3.2 of the SCOU ROD.
103	[Section 3.2.2.3, Risks at Landfill Sites, Landfill 5 (p. 3-26)] Under Landfill 5, Site COCs and RAOs, please include a statement at the beginning of this section (which is done for the other sites) that "the remedial decision is driven by..."	The following statement has been included with the LF5 COC/RAO section, "The remedial decision for LF5 is driven by the BHHRA and WQSA goals".
104A	[Section 3.2.3.7, Description of Alternatives for Landfill Sites, Institutional Controls and Deed Restrictions (pp. 3-30 to 3-32)] The second sentence at the beginning of page 3-30 states that "deed restrictions will be used to...prevent site reuse that would damage the cap integrity." Please add, after reuse, "and activities"; this would then prevent such activities as installing wells, etc.	The following statement has been added to the Description of I/C's for landfills (Section 5.2.3.8), "To ensure the integrity of the cover and the containment and monitoring systems, the future landowner(s) and/or user(s) will be restricted from **any activity** that will adversely impact the cover and monitoring system or affect the drainage and erosion controls developed for the cover (including soils, cobbles, vegetation, gravel, paving, etc.)".

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IV. Comments from Office of Regional Counsel (Thelma Estrada) **General Comments**		
104B	On page 3-30, under Item B (Construction), a provision should be included requiring notice to the Air Force and regulatory agencies prior to any construction activity.	The following statement has been added to the Description of I/C's for landfills (Section 5.2.3.8), "Prior to any construction activity, such as, but not limited to installation of utilities, the landowner shall make written request to and obtain approval from the AF and the regulators", in addition to the normal construction permitting activities of the local government. This statement is correct for property under lease, but not for transferred property.
104C	At the beginning of page 3-31, under Item E (Protection of Equipment), reverse the order of the two sentences.	Change made as suggested.
104D	On page 3-31, under Item F (Site Access), the last sentence beginning with "Monitoring activities" should be the second sentence. The third sentence should be that which starts with "In addition," although the phrase "in addition" should be deleted. Additionally, the typographical error in this sentence (i.e., repeated phrase) should be corrected. The last sentence should be that which starts with "All future land owners..."	Changes made as suggested. See Section 5.2.3.8, item E.
104E	Also on page 3-31, under Item G (Groundwater), clarify whether it is "principle" aquifer or "principal" aquifer. What is the significance of the 500 foot radius from the site boundary? In the last paragraph for this section, which starts with "The future landowner(s)...," add the word "fluids" after releasing.	The SCOU ROD addresses soil contamination sites at Castle Airport. Deed Restriction issues related to the ground water will be discussed and finalized in the CB Part 2 ROD.
104F	The ROD seems to combine two ideas in the first paragraph on page 3-32. Although the future landowner does need to notify the Air Force and all regulatory agencies whenever any events occur that may change the approved design of the site, this need not be done "in accordance with an	The text has been revised to state, "If the transferee should undertake or seek to undertake such restricted use, the transferee shall be liable for the cost of any additional remedial action required to facilitate such restricted reuse. The transferee

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IV. Comments from Office of Regional Counsel (Thelma Estrada) **General Comments**		
	emergency response plan." Any remedy failure (which is the second idea in this paragraph) should trigger notification in accordance with an emergency response plan. A separate section should be added to specify a requirement for an emergency response plan. Also on page 3-32, under the provisions of 120(h)(3), please delete the phrase "due to remedy failure" in the covenant that any additional remedial action found to be necessary after the date of such transfer shall be conducted by the United States. The statute does not include such language.	shall obtain approval of the US AF, the US EPA, and DTSC prior to undertaking such changes in land use and conducting additional remedial action. All restrictions shall apply to the restricted land, shall pass with each and every portion of the land, shall apply to and bind respective successors in interest to the restricted property, are enforceable by state and federal regulations, and are imposed upon the entire restricted property unless otherwise stated or unless lifted by the AF or the regulators prior to transfer. As part of the emergency response plan, any remedy failure would trigger notification of the Air Force and regulatory agencies. The emergency response plan will be developed as part of the landfill Work Plan and RD/RA process". The recommended change has not been made to the ROD text. The Air Force Legal Counsel will respond to comments regarding "remedy failure" during the 45 day review period
105	[Section 3.2.5, The Selected Remedy for Landfill Sites (p. 3-33)] Under Section 3.2.5, please indicate that the zone capping remedy includes institutional controls.	The following information has been added to the description of landfill Institutional Controls "Institutional controls including deed restriction are included as part of the Class III, Evapotranspiration, and Zoned capping remedies".
106	[Section 3.2.5.1, The Selected Remedy for Landfill Sites, Sample Deed Restriction Language (p. 3-34)] In the paragraph at the beginning of the page, please spell out "RA." Also, under (b), there is a typographical error: the phrase "groundwater its remediation of underlying groundwater plumes" does not make sense. This phrase should be corrected.	Sample Deed Restriction language has been removed from the SCOU ROD.

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IV. Comments from Office of Regional Counsel (Thelma Estrada) **General Comments**		
107	[Section 3.2.6.2, Statutory Determinations for Landfill Sites, Attainment of ARARs (p. 3-35)] The fourth paragraph refers to federal ARAR standards for owners and operators of hazardous waste facilities. EPA had thought the landfills at Castle Airport are not hazardous waste landfills. This issue should be clarified.	Section 5.2.6.2, Attainment of ARARs, has been revised to state, "The Castle Landfills are considered Class III landfills and are suitable for disposal of municipal waste. However, if hazardous or designated wastes are identified during landfill consolidation work, this waste will be segregated, characterized, and taken off-site for disposal. Hazardous Waste will be taken to a Class I landfill for disposal, while designated waste will be taken to a Class II landfill".
108	[Section 3.3.2.1, Risks at Shallow Contamination Sites, Firing Range (p. 3-41)] The basis for the remedial action for the Firing Range is not clearly stated in Section 3.3.2.1. This should be clarified. This comment also applies to the other sites where the risk is within the acceptable risk range and the WQSA criteria are not exceeded.	A Risk Management Decision section has been added to the Firing Range site summary. It states, "Based on WQSA and Risk evaluation, the Firing Range site did not pose a threat to human health or water quality. Remediation was driven by reuse concerns".
109	[Section 3.3.6.2, Statutory Determinations for Shallow Contamination Sites, Compliance with ARARs (p. 3-47)] Under Section 3.3.6.2, there is a reference to wastes remaining in place. However, the selected remedy for the shallow contamination sites is excavation. It is unclear whether the reference to these wastes applies to the Further Action Data Gap sites. If the sites are excavated, they will not have waste remaining in place. The consolidation landfill (and this landfill should be identified) is the only site which has to meet the Title 23 (or Title 22 if its hazardous waste) regulations. Therefore, please revise this section to include separate discussions for the ARARs for the excavation sites and the ARARs for the consolidation landfill.	The Compliance with ARARs summary (Section 5.3.6.2) has been revised to more clearly state, "Clean Closure of the Shallow Contamination sites will require compliance with SWRCB Resolution 92-49. Closure of the Shallow Contamination sites will require the collection and analyses of confirmation soil samples. Consolidation of wastes from the Shallow Contamination sites into a consolidation landfill, must comply with Title 27 CCR regarding wastes remaining in place (i.e., capped in place) as part of a RA.

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IV. Comments from Office of Regional Counsel (Thelma Estrada) **General Comments**		
110	[Section 3.4, Miscellaneous Sites Requiring Institutional Controls (p. 3-49)] The requirement to have institutional controls at sites that do not meet residential cleanup requirements is not just based on State of California requirements. CERCLA also requires that non-engineering mechanisms (such as institutional controls) be included in a remedy if the remedy by itself is not protective of human health and the environment.	The text has been revised to indicate that I/C is also a requirement of CERCLA. See Section 5.4.
111	[Section 3.4.2.1, Risks at Miscellaneous Sites Requiring Institutional Controls, (p. 3-52)] What are the results of the WQSA for the Storm Drain System? This information was omitted from Section 3.4.2.1.	The text has been revised to indicate that molybdenum, lead, and cadmium exceeded TBVs and WQSA screening levels.
112	[Section 3.4.2.8, Risks at Miscellaneous Sites Requiring Institutional Controls, Stains 33 to 44 (p. 3-57)] The first sentence on page 3-57 states the remedial decision is driven by WQSA goals. How could this be the basis for selecting institutional controls? Also, on the same page, under Institutional Controls, the phrase "legal controls that are required to" should be replaced with "non-engineering mechanisms, particularly legal measures, designed to..."	The text has been revised to state, "The remedial decision for Stains 33 through 44 is primarily driven by Human Health Risks associated with exposure to benzo(a)pyrene in surface soils. WQSA thresholds for several PAHs have also been exceeded. A summary of COCs and RAOs is provided below". The definition of Institutional Controls has been revised as suggested.
113A	[Section 3.4.3.2, Description of Alternatives at Miscellaneous Sites Requiring Institutional Controls, Institutional Controls (p. 3-58)] The second bullet at the top of page 3-58 states that the landowner will be restricted from using the site for a school for persons under the age of 21. Is there a reason why a school for persons over the age of 21 (e.g., a university) would be allowed?	The bullet has been revised to state, "Future Land Owners and/or users will be restricted from using the designated site for public or private school. This restriction includes use of the restricted property for day care centers for children."

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IV. Comments from Office of Regional Counsel (Thelma Estrada)		
General Comments		
113B	On page 3-58, please delete that first sentence that starts with "If the transferee should undertake..." This sentence can be interpreted to mean that the Air Force is limiting its responsibility under CERCLA. The Air Force is responsible for the effectiveness of the remedy it selects, which, in this instance, includes institutional controls. If those institutional controls fail because of an act by the future landowner, the Air Force will need to take an action against the landowner, but the Air Force remains liable for the cleanup.	Change not made. Air Force contends that the transferee is responsible for any damage they may cause to the selected remedy. See Section 5.4.2.2.
114A	[Section 3.4.3.2, National Pollutant Discharge Elimination System (NPDES) (p. 3-58)] On page 3-58, please spell out "SDS," which, by the way, is not in the list of acronyms.	As suggested, the acronym for the Storm Drain System has been defined in the ROD and added to the acronym list.
114B	The last sentence under this section is confusing. Will there be periodic dredging as part of the remedy?	The text has been revised to indicate that based on NPDES requirements, periodic monitoring of storm water effluent will be conducted. If this monitoring indicates contamination above MCLs, dredging of selected areas of the SDS would be required.
115	[Section 3.4.6.2, Statutory Determinations for Miscellaneous Sites Requiring Institutional Controls, ARAR Attainment (p. 3-59)] Under Section 3.4.6.2, refer to Comment 110 above regarding institutional controls and State of California requirements.	Change made as suggested. See Section 5.4.6.2.
116A	[Section 3.5.6.2, Statutory Determinations for Multiple Contaminant Sites, Attainment of ARARs (p. 3-63)] Under "Excavation/On-Site Disposal," refer to Comment 109 above regarding waste left in place.	Both Multiple Containment sites, FYTA1 and DA5 have been removed from the ROD. Final remedial decisions for these sites will be documented in CB Part 2.

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IV. Comments from Office of Regional Counsel (Thelma Estrada) **General Comments**		
116B	The last paragraph on page 3-63 makes reference to Standards for Owners and Operators of Hazardous Waste Facilities. It is unclear whether Hazardous Waste Facilities exist on site.	Both Multiple Contaminants site, FYTA1 and DA5 have been removed from the ROD. Final remedial decisions for these sites will be documented in CB Part 2.
117	[Section 3.6, SCOU Sites Selected for Removal Actions (p. 3-66)] Under Section 3.6, the third sentence that states "Removal actions are considered final solutions...," is inaccurate. Generally, removal actions are not considered to be final solutions; they are meant to address an immediate or imminent threat. Following the removal action, another, more complete, analysis should be conducted regarding the final remedial action for the site that would meet the CERCLA nine criteria. If no follow-up remedial action is necessary after a removal action is completed, this has to be explained. Please include such an explanation in the text.	The Removal Action sites have been reincorporated into appropriate remedial action groups (i.e., VOC sites, Landfill sites, Shallow contamination sites). The status of site closure is included as part of the site characterization information for the Removal Action sites.
118	[Section 3.6.1.2.3, Risks at Volatile Organic Compound Removal Action Sites, Fuel Spill 1 (p. 3-69)] Under Section 3.6.1.2.3, Risk Assessment, the third sentence is missing a verb. This sentence should be corrected.	The sentence has been revised to state, "Almost 100 percent of the calculated risk and hazard was contributed by benzene, a known human carcinogen, which was detected in subsurface soil".
119	[Section 3.6.2.2.1, Risks at Landfill Removal Action Sites, Landfill 2 (p. 3-73)] Under Section 3.6.2.2, Site COCs and RAOs for Landfill 2, there is a statement regarding meeting the Integrated Waste Management Board's closure requirements for landfills. Are these the only ARARs for these sites?	Landfills are required to meet a host of federal and state ARARs. These ARARs include the Integrated Waste Management Board and SWRCB requirements for landfills. A more detailed discussion of ARAR attainment for landfills can be found in the ARARs Attainment portion of the Landfill Statutory Determination (Section 5.2.6.2.).
120	[Section 3.6.2.2.2, Risks at Landfill Removal Action Sites, Landfill 4 (p. 3-74)] Under Section 3.6.2.2.2, Site COCs and RAOs for Landfill 4, please start off this section with a statement (which is done in the other sections) regarding the basis for the remedial action. For instance, if the WQSA drives the remedial action, state that here.	The following statement has been added to the LF4 COC/RAO summary, "The remedial decision for LF4 is driven by WQSA goals".

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
IV. Comments from Office of Regional Counsel (Thelma Estrada) **General Comments**		
121	[Section 3.6.2.2.4, Risks at Landfill Removal Action Sites, Castle Vista Landfill B (p. 3-75)] Under Section 3.6.2.2.4, Site COCs and RAOs, the first sentence states that the ROD provides remedial alternatives "to address data gaps." This statement does not make sense. A ROD is supposed to document the decision regarding the selected remedy, not address data gaps.	Data Gaps associated with Castle Vista Landfill B have been addressed as part of Removal Action activities at the site Reference to Data Gaps at Castle Vista Landfill B has been removed from the ROD.
122	[Section 3.6.3.2.1, Risks at Shallow Contamination Removal Action Sites, Building 871 (p. 3-78)] Under Section 3.6.3.2.1, Site COCs and RAOs for Building 871, the last sentence states that the ROD documents a removal action that addressed the contaminants of concern. Please include an explanation here why further remedial action is not necessary after the removal.	The Characterization Summary for B871 (Section 5.3.1.1) has been revised to state, "In 1996, TEPH, PCB, and pesticide contaminated soil were excavated and removed from the B871 site. Confirmation sampling conducted after excavation work was completed indicated that all contamination above cleanup levels had been removed. The closure of B871 was documented in the Technical Report for Removal Action at B871 (September 1996).
123	[Section 3.6.3.2.3, Risks at Shallow Contamination Removal Action Sites, PCB 9, (p. 3-79)] Under Section 3.6.3.2.3, Site COCs and RAOs for PCB Site 9, it is not clear, after reading the discussion on the site COCs, what is the basis for the remedial action.	The COC/RAO summary for PCB9 site has bee revised to include the following statement, "The remedial action for this site is driven by BHHRA concerns resulting from in surface soil".
124	[Section 3.6.4.2, Risks at the FTA-1 Site (p. 3-83)] The first sentence at the top of page 3-83 (following the bullets) states that, based on risk management decisions, RAOs were not developed for metals and volatiles as part of the ERA assessment. Please explain this further.	FTA 1 has been removed from the SCOU ROD. Final remedial decisions for FTA1 will be documented in the CB Part 2 ROD.
125	[Section 3.6.4.3.2, Description of Alternatives at FTA-1 Site, Institutional Controls and Deed Restrictions (p. 3-84)] Under Item B (Construction), please include a requirement for notifying the Air Force and regulatory agencies prior to any construction activity. Also, please see the comments above regarding suggested changes to the section "Institutional Controls and Deed Restrictions."	FTA 1 has been removed from the SCOU ROD. Final remedial decisions for FTA1 will be documented in the CB Part 2 ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
Comments on ARARs Narrative Section:		
126	[Plate 3-1-4, Comparison of Alternatives for VOC Contingency Sites] Under "Long Term Effectiveness," there is a typographical error. The text states "Alternatives 1 and [blank] would both be...." This commission should be clarified.	Correction made as suggested. See Plate 5-1-7.
127	[Section 6.1, Summary of ARARs Conclusions (p. 6-2)] Under Section 6.1, reference is made to requirements to be considered (TBCs). Please state clearly that once the Air Force decides to use a TBC in this remedial action, such TBC becomes a performance standard.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
128	[Section 6.1.1, Chemical-Specific ARARs for Air (p. 6-2)] Under Section 6.1.1, please state that only the provisions under the State Implementation Plan (SIP) which were promulgated to comply with the Clean Air Act are considered federal ARARs.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
129A	[Section 6.1.2, Chemical Specific ARARs for Groundwater (pp. 6-3, 6-4)] The last paragraph on page 6-3 makes a statement that Maximum Contaminant Level Goals (MCLGs) and Maximum Contaminant Levels (MCLs) are identical for all chemicals except thallium. Yet, no follow-up statement is made regarding thallium. What is the cleanup number for thallium?	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
129B	In the second paragraph on page 6-4, please qualify that only those portions of the San Joaquin Basin Plan that establish water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and groundwater in the region, are ARARs.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
Comments on ARARs Narrative Section:		
129C	In the third paragraph, last sentence on page 6-4 , please explain what is meant by the statement "there is no state secondary MCL that is a controlling ARAR for a contaminant in groundwater." Is this because there is not an ARAR based on a secondary MCL?	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
129D	In the fourth paragraph on page 6-4 , please explain why "no significant risk" is the controlling ARAR for 2,4-dinitrotoluene (2,4-DNT).	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
129E	Reference is made on page 6-4 and on subsequent pages to a "new landfill." Is this landfill the consolidation landfill? Also, the text does not clarify that this landfill is addressed in the SCOU ROD and not in some other ROD. The last sentence on this page needs elaboration.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
130	[Section 6.1.3, Chemical Specific ARARs for Soils (p. 6-5)] In the second paragraph of Section 6.1.3, there is a statement that alternate treatability variance levels for the treatment of soils containing RCRA hazardous waste are TBCs. Why are these TBCs? These would be relevant and appropriate requirements if in fact these soils have RCRA waste.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
131	[Section 6.1.4, Location-Specific ARARs (p. 6-6)] In the first line on page 6-6, include a short description or descriptive title of Executive Order 11990.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
132A	[Section 6.1.5, Action-Specific ARARs (pp. 6-6 to 6-7)] On page 6-6, third paragraph includes a statement that Title 27 regulates both hazardous and non-hazardous waste to land. It is EPA's understanding that Title 27 only regulates non-hazardous waste to land (solid waste). Additionally, the sentence in the third paragraph that starts " Exempt from the provisions of Title 27, Chapter 15 are certain actions...." is confusing. So is the last paragraph on this page which continues on the next page. Please clarify.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
Comments on ARARs Narrative Section:		
132B	The first full paragraph, last sentence on page 6-7 states that PCB contaminated soils involve on-site and off-site disposal of soils. Therefore?	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
ARARs Tables 6-5 and 6-6:		
133	[General] The ARARs presented in Tables 6-5 and 6-6 need to be specific for the remedial activities and characteristics of the sites in the SCOU ROD. ARARs from the Mather ROD or the Castle Landfills Action Memorandum were included in the SCOU ROD without changes to the text or explanations of why the listed ARARs apply. This discrepancy needs to be clarified.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD
134A	[Table 6-5, SCOU Federal ARARs] The information on page 1, first row, appears to not apply to this ROD. Although fluids will be injected into the subsurface through wells, this activity is covered in the Comprehensive Basewide Part 1 (Groundwater) Record of Decision.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
134B	Delete the parenthetical statement in the ARAR Status column on page 3. This requirement is relevant and appropriate not "if the definition of airport is met" but because the activity involved, i.e., consolidation of waste at LF4, may cause a potential bird hazard to a nearby airport.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
134C	On page 4, first row, if there are vernal pools, this requirement is applicable not relevant and appropriate.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
134D	The text on page 7 should state whether the waste involved is believed to be household waste. If this information is unavailable, when will it be available? Finally, there is a statement here regarding a waiver. Do the regulations provide a waiver or is this statement referring to an ARARs waiver? If it is the latter, which ARARs waiver is applicable?	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
Comments on ARARS Narrative Section:		
134E	In the second row on page 10, the text states that post-closure requirements are relevant and appropriate for Landfills 1, 3, and 5 because disposal of the waste for these landfills occurred before RCRA Subtitle D. Yet, the previous page states that Subtitle D closure requirements are applicable. Which one is it - applicable or relevant and appropriate? Also, the last sentence in the Comment column is not a complete sentence.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
134F	On page 11, under "Comment," the text states the maintenance of a leachate collection system is not an ARAR because there are no leachate collection systems in the final remedial alternative. Do the regulations require a leachate collection system? If so, Landfill 4 (the site for which this is stated to be an applicable ARAR) must meet this requirement. For the other landfills, for which this is a relevant and appropriate requirement, a leachate collection system is optional.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
135A	[Table 6-6, SCOU State Landfill ARARs] On pages 1 to 16, the requirements are from Title 14, the Integrated Waste Management Board regulations. It is EPA's understanding that permitting requirements for municipal solid waste landfills which were previously in Title 14 and in Title 23, Chapter 15, were consolidated in Title 27. There are still requirements under Title 23, Chapter 15 (corrective action requirements for unpermitted facilities) but Title 14 has been superseded by Title 27. Therefore, please delete all references to Title 14 and simply refer to Title 27.	The Title 14 and Title 23 regulations have been incorporated into Title 27. This change is reflected in the ARAR summary Tables (Plates 6-1 and 6-2).
135B	On pages 17 and 18, include a description or descriptive title of State Water Resources Control Board (SWRCB) Order 92-08. The same comment applies to SWRCB Order 92-13.	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
Comments on ARARS Narrative Section:		
135C	On page 19, why is SWRCB Resolution No. 68-16 an ARAR for this ROD?	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD
135D	On page 20, the first row states “applicable to.” To what?	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.
135E	On page 21, first row - what are the requirements in SWRCB Resolution No. 93-62? Are these requirements different from the other ARARs? Second row - what is SWRCB Order 93-200? Again, are these different requirements?	Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD.

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
V. Comments from Community Involvement Office (Viola Cooper)		
136	The Responsiveness Summary is incomplete. Only comments received during the public hearings held on August 26 and September 23, 1997 are included in the draft ROD. However, the SCOU Proposed Plan was discussed with community members at several other meetings, including the October and November 1997 RAB meetings, and the community involvement discussions held on November 6 and 17, 1997. Comments received during these additional meetings also should be included in the Responsiveness Summary. EPA feels this approach is necessary due to the initial impediments to public review of the SCOU Proposed Plan. RAB members were given insufficient time to review the SCOU Proposed Plan prior to the August 26 public hearing since it had not been distributed. This issue, which was raised both at the August 26 meeting (Comment #4, Responsiveness Summary) and prior to the meeting, is one of the reasons it was necessary to hold a second public hearing. Given the situation, considering input received at meetings held subsequent to the public hearings is particularly important. The Air Force should have access to recorded information from these meetings. The Air Force (Ms. Linda Geissinger) prepared a summary of the November 6 meeting, and the meeting also was taped. Comments received at the RAB meetings were summarized in the meeting minutes prepared by Gutierrez-Palmemberg, Inc. (Mr. Russell Stowe).	Comments from the RAB October 1997, November 1997, and January 1998 meeting minutes and November 6, 1997 community involvement meeting notes have been added to the Responsiveness Summary in the following sections <u>Section 4, Summary of Comments Received and Agency Responses</u>: ● category A, Remedial Alternative Preferences, comment number 11 (from October 1997 RAB meeting minutes) ● category A, Remedial Alternative Preferences, comment number 12 (from November 6, 1997 meeting notes). ● category C, Language Used in Proposed Plan or Record of Decision, comment number 2 (to address EPA comment number 46C). ● category E, Future Base Reuse Issues, comment number 1 (to address EPA comment number 46D). ● category E, Future Base Reuse Issues, comment number 2 (from November 6, 1997 meeting notes). ● category G, RAB Assistance, comment number 1 (from November, 6, 1997 meeting notes). ● category G, RAB Assistance, comment number 2 (from October 1997 RAB meeting minutes).

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
V. Comments from Community Involvement Office (Viola Cooper)		
		• category H, Decision Process, comment number 1 (from November 6, 1997 meeting notes). • category H, Decision Process, comment number 2 (from October 1997 RAB meeting minutes). • category I, Off-Base Property, comment number 1 (from November 1997 RAB meeting minutes). • category I, Off-Base Property, comment number 2 (from January 1998 RAB meeting minutes). <u>Section 5, Remedial Design/Remedial Action Concerns:</u> • comment number 3 (second letter from Ruben Lara). • comment number 4 (from January 1998 RAB meeting minutes). • comment number 5 (from October 1997 RAB meeting minutes).

RESPONSES TO EPA COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

Comment No.	Comment	Response
V. **Comments from Community Involvement Office (Viola Cooper)**		
137	The Responsiveness Summary is inconsistent with EPA guidance (Please refer to the ROD guidance and OSWER Directive, Superfund Responsiveness Summaries (18), the Community Relations Handbook as outlined in Appendices D and H). It should include four sections: 1) Overview; 2) Background on Community Involvement; 3) Summary of Comments Received; and 4) Air Force Response and Remedial Design/Remedial Action Concerns. Additionally, the Responsiveness Summary should: include references to all significant comments, criticisms, and new data received, as well as the Air Force's position on each issue; provide information about the views of the community and the Air Force regarding the proposed remedial actions and any alternatives; and document how the Air Force has considered public comments during the decision-making process and provide answers to major comments. The Responsiveness Summary needs to fulfill the requirements specified above.	The Responsiveness Summary has been revised to conform with EPA guidance.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

ITEM NUMBER	CONCERN NUMBER	SECTION REFERENCE	COMMENT	RESPONSE
1	1	**GENERAL CONCERNS**	**Cleanup Limits**. The discussion of cleanup limits in the Draft SCOU ROD is confused and confusing. Throughout the text the terms "preliminary remedial action objectives (PRAOs)", "water quality site assessment (WQSA)", "remedial action objectives (RAOs)", "WQSA goals" and "maximum allowable concentrations" are used interchangeably and without clear definition. The Air Force and the regulatory agencies have been actively discussing final cleanup limits for the last several months, and preliminary agreement has been reached on some of the proposed cleanup levels at several removal action sites, but little of this discussion is presented in the Draft SCOU ROD in a clear, logical format. Final cleanup limits, or remedial action objectives (RAOs) have not yet been established for any of the SCOU sites. In general, the Draft SCOU ROD proposes to use the Water Quality Site Assessment (WQSA) preliminary remedial action objectives (PRAOs) as the cleanup limits, with no justification as to why these are also appropriate final cleanup limits for each of the sites. As noted in the Final Source Control Operable Unit Remedial Investigation/Feasibility Study, Part 3: Feasibility Study (FS), dated May 1997 "PRAOs were established to provide a basis of comparison among remedial alternatives and to determine if sites that exceeded RI WQSA and risk assessment decision criteria should be subject to detailed evaluation in the FS." The FS also notes that "final RAOs will be established during the remedy selection process and documented in the Record of Decision (ROD). Section 2.4.1 of the Draft SCOU ROD (see additional comments below on this section) describes the general historical background of the SCOU Risk Assessment, but does not include the derivation of the RAOs referenced throughout the text. The Draft SCOU ROD must be revised to include a section that describes the general procedures for RAO development for water quality, and human and ecological health. To date, the best example of agreed-upon RAO development discussion is Appendix J of the *Final Closure and Post-Closure Maintenance Plan for Castle Vista Landfills*. Although the discussion in Appendix J can be used as a starting point, it pertains primarily to landfills and will need to be revised somewhat to be appropriate for the other SCOU sites. Jacobs Engineering also prepared a draft version of an RAO table for all the SCOU sites that was being used as a basis for discussion with the agencies. This draft RAO table included both	The WQSA test has been revised to clarify the development of WQSA and Human Health PRAOs To clarify text references, PRAOs are discussed with regard to site evaluations, only. A summary of Castle PRAOs is provided on Plates 4-10a, b, and c. Based on Air Force and Agency agreement, VLEACH1 PRAOs have been adopted as RAOs for SVOCs and Water Board Designated Level Methodology (DLM) PRAOs have been adopted as metals RAOs. RAOs for VOCs are subject of continuing Air Force and Agency discussions. Final decisions for VOC RAOs will be documented in the CB Part 2 ROD. Site specific COC/RAO tables have been included for each remedial action site presented in the ROD. These tables indicate that VOC RAOs have yet to be determined.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
2	2		narrative and numerical cleanup levels, and this RAO table should be finalized and incorporated into the SCOU ROD. Our additional comments of VOC cleanup standards below discuss the derivation of RAOs for VOCs in soil and soil gas. In general, we believe that agreement on cleanup levels for SVOCs and metals should not be difficult to agree on. We do not agree to the use of the PRAO levels (based on VLEACH1 evaluation) as final cleanup levels for VOCs, however. Also for each Site, the discussion of the "Site COCs and RAOs" must then be revised to use consistent terminology that is in accordance with the discussion of the RAO development section. For each Site, the "Site COCs and RAOs" sections must clearly indicate the COCs triggering the remediation (most sections already adequately do this), and what the RAOs are and where they are derived from. Air Force had the option of either conduction a technical and economic feasibility evaluation to determine if additional cleanup was feasible, or performing additional excavation until the VLEACH2 value was reached in the confirmation samples. This strategy allowed the Air Force to pursue their aggressive schedule in excavating and consolidating the various landfills, while leaving open the discussion of final RAOs for VOCs. The Air Force and the regulatory agencies have been discussing a VOC-contaminated soil cleanup standard (and related criteria for soil vapor extraction (SVE) system shutoff) for the last several months, especially in relation to Site DA-4. We believe that, in general, the VOC cleanup standard being discussed for the DA-4 has been agreed to by the agencies and the Air Force. The agencies and the Air Force are, however, continuing discussion on how to document compliance with the standard and how to implement the steps required to demonstrate the technical and economic feasibility of the remaining VOC removal. For the DA-4 site, the VOC cleanup standard has been met when:	VLEACH1 PRAOs have been adopted as RAOs for SVOCs. Water Board DLM PRAOs have been adopted as RAOs for metals contaminants. RAOs for VOCs will be determined at after date, and documented in the CB Part 2 ROD.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
			1. Remaining vadose zone VOC contaminants no longer cause concentrations in the leachate discharging to groundwater to exceed the aquifer cleanup levels, based on interpretation of soil-gas data using an appropriate vadose zone model, and 2. VOCs have been removed to the extent technically and economically feasible. We believe that the Air Force should operate a SVE system until it successfully demonstrates that Items 1 and 2 above have been met. After all reasonable efforts have been made, if the parties determine that achieving Item 1 is technically and economically infeasible, the parties will reevaluate the need to achieve Item 1, as long as Item 2 has been fully achieved to the satisfaction of the USEPA, DTSC and RWQCB. This is a performance based standard. The following factors must be determined and assessed to demonstrate compliance with the technical and economic feasibility portion of the standard: a. Whether the predicted concentration of the leachate discharging to groundwater from the vadose zone will exceed the groundwater cleanup standard, using the above mentioned additional data. b. Whether the mass removal rate has stabilized at a level approaching the asymptotic level following one or more temporary shutdown periods (no rebound in concentration), and after the SVE system has been appropriately optimized. c. The additional cost of continuing to operate the SVE system when mass concentrations have approached asymptotic levels. d. The predicted effectiveness and cost of further enhancements to the SVE system (e.g., additional vapor extraction wells, air injection) beyond system optimization, which should occur throughout operation of the remedial action, to remove additional VOCs. e. Whether the cost of groundwater remediation will be significantly more if the residual vadose zone contamination is not addressed.	

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
			f. The incremental cost over time of vadose zone remediation compared to the incremental cost over time for groundwater remediation on the basis of a common unit (e.g, cost per pound of TCE removed) provided that the underlying groundwater has not reached aquifer cleanup levels The discussion of the VOC-contaminated soil cleanup standard in the Draft SCOU ROD differs markedly in several areas from the VOC standard described above that has been the basis of the discussion at DA-4. We believe that the VOC-contaminated soil cleanup in the Draft SCOU ROD should be replaced with the standard being used for the DA-4 site, since this site has been intended from the outset to serve as a model site for cleanup and closure of VOC contaminated sites at Castle. We have also provided comments on the VOC-contaminated soil cleanup standard currently in the Draft SCOU ROD below, if the project team decides to use that proposed language as a starting point for discussion. As noted below, the VOC-contaminated soil cleanup standard presented above may be modified by the addition of “default” cleanup values that are agreed to be protective of water quality.	

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
3	3		**Applicable or Relevant and Appropriate Requirements:** The Applicable or Relevant and Appropriate Requirements (ARARs) tables in the Draft SCOU ROD are not specific for Castle Air Force Base. Instead, they are derived, often without necessary modification, from a similar Mather AFB ROD, and the Castle Landfill Action Memorandum, which was specific to certain landfills. The ARARs tables should be revised to be specific to the remedial actions and sites in the SCOU ROD. Additional specific comments on the ARARs are provided below. Also, we have reviewed the comments from USEPA's Office of Regional Counsel. As we have questions concerning several of the comments that USEPA has provided, we believe that the Remedial Project Managers and the attorneys for the Air Force and the respective agencies involved should meet to resolve these issues and further discuss the ARARs tables prior to the revision of this section of the next Draft SCOU ROD.	ARAR test and tables have been revised based on input from Air Force Legal Counsel, Eric Bee.
4	4		**Landfill Action Memorandum Language:** Significant effort has been expended by both the Air Force and the regulatory agencies in drafting mutually acceptable language concerning landfill excavation and consolidation during the preparation of both the Mather Air Force Base Landfill Operable Unit Site ROD (Mather ROD), which was used as an example for Castle, and the Castle Landfill Action Memorandum. Significant discussion is presented in the text of the Castle Landfill Action Memorandum (based on the Mather ROD sections 2.7.5.2, 2.8.2.2, and 2.8.2.1.2) that supports the ARARs tables. Since this discussion is critical to understanding the information in the ARARs tables, and the agreements that were reached, we believe that this language should also be incorporated into the text of the SCOU ROD. Specifically this information is presented in the following sections of the Castle Landfill Action Memorandum: 1) Section V.A.1 (second paragraph of LF-2, CVLF-A, and CVLF-B subsection; "No contaminated soil will..."); 2) Section V.A.1 (third paragraph of LF-4 subsection, "The discharge to LF-4...); and 3) Section V.A.5 (Entire text of Applicable or Relevant and Appropriate Requirements subsection). The Draft SCOU ROD must be revised to incorporate this information.	The referenced text has been included under Statutory Determinations for Zoned Capping (Section 5.2.6.2) of the ROD.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
5	5		**Landfill Acceptance Criteria**. Acceptance criteria for each of the landfills that are to accept wastes in their consolidation and/or capping must be included in the SCOU ROD. This includes landfills such as LF-4, which is to accept wastes from other landfills that are being consolidated into LF-4 and clean-closed. Acceptance criteria must also be included for those landfills that are going to be consolidated within themselves and then capped. Since the discharge of 'hazardous waste' or 'designated waste' at these sites is prohibited, it is possible that wastes excavated at one portion of a landfill may not be able to be redisposed of in another portion of the same landfill if the waste is a designated or hazardous waste, primarily because it was not appropriate to dispose of the waste in the landfill in the first place. Development of the acceptance criteria should include the following: Determination of numerical designated levels for each constituent known to be present in the waste that is going to be accepted at the landfill. Since the determination of designated levels is site-specific, designated levels should be determined for each landfill that is to accept waste. A narrative process for rapidly determining designated levels for previously undetected and/or unknown constituents of concern. This process should include how suspect excavated waste will be determined to be designated or non-designated waste. The SCOU ROD must be revised to incorporate acceptance criteria for the landfill sites. Again, the best example of acceptance criteria discussion is in Appendix J of the *Final Closure and Post-Closure Maintenance Plan for Castle Vista Landfills*, and, to a lesser degree, the Castle Landfill Action Memorandum. Both of these contain acceptance criteria specific to Landfill 4. The Landfill 4 acceptance criteria discussion should be included in the SCOU ROD and expanded to include other consolidation landfills.	A general explanation of landfill acceptance criteria has been included as a provision for all landfill capping alternatives that were considered during the RI/FS. Site specific narrative acceptance criteria will be included with the Closure/Post Closure Maintenance Plan for LF 3, LF4, and LF5.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
6	6		**Contingency Language for Technical and Economic Evaluation Sites**. The contingency language in the ROD is very vague. If the remedial decision is to be made later the ROD should clearly specify the contingency and the remedy to be used in the event of that contingency. Please reference USEPA's comments for a detailed discussion of this issue.	Contingency sites have been incorporated into appropriate remedial action groups based on the findings presented in the Draft Data Gap Investigation Report (January, 1998).
7	7		**Title 27 Citations**. The combined State Water Resources Control Board/Integrated Waste Management Board regulations for the treatment, storage, processing or disposal of solid waste (Title 27) became effective on 18 July 1997. Title 27 combines portions of the State Water Resources Control Board's Title 23, Chapter 15 regulations with the Integrated Waste Management Board's Title 14 regulations in an effort to reduce redundancy in the State's regulation of solid waste. As such, the new Title 27 regulations should be referenced as State Applicable or Relevant and Appropriate Requirements (ARARs) for actions involving solid waste and Class III landfills, such as the landfill excavation and consolidation activities at Castle Air Force Base. Note, however, that some regulations related to cleanups remained in Title 23, Chapter 15. The State is currently preparing revised RWQCB ARAR tables that include the new Title 27 references. We will furnish copies of these new ARAR tables to the Air Force when they are finished in order to aid the Air Force in incorporating the new Title 27 requirements in future documents. Copies of the new Title 27 regulations, as well as the revised Title 23, Chapter 15 regulations, may be obtained through Barclays Law Publishers, 400 Oyster Point Boulevard, P.O. Box 3066, South San Francisco, CA, 94080 (415-244-6611). The Title 27 citations should be used for the Source Control Operable Unit Record of Decision. As such, the ROD should be reviewed and the Title 23 citations either retained or changed to the new Title 27 citations as appropriate (for example, Section 3.2.6.2 and 3.3.6.2 among others).	Reference to Title 14 and Title 23 ARARs have been corrected to appropriate Title 27 references.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
8	8		**Removal Action Sites**. The Draft SCOU ROD includes a "removal action" category of sites that was added without prior input from the regulatory agencies. Since the final actions at these removal action sites will be determined in accordance with the SCOU ROD, these sites should be integrated into the appropriate category in the Draft SCOU ROD. For example, the information in the landfill removal action sites section (Section 3.6.2) should be integrated into the section on landfill sites (Section 3.2) with a notation that the cleanup at Landfills LF-2, LF-4, CVLF-A, and CVLF-B were conducted as removal actions but the removal actions comply with the requirements for the final remedial actions for landfills. Integration of removal action sites into the appropriate area of the text will reduce redundancy in the SCOU ROD.	As suggested, the Removal Action sites have been incorporated into the five main remedial action groups.
9	9		**Regulated Waste**. The term "regulated waste" is used throughout the text with no definition. Since in many instances both "hazardous wastes" and "regulated waste" are used separately in the same discussion, it appears that "regulated waste" is used to mean "designated waste", which has a clear regulatory definition. The term "regulated waste" should either be defined in the text or replaced with the term "designated waste" as appropriate.	The term "regulated waste" has been removed from the ROD and replaced with "designated" waste.
10	10		**Typographical Errors**. There are numerous typographical errors throughout the text. The draft SCOU ROD should be reviewed by a technical editor and revised prior to issuance of the next draft.	Noted
11	1	**SPECIFIC COMMENTS**	Section 1.0, page 1-2. Removal action sites don't warrant their own group (Section 3.6) and should be integrated into the other appropriate site groups.	As suggested, the Removal Action sites have been incorporated into appropriate remedial action groups found in sections 4 of the ROD.
12	2		Section 2.4.1.1, page 2-8. The text should be revised to briefly explain the methodology used to evaluate the threat to water quality from semivolatile organic compounds (SVOCs) and metals in the soil in the same manner that the text explains the VLEACH modeling of VOCs.	Section 2.4.1.1 (now Sections 4.3.1 and 4.3.2) has been revised to briefly describe methodologies used to evaluate threats to water quality and human health from SVOCs and metals.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
13	3		Section 2.4.1.1, page 2-8. The text should be revised to indicate how the contaminants of potential concern (COPCs) for the WQSA were selected. Was the same process used to select COPCs for the WQSA that was used for the human health risk assessment, or were different criteria used? This should be clearly explained in the text.	Section 2.4.1.1 (now Section 4.3.1) has been revised to describe how COPCs were developed for the WQSA.
14	4		Section 2.4.1.1, page 2-9. VLEACH2 results are integral to the WQSA for determining criteria for No Further Action sites and for determining which sites required further technical and economic feasibility evaluation. The results of the VLEACH2 modeling must be added to the SCOU ROD in the same manner that the results of the VLEACH1 modeling are summarized.	The results of VLEACH2 have been included in Tables 2-7a (PRAOs for VOCs.)
15	5		Section 2.4.2, page 2-14. In footnote 1, indicate where (name of report) and when technical and economic feasibility evaluations have been performed for Building 1532, Building 1709, and Hangar F-4.	The footnote, now located in Section 4.3.4, has been modified to state, "Technical and Economic Evaluations have already been completed for the Building 1532, Building 1709, and Hangar F4 sites. The findings of these evaluations are presented in the CB part 2 RI/FS".
16	6		Section 2.4.2.2, page 2-15. This section lists some but not all of the components of a technical and economic evaluation. This section should be expanded to more fully discuss the technical and economic evaluation process.	Based on comments received during the Air Force/Agency telecon on the revised draft Decision Summary text, the description of T&E has been the simplified to include only a general description of the T&E process and the key parameters and assumptions.
17	7		Plate 2-5. Revise this plate to delete the "Removal Action Sites" category and integrate all Removal Action Sites into the appropriate other site categories.	A suggested, the Removal Action sites have been incorporated into appropriate remedial action groups found in sections 4 of the ROD.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
18	8		Plate 2-6. Revise this plate to indicate the meaning of the arrows along the bottom of the flowchart. These arrows both enter and exit the flowchart with no explanation.	As suggested, additional arrows have been added to Plate 2-6 (now 4-6) to show the relationship between the SCOU RI/WQSA and human health risk screening steps to the SCOU FS and CB Part 2.
19	9		Plate 2-8a. Footnote this plate to indicate that the values in this table are derived from the VLEACH1 evaluation.	Plate 2-8a (now Plate 4-10a) has been updated to show both VLEACH1 and VLEACH2 values.
20	10		Section 3.1.2.1, page 3-9. The “Site COCs and RAOs” section must be revised as we do not agree that numerical WQSA RAOs based on the screening level WQSA PRAOs are acceptable (please see detailed discussion above for more information). The text should be revised to indicate that RAOs for VOCs will be in accordance with the criteria in the “VOC contaminated soil cleanup section” of the SCOU ROD (which itself requires further discussion and revision to be acceptable.).	VLEACH1 WQSA PRAOs have been used as the source for SVOC RAOs Water Board Designated Level Methodology was used to derive WQSA screening values for metals. This data is included with Plates 4-10b and c. VOC RAOs are currently subject to further Air Force/Agency discussion and will be documented in the CB Part 2 ROD.
21	11		Section 3.1.2.2, page 3-9. Please reference Specific Comment 10 above.	See response to comment 10.
22	12		Section 3.1.2.3, page 3-10. Please reference Specific Comment 10 above.	See response to comment 10.
23	13		Section 3.1.2.4, page 3-11. Please reference Specific Comment 10 above.	See response to comment 10.
24	14		Section 3.1.2.5, page 3-11. Please reference Specific Comment 10 above.	See response to comment 10.
25	15		Section 3.1.2.6, page 3-11. Please reference Specific Comment 10 above.	See response to comment 10.
26	16		Section 3.1.2.7, page 3-12. Please reference Specific Comment 10 above.	See response to comment 10.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
27	17		Section 3.1.2.9, page 3-12. The "Site COCs and RAOs" section should be revised as it is unclear from the discussions in the text how the RAOs will be determined by the technical and economic evaluation. Alternately, the sections of the text describing the technical and economic evaluation (Section 2.4.2.2, Section 3.1.5.1.2, and Plate 3-1-6) should be revised to indicate how final RAOs will be determined for these sites. In any event, the RAOs for VOCs must still be in accordance with the criteria in the "VOC contaminated soil cleanup section" of the SCOU ROD.	The COC/RAO section of the site summary text has been revised to include narrative and numeric values from the Draft RAO Summary prepared by Jacobs. This information includes VLEACH1 based RAOs for SVOCs, Water Board DLM RAOs for metals. VOC RAOs are currently subject to further Air Force/Agency discussion and will be documented in the CB Part 2 ROD.
28	18		Section 3.1.2.10, page 3-13. Please reference Specific Comment 17 above.	See response to comment 17.
29	19		Section 3.1.2.11, page 3-13. Please reference Specific Comment 17 above.	See response to comment 17.
30	20		Section 3.1.2.12, page 3-13. Please reference Specific Comment 17 above.	See response to comment 17.
31	21		Section 3.1.2.13, page 3-14. Please reference Specific Comment 17 above.	See response to comment 17.
32	22		Section 3.1.2.14, page 3-14. Please reference Specific Comment 17 above.	See response to comment 17.
33	23		Section 3.1.5.1.1, page 3-18. This section should be revised to briefly indicate that the WQSA and risk assessments to be performed on the data gap sites will be consistent with those performed during the RI/FS process. Also, we do not agree with the "remediation trigger" language outlined on Plate 3-1-6, as it is not consistent with the process previously used in the RI/FS. Plate 3-1-6 must be revised to indicate the correct remediation trigger (remediation required if site concentrations are greater than the WQSA PRAOs listed on Plates 3-1-7a, b, and c; or a technical and economic feasibility evaluation to determine if remediation is warranted if site concentrations are between the WQSA PRAOs and the VLEACH2 values).	Reference to "contingency sites" has been removed from the ROD. The ROD now includes site recommendations that were presented in the Draft Data Gap Technical report, issued in January of 1998.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
33	24		Section 3.1.5.2, page 3-18. Whether the SVE is feasible should be evaluated sooner than 5 years, but should be part of the evaluation on economic and technical feasibility described in 3.1.5.2.1.	The Castle SVE Shut-off Criteria have been removed from the SCOU ROD. Details of the Shut-off Criteria are subject to Formal Dispute and will be finalized during RD/RA.
34	25		Section 3.1.5.2.1, page 3-18. This standard, especially b, is vague: It is not the "VOC contaminated soils cleanup" that causes loss of uses; it is the VOCs in soil. Please see our general comment on the VOC cleanup standard for a more detailed commentary. Also, we agree with the Air Force's desire to incorporate a "default" numerical cleanup level in the standard, as suggested by this section. This would allow the Air Force the option of simply running the system until the water quality protective cleanup level (based on the VLEACH2 evaluation) has been reached and physically measured, instead of resorting to complicated computer modeling.	The Castle SVE Shut-off Criteria have been removed from the SCOU ROD. Details of the Shut-off Criteria are subject to Formal Dispute and will be finalized during RD/RA.

RESPONSES TO WATER BOARD COMMENTS ON NOVEMBER 15, 1997 DRAFT SCOU ROD

CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
35	26		Plate 3-1-6. Under Technical and Economic Evaluation sites under "Goal of Technical and Economic Evaluation": Criteria 2 should say "For contingency sites . . ., determine if leachate discharge contains concentrations of constituents that exceed water quality objectives. Criteria 2 should also include a determination of whether leachate discharges to groundwater at concentrations that exceed water quality objectives. Criteria 3 should require that site specific standards prevent leachate from discharging to ground water in concentrations in excess of water quality objectives. Under "Remediation Trigger"; the remediation trigger should be for all sites that leachate is discharging to ground water at levels above the water quality objectives. 2 and 3 are part of the factors but are not all of the factors that may need consideration. Also, we do not agree with the remediation triggers for the "Further Action Data Gap Sites" section in that they don't follow the same logic and criteria used in the SCOU RI/FS to determine if remediation is warranted at a site. The text should be revised to indicate the correct remediation triggers.	Description of Technical and Economic evaluation goals is now discussed in Section 4.3.1.5 of the ROD. Because T&E evaluations were completed as part of the Data Gap Investigation conducted in late 1997, the ROD has been revised to reflect this new data. Based on information provided in the Draft Data Gap Investigation report, reference Technical and Economic evaluation "contingency sites" has been removed from the ROD.
36	27		Plates 3-1-7a, b, and c. We have not agreed to the use of the WQSA PRAOs for VOCs as final RAOs. These three tables should be deleted from this section of the text and revised tables should be placed in the section describing the development of PRAOs and RAOs for Castle AFB (see the above general comments on Cleanup limits and VOC contaminated soil cleanup standards for more discussion of this issue.	As suggested, Plates 3-1-7a, b, and c have been removed from the VOC group text. The COC/RAO summaries for the VOC sites have been updated with information from the Draft RAO Summary prepared by Jacobs Engineering. However, because the SVE Shutoff Criteria is subject of on-going discussion between the Air Force and Regulatory Agencies, RAOs are not listed for the VOC COCs.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
37	28		Section 3.2, Page 3-22. Landfill sites LF-2, CVLF-A, CVLF-B, and LF-4 should be integrated into this section instead of being segregated into the "Removal Action" category of sites.	All Removal Action sites (including Landfills) have been integrated into appropriate remedial action groups as suggested.
38	29		Section 3.2.2.1, page 3-24. The "Water Quality Site Assessment" subsection is unclear, and should be rewritten for clarity. As it is currently written, it reads as if the allowable soil gas limits for lead and diesel are exceeded, which is not correct.	The WQSA summary for LF1 was revised to state, "The maximum allowable soil concentrations for TVPH, TEPH, and lead exceeded in the vadose zone screening analysis."
39	30		Section 3.2.2.1, page 3-24. The "Site COCs and RAOs" subsection should be revised to indicate that SWRCB requirements for closing landfills will also be met.	For all of the landfill sites, the text COC/RAO text was revised to indicate "The ROD provides alternatives for addressing indentified COCs and meeting the Integrated Waste Management Board and SWRCB closure requirements for landfills."
40	31		Section 3.2.2.2, page 3-25. Please reference Specific Comment 30 above.	See response to item 30.
41	32		Section 3.2.2.3, page 3-26. Please reference Specific Comment 30 above.	See response to item 30.
43	34		Section 3.2.3.2, page 3-28. The text should be revised to clarify the meaning of "regulated waste". Non-designated waste can typically be disposed of in Class III landfills.	The term "regulated" waste has been replace by "designated" waste. The text has been modified to indicate that non-hazardous, non-designated, and municipal waste can be disposed of in the on-base consolidation landfill. All hazardous or designated waste must be taken off-site for disposal.
44	35		Section 3.2.3.3, page 3-28. The text should again be revised to clarify the meaning of the term "regulated waste". The text must be revised to indicate that only non-designated, non-hazardous waste can be consolidated into LF-4. Hazardous or designated waste must be disposed of offsite at an appropriate disposal facility.	Please see response to comment 34.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
45	36		Section 3.2.3.4, page 3-28. The text should be revised to clarify the meaning of "A sixty (40)-mil flexible membrane liner (FML).	The typographical error has been corrected. The text now states. "A forty (40)-mil flexible membrane liner (FML)".
46	37		Section 3.2.3.6, page 3-29. The meaning of the sentence "The zoned capping alternative is a composite of several landfill Zoned Capping technologies" is unclear and the text should be revised. Also, the first paragraph should be revised to indicate that any designated waste, as well as any hazardous waste, found during the consolidation will be segregated and taken off-site for disposal at an appropriate disposal facility.	The introduction to the Zoned Capping strategy has been revised to state, "The zoned capping alternative combines consolidation and capping strategies to optimize cost and technical effectiveness of this landfill remedy. Initially, the landfill is divided into zones based on the presence of trenches, disposal pits, and COC-affected soil at depth in the vadose zone between trenches. Under this alternative, non-hazardous, non-designated, and municipal waste materials from trenches and surface hot spots will be consolidated into an area occupying a smaller portion within the landfill footprint. Any designated or hazardous waste found during consolidation will be segregated and taken off-site for disposal at either a Class I or Class II landfill.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
47	38		Section 3.2.3.8, page 3-32. The text should be revised to indicate that long-term monitoring will be required for at least 30 years or until the Air Force can demonstrate that there is no threat to water quality from the waste remaining in place.	Change made as suggested. See Section 5.2.3.9.
48	39		Section 3.2.3.8, page 3-32. A process is needed to assure that the state regulatory agencies concur with deed restrictions and a process for documenting and enforcing and lifting deed restrictions. The Regional Board, in consultation with the County, must be the agency to decide if a deed restriction on using groundwater should be lifted. The text should be revised to include a description of these processes.	As part of the description of the Institutional Control "process", removal of restrictions would require State and Federal regulatory concurrence. Merced County, which is responsible for enforcement of the restrictions would be consulted regarding restriction removal. Please see Section 4.4 of the ROD.
49	40		Section 3.2.5.1, page 3-33. The reference to the "Federal Toxic Substances Control Act" does not make sense. On page 3-34, grantee must demonstrate that ground water meets all water quality objectives for protection of all designated beneficial uses, not just drinking water. The Regional Water Board, specifically, must agree before deed restriction is lifted.	The Sample Deed Restriction language has been removed from the ROD.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
50	41		Section 3.2.6.2, page 3-35. The "Zoned Capping" subsection should be revised to: 1) include new Title 27 citations; 2) indicate that waste that is also classified as designated waste must be disposed of offsite at an appropriate disposal facility; 3) include the appropriate text derived from the Mather ROD and Castle Landfill Action Memo discussed above in the Landfill Action Memorandum Language general comment.	Under Statutory Determinations for the Landfill remedial action group. Attainment of ARARs (Section 5.2.6.2) the Zoned Cap remedy was revised to include items 1 and 2 from comment 41. Portions of item 3, that included Section V.A.-Second Paragraph (LF2, CVLFA/B) and Section V.A.1-Third Paragraph (LF4) of the Castle Landfill Action Memos was added to the description of ARAR Attainment for the Excavation and On-site Disposal remedy. Section V.A.5 in it's entirety has been incorporated into the ARAR discussion presented in Section 6.0 of the SCOU ROD.
51	42		Section 3.3.1.9, page 3-41. The discussion of ETC8, and how it relates to ETC2 and ETC10 is unclear and should be revised. Specifically, the discussion of the decision to not sample the area for lead is confusing, since the last sentence of the paragraph indicates that the area will be sampled for lead as well as several other potential contaminants.	ETC2 and ETC8 were evaluated as part of the Data Gap investigation undertaken in late 1997. Based on the results of this investigation, both ETC2 and ETC8 have been have been recommended for excavation of "hot spots" and on-site disposal. The text has been revised to reflect this remedial decision.
52	43		Section 3.3.2.1, page 3-42. In the "Site COCs and RAOs" section, the WQSA RAO of 855 mg/kg discussion is incomplete in that the 855 mg/kg does not refer to a specific contaminant. The text should be revised to fix this discrepancy.	The COC and RAO summary for the DA 3 site has been revised to indicate that 855 mg/kg refers to the lead WQSA PRAO. See Section 5.3.2.2

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
53	44		Section 3.3.6.2, page 3-47. The "Compliance with ARARs" subsection should be revised to include the new Title 27 citations. Also, when a landfill is consolidated, the landfill at which waste is being disposed must comply with all requirements of Title 27. Clean closure areas must comply with Resolution 92-49.	As suggested, the Compliance with ARARs text (Section 5.3.6.2) has been revised to reflect the new Title 27 ARAR citation. Also, the text has been revised to state, "Excavation of contamination and clean closure of the Shallow Contamination sites is required to meet requirements of State Water Resource Control Board Resolution 92-49."
54	45		Section 3.4.1.1, page 3-50. The sentence "The unlined areas, including the canals located on the Castle Airport side of the weir, should be considered separately for WQSA risks" is confusing since it is offered without any additional discussion. The text should be revised to expand and explain the concept being discussed: water quality risks from unlined drainage canals.	The comment is in reference to the Storm Drain System (SDS). The SDS text has been updated to provide a clearer explanation of WQSA risk associated with the site. Under Water Quality Impacts, the text has been revised to state "Molybdenum lead, and cadmium exceeded TBVs and WQSA screening levels and are considered anthropogenic."
55	46		Section 3.4.2.1, page 3-52. The "Water Quality Site Assessment" subsection needs to be added to the text.	As suggested, a Water Quality Impacts section has been added to the SDS summary.
56	47		Section 3.4.2.7, page 3-56. The "Water Quality Site Assessment" and "Risk Assessment" subsections needs to be added to the text.	The comment is in reference to the SWMU 4.31. SWMU 4.31 has moved to the No Further Action group. The characterization information for SWMU 4.31 is now found in Section 5.6.
57	48		Section 3.4.3.2, page 3-58. The text should be revised to indicate that periodic sampling and analysis of effluent is required to assure that contaminants above discharge limits (which are not necessarily the same as MCLs) are not being discharged.	Text covering provisions of NPDES was in reference to the SDS. Section 5.4.2.2.3 has been added to the ROD to further define the role and purpose of the NPDES process.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
58	49		Section 3.4.5, page 3-58, and Plate 3-4-2. Compliance with the NPDES requirements is a mandatory part of the remedy for the storm drain system. However, as noted in the text, institutional controls may also be required, as the NPDES is primarily designed to monitor and reduce discharge of contaminants in stormwater from the base, and does not necessarily address reduction of relatively non-mobile contaminants that may be present in the storm drain system itself. As a result, certain areas of the storm drain system may still contain contaminants at levels potentially deleterious to either human or ecological health, and may require institutional controls beyond the controls that the NPDES permit is designed to provide.	The comment is in reference to the Storm Drain System (SDS). The selected remedy for the SDS are Institutional and compliance with NPDES provisions.
59	50		Plate 3-4-1. Discussion of the storm drain system needs to be added to this plate.	As suggested, the SDS has been added to the Discussion of Alternatives for Miscellaneous sites (now Plate 5-4-1).
60	51		Section 3.5.6.2, page 3-63. The “Excavation/On-Site Disposal” subsection should be revised to include the new Title 27 citations.	Title 27 ARARs are cited as suggested. See Shallow Contamination Sites Statutory Determination of ARAR attainment (Section 5.3.6.2).
61	52		Section 3.6, page 3-66. See our general comment above about integrating removal action sites into the appropriate section of the text. Integration of these sites will reduce the redundant text in this section of the Draft SCOU ROD.	A suggested, the Removal Action sites have been incorporated into appropriate remedial action groups found in sections 4 of the ROD.
62	53		Section 3.6.1.2.1, page 3-68. Please reference Specific Comment 10 above.	As suggested, discussion of all Removal Action sites has been incorporated into appropriate remedial action groups.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
63	54		Section 3.6.1.2.2, page 3-68. Please reference Specific Comment 10 above.	As suggested, discussion of all Removal Action sites has been incorporated into appropriate remedial action groups.
64	55		Section 4.0, page 4-1. Additional detail needs to be added to the No Further Action section for each of the sites to indicate specifically the rationale for determining that no further action is warranted. For example, for each site it should be clearly indicated if the NFA determination is based on either: 1) screening level information (i.e., "passing" the VLEACH2 screening criteria); or 2) technical and economic feasibility evaluation (for sites "passing" the VLEACH1 screening criteria but "failing" the VLEACH2 screening criteria); or 3) evaluation in the FS.	The NFA text (Section 5.6) has been modified to include separate discussions of WQSA and Human Health Risk evaluation. The basis for the NFA determination is included with each evaluation.
65	56		Also, throughout this section the various tables use the "WQSA" heading without explanation. Listed under this column are generally PRAOs (VLEACH1 values), but we have not accepted the use of PRAOs alone for VOCs to determine if a site should or should not be remediated. Rather, this NFA determination is based on the comparison of site specific data to both PRAOs and VLEACH2 screening criteria as explained elsewhere in the text. The tables should be revised, and the text expanded, to reflect the actual procedure used to determine NFA status for the various sites.	For comparison purposes, VLEACH2 Threshold Levels have been included as part of the NFA justification for sites with low levels of VOC contamination. VLEACH1 values have been used for WQSA NFA justification for SVOCs. Water Board DLM derived values have been used as justification for WQSA NFA for inorganic contaminants. The introduction to the NFA Section has been modified to reflect the basis and justification for the NFAs.

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CONCERNS AND COMMENTS FROM CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD				
66	57		Section 6.1.2, page 6-3. The Water Quality Control Plan also contains chemical specific ARARs and should be added. In third paragraph, it says that secondary MCLs are TBCs and are not ARARs. That is incorrect. The narrative water quality standards in the Water Quality Control Plan are ARARs; the numeric limits that have not been promulgated that would comply with the narrative water quality standards are TBCs. However, TBCs become performance goals and are not just guidance.	Question to be addressed during the ROD, Version 3 comment period.
67	58		Section 6.1.2, page 6-4, last paragraph on page. ARARs would be different for consolidating into any existing landfill vs. consolidating into a new landfill. This section should clarify the alternative. Title 27 CCR applies to the consolidation, Resolution 92-49 applies to the clean closure areas.	Question to be addressed during the ROD, Version 3 comment period.
68	59		Section 6.1.5, page 6-6. The Porter-Cologne Act provides the statutory authority of adoption of the regulations that regulate land disposal. The regulations, not the act, addresses siting, design, etc. Air force needs to clarify whether waste is being consolidated into a new landfill or existing one.	Question to be addressed during the ROD, Version 3 comment period.
69	60		Table 6-4a. Chapter 15, Section 2550.4 is not a TBC, but a promulgated applicable requirement.	Question to be addressed during the ROD, Version 3 comment period.

CASTLE RECORD OF DECISION
SOURCE CONTROL OPERABLE UNIT, Version 3
June 1998
Bechtel Comments

(Bechtel Comments Submitted on Behalf of USEPA)

GENERAL OBSERVATION

1. Version 3 of the SCOU ROD appears as though it was prepared in a hurry. Document quality, completeness, and responsiveness to agency concerns, all appear to have been lower priorities. This is reflected in the comments below.

FRONT SECTION

2. There is no table of contents, unlike the previous drafts.

   A Table of Contents and page numbers have been included with the current draft of SCOU PART 1 ROD.

DECLARATION

3. Site grouping inconsistencies. Apparent inconsistencies continue to exist in the number or grouping of SCOU sites. The first paragraph of the Declaration (new text) refers to 180 remedial action sites and 51 outstanding sites. However, these groupings are not reflected in Plate 4-8 (Decision Summary), which describes the disposition of SCOU sites. Plate 4-8 should be revised to clearly show how the 180 site and 51 site groupings have been derived, or the text in the Declaration should be revised. (Additional inconsistencies in site groupings exist between Plate 4-5 and Plate 4-8, described below.)

   The ROD1 Declaration has been revised to reflect the recent changes in the SCOU decision document schedule. The Declaration introduction now states, "The SCOU is comprised of 231 sites. The SCOU Part 1 ROD addresses 167 of the 231 sites. Final decisions for the remaining 64 SCOU sites will be documented in either the SCOU Part 2 ROD or the Comprehensive Basewide Part 2 ROD that are scheduled for completion in 2000. Sites addressed in the SCOU Part 1 ROD include 16 landfill sites, 121 sites requiring No Further Action (NFA), and 30 sites contaminated by petroleum hydrocarbons only. The 30 petroleum hydrocarbon only sites are included in the Part 1 ROD for tracking purposes only. Because the petroleum hydrocarbon only sites are not subject to Comprehensive Environmental Response Compensation and Liability Act (CERCLA) requirements, final remedial decisions for these sites will be documented in a future Resource Conservation and Recovery Act (RCRA) Corrective Action Plans.

4. Remedies. The reorganization of the Declaration is not responsive to one of EPA's key concerns on this section. As explained in EPA Comment 16B (January 23, 1998), third bullet, per EPA guidance, it is important that the Declaration provide a listing of the selected remedies by site. Instead, this section presents a listing of sites by category, not by remedy. As a result, please delete the site listing on the second and third pages of the Declaration (there are no section or page numbers) and move Plate 4-5 (which does list remedies for each site) from the Decision Summary to the Declaration, per EPA's original comment.

The ROD1 Declaration has been revised to include selected remedies for each listed site.

5. Interim VOC sites. On the third page of the Declaration, under "Description of Remedies", the text states that "VOC sites are included in the SCOU ROD on an interim basis." This wording seems incorrect. Although the cleanup levels (PRAOs) may be considered interim, the sites themselves are not "interim." Please correct wording.

Based on recent RPM decision, the VOC sites have been removed from SCOU PART 1 ROD. Comments regarding VOC sites will be addressed in SCOU PART 2 ROD.

6. Pagination. Declaration section should have page numbers and probably section numbers.

Page Numbers have been added to the Declaration.

DECISION SUMMARY

6. Formatting. AF did not follow EPA's comment to restructure the Decision Summary (Comment l6C) so that it includes the site summary information (despite the AF response indicating otherwise). All site summaries and ARARs discussion are still separate from the Decision Summary. Colored or plastic tabs could be used to distinguish the Declaration, Decision Summary, and Responsiveness Summary from other sections, so that the "Site Summary Guide", and the individual site discussions become a subset of the Decision Summary. The Table of Contents and Executive Summary will also need to be changed to reflect this.

The formatting of the Decision Summary has been revised. Landfills and NFA sites are included as subsections of the Decision Summary.

7. Remedial Action Objectives (RAOs). Plates 4-10b though 4-10c have been modified to indicate Preliminary Remedial Action Objectives (PRAOs), instead of Remedial Action Objectives (in the November 1997 Draft). Although this terminology may be appropriate for VOC contaminants (which is dependent upon SVE shutoff criteria that has yet to be finalized) why are PRAOs applied to semi-volatile organics (Plate 4-10b) and metals (Plate 4-10c) in the ROD? This is inconsistent with the site summaries which present

RAOs for non-VOC contaminants. Section 4.3.1.6 also inappropriately describes PRAOs. Also, Section 4.3.2.6 (addressing HHRA RAOs) only represents the *equations* for developing the RAOs, not the RAOs themselves. Per EPA Major Concern 4, the complete RAO table should be included in the SCOU ROD, in addition to the RAO summaries presented in the site discussions. This table is still missing. In addition, the AF response to Major Concern 4 was missing.

The SVOC and Inorganic summary tables (Plates 4-10b and 4-10c) have been revised to indicate the values presented are RAOs. Because the Air Force and agencies have yet to reach agreement of VOC RAOs, the VOC Table (4-10a) remains Preliminary RAOs.

BHHRA RAOs have been included in the two right hand columns of the Plates 4-10a, 4-10b, and 4-10c.

Plates 4-10b and 4-10c present a complete a summary of Castle RAOs for SVOCs and Inorganics. Plate 4-10a presents a complete summary of VOC PRAOs.

9. Discrepancy between Alternatives in ROD and FS. EPA Comments 27, 37, and 54 identify discrepancies between alternatives identified in the ROD and FS, and indicate that the text must explain why alternatives evaluated in the FS were not evaluated in the ROD (per Section 6.3.1.1 of EPA guidance, Documentation of Significant Changes). However, in most cases, the explanation of such differences are not presented in the ROD text, but rather, in the response to agency comments section. This is unacceptable. This information should also be included in the ROD text, otherwise how would the reader know where to find it? Additionally, the explanations in AF responses invariably refer to "site categories" developed in the FS. These site categories are remnants of the "representative site" approach used in the FS, which EPA has indicated is inappropriate for the SCOU ROD. Further, the discussion of "site categories" is very difficult to understand and is convoluted in nature. The reader must have intimate knowledge of the representative site approach and individual categories used in the FS before such explanations can begin to make sense. Obviously the reader of the SCOU ROD is not expected to have such knowledge. Thus, not only must the AF move such explanations from the response to comments section to the ROD text, the AF must also be sure such explanations are understandable to a reader who is not familiar with the SCOU FS. This will require significant thought and rewording, since explanations should also avoid (or minimize) discussion of the representative site approach and the site categories used solely in the SCOU FS. Specific site grouping where this applies are addressed below:

- For Comment 27, EPA noted inconsistencies with alternatives identified in the FS for Building 871, ETC-10, and ETC-11. The AF response indicated that the text for these sites has been revised to match the FS. However, this was not done. The text still does not address the other alternatives evaluated in the FS (see Plate 5-3-9). Also, the AF response to Comment 27 is also unclear and refers to site categories developed in the FS.

B871 - The following "Explanation of Significant Difference" text has been added to the site summary for B871 to explain discrepancies between preferred alternatives presented in the SCOU RI/FS and SCOU Proposed Plan and the selected remedy presented in ROD1. "The SCOU RI/FS listed Land Treatment Unit (LTU) as the preferred alternative for B871. Based on the Air Force decision to cap FTA1, and the need for foundation soil at FTA1, it was determined that Excavation and On-site Disposal was a faster and more economical remediation method for B871. Excavation and On-site Disposal was listed as the preferred alternative in the SCOU Proposed Plan. This work was undertaken as a Removal Action in 1996. Confirmation samples collected after excavation work was completed confirmed No Further Actions were needed to protect human health or water quality at B871."

ETC11 - The following text has been included as the Risk Management Decision rationale for ETC11. "ETC11 was included with the Landfill Group (Category 3) during the RI/FS process. Alternative considered for Category 3 sites included No Action, Excavation and On-site Disposal, Class III Capping, ET Capping, and Zoned Capping. A summary of how thesee alternatives could be applied at ETC11 is provided on Plate 5-2-2. A summary of alternative comparison for the ETC11 site is provided on Plate 5-2-3. Based on evaluation of the RI data, it was determined that elevated metal levels in the site soil samples were a result of a natural variation in site lithology, and not a result of a contaminant release. Base on Risk Management Decision, No Further Actions are required at the site.

ETC10 - has been removed from SCOU PART 1 ROD. The ETC10 comment will be addressed in SCOU PART 2 ROD.

- For Comment 37, the AF explanation pertaining to DA-3, in not included in the ROD text. The AF response is not clear since it refers to Category 7, developed for the FS.

DA3 is a Shallow Contamination site that has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

- For comment 54 (pertaining to VOC site alternatives not evaluated in the ROD), the AF explanation is not included in the ROD text. The AF response is not clear since it refers to categories developed for the FS.

All VOC sites have been removed from SCOU PART 1 ROD. This comment will be addressed in SCOU PART 2 ROD.

10. Alternate Remedies for Institutional Control (IC) Sites. The only alternatives evaluated for the IC sites in Section 5.4 are IC and No Action. It is unclear how we know that IC is a better remedy than any active remedy, since no active remedies were evaluated. Specifically, the tradeoffs between the lower cost of IC (although this is questionable, since costs were not provided), and the increased environmental protection of an active remedy were never evaluated. How can the signers of this ROD feel confident that IC is

the best remedy for these sites if: 1) active remedies were never evaluated; and 2) costs for IC are not presented?

The Institutional Controls group of sites has been removed from SCOU PART 1 ROD. This comment will be addressed as part of SCOU PART 2 ROD.

11. Costs for Institutional Controls (IC) Sites. These costs are not provided. EPA Comment No. 40B expressed concern that IC costs were not sufficiently detailed. Instead of providing more detail, the Air Force has removed all costs for sites where IC is the selected remedy. Also, EPA Comments 32 and 40A requested that the cost for the no action alternative be presented. However, costs for these sites are not presented for the no action alternative.

    The Institutional Controls group of sites has been removed from SCOU PART 1 ROD. This comment will be addressed as part of SCOU PART 2 ROD.

12. Costs for Landfill Sites - No Action Alternatives. The fist two columns of Plate 5-2-4 appear to have information that is out of place. For example, for the "Total Capital Cost for Additional Wells" row, what is meant by "23 /well"?

    $ X 1,000 has added as an explanation header for this column. The value represents anticipated costs per well.

13. Costs for Shallow Soil Contamination Sites. The response to EPA Comment 37 is incomplete. Costs shown in Plate 5-3-3 do not distinguish between the "excavation and on-site disposal alternative" versus the "excavation and off-site disposal alternative."

    The Shallow Contamination group of sites has been removed from SCOU PART 1 ROD. This comment will be addressed as part of SCOU PART 2 ROD.

14. Costs for Shallow Soil Contamination Sites - No Action Alternative. The fist two columns of Plate 5-3-4 do not make sense. It appears that information is missing. Additionally, some cost information is inconsistent with Plate 5-3-3. For example, Plate 5-3-4 shows that costs for the No Action alternative for Building 871 is $113,000, while Plate 5-3-4 shows them to be $112,000. A similar inconsistency exists for ETC8.

    The Shallow Contamination group of sites has been removed from SCOU PART 1 ROD. This comment will be addressed as part of SCOU PART 2 ROD.

15. Costs for Shallow Soil Contamination Sites - Soil Washing. Costs for some sites are inaccurately presented. For example, for PCB-9 on Plate 5-3-6f, the costs for the "monthly O&M subtotal" should be $ 387,810, not $917,810. As a result, the total present worth cost for this alternative is inaccurate, both here and on Plate 5-3-3. As another example, for the Firing Range (Plate 5-3-6e), the costs for the "monthly O&M subtotal" should be $366,760, not $362,160. These are just examples. Please check cost

tables in detail for accuracy. There is no reason that cost information for non-selected alternatives should be any less accurate than for selected alternatives.

The Shallow Contamination group of sites has been removed from SCOU PART 1 ROD. This comment will be addressed as part of SCOU PART 2 ROD.

16. Inconsistency in WQSA discussion. The new WQSA discussion reveals an inconsistency in the level of detail between sites where remedial action is selected, in contrast to NFA sites. For remedial action sites, the WQSA section only identifies which contaminants failed either VLEACH 1 orVLEACH2. However, for the NFA section (Section 5.5), the WQSA section *also* provides a table of VLEACH screening results for individual contaminants. Why do NFA sites provide a tabulation of WQSA results, while remedial action sites do not?

As suggested, the Landfill text has been revised to include comparisons of site contamination levels and appropriate WQSA screening levels. SCOU Part 2 ROD will be amended to include similar comparisons for VOC, Shallow Contamination, and Institutional Control sites.

17. Inconsistent Evaluation of NFA sites. EPA Comment 30B states that "any site which was not determined to require NFA based on pre-FS decision should be evaluated in a manner similar to sites in Section 3." Section 5.5 of the ROD identifies 71 Post-FS sites which would fall into this category. However, only 6 of these sites were evaluated in a manner similar to sites in Section 3 (Plate 5-5-3). Post-FS sites which were not evaluated according to the 7 criteria are Building 84, ETC7, SAB1, Stains 1 through 32, Structure T85, Structure 1206, all of the PCB sites, and 23 SWMU sites. Additionally, five of the Pre-FS sites were evaluated with respect to the seven criteria in Plate 5-5-3. Thus, Section 5.5 presents a convoluted mixture of evaluation methods to address NFA sites. It appears that some sites which passed both WQSA and risk screening were evaluated in the SCOU FS even though they did not need to be, and that some sites which failed either WQSA or risk screening were not evaluated in the FS, even though they should have been.

Based on the July telecom discussions, only Risk Management Decision NFA sites (sites that failed WQSA and or human health risk screening) would require complete development and comparison of alternatives. This covers a total of 19 NFA sites. Alternatives considered for these sites, comparison of the alternatives, and the basis of the Risk Management Decisions are summarized on Plates 5-2-2 and 5-2-3.

Your observation regarding the timing of the Risk Management Decisions is correct. Several sites that were included in the FS did pass both screening tests. Also, for several pre-FS NFA sites, the Risk Management Decision was made during the RI, and these sites were not included in the FS.

17. More site grouping inconsistencies. Plate 4-8 describes the disposition of SCOU sites. The 5 groupings of sites (and site) numbers in the lower left corner of the plate (91 Sites

Recommended for Remedial Action) do not exactly match the grouping presented in Plate 4-5 (Selected Remedy by site). For clarity, Plate 4-8 should be revised to be more consistent with Plate 4-5.

Plate 4-8 (now Plate 4-4) has been revised to more accurately summarize the current disposition of the SCOU sites.

18. Decision Flow Chart. Plate 4-6 has been revised but is missing an important element. Boxes need to be added (or existing boxes revised) to reflect that remedy selection for some SCOU sites (21 sites) has been deferred to the CB Part 2 RI/FS.

Based on BCT concurrence, Plate 4-6 was removed from the SCOU Part 1 ROD. The BCT agreed that the information provided by Plate 4-6 was adequately conveyed by existing text and plates.

19. Site Summary Guide. This section was added in response to EPA's verbal comments on the previous draft. The discussion of the various categories should be expanded in some areas. Specifically, the "Water Quality Risks," "Human Health Risk Assessment", "Site COC and RAOs" should refer back to the appropriate parts of Section 4 which establish the pass/fail criteria for screening and the master listing of COC RAOs (which is currently missing). Also, the "Risk Management Decision" should define what this means, e.g, that it considers both the WQSA results and human health risks in the 10-4 to 10-6 range to decide whether remedial action is warranted. Additionally, the "Comparative Analysis of Alternatives" section incorrectly indicates that "Threshold" criteria are included in the site by site evaluation, which is not the case. Finally, this section has no section or page numbers. They should be included.

Changes made as suggested.

20. Description of No Action Alternatives. The AF has not fully responded to EPA Major Concern 9B which indicates that the No Action Alternative should be described. Very little new text (if any) has been added to address the No Action alternative for sites which an active remedy has been selected, despite the AF response which indicates otherwise.

The No Further Action description for the landfill sites states, "Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Periodic ground water monitoring would be required. Semi-annual ground water monitoring would continue for 30 years." If there is more information that should be added, please specify.

21. Cross Reference Site Listing. It is highly likely that someone would want to find information on an individual site within the SCOU ROD. However, it its current form, this cannot be easily achieved. The reader must hunt through each site category until the site is found. This is a very inconvenient and awkward process that could be easily remedied by the inclusion of an additional table comprised of three separate columns. The first column would list each of the 231 SCOU sites in alphanumerical order (not category). The second column would indicate the site category (consistent with Plate 4-5). The third column would identify the section of the ROD were the site is evaluated.

An optional fourth column could identify the selected remedy (consistent with Plate 4-5). Please consider adding such a table.

A table of contents, that will list where information on each individual site is located and specify page numbers, has been added to SCOU PART 1 ROD.

CASTLE RECORD OF DECISION
SOURCE CONTROL OPERABLE UNIT, Version 3

Additional Bechtel Comments
(Bechtel Comments Submitted on Behalf of USEPA)
(Second Set – July 24, 1998)

1. Signification Changes in the Remedy. The selected remedy for many sites differs from the preferred alternative identified in the SCOU FS and Proposed Plan. As explained in EPA Guidance (Section 6.3.1.1), "the ROD should document and discuss the reasons for any significant changes made to the selected remedy from the time the Proposed Plan and RI/FS Report were released for public comment to the final selection of the remedy." This is necessary for compliance with Section 117(b) of CERCLA, as explained in more detail in Section 5.2 of the EPA Guidance. The following is a listing of sites where the selected remedy in the ROD was found to differ from the preferred alternative in the Feasibility Study and/or the Proposed Plan. For each of these sites, a foot note should be added to the applicable "comparison of alternatives tables" in the ROD to explain each change. Please note that the Responsiveness Summary, Table 2, Modifications to the SCOU ROD does not present a complete listing of such changes.

   Applicable sites are listed first (in the order presented in Plate 4-5), followed by the selected alternative in the ROD, followed by (if applicable) the preferred alternative identified in the FS, followed by (if applicable) the preferred alternative identified in the Proposed Plan.

   Explanation of Significant Difference information has been added to the Decision Summary, Landfill, No Further Action, and Responsiveness Summary text. The added text is provided below:

   Decision Summary:
   4.3 Explanation of Significant Difference - The SCOU comprises a total of 231 individual sites. The SCOU RI/FS and Proposed Plan addressed all 231 of these sites. However, because the Air Force and regulatory agencies have been unable to reach agreement on a variety of SCOU issues, including VOC remedial action objectives (RAOs), soil vapor extraction shut-off criteria, implementation and monitoring requirements for Institutional Controls and Deed restrictions, and selected remedies, a total of 65 SCOU sites have been removed from SCOU PART 1 ROD. Final decisions for these 65 sites will be documented in SCOU PART 2 ROD or in the CB Part 2 ROD. Plate 4-4 illustrates the disposition of all 231 SCOU sites. The Declaration includes a listing of all 231 SCOU sites organized by decision document and site characteristics.

   Landfills:
   5.1.2 Explanation of Significant Differences - Based on the SCOU RI/FS, the preferred remedial alternative for all of the Castle Landfill sites was Zoned Capping with Institutional Controls. When the SCOU Proposed Plan was issued the preferred alternative for Castle Vista Landfills A and B and LF2 was changed to Excavation and On-site Disposal. These changes were based on the relatively small volume of waste

found at these landfills and on community efforts to attain unrestricted reuse of the site. After the Proposed Plan was issued, the selected remedies for LF1 and LF3 were also changed to Excavation and On-site Disposal. These changes were based on community concerns regarding anticipated reuse of the area occupied by LF1 and on preliminary trenches that were dug at LF3 that indicated relatively low volumes of waste were located at the site. All of these changes have been reflected in the SCOU ROD.

No Further Action:
5.2.1 Explanation of Significant Differences - During the SCOU investigation and remedy selection process, the Air Force, with concurrence of the BCT, changed the selected remedy for several post FS NFA sites from active remediation or institutional controls to NFA. These changes were based on a variety of factors which included responding to community concerns, acquisition of additional data, and reevaluation of risk and potential water quality impacts. Sites where the NFA decision represents a significant change from previously documented preferred alternatives are noted below. The basis and justification for the changes are included in the site summaries.

Responsiveness Summary:
The final SCOU Remedial Investigation/Feasibility Study (RI/FS) was released in May 1997, and the SCOU Proposed Plan was released on August 15, 1997. Based on additional data gathered after the RI/FS was completed, the selected remedies for several SCOU sites have been modified or changed. A summary of the remedy changes for the SCOU PART 1 ROD sites is provided in Table 2.

Table 2. Modifications to the SCOU ROD 1

NOTE: Sites that have had modifications between RI/FS, Proposed Plan, or ROD are shaded.

Site	*RI/FS Preferred Alternative*	*Proposed Plan Preferred Alternative*	*ROD Selected Remedy*
LANDFILL SITE			
Landfill 5 Trenches (LF -5)	*Zoned capping with institutional controls*	*Zoned capping with institutional controls and SVE*	*Zoned capping with institutional controls and SVE*
Castle Vista A	*Zoned capping with institutional controls*	*Excavation and On-site Disposal*	*Excavation and On-site Disposal*
Castle Vista B	*Zoned capping with institutional controls*	*Excavation and On-site Disposal with institutional controls and SVE*	*Excavation and On-site Disposal with SVE*
Disposal Pit 1 (LF-1)	*Zoned capping with institutional controls*	*Zoned capping with institutional controls*	*Excavation and On-site Disposal*
Disposal Pit 2 (LF-1)	*Zoned capping with institutional controls*	*Zoned capping with institutional controls*	*Excavation and On-site Disposal*
Disposal Pit 3 (LF-1)	*Zoned capping with institutional controls*	*Zoned capping with institutional controls*	*Excavation and On-site Disposal*
Landfill 1	*Zoned capping with institutional controls*	*Zoned capping with institutional controls*	*Excavation and On-site Disposal*
Landfill 2	*Zoned capping with institutional controls*	*Excavation and On-site Disposal with institutional controls and SVE*	*Excavation and On-site Disposal*
Landfill 3	*Zoned capping with institutional controls*	*Zoned capping with institutional controls*	*Excavation and On-site Disposal*

NO FURTHER ACTION SITES			
Building 84	*Not Specified (Data Gap site)*	*Excavation and On-site Disposal*	*No further action*
Building 871[1]	*Land Treatment Unit*	*Excavation and On-site Disposal*	*No further action*
Building 1529	*Not Specified (Data Gap site)*	*SVE and intrinsic remediation*	*No further action*
Building 1532	*Not Specified (T&E site)*	*No further action*	*No further action*
Detonation and Burn Facility (DBF)	*Excavation and disposal*	*No further action*	*No further action*
ETC-7	*Not Specified (Data Gap site)*	*SVE*	*No further action*
FTA-2	*Excavation and disposal (Data Gap site)*	*Excavation and On-site Disposal*	*No further action*
PCB 1, 2, 3	*No further action*	*Institutional controls*	*No further action*
PCB 4	*Not Specified*	*Institutional controls*	*No further action*
PCB 5	*No further action*	*Institutional controls*	*No further action*
PCB 6	*No further action*	*Institutional controls*	*No further action*
PCB-8	*No further action*	*Institutional controls*	*No further action*
Storage Area B1 (SA-B1)	*Not Specified (Data Gap site)*	*Excavation and On-site Disposal*	*No further action*
Structure T85 (B84)	*Not Specified (Data Gap site)*	*Excavation and On-site Disposal*	*No further action*
SWMU 4.9 (B325)	*Not Specified (T & E site)*	*SVE*	*No further action*
SWMU 4.10 (B325)	*Not Specified (T & E site)*	*SVE and intrinsic remediation*	*No further action*
SWMU 4.19 (B1324)	*Not Specified*	*Intrinsic remediation*	*No further action*
SWMU 4.25 (B84)	*No Further Action (Data Gap site)*	*Excavation and On-site Disposal*	*No further action*
SWMU 4.31	*Not Specified*	*Institutional controls*	*No further action*
SWMU 4.36 (B1324)	*Not Specified*	*Intrinsic remediation*	*No further action*

- Building 1266 - ROD: SVE/bioventing; FS: Preferred alternative not identified
- Building 1709 - ROD: SVE/bioventing; FS: Preferred alternative not identified/T&E evaluation; PP: NFA
- ETC-5 – ROD: SVE/bioventing; FS: NFA
- Hanger F-4 – ROD: SVE/bioventing; FS: Preferred alternative not identified/T&E evaluation
- SA B3 – ROD: SVE/bioventing; FS: Preferred alternative not identified/data gap site
- Sanitary Sewer 4 – ROD: SVE/bioventing; FS: Intrinsic Remediation
- Landfill 3 – ROD: To be changed to excavation and on-site disposal; FS: Zoned capping; PP: Zoned capping

- Disposal Pit 1 (LF- 1) – ROD: Excavation and on-site disposal; FS: Zoned capping; PP: Zoned capping

- Disposal Pit 2 (LF-1) – ROD: Excavation and on-site disposal; FS: Zoned capping; PP: Zoned capping

- Disposal Pit 3 (LF-1) – ROD: Excavation and on-site disposal; FS: Zoned capping; PP: Zoned capping

- Disposal Pit 1 (LF-1) – ROD: Excavation and on-site disposal; FS: Zoned capping; PP: Zoned capping

- Landfill 1 – ROD: Excavation and on-site disposal; FS: Zoned capping; PP: Zoned capping

- Landfill 2 - ROD: Excavation and on-site disposal; FS: Zoned capping; PP: Zoned capping

- Building 871 – ROD: Excavation and on-site disposal; PP: NFA

- Building 1344 – ROD: Excavation and on-site disposal; FS: Institutional Controls

- DA-3 - ROD: Excavation and on-site disposal; PP: Excavation and on-site disposal/intrinsic remediation

- ETC-2 – ROD: Excavation and on-site disposal; FS: Preferred alternative not identified/data gap site

- ETC-8 – ROD: Excavation and on-site disposal; FS: Preferred alternative not identified/data gap site

- PCB 9 – ROD: Excavation and on-site disposal; FS: Preferred alternative not identified; PP: excavation with institutional controls

- SWMU 4.15 – ROD: Excavation and on-site disposal; PP: Intrinsic Remediation

- Building 84 – ROD: NFA; FS: Preferred alternative not identified/data gap site; PP: Excavation and on-site disposal

- Building 1529 – ROD: NFA; PP: SVE/Intrinsic Remediation

- Building 1532 – ROD: NFA; FS: Preferred alternative not identified/T&E evaluation

- DBF – ROD: NFA; FS: Provisional NFA
- FTA-2 ROD: NFA, FS: Preferred alternative not identified/data gap site; PP: Excavation and on-site disposal
- PCB 1, 2, 3 - ROD: NFA; FS: Institutional Controls; PP: Institutional Controls
- PCB 4 - ROD: NFA; FS: Institutional Controls; PP: Institutional Controls
- PCB 5 - ROD: NFA; FS: Institutional Controls; PP: Institutional Controls
- PCB 6 - ROD: NFA; FS: Institutional Controls; PP: Institutional Controls
- PCB 8 - ROD: NFA; FS: Institutional Controls; PP: Institutional Controls
- SA-B1 - ROD: NFA; PP: Excavation and on-site disposal
- Structure T85 - ROD: NFA; FS: Preferred alternative not identified/data gap site; PP: Excavation and on-site disposal
- SWMU 4.10 - ROD: NFA; PP: SVE/Intrinsic Remediation
- SWMU 4.19 - ROD: NFA; PP: Intrinsic Remediation
- SWMU 4.31 - ROD: NFA; PP: Institutional Controls
- SWMU 4.36 - ROD: NFA; PP: Intrinsic Remediation

2. Building 51 Group. New text added to the Risk Management Discussion in Section 5.1.1.1 describes a two new data gaps. These data gaps were not addressed as part of the recent SCOU Data Gap Investigation effort. Specifically, the ROD (Section 5.1.1.1, Risk Management Decision) identifies the following data gaps: "1) the potential for metal contamination in association with VOC plumes, and 2) the extent of TCE and PCE contamination beneath B52 and B53." It is not clear why metals are considered a data gap in the ROD. In the SCOU RI/FS (data gap spreadsheet), the text acknowledges that chromium and molybdenum exceed TBVs, but are far below PRG and WQSA PRAOs. Please explain. Also, since the metals data gap could potentially alter the selected remedy for this site, why was this data gap not filled as part of the SCOU data gap investigation? Further, the ROD indicates that if additional metals sampling during RD/RA reveals contamination "in excess of WQSA and (*should be or*) risk levels, appropriate remedial actions will be enacted and documented in the CB Part 2 ROD." This is unacceptable, since the SCOU ROD should not have such contingencies. Part of the remedy selection for a site cannot be deferred to the CB Part 2. The remedy for the entire site should be established in either the SCOU ROD or in the CB Part 2 ROD. (This is in contrast to the remedy for VOC sites being identified in the SCOU ROD, while the cleanup criteria are identified in the CB Part 2).

Filling the VOC data gap during RD/RA seems OK since it should not affect the remedy. However, it may be inappropriate to discuss this data gap under risk management. Consider discussing all data gaps under the initial section of the site discussion (before the Water Quality Impacts) discussion.

VOC sites have been removed from ROD1. VOC sites and this comment will be addressed during development of SCOU PART 2 ROD.

3. Building 54 Group, Section 5.1.1.2. Similar to Building 51, Building 54 identifies a new data gap in the Risk Management Decision Section. The text explains that if metals are found above WQSA and (or) risk screening levels, then "appropriate remedial actions will be enacted and documented in CB Part 2." Why was this data gap not filled as part of the SCOU Data Gap Investigation? Additionally, the SCOU ROD should not have contingencies for remedy selection. The remedy for the entire site should be established in either the SCOU ROD or in the CB Part 2 ROD.

   Filling the VOC data gap during RD/RA seems OK since it should not affect the remedy. However, it may be inappropriate to discuss this data gap under risk management. Consider discussing all data gaps under the initial section of the site discussion (before the Water Quality Impacts) discussion.

   VOC sites have been removed from ROD1. VOC sites and this comment will be addressed during development of SCOU PART 2 ROD.

4. Representative Sites Approach. Section 5.3.2, Description of Alternatives for Shallow Contamination Sites. The first paragraph on page 5.3-15 refers to site categories developed during the SCOU RI/FS. The reader of this ROD would not be expected to understand this text. Text should be revised to omit reference to the "representative sites" approach used in the FS.

   The Shallow Contamination site group has been removed from ROD1. This site group and this comment will be addressed as a part of ROD2.

5. Threshold Criteria. EPA Concurrent 55 on the Draft ROD addressed the need to explain how each alternative considered (not only the selected alternatives) meets the CERCLA threshold criteria. This concern has been inadequately addressed, despite the Air Force response indicating otherwise. For the landfill alternatives which were not selected in Section 5.2.2 (i.e., excavation and off-site disposal, class III landfill cap, and evapotranspiration cap alternatives), there is no discussion of how these three alternatives meet the threshold criteria. Similarly, for the shallow contamination sites alternatives (Section 5.3.2.1 through 5.3.2.5), there is no discussion of how these five alternatives meet the threshold criteria. Additionally, Section 5.3.3 (page 5.3-17), which discusses shallow contamination sites, states "Because all of the alternatives presented on the comparison summary met the first two CERCLA criteria, further discussion of these "Threshold" requirements is not included on the table." This statement is spurious since

the text has not explained why these alternatives have met the first two criteria. Additionally, EPA requested that footnotes be added to the comparative analysis tables, which would refer the reader to sections in the text which discuss the threshold criteria for the considered and selected alternatives. This was not done. Please provide the information requested in EPA's original comment.

As suggested, additional information has been added to the description of alternatives text to explain how each Landfill alternative met the "Threshold" requirements. Also, footnotes have been added to Plate 5-1-12 to indicate information concerning "Threshold" requirements can be found in the Description of Alternatives text.

6. Building 1709. Comment No. 57A, applicable to Building 1709 alternatives, has not been fully addressed. While Figure 5-1-7 (formerly Plate 3-1-4) indicates that " SVE/bioventing" is the selected alternative for Building 1709, the footnote states "SVE is the selected alternative for Building 1709..." Please change the footnote to indicate the correct selected alternative, i.e., "SVE/bioventing... Additionally, the first page of Plate 5-1-7 is erroneously labeled "Plate 5-1-7 (continued)."

VOC sites have been removed from ROD1. VOC sites and this comment will be addressed during development of SCOU PART 2 ROD

7. Comparison of Landfill Alternatives. Comment No. 58A addressed discrepancies in the comparison of alternatives for landfills (currently Plate 5-2-12). Not all concerns have been addressed. Except for Landfill 1 , the plate continues to incorrectly state that "Excavation and Onsite Disposal" is better than "Excavation and Off-site Disposal" in terms of the "Long Term Effectiveness" and "Reduction of Toxicity, Mobility, or Volume" criteria. Why should other landfills be different from Landfill 1 with respect to those criteria?

As suggested, discussion of on-site disposal and off-site disposal for waste material in Plate 5-2-12 (now 5-1-12) has been corrected to indicate off-site disposal is preferable to on site disposal in terms of Long-term Effectiveness and Reduction of Toxicity, Mobility, or Volume.

8. Disposal at FTA-1. New text has been added to Section 5.3.2.2, which describes the Excavation and on-site disposal alternative under Shallow Contamination Sites. It explains that waste excavated from shallow contaminated sites would be relocated to a number of possible locations, including FTA-1. The BCT may want to reflect on the acceptability of citing FTA-1 in this ROD for possible disposal, considering that the final remedy for FTA-1 has been deferred to CB Part 2.

Shallow Contamination sites have been removed from SCOU PART 1 ROD. The sites, and this comment will be addressed during development of the CB Part 2 ROD.

9. The SCOU RI/FS and CB Part 2 Flow Chart. This figure (Plate 4-6) and a new supporting figure (Plate 4-7) does not fully address EPA Comment 64 on how the SCOU

ROD is addressed in Plate 4-6. Please consider the following changes: 1) Change the title of Plate 4-6 to "SCOU and CB Part 2 Decision Flow Chart" (deleting the term "RI/FS"); 2) In the upper middle part of the plate, change the heading "SCOU Feasibility Study" to just "SCOU" and 3) Add a new box or change existing text to reflect that remedy selection for some SCOU sites (21 sites) has been deferred to CB Part 2.

Plate 4-6 (now Plate 4-2) is currently being revised under the direction of DTSC.

10. FTA-1. In Section 2.1 of the Decision Summary (page 5), the sixth paragraph specifically discuss the FTA-1 site. The significance of calling out this site in this section is unclear. FTA-1 is not the only SCOU site which has been moved from the SCOU ROD to CB Part 2. Please elaborate on the significance of calling out FTA-1 in this section, or delete discussion of this site here.

    As suggested, the specified reference to FTA 1 has been removed from the Decision Summary.

11. In Plate 4-5, the foot note for Site 61 (Storm Drain System) is not provided.

    Plate 4-5 has been removed from SCOU PART 2 ROD. A complete listing of SCOU sites is presented in the Declaration.

12. Plate 4-12, VLEACH Screening Criteria Development Process. The first box in this figure refers to Beneficial Use Numerical Limits in Table 6-4. This table does not exist. Please include this table or modify Plate 4-12.

    Plate 4-12 (now Plate 4-10) has been modified to remove incorrect table references.

13. Storm Drain System. Section 5.4.1.2 of the ROD indicates that "molybdenum, lead, and cadmium exceeded TBVs and WQSA screening levels and are considered anthropogenic." However, per the SCOU RI/FS Executive Summary, Section 7.1.4, the "maximum allowable soil and soil gas concentrations were not exceeded" for the WQSA. Which is correct, the RI/FS or the ROD? Please resolve.

    The Storm Drain System has been removed from SCOU PART 1 ROD. This site, and this comment will be addressed during development of the CB Part 2 ROD.

CASTLE RECORD OF DECISION
SOURCE CONTROL OPERABLE UNIT, Version 3

Additional Bechtel Comments
(Bechtel Comments Submitted on Behalf of USEPA)
(Third Set – August 4, 1998)

1. Soil Washing Costs, Plates 5-3-6a though 5-3-6f. Note 3 on each of these cost estimate tables states "Cost Estimate based on soil volume, cubic yards 5500." This assumption is unreasonable, considering that the volume of contaminated soil for each site ranges from 40 cy (PCB9) to 18,483 cy (ETC10), per Plate 5-3-2. For example, how could the total present worth cost for the soil washing alternative be $1,203,450 at PCB-9 (Plate 5-3-6f), while it is $679,098 at ETC10 (Plate 5-3-6d)? Similar cost discrepancies exist for other sites where soil washing was evaluated. The "total capital costs", "excavation/prescreening" costs, and "plant operations" costs for these sites do not take into consideration the volume of material to be treated, even though soil volumes differ by as much as 462 times between sites (PCB9 vs. ETC10). Soil washing costs for all applicable sites (DA3, ETC2, ETC8, ETC10, Firing Range, and PCB9) need to be revised to take into consideration the estimated volume of soil to be treated. Currently, the relative soil washing costs among some sites are probably inaccurate by orders of magnitude. Please note that even though soil washing was not the selected remedy for a site, this does not mean that cost estimates should be any less accurate in the ROD.

   Additionally, there are two Plates 5-3-6f for PCB9. The first one should be re-titled "Cost Estimate Summary for Soil Washing." The second one should be changed to Plate 5-3-7f and re-titled "Cost Estimate Summary for Solidification/Stabilization." The costs for both tables need to be significantly revised, as explained in this comment and in the following comment.

   Shallow Contamination sites have been removed from SCOU PART 1 ROD. These sites, and this comment will be addressed as part of SCOU PART 2 ROD.

2. Solidification/Stabilization Costs, Plates 5-3-7a though 5-3-7f. A similar situation exists with these costs. Again, Note 3 on each of these cost estimate tables states "Cost Estimate based on soil volume, cubic yards 5500." This assumption again seems unreasonable, considering that the volume of contaminated soil for each site ranges from 40 cy (PCB9) to 18,483 cy (ETC10). Although there are greater differences in costs between sites for this alternative compared to the soil washing alternative, the costs are still questionable. For example, the capital costs for all sites do not take into consideration the volume of soil to be treated. Why is it reasonable that the capital costs for a site with 40 cy of contaminated soil (PCB9) are the same as one with 18,483 cy (ETC10), i.e., both are $54,425? Additionally, the total monthly O&M costs for PCB9 and ETC10 are $1,138,000, and $1,258,950, respectively. How could such costs be nearly the same when the volume of soil to be treated differs by a factor of 462. Solidification/stabilization costs for all applicable sites (DA3, ETC2, ETC8, ETC10,

Firing Range and PCB-9) need to be revised to take into consideration the estimated volume of soil to be treated.

Shallow Contamination sites have been removed from SCOU PART 1 ROD. These sites, and this comment will be addressed as part of SCOU PART 2 ROD.

3. Soil Volumes. Soil volume estimates conflict between Plate 5-3-2 and Plate 5-3-5 for the excavation and on-site disposal alternative. The volume estimates for individual sites differ between Plate 5-3-2 and 5-3-5 as follows: DA3 (955 cy vs. 300 cy); ETC10 (18,483 cy vs. 18,300) cy); PCB9 (40 cy vs. 400 cy); SWMU 4.15 (no value vs. 15 cy). Please revise these values, as appropriate.

   Shallow Contamination sites have been removed from SCOU PART 1 ROD. These sites, and this comment will be addressed as part of SCOU PART 2 ROD.

4. Plate 5-3-5, Excavation and Disposal, Shallow Contamination Sites. Two parts of this table indicate the incremental costs for soil disposal are based on other tables, i.e., Tables "C3A – F-LF-3, incl.", and "C3A-F-O&M-LF-3." However, these tables do not exist in the ROD. They are probably Landfill 3 cost tables from the SCOU RI/FS. However, such incremental costs for soil disposal are not reflected in cost tables for LF-3, as presented in this ROD (Plate 5-2-7b). Thus, the validity and source of these incremental costs needs to be supported/provided.

   Shallow Contamination sites have been removed from SCOU PART 1 ROD. These sites, and this comment will be addressed as part of SCOU PART 2 ROD.

5. Plate 5-1-3, Summary of Cost Analysis for VOC Group. The B51 Group site is labeled "representative site." Please omit this designation, for the reasons expressed by EPA in earlier comments.

   VOC sites have been removed from SCOU PART 1 ROD. These sites, and this comment will be addressed as part of SCOU PART 2 ROD.

6. Plate 5-1-5, SVE/Bioventing Costs for VOC Group. The "site costs" (under Capital Cost) for F4 and SS-4 appear incorrect and possibly reversed. Why are the site costs for F4 (which has 12 extraction wells and 6 monitoring wells) only $50,000, while site costs for SS-4 (which has 2 extraction wells and no monitoring wells) $151,200?

   VOC sites have been removed from SCOU PART 1 ROD. These sites, and this comment will be addressed as part of SCOU PART 2 ROD.

7. Plate 5-1-6, Thermally Enhanced SVE Cost. For each VOC site, the number of extraction wells for the thermally enhanced SVE alternative are greater than the number of extraction wells for the SVE/bioventing alternative (Plate 5-1-5 vs. Plate 5-1-6). The one exception is Site F4 which has fewer wells for thermally enhanced SVE. Please

check the number of extraction wells appropriate for both SVE/bioventing and thermally enhanced SVE for Site F4, and correct the cost estimate, as appropriate.

VOC sites have been removed from SCOU PART 1 ROD. These sites, and this comment will be addressed as part of SCOU PART 2 ROD.

8. Plate 5-2-4, Cost Estimate Summary for No Action Landfill Group. Insufficient information is presented to determine how the present worth costs were calculated Please provide a foot note to this table, which explains how they were calculated.

As suggested, footnotes have been added to the No Action Landfill cost tables to explain basis for Present Worth Costs.

9. Section 5.5.2.1, Building 23. The WQSA evaluation for this site presents the VLEACH1 results. However, in the SCOU RI/FS Executive Summary, Section 7.2.19, the text states "Because of the identified use of the building, no water quality assessment was needed." Which is correct, the ROD or the RI/FS?

Both documents are correct. Based on the sampling results, the site did not pose a threat to water quality. The ROD included the WQSA comparison to illustrate site contamination levels did not exceed WQSA screening levels.

DTSC Comments on the Source Control Operable Unit
Record of Decision Version 3
June 1998

General Comments:

1. Response to Previous DTSC general comment 1 (dated 2/5/98)

"Additionally, as discussed in our January 9, 1998 letter, Air Force must provide justification for any risk management decision made with risks that fall in the risk range of 10^{-4} and 10^{-6} ."

The Air Force must provide detailed justification for not selecting a remedial action for sites that fall within a risk range of 10^{-4} and 10^{-6}. Justification such as small quantity of wastes, one sample location above Preliminary Action Goals, or large structures as building that may not be destroyed in near future maybe acceptable depending on site specific location and current and future reuse of the site. However, the presence of parking areas or lawns is not an acceptable justification for no action. Cost comparison and impacts of the different alternatives should be provided as part of the justification. Additional clarification regarding DTSC policy on this issue has been previously transmitted to you on January 9, 1998.

1. Justification for RMDs – There are a total of 22 RMD NFA sites included in SCOU PART 1 ROD. These sites include:

B84	***B1532***	***ETC7***	***PCB4***	***SA B1***
B1335	***DBF***	***ETC11***	***PCB5***	***SS1***
B1404	***DP7***	***FTA2***	***PCB6***	***ST1201***
B1405	***DP10***	***PCB1,2,3***	***PCB8***	***ST1206***
B1529				

The basis of the NFA decision for these sites has been included with the site summary text. Tables have been developed to summarize the alternatives considered for these sites and to compare the alternatives. Costs for the considered alternatives have not been included because they were not included in the RI/FS, and were not key to the NFA decision.

2. Response to previous DTSC general comment 7

"Previous to submitting the draft SCOU ROD, the AF with its contractor and the agencies spent a substantial time and effort in preparing the Remedial Action Objectives (cleanup numbers). This information has not been included or discussed in the SCOU ROD. However the SCOU ROD presents non-site specific screening level data (Plates 3-1-7 a, b, and c), Preliminary Remediation Goals (PRGs) and VLEACH modeling results, as the remedial action objectives. The levels provided in the tables should be used for planning purposes and not in the ROD.

The draft RAOs provided in your September 24, 1997 letter should be finalized and used in the SCOU ROD. The final RAO tables and narrative must incorporate the suggestions and comments made by the Agencies during the technical working sessions held in San Francisco on October 9, 1997. It should also incorporate the response to Agency comments prepared by Jacobs engineering (Transmittal date December 8, 1997 and received 1/28/98)."

A complete response to this comment has not been provided. We suggest that the RAO tables be finalized before the version of ROD is submitted.

2. ***Jacobs Engineering has developed an RAO package that will specifically target SCOU Part 1 ROD sites only. For WQSA RAOs, this package will include VLEACH1 RAOs for SVOCs, Water Board DLM RAOs for metals and TEPH/TVPH, and VLEACH2 PRAOs for VOCs. The Human health RAOs that were presented in previous RAO summary packages will be incorporated verbatim. This revised RAO Summary will be submitted for agency review.***

3. Response to previous DTSC specific comment 13

"The text states that the T&E evaluations for these sites have been completed, but the results were not presented. These results must be presented in the SCOU ROD."

The Response To Comments states that the T&E evaluation could be found in the Draft CB Part 2 RI/FS. The Draft CB Part 2 RI/FS has not approved by the agencies. DTSC can not use information from unapproved document to make a final determination for the SCOU ROD. Please, either submit the T&E evaluation for Agency acceptance or retain this site in the CB Part 2 program.

3. ***The results of T&E evaluations for three SCOU sites were presented in the CB Part 2 RI/FS. The sites include: B1532, B1709, and Hangar F4. Two of these sites, B1709 and Hangar F4, are included with the VOC Contamination site group that will require remediation. These two sites have been removed from SCOU PART 1 ROD. Because T&E evaluation concluded active remediation was not needed, B1532 has been included in SCOU PART 1 ROD as an NFA site.***

4. Response to previous DTSC specific comment #35, #36, #37

The response to comments states "Air Force response to this comment will be developed during the response period for version 3 of the SCOU ROD." The response to our comments are not clear whether the AF will prepare responses after agency submits comment to the version 3 of the SCO ROD comments or it meant as a place holder for the Air Force to provide a response but it was never followed through. In either case, a no response is not an acceptable response. Please resubmit the response to comment portion of the SCOU ROD with responses to our comments.

4. These comments were discussed during recent meetings of the Air Force and Agency Legal Counsel. Formal Response to Comments 35, 36, and 37 have not been developed.

5. Draft Responsiveness Summary Comment #5, Page 7-8

The SCOU ROD does not provide an adequate response to the Restoration Advisory Board's concern with the Air Force selecting Deed Restrictions/Institutional Controls as the preferred alternative. The Responsiveness Summary should discuss why Institutional Controls/Deed Restrictions were selected as the preferred alternative over other alternatives.

5. The stain sites (Stain 33-44) and the Storm Drain System (SDS) which had been recommended for Institutional Controls/Deed Restrictions in the Version 3 Draft of the SCOU ROD have been removed from SCOU PART 1 ROD. Final decisions for these sites will be documented in SCOU PART 2 ROD. The Responsiveness Summary has been revised to reflect this change. For sites included in the Part 1 SCOU ROD, Institutional Controls/Deed Restrictions apply to capped landfill sites (LF4 and LF5) only. The Responsiveness Summary explains that Institutional Controls/Deed Restrictions for these sites are required by State law.

6. The Agencies have not reached an agreement with the Air Force on the final version of the Remedial Action Objectives (RAOs). We recommend that the Air Force revise the September 1997 draft by incorporating Agency comments and any new changes since the last version. A revised copy should be submitted to the Agencies for Approval. These changes should be reflected in the SCOU ROD.

6. Jacobs Engineering has developed an RAO package that will specifically target ROD1 sites only. For WQSA RAOs, this package will include VLEACH1 RAOs for SVOCs, Water Board DLM RAOs for metals and TEPH//TVPH, and VLEACH2 PRAOs for VOCs. The Human health RAOs that were presented in previous RAO summary packages will be incorporated verbatim. This revised RAO Summary will be submitted for agency review.

7. The SCOU ROD should document in detail any significant changes in preferred remedial actions since the Proposed Plan and the RI/FS. These changes should be documented in a new sub-section titled "significant changes" under the Decision Summary Chapter.

7. As suggested, an Explanation of Significant Changes section has been added to the Decision Summary for Landfill and NFA sites. Also, the Responsiveness Summary contains an updated table that documents significant changes from the RI/FS and Proposed Plan Preferred Alternatives through the ROD1 selected remedies.

8. Generally the VOC Sites section may require the following changes:

- For sites with no human health risks, the proposed reuse should be unrestricted since it permits the property for any type of reuse.

- Institutional Controls/Deed Restriction should be part of the remedy whenever cleanup to unrestricted reuse is not achieved. Language for the type of restriction required should be provided.

- Cost comparison between occupational and unrestricted reuse should be provided whenever cleanup to unrestricted reuse is not proposed.

- For Sites with human health risk in the range of 10^{-4} and 10^{-6}, adequate justification must be provided for a not selecting a remedial action. The BCT must approve the justification before a no further action for human health is accepted.

8. VOC sites have been removed from SCOU PART 1 ROD, and will be finalized in SCOU PART 2 ROD. Response to agency comments on VOC sites will be contained in the SCOU PART 2 ROD.

9. DTSC has not reviewed Section 6 (Applicable or Relevant and Appropriate Requirements) and the ARARs tables. DTSC will not provide additional comments until the Air Force revises these sections and provides a response to DTSC's previous comments.

9. The text and tables from the ARAR section of the Part 1 ROD has been revised to match the ARAR text included as part of the Action memorandum for Landfill 1, 3, 4, and 5. This text and tables has been revised based on recent discussions between Air Force and Agency legal counsels.

10. The SCOU ROD bases its decisions on the draft SCOU Data Gap Investigation Report that has not been finalized and accepted by the Agencies. DTSC cannot support the Air Force's decision in using an incomplete document to make a ROD determination. However, the BCT, by consensus agreement, could reach an agreement on the findings of some sites in the Data Gap Investigation report that is acceptable by the Agencies and the Air Force. The SCOU ROD should document this agreement and make its determination based on this agreement.

10. The Data Gap Investigation addressed five NFA sites that are contained in SCOU PART 1 ROD. These sites include: B84, Structure T85, B1529, FTA2, and SAB1. The Draft Final Data Gap Investigation report was submitted for agency review in July of 1998. Because Agency comments on the Draft Final Data Gap Investigation Report have not involved the above listed sites, the Air Force believes BCT concurrence on the NFA decisions has been reached.

11. The ROD should be revised to include a table of contents and page numbering.

11. As suggested, a Table of Contents and page numbering have been added to SCOU PART 1 ROD.

DTSC Comments on the Source Control Operable Unit
Record of Decision Version 3
June 1998

Specific Comments:

1. Statement of Basis and Purpose, Paragraph 2. Please remove the word "the" from the first sentence

1. Change made as suggested.

2. Statement of Basis and Purpose, Paragraph 3. In the first sentence, please add the word "with" after word "accordance."

2. Change made as suggested.

3. Statement of Basis and Purpose, Paragraph 3. In the last sentence, please add the following text "nor the California Department of Toxic Substances Control" after the word "EPA."

3. Based on EPA comment the entire reference to non-concurrence for Petroleum Hydrocarbon sites has been removed from the ROD.

4. Section 2.0, Site History and Enforcement Activities, Paragraph 1, line 7 and 8. The text states that the FFA outlines the CERCLA and State requirements for the Air Force and the BCT. Please delete the word "BCT" and insert "United States EPA and State of California."

   The expression "Base Closure Team" is used incorrectly throughout the SCOU ROD for the acronym "BCT". The Correct word form for "BCT" is "BRAC Cleanup Team." Please revise insert "BRAC Cleanup Team" wherever "Base Closure Team" is used.

4. Changes made as suggested.

5. Section 4.2, Comprehensive Basewide Program, Paragraph 2. The text states that the CB Part 1 ROD superceded the "Interim" OU1 and OU2 RODs. Operable Unit 2 is a stand alone ROD and not an Interim ROD. Please revise text to reflect the correct title for OU2.

5. The text in Section 4.2 was revised to state, "The CB Part 1 ROD superceded the "Interim" OU1 ROD and the final OU2 ROD that had been developed for ground water operable units, OU1 and OU2, and set final cleanup levels for ground water remediation necessary to protect human health and the environment".

6. Section 4.2.1, Ecological Risk Assessment, page 8. Paragraph 2, Line 6. Please replace the word "will" with word "should."

6. Change made as suggested. (Text formerly contained in Section 4.2, is now in Section 4.3.3, a subset of the Assessment of Environmental Impact Section).

7. Section 4.2, Comprehensive Basewide Program, Page 7. Please remove the word "RI/FS" from the "Comprehensive Basewide RI/FS Program Part 1" figure.

7. Change made as suggested.

8. Section 4.3.1.3, WQSA Evaluation of VOCs, Paragraph 1. In the second sentence, please replace the word "effect" with "affect."

8. Change made as suggested.

9. Section 4.3.2.5, HHRA conclusions and Summary, Page 16. This section should clarify the HHRA assessment in this ROD only considers risks in the vadose zone and does not provide a total risk. The text should clarify that the total risk will be calculated and presented in the Comprehensive Base wide RI/FS.

   Additionally, this section should clarify that the vadose zone HHRA evaluated the exposure risks in the zero to fifteen feet below ground surface (bgs) and it did not evaluate the risks in the 15 to 70 feet (groundwater) range. The text should explain that the agencies accepted the shortcoming of the HHRA assessment due to Air Force assurance that a Water Quality Site Assessment will be conducted which provide similar evaluation as in the HHRA.

9. The introduction to Section 4.3.2.5 has been revised to include the following, "The HHRA evaluated risks in the vadose zone from 0 to 15 feet bgs only. The total site risk, that would include the remainder of the vadose zone, from 15 feet bgs to ground water, will be evaluated as part of the CB Part 2 RI/FS. The regulatory agencies have accepted this short coming based on Air Force assurance that total risk from the entire vadose zone soil column will be addressed in CB Part 2.

10. The HHRA results for all SCOU sites including No Further Action Sites must be summarized in a table format similar to Plate 4-14.

10. A summary of HHRA results for the NFA sites is included on Plate 5-2-1.

11. Section 4.4, Institutional Controls, Page 19. In the second line, please replace the word "residential" with "unrestricted".

11. Change made as suggested.

12. Section 4.4, Page 19, 1st Paragraph. The text states that institutional controls have three main goals. A forth goal should be added. The goal should state "the Air Force will

ensure that institutional controls including deed restrictions are maintained and monitored through operations, maintenance and monitoring (OM&M) plans.

12. The text has been revised to include, "To ensure effectiveness, an institutional control operation and maintenance plan will be developed and implemented".

13. Section 4.4, Institutional Controls, Page 19, Paragraph 1. Please delete the last two sentences starting with the text "The Air Force does not want to alarm...."

13. As suggested the referenced text has been removed from ROD1.

14. Section 4.4, Institutional Controls, Page 19, Paragraph 2. In the forth sentence, please delete the term "(including FTA-1)."

14. FTA1 has been removed from ROD1. The reference to FTA1 has been removed from the text as suggested.

15. Section 4.4, Institutional Controls, Page 19, Paragraph 3. This section does not reflect accurate requirements of Institutional Controls. In particular the last paragraph where it states that Institutional Controls are not meant to be a typical component of environmental cleanups, nor intended to last forever as a restrictive element of land use. DTSC considers Institutional Controls to be a long term remedial action. There are long term responsibilities as well as costs associated with these remedial actions. As any remedial action, the Air Force must demonstrate that the remedy is effective, operating safely, and protective of human health and the environment. The remedy must be maintained as long as the risks are present. Please revise the text to reflect that institutional controls are long term remedies which require operation, maintenance and monitoring (OM&M) Plans. Additionally, cost estimates associated with institutional controls must be calculated and overall cost compared with the other alternatives.

15. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

16. Section 4.4, Institutional Controls, Page 19, Paragraph 3. Please delete the first sentence that starts with the "Deed restrictions, ..." and the following two sentences.

16. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

17. Section 4.4.1, Development of Institutional Controls, Page 19, Paragraph 1. The Text states that technology may be unavailable for removing all contamination to allow unrestricted use of the property. We do not believe that there are technological

constraints for removing the contaminants at these sites. Please delete these references from the SCOU ROD.

17. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

18. Section 4.4.1, Development of Institutional Controls, Page 19, Paragraph 2. The text states that the SCOU Feasibility Study provides a clear description of the anticipated restrictions. This is incorrect. The SCOU Feasibility Study is very vague in providing description or no description exist at all. This has been a concern of the agencies and the community in the earlier documents that they did not provide any detailed discussion of the anticipated restrictions. Please omit these references from the SCOU ROD and revise this section to state that since the SCOU Feasibility Study lacked specific detail, the Air Force has agreed to review the specific restriction language with the agencies and the community.

18. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

19. Section 4.4.1, Development of Institutional Controls, Page 19, Paragraph 2. Please delete the third sentence and replace with "Deed restrictions maybe combined with other mutually reinforcing controls such as access barriers and warning signs."

19. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

20. Section 4.4.1, Development of Institutional Controls, Page 20, Paragraph 2. Please delete the first two sentences and replace with "The deed restriction or restrictive covenants can be structured to give enforcement rights to the previous to the previous owners and other third parties. The restrictions should be structured to run with the land, i.e., to remain binding and in force despite transfer of the property."

20. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

21. Section 4.4.2, Deed Restriction Implementation Process, Page 20, Paragraph 2. In the sentence before last, please insert the words "into the" before the word SCOU.

21. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

22. Section 4.4.2, Deed Restriction Implementation Process, Page 21, Paragraph 2. Please delete the symbol "&" from DTSC.

22. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

23. Section 4.4.2, Deed restriction Implementation Process, Page 21, Paragraph 3. In the second sentence, please replace the word "conveyee" and replace with "transferee."

23. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

24. Section 4.4.2, Deed Restriction Implementation Process, Page 21, Paragraph 3. The text states that the deed is sent for recordation in the local real property records at the Merced County Court House providing notice "in perpetuity" of deed restrictions to any potential purchaser of the property. DTSC cannot be assured that the required deed restriction will run with the property in perpetuity since it can not be enforced by the State. We recommend that the Air Force, DTSC and any future property owner or caretaker enter into a covenant agreement that ensures long term permanence of the remedy (institutional controls).

24. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

25. Section 4.4.2, Deed Restriction Implementation Process, Page 21, Paragraph 3. Please delete the last sentence that starts with "For example."

25. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

26. Section 4.4.2, Deed restriction Implementation Process, Page 21, Paragraph 4. The text states that the County, State, or Federal Agency will be charged with enforcement of the Deed Restriction provisions. DTSC believes that the Air Force Cannot require the Agencies to enforce Deed Restriction provisions. If any laws or programs exist, please provide the proper citations.

26. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

27. Section 4.4.2, Deed restriction Implementation Process, Page 21, Paragraph 4. The last sentence states that the stakeholders can determine the extent of their responsibilities for Institutional Controls implementation at the sites. We disagree with this statement since it is the law that determines individual responsibilities. Please revise text to state that the stakeholder will work within the scope of the laws.

27. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

28. Section 4.4.2, Deed restriction Implementation Process, Page 21, Paragraph 5. Please delete the first sentence and replace with the following sentence "There may be inspections of the property as part of the remedy's Operation, Maintenance and Monitoring (OM&M) Plan."

28. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

29. Section 4.4.2, Deed restriction Implementation Process, Page 2l, Paragraph 5. In the third sentence, please delete the term "Federal government" and replace with "Air Force."

29. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

30. Section 4.4.3, Deed Restriction Termination, Page 21, Paragraph 1. In the first sentence, please delete the term "or potential owner."

30. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

31. Section 4.4.3, Deed Restriction Termination, Page 21, Paragraph 1 . The text states that a petition for deed restriction removal is submitted to the County. This is incorrect since it presupposes that the deed runs in favor of the County (Merced). The text should be revised to state that the interested party must petition with the State (DTSC) for deed restriction termination. The State (DTSC) will either accept or deny the petitioner's request depending on the risks at the site. If the petitioner's request is accepted, then the state may request the County of Merced to terminate the Deed language.

31. The referenced text has been removed from ROD1. Further details regarding the development, implementation, and maintenance of the deed restrictions will be included in SCOU PART 2 ROD.

32. Plate 4-6, SCOU RI/FS and CB Part 2 Decision Flow Chart. It is not clear if the flow chart is attempting to demonstrate how sites flow from the SCOU into the CB Part 2. The flow chart illustrates this by showing sites flowing from the SCOU Feasibility Study column into the CB Part 2 column and later into the Remedial Design/Remedial Action column. The process confuses the reader since it is not clear how the sites in the SCOU FS flow into the CB part 2 program without proceeding into the SCOU ROD and SCOU RD/RA first. Please revise the flow chart to include all the important parts of the CERCLA process that apply to the SCOU and CB Part 2.

32. Because information provided on Plate 4-6 is adequately conveyed by other plates and text included in the Part 1 ROD, Plate 4-6 has been removed from the ROD.

33. Tables 10-4 a, b and c. Please remove the word "Preliminary" form the title heading.

33. Plates 4-10 b and c that deal with SVOC and inorganic contaminants have been revised to indicate the posted values are RAOs. Because the Air Force and regulatory agencies have not agreed on VOC RAOs, the VOC table remains a "Preliminary" RAO reference.

34. Section 5.1.1.1, Building 51 group. A new section should be added to the Building 51 group to have a discussion of the IC/deed restriction language whenever unrestricted reuse is not allowed. The language should be specific to discuss which areas and buildings that will not meet the unrestricted reuse scenario. Additionally, the risk management section should provide justification for the no action areas within the Building 51 group that have an occupational risk within the $1x10^{-4}$ and $1x10^{-6}$ risk range. Justification such as the paved parking areas is inadequate since it does not provide a long term barrier for exposure pathway.

34. B51 has been removed from ROD1. This comment will be addressed during development of ROD2.

35. Section 5.1.1.2, Building 54 group/SWMUs. The text should clearly state that SWMUs 4.17, 4.18, and 4.29 are not being addressed in this ROD. It should clearly state that remedial investigations at these sites is incomplete.

Comment # 34 also applies to Building 54 group.

35. B54 has been removed from ROD1. This comment will be addressed during development of ROD2.

36. Sections 5.1.1.3, 5.1.1.4, 5.1.1.5, 5 1.1.6, 5.1.1.7, 5.1.1.8, 5.1.1.9. The sites in these sections have no human health risks. Therefore, the proposed reuse should be revised to unrestricted reuse.

36. All of the VOC sites have been removed from ROD1. This comment will be addressed during development of ROD2.

37. Section 5.1.4, 1st Paragraph, Page 5.1-17. Delete the last sentence that starts with "Based on the conservative WQSA..."

37. All of the VOC sites have been removed from ROD1. This comment will be addressed during development of ROD2.

38. Sections 5.1.1.1, 5.1.1.2, 5.1.1.3, 5.1.1.6, 5.1.1.7. Landfills 1, 2, 3, CVLFA, and CVLFB should not have no human health risks left in place after the excavation. The proposed reuse should revised to unrestricted reuse. Please revise these sections to show that the reuse is unrestricted.

38. The following text has been added to the description of the Excavation and On-site Disposal remedy, "Because all waste above WQSA and HHRA RAOs would be removed during excavation activities, the excavated landfill would meet unrestricted reuse requirements". The site summaries for LF1, LF2, LF3, and CVLFA, and CVLFB have been modified to indicate that unrestricted reuse should be attained by implementing the Excavation and On-site Disposal remedy.

39. Section 5.2.1.1, Landfill 1. Two different RAO numbers are provided for lead. Please provide the correct RAO.

39. The WQSA RAO for lead, which is more stringent than the HHRA RAO has been adopted for LF1.

40. Section 5.2.1.3, Landfill 3. Please revise this section to indicate that Landfill 3 will be clean closed.

40. The Risk Management discussion (Section 5.2.13.) for LF3 has been removed. The site summary has been revised to indicate that the selected remedy (Excavation and On-site Disposal) should allow for clean closure and unrestricted reuse.

41. Section 5.2.2, Description of Alternatives for Landfill Sites, Page 5.2-17, Paragraph 2. Please delete the first sentence and replace with the following " It should be noted that Institutional Controls, Deed Restrictions and Long-term Monitoring are an integral part of capping alternatives."

41. Change made as suggested.

42. Section 5.2.2.9, Long-term Monitoring, Page 5.2-22. Please add "Any changes to the long-term monitoring plan will require regulatory review and approval," at the end of the paragraph.

42. Change made as suggested.

43. Section 5.3.1.2, Building 1344. The proposed land-use for this site is occupational. Therefore, Institutional Controls/Deed Restrictions should be part of the remedy. Please revise the text to state that Institutional Controls/Deed Restrictions is part of the selected remedy. Cost comparison between unrestricted reuse and occupational reuse should be included.

43. Building 1344 has been removed from ROD1. This comment will be addressed as part of ROD2.

44. Section 7, Draft Responsiveness Summary Comment #5 and #7. The response in the Responsiveness Summary to the community's long-stated opposition to deed restrictions is erroneous and misleading. For example, the text states that the property owners or potential property owners can petition the county to remove deed restrictions once they prove that the site no longer poses a threat to human health or the environment. The response is misleading and makes the reader to believe that the Institutional Controls/Deed Restrictions can be easily be removed. For a good percentage of sites at Castle with Institutional Controls/Deed Restrictions, the preferred remedy is the long term solution. Landfills are an example where the deed restrictions and other institutional controls will be in place permanently.

44. The Responsiveness Summary has been revised to indicate the landfill deed annotation requirements imposed by 40 CFR Sections 258.60(i) and 258.61(c)(3) will be permanent, and any use of restrictions at any other non-landfill sites will remain in effect until the threat to human health and the environment no longer exists.

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7/15/98

SCOU ROD Version 3 - Preliminary Comments from Iisa Hanusiak

As requested, my comments are focused on RAOs. Overall, I think the Air Force did a good job in incorporating the information from the draft RAO table. I agree that it is better to incorporate site-specific RAOs in the site summaries rather than including a separate RAO table. I have the following comments.

1. [General] We need to be careful with significant figures for numerical RAOs (Table 4-10 and in site-specific summaries). Some numbers are carried out to seven sig figs, which is unrealistic.

   The ROD has been reviewed, and changes have been made, to reduce significant figures.

   [Plate 4-10] RAOs are still labeled as preliminary.

   Because AIR Force/Agency consensus has not been reached for VOC RAOs, table 4-10a (now 4-8a) will remain listed as PRAOs. For the SVOC and Inorganic values, the titles have been changed to simply RAO.

2. [Section 5.2.1.2, Landfill 2, Site COCs and RAOs] Shouldn't Landfill 4 acceptance criteria be addressed? This comment applies to Landfills A and B also, and possibly 1 and 3.

   Landfill acceptance criteria for Landfill 4 is addressed under the Landfill 4 text (No. 4 in the COCs and RAOs section).

3A. [Section 5.2.1.1, Landfill 1, Site COCs and RAOs] Which lead RAO (CalEPA model or WQSA) is the driver? WQSA is more stringent. Listing two RAOs is confusing.

   The LF1 RAO summary has been revised to show only the WQSA RAO for lead. Although both are applicable, the WQSA value was presented because it was more stringent

3B. The text should be modified to discuss the Air Force's plan to excavate Landfill 1.

   As suggested the LF1 text was revised to state, "To ease property transfer and reduce risks from potential human exposure to site contaminants, waste from LF1 will be excavated and disposed of at a designated on base consolidation landfill. This work will be accomplished under Removal Action authority and is scheduled to begin late 1998.

3C. Under "Risk Management Decision," I don't think the justification regarding dioxins/furans "likely representing background concentrations" is legitimate. There

shouldn't be "background" dioxins/furans. Also, this section probably should address community concerns, which were the driver for removing Landfill 1.

The Risk management Decision text was modified to state, "Dioxins/furans were not included as LF1 COCs because they were below EPA Region IX Risk Preliminary Remediation Goals (PRGs".

Also the following discussion has been added to explain the community concerns impact the LF1 selected remedy, "During the RI/FS process, Zoned Capping with Institutional Controls was developed as the Preferred Alternative for LF1. Zoned Capping was also listed as the Preferred Alternative in the SCOU Proposed Plan. However, in response to community concerns regarding potential reuse of the LF1 area, the selected remedy for LF1 was changed to Excavation and On-Site Disposal Enacting the Excavation and On-Site Disposal will alternative will preclude the need for Institutional Controls and allow for unrestricted reuse".

5A. [Section 5.2.1.3, Landfill 3, Site COCs and RAOs] The RAO for arsenic 20 mg/kg (HHRA, occupational) appears to be inconsistent with PRAO listed in Plate 4-10c (2400 ug/kg). What is the basis for this?

The arsenic RAO was incorrectly transcribed. The table has been revised with the correct occupational arsenic RAO of 2.4 mg/kg.

5B. The text should be modified to discuss the Air Force's plan to excavate.

The LF3 introductory text has been modified to state, "LF3 is a part of a land parcel that has been transferred to Federal Bureau of Prisons, Department of Justice. The prison footprint is not within the LF3 boundary. To ease property transfer and reduce risks from potential human exposure to site contaminants, waste from LF3 will be excavated and disposed of at a designated on base consolidation landfill. This work will be accomplished under Removal Action authority and is scheduled to begin late 1998".

Further information on the change in selected remedy is provided in the Risk Management section. "During the RI/FS and Proposed Plan process, Zoned Capping with Institutional Controls was developed as the preferred alternative for LF3. The proposed reuse for LF3 is industrial/commercial. However preliminary site trenching indicated the projected volume of waste at LF3 was smaller than originally estimated, and that Excavation and On-site Disposal was the most cost effective remedy. Based on this determination, the selected remedy for LF3 has been changed to Excavation and On-site Disposal".

5B. Areas 1 and 2 of Landfill 3, in addition to Test Pit A, need to be clarified, such as on the map.

The Selected Alternative Map, Plate 5-1 has been modified to show Areas 1 and 2.

6. [Section 5.2.1.4, Landfill 4, Site COCs and RAOs] Narrative RAOs need to be added since waste will be left in place. These should include, at a minimum, capping the waste to interrupt the potential exposure pathway and prevent contact exposure and protecting the cap through institutional controls. This comment also applies to Landfill 5, and would apply to Landfills l and 3 if the excavation were not planned.

The RAO summary has been modified to include, "The objective of the Zoned Cap remedy is to interrupt the potential exposure pathway and prevent contact exposure. Protecting the cap through institutional controls is an integral component of the capping remedy."

7A. [Section 5.2.1.5, Landfill 5, Site COCs and RAOs] The discussion of beryllium and 1,4-dichlorobenzene exposures with respect to HHRA appears to be inconsistent with the discussion previously presented in the 9/28/97 draft RAO table. Are these results new, was the information previously omitted, or is the information incorrect?

The reference to beryllium and 1,4-dichlorobenzene was incorrect and has been removed from the RAO summary.

7B. Are the occupational standards appropriate given the future use of the property as a penitentiary? This issue is not discussed.

The Risk management Decision text has been modified to state, "LF5 is part of a land parcel that has been transferred to the Federal Bureau of Prisons. Because LF5 is <u>not</u> within the prison footprint, and because the planned reuse of the area is industrial/commercial, the occupational exposure scenario is appropriate for the site".

7. [Section 5.2.1.6, CVLFA, Site COCs and RAOs] Reference to ERA should be dropped.

As recommended ERA has been dropped from the CVLFA discussion.

8. [Section 5.2.1.7, CVLFB, Site COCs and RAOs] The RAO for BAP should be verified. The ROD lists 0.12 mg/kg and the 9/28/97 draft RAO table lists 0.095 mg/kg.

The residential RAO for benzo(a)pyrene is 0.095 mg/kg. The RAO summary for CVLFB has been modified to reflect this value.

9. [Section Building 871] Should Building 871 possibly be a NFA site or a petroleum only site? I thought the agencies concurred on site closure.

Closure of the B871 site was approved by EPA, DTSC, and RWQCB on December 12, 1996 Based on this decision, B871 has been moved to the NFA section of the ROD.

11A. [Section 5.3.1.5, ETC 8, Site COCs and RAOs] RAOs for benzo(b)fluoranthene and benzo(a)anthracene are specified in addition to the RAO for benzo(a)pyrene. This seems inconsistent with the 9/18/97 draft RAO table, which specifies that "Where PAHs,

including BAP, are the only contaminants, a RAO was identified only for BAP, because it is the most restrictive"

Shallow Contamination sites have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

11B. This section includes the statement, "The SCOU ROD provides alternatives for addressing Human Health risks at ETC8." The purpose of this statement is unclear.

Shallow Contamination sites have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

12. [Section 5.3.1.6, ETC10, Site COCs and RAOs] The drivers for remedial (or removal) actions at ETC10 need to be clarified. RAOs based on BHHRA (or CalEPA) and WQSA are specified for arsenic, antimony, and lead.

Shallow Contamination sites have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

13. [Section 5.3.1.7, Firing Range] Discussion in first paragraph of PCB9 (i.e., "In 1997, under Removal Action authority, contaminated soil at PCB9 was taken to LF4 for consolidation and disposal.") seems like a non sequitur. Also, the status of the FR needs to be clarified. What is meant by the last sentence "...and additional sampling would have been necessary to close the site under NFA."?

Shallow Contamination sites have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

14A. [Section 5.3.1.8, PCB9, Site COCs and RAOs] Clarify that the BCT has not yet concurred on site closure (although maybe it will by the time the ROD is finalized).

Shallow Contamination sites have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

14B. The RAO specified (i.e., 0.72 mg/kg) is different from the RAO specified in the 9/18/97 draft RAOs (0.19 mg/kg), and in the draft final Action Memo (0.15 mg/kg). This discrepancy needs to be clarified.

Shallow Contamination sites have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

14. [Section 5.3.1.9, SWMU 4.15, Site COCs and RAOs] The text should clarify what is meant by "confirmation soil samples will be collected and analyzed to meet RCRA requirements." What are these requirements?

Shallow Contamination sites have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

16A. [Section 5.4.1.1, Stains 33 to 44, Site COCs and RAOs] Which BAP RAO (HHRA or WQSA) is the driver? HHRA is more stringent. Listing two RAOs is confusing.

Miscellaneous sites requiring Institutional Controls have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

16B. What do the numerical RAOs mean? How do they relate to remedial action? A narrative RAO needs to be added since contamination will be left in place. This should include, at a minimum, prohibiting future residential use of the property to prevent unacceptable contact exposure.

Miscellaneous sites requiring Institutional Controls have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

17. [Section 5.4.1.2, SDS, Site COCs and RAOs] Same comment as in 16B above.

Miscellaneous sites requiring Institutional Controls have been removed from the SCOU PART 1 ROD. This site group, and this comment will be addressed as part of SCOU PART 2 ROD.

Other Comments

18. [EPA Comments 10, 20, 40A, 40B, Institutional Controls] The Air Force's response regarding costs for implementing institutional controls is unacceptable. A cost summary needs to be presented. This is particularly important since the costs were not in the RI/FS. Also, the omission of costs for ICs is inconsistent with other portions of the ROD, which present costs for other remedies.

Test covering implementation of Institutional Controls will be developed as part of the CB Part 2 ROD.

19. EPA's 14 July 1997 comments on the preliminary draft ROD appear to have been omitted from Version 3, and also from the AR listing. The response to comments presented in the 11/15/97 draft ROD should be maintained.

As requested, cumulative responses to agency comments will be provided in future hard copy deliveries of SCOU PART 1 ROD.

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7/21/98

SCOU ROD Version 3- Preliminary Comments from Lisa Hanusiak

Concerns

l [General] The BCT needs to come to an agreement on the approach for finalizing the SCOU Data Gap Investigation Report. We all seem to have different expectations about how to proceed with this.

The Draft Final Data Gap Investigation report has been submitted for agency review. Five NFA sites included in the Part 1 ROD were part of the Data Gap Investigation. However, because Agency comments on the Draft Final Data Gap Investigation Report have not involved these NFA sites, the Air Force believes BCT concurrence has been reached for the on the NFA decisions for these sites.

2A. [Declaration] The statement about the USEPA not concurring on the portions of the document that address petroleum contamination is unnecessary now that the ROD will not identify remedies to address petroleum hydrocarbons.

Reference to USEPA not concurring with petroleum hydrocarbon only sites has been removed from the Declaration.

2B. On the top of the second page, the first sentence would be clearer if it were modified to state, "Site summaries included in the Decision Summary have been subdivided based on the following categories: ..." The categories might as well all be listed since there are only a handful.

The referenced introduction has been changed to reflect recent changes in the ROD 1 scope. Sites are now grouped by Decision Document (ROD1, ROD2, and CB Part 2 ROD). After Decision Document, sites are further categorized by site characteristic (i.e. landfills, no further action, VOC sites, etc.)

2C. As discussed in the teleconference last week, Plate 4-5 should be moved to the Declaration. The current site listings on the second and third pages of the Declaration then can be deleted. Also, under "Description of Remedies," much of the text can be deleted and the table can be referenced since it lists the remedies.

A revised Plate 4-5 has been incorporated into the Declaration as suggested. All sites are included and numbered consecutively in the summary.

2D. Under "Description of Remedies," much of the text is about the various Castle Airport OUs, and does not seem to follow the section title. Additionally, the text explaining the inclusion of VOC sites in the SCOU ROD needs to clarify that, although the VOC cleanup criteria are under negotiation, the selected remedies for these sites are not interim.

The referenced description of the Castle Operable Units has been moved to the Basis and Purpose portion of the Declaration. With regard to VOCs at the landfill sites, the text states, "For landfill sites requiring VOC remediation, Soil Vapor Extraction (SVE) is the selected remedy. However, SVE shut-off criteria and VOC Remedial Action Objectives are subject to on-going Air Force and Regulatory Agency, discussion. Final decisions for SVE Shutoff Criteria and VOC RAOs will be documented in SCOU Part 2 ROD.

2E. Under "Statutory Determinations," the following sentence is included: "However, in some instances, some contaminants may remain on-site above health-based levels." This sentence should be replaced with: "However, in some instances, contaminants may remain on-site at concentrations exceeding health protective levels. Institutional controls will be implemented at the applicable sites to interrupt potential exposure pathways and reduce risks to acceptable levels."

Change made as suggested.

2F. The discussion of Five-Year Reviews under "Statutory Determinations" should be modified or eliminated. Although the effectiveness of ICs needs to be addressed in Five-Year Reviews, the primary mechanism for evaluating their effectiveness will be the long-term monitoring plan, which will need to receive regulatory agency concurrence. The Declaration currently implies that Five-Year Reviews will be the primary mechanism for evaluating IC effectiveness, which is inadequate.

Discussion of IC review has been removed from the Declaration. Details of implementation and management plan for Institutional Controls will be described in SCOU PART 2 ROD.

3A. [Section 4.3.2.4.1, HHRA, Cancer Risk] The new text added to the end of this section, starting with "The 10^{-6} risk level has been used as a point of departure..." through the bottom of page 15, is very confusing. It should be rewritten.

The referenced text has been shortened to state, "The 10^{-6} risk level has been used as a basis for determining remediation goals when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants or multiple exposure pathways".

3B. The discussion of the target risk range really is about risk management, rather than about quantifying cancer risk; it seems inappropriate to present it in this section. A general discussion of risk management should be presented in a separate section. The new section (possibly numbered 4.3.3, see comment below about section numbers) could address the Reuse Plan in terms of risk management. This would put the site specific discussions of risk management in context.

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The following Section has been added to the Decision Summary:

Risk Management Decisions

After the SCOU RI/FS was completed, it was determined that, for selected sites, a remedy that resulted with estimated incidence of cancer risk between the 10^{-4} and 10^{-6} risk goals was acceptable. These determinations, known as Risk Management Decisions, were based on site-specific information, including the site reuse plan that justified the higher anticipated risk levels. Nineteen of the 120 No Further Action sites presented in ROD1 required Risk Management Decision justification. These site include:

B1335	***B1532***	***ETC11***	***PCB5***	***SSI***
B1404	***DBF***	***FTA2***	- ***PCB6***	***ST1201***
B1405	***DP7***	***PCB1,2,3***	***PCB8***	***UFL4***
B1529	***DP1O***	***PCB4***	***SA BI***	

A discussion of Risk Management Decision justification has been included as part of the summary text for all applicable sites.

4A. [Section 4.4, Institutional Controls] The purpose of the following statement in the first paragraph of Section 4.4 (p. 18) is unclear: "Comments have been received from both the US EPA and the State of California indicating that "Deed Restriction" requirements should be included in the SCOU ROD..." The BCT's objective should be to come to an agreement among all members regarding the requirements for cleanup.

Details of Deed Restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD This comment will be addressed at that time.

4B. In the second paragraph, second sentence of Section 4.4 (p.19), the statement "A secondary objective for both types of sites is to be as unobtrusive as possible." Needs clarification. This statement is confusing.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

4C. In the third paragraph, I agree with John and Rizgar's previous comments. I don't understand what is intended by the discussion regarding deed restrictions and their being "not meant to be a typical component of environmental cleanups, nor intended to last forever..." and "not perfect nor can they be made perfect..." We will need to rework this discussion when we get together the week of 8/3.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

5A. [Section 4.4.1, Development of Institutional Controls] Much of the discussion in the first paragraph of this section (p. 19) appears to be unnecessary. The first sentence should be deleted; it adds no information. The discussion of the seven and nine CERCLA criteria applies to all remedial actions including ICs. It is unnecessary to include it here since it is already presented elsewhere in the ROD.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

Additionally, the discussion of ICs should be related to the SCOU sites. Statements such as "In some cases, removing all contamination to allow..."; "Typically, deed restrictions are combined..."; and "Most often, these restrictions prohibit..." are ambiguous. The ROD needs to specify the ICs required for SCOU sites, and not ICs that are required "in some cases," "typically," or "most often."

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

5B. It is unclear whether the statement in the second paragraph of Section 4.4.1 on p. 19, "The feasibility study provides a clear description of the anticipated restrictions," is accurate with respect to the SCOU FS. This statement is correct given optimal circumstances. However, I don't believe we really had a "clear description" of the restrictions before the ROD was prepared. We need to explain how this worked for the SCOU, and not for hypothetical situations.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

5C. The discussion of community involvement in identifying appropriate ICs should be clarified to explain how the community has been involved to date and how the community will need to be involved in the future. Statements such as "As the deed restriction develops, a clear statement of the restriction provisions needs to be presented to the community," make this unclear.

Furthermore, the statement, "While community acceptance is an essential ingredient in making the final remedy selection, it is not always possible to accomplish all the community's goals," is beside the point and unnecessary. We already know which of the community's concerns with SCOU sites have been addressed (this information is detailed in the Responsiveness Summary), so specific information could be presented or referenced.

Additionally, the discussion of community involvement with respect to ICs should somehow be connected to Section 3.0 (Highlights of Community Involvement) and the Responsiveness Summary. These aspects of community involvement appear divorced in the ROD.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be at addressed at that time.

5D. In the third paragraph of Section 4.4.1 (p. 20), the following statements should be deleted as they are unnecessary: "It is DOD's responsibility to make the final remedy selection in accordance with the applicable laws and requirements..." and "The final remedy selection is formalized through the ROD." These concepts need to be adequately covered in the Declaration, which should be enough.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

5E. The discussion in the fourth paragraph of Section 4.4.1 (p. 20) of certain components of future deeds should be more definitive. It is unclear what is intended by statements including "Language of the deed restriction can be structured..."; and "The restrictions should be structured..."; and "Enforceability of the deed restrictions...will be considered carefully..." The ROD should specify the ICs required for SCOU sites and how the ICs will be implemented. The statements above do not clarify how the Air Force will ensure the effectiveness of ICs.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

6A. [Section 4.4.2, Deed Restriction Implementation Process] Section 4.4.2 should clarify how the current status of Castle Airport relates to the process described. The discussion would be much more useful if it were put in the context of the SCOU ROD. Many of the activities described have already been completed; however, the general discussion gives the impression that all of the activities are slated to be accomplished in the future. For example, the statement "The AFBCA prepares the remedial decision document which may include statements of use restrictions for the property," is confusing. In this case, I'm assuming the decision document is the SCOU ROD, and that the statements of use restrictions are already included.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

6B. The discussion in the last two paragraphs of Section 4.4.2 does not clarify the Air Force's responsibilities for implementing ICs. These two paragraphs cover the most critical aspect of ICs--implementation--but the discussion is very vague. The text needs to state the measures the Air Force intends to take to ensure that its selected remedy is effective in the short and long term.

Details of Deed restriction including development, implementation, and removal will be finalized in SCOU PART 2 ROD. This comment will be addressed at that time.

7A [Section 5.1.1.1, Building 51 Group] It might make sense to move the site summary information for SWMUs 4.26, 4.27, and 4.30 to the section on NFA sites (Section 5.5). The inclusion of site use history for these SWMUs implies that remedial actions are necessary.

The VOC sites, including B51 Group have been removed from SCOU PART 1 ROD. The VOC sites, and this comment will be addressed as part of SCOU PART 2 ROD.

7B. The text in Section 5.1.1.1 should explain why it is acceptable to move forward with decisions for the Building 51 Group despite the data gap for metals (i.e., why was it considered unnecessary to fill data gaps before remedy selection and RD/RA?). Prior to the SCOU Data Gap Investigation, the project team identified sites that required sampling based on the information presented in the SCOU Data Gap Spreadsheet. Since the Building 51 Group sites were omitted from the Data Gap Investigation, I assume we had a rationale for this during project scoping. The rationale needs to be documented in the ROD. This comment also applies to the Building 54 Group sites.

The VOC sites, including B51 Group have been removed from SCOU PART 1 ROD. The VOC sites, and this comment will be addressed as part of SCOU PART 2 ROD.

7C. Under "Human Health Risk Assessment," the statement "The maximum cumulative residential risk was...and the occupational risk was..." can be deleted (p. 5.1-3). This statement repeats the information already presented in the risk summary table for the site. This comment also applies to the Building 54 Group (p. 5.1-6).

The VOC sites, including B51 Group have been removed from SCOU PART 1 ROD. The VOC sites, and this comment will be addressed as part of SCOU PART 2 ROD.

8A. [Section 5.1.1.2, Building 54 Group] In the introductory section (p. 5.1-4), the text (after the bullet) should explain what was stored at Storage Area B3.

The VOC sites, including B54 Group have been removed from SCOU PART 1 ROD. The VOC sites, and this comment will be addressed as part of SCOU PART 2 ROD.

8B. In the second paragraph on p.5.1-5, the text should explain how the additional components of the B54 group that are described, including the USTs, floor drains, underground ceramic sewer lines, industrial waste line, and segment of the JP4 fuel line, are being addressed (i.e., how they fit into the investigation and cleanup).

The VOC sites, including B54 Group have been removed from SCOU PART 1 ROD. The VOC sites, and this comment will be addressed as part of SCOU PART 2 ROD.

9. [Section 5.1.1.3, Building 1350] Under "Risk Management Decision" (p. 5.1-8), the statement "The ROD provides RAOs for all COCs identified at the site" is inaccurate. RAOs are not provided for VOCs, only the remedy for addressing VOC contamination has been selected.

The VOC sites, including B1350, have been removed from SCOU PART 1 ROD. The VOC sites, and this comment will be addressed as part of SCOU PART 2 ROD

10. [Section 5.3, Shallow Soil Contamination Sites] The RAOs for each site should specify institutional controls as a contingency component of the remedy should excavation fail to adequately remove contaminants. Although a general statement about this is included in the first paragraph of Section 5.3, discussion of this has been omitted from the site summaries.

The Shallow Contamination sites have been removed from SCOU PART 1 ROD. These sites, and response to this comment, will be presented in SCOU PART 2 ROD.

11. [Section 5.3.1.1, Building 871] I would like to reiterate my comment from last week regarding Building 871. Assuming that all remedial actions have been taken and the agencies have concurred on site closure, this should be a NFA site. I have verified this with my management and attorney. This site is no different from the PCB sites, which we have all agreed require no further action and, as a result, are listed for NFA in the ROD. Let's take credit for a RA complete!

Agreed! B871 has been moved to the NFA section. The joint closure letter from DTSC, RWQWB, and EPA was received 12/12/96.

12. [Section 5.3.1.7, Firing Range] I'm confused about the status of the firing range. When was the draft closure report issued? Where are we going with this? The ROD is vague regarding the additional work that needs to be completed.

The Firing Range, as well as all of the Shallow Contamination sites has been removed from ROD1 These sites, and this comment, will be addressed as part of SCOU PART 2 ROD.

Comments

12. [Executive Summary] The EC should be retitled. It is not actually an EC but an overview of the information presented in each section of the ROD. The Declaration functionally serves as an EC.

As suggested, the title of Executive Summary was changed to ROD Format.

14A. [General] Whenever referencing the SCOUR RI/FS for site-specific or background information, cite the applicable sections. This comment also applies to other referenced documents, such as the CB Part 1 ROD and SCOU Data Gap investigation Report.

Changes made as suggested.

14B. The name of the site should be consistent throughout the document. The document calls the site both "Castle Airport" and "CAFB".

Changes made as suggested.

14C. "RA" should be globally replaced throughout the ROD with either "remedial action" or "removal action", as appropriate.

Changes made as appropriate.

15A. [Section 4.2, Comprehensive Basewide Program] The CB Part 1 ROD was finalized in 1997 (first sentence, second paragraph, p. 7).

Change made as suggested.

15B. In the last paragraph, second to last sentence, p. 8, replace "environmental concerns" with "ecological receptors." ("...document any remedy modifications that are needed to protect ecological receptors.")

Based on recent changes in the scope of ROD1, the referenced text was revised to state, "Final decisions for ecological receptors at Castle will be documented in the CB Part 2 ROD".

15C. In the last paragraph, last sentence, p. 8, verify the date listed for CB Part 2 (April 1999). Also, is this supposed to be the date for the ROD?

The text has been revised to state, "The CB Part 2 ROD is scheduled for completion in September, 2000".

l6. [Section 4.2.1, Ecological Risk Assessment, p. 8] I don't understand why FTA-1 isn't considered an upland, rather than a wetland. I understood that the concern for this site was surface runoff carrying contaminants to the adjacent wetland.

FTA1 has been included as both a wetland and upland site.

17. [Section 4.3.1, SCOU Assessments for Impacts to Groundwater Quality and Human Health Risk] The numbering used in this section should be reviewed. The discussion of WQSA begins at Section 4.3.1.2 and the discussion of HHRA begins at Section 4.3.2. This seems inconsistent. It would be better to begin the WQSA discussion at 4.3.1 and the HHRA discussion at 4.3.2. (Then the risk management discussion could begin at 4.3.3.) The information presented in the current Section 4.3.1 could be integrated into the separate WQSA and HHRA discussions. Also, please note that given the current numbering system, with Section 4.3.1 beginning discussions of both WQSA and HHRA, the numbering is incorrect: the WQSA discussion should begin at 4.3.1.1 and the HHRA discussion should begin at 4.3.1.2.

Section numbering has been rectified for the WQSA discussion.

18 [Section 4 3.1 2.1, WQSA Contaminants of Potential Concern] The last paragraph of this section, p. 10, includes the statement "...because TPH, TVPH, and TEPH are not compound specific, they have not been included as COCs for SCOU sites." Does this statement apply to WQSA, or only to HHRA, which excludes mixtures of compounds for which risks cannot be quantified?

Based on input from RWQCB, TEPH/TVPH remain as COCs for selected SCOU sites. The referenced text has been removed.

19A. [Section 4.3.2, HHRA] At the top of page 13:

modify the first bullet to include "and determine the appropriate response actions" at the end of the sentence.
delete the third bullet ("help support selection of NFA alternatives").

Changes made as suggested.

19B. The information presented in Section 4.3.2.2 (Quantitative BHHRA) seems redundant with the information in Section 4.3.2 (under bullets). Couldn't this information be combined and Section 4.3.2.2 eliminated?

As suggested, the Quantitative Risk Assessment section was eliminated from SCOU PART 1 ROD.

l9. [Section 4.3.2.1, HHRA COPCs] In the second paragraph on page 13, under the first bullet, clarify that laboratory contamination is an example of a source of false positive results (e.g., due to laboratory contamination); however, other problems also may result in false positive results.

Change made as suggested.

20. [Section 4.3.2.3, HHRA, Pathways and Exposure Scenarios] Delete the first sentence of the first paragraph (p. 14), and add the word "potential" to the beginning of the second sentence (new first sentence). I think it's confusing to discuss "many exposure pathways" when the actual potential exposure pathways are identified.

Change made as suggested.

22A. [Section 4.3.2.6, HHRA RAOs] "PER" should be defined (p. 17).

PER was a typo, text has been revised to shoe PEF (particulate emission factor) which is shown in the legend.

22B. In the second bullet on p. 18, "SF," appears to be a typo. Should this be "CSF"?

$S.F_o$ appears in the legend and is defined as the oral cancer slope factor.

23. [Section 4.5, Five Year Review] The key function of Five-Year Reviews is to ensure protectiveness of HHE. This concept needs to be highlighted. Also, five years is the very minimum frequency at which the remedial actions are required to be evaluated. The expectation is that more frequent monitoring will be conducted.

The text has been modified to state, "The goal of the reviews will be to confirm that the selected remedial actions are meeting performance standards established".

24A. [Section 5.1.1.6, Discharge Area 4; Section 5.1.1.7, Discharge Area 8] Under the descriptions of removal action work conducted to date, it would be more meaningful to explain how much of the total estimated TCE mass at DA4 and DA8 the over 325 and over 200 pounds removed, respectively, represent (how much is remaining?). It is difficult to discern this from the information as presented (e.g., for DA4, 13,500 cubic yards of VOC contaminated soil prior to initiating SVE, and 325 pounds removed; it's kind of like comparing apples and oranges).

DA4 as well as the rest of the VOC Group of sites have been removed from SCOPU ROD1. DA4 and response to this comment will be provided as part of SCOU PART 2 ROD.

24B. For Discharge Area 8, under "Human Health Risk Assessment," sewer line segment SS7 should be specified rather than SS8.

DA8 as well as the rest of the VOC Group of sites have been removed from SCOPU ROD1. DA8 and response to this comment will be provided as part of SCOU PART 2 ROD.

24. [Section 5.3.1.5, ETC8] The text discusses analyses of sieved and un-sieved samples. The significance of these two types of analyses should be clarified. How do the results translate in terms of risk?

ETC8 is part of the Shallow Contamination group of sites. ETC8 and this comment will be addressed in SCOU PART 2 ROD.

USEPA Comments on the Source Control Operable Unit
Record of Decision Version 3
June 1998

7/23/98

SCOU ROD Version 3 - Preliminary Comments from Lisa Hanusiak

Concerns

1. [Documenting Significant Changes to Selected Remedies] The ROD needs to document all significant changes from the preferred alternatives presented in the RI/FS and Proposed Plan to the final selected remedy for all SCOU sites. Significant changes include scope, performance, and cost (refer to Section 5.3 of EPA guidance for descriptions). EPA raised the concern with documenting significant changes in comment 26 on the draft ROD.

   Explanation of Significant Difference (ESD) text has been added to both the Landfill and NFA portions of the ROD1 Decision Summary. The Landfill ESD section (Section 5.1.2) states, "Based on the SCOU RI/FS, the preferred remedial alternative for all of the Castle Landfill sites was Zoned Capping with Institutional Controls. When the SCOU Proposed Plan was issued the preferred alternative for Castle Vista Landfills A and B and LF2 was changed to Excavation and On-site Disposal. These changes were based on the relatively small volume of waste found at these landfills and on community efforts to attain unrestricted reuse of the sites. After the Proposed Plan was issued, the selected remedies for LF1 and LF3 were also changed to Excavation and On-site Disposal. These changes were based on community concerns regarding anticipated reuse of the area occupied by LF1 and on preliminary trenches that were dug at LF3 that indicated relatively low volumes of waste were located at the site. All of these changes have been reflected in the SCOU ROD".

   An introduction to NFA ESDs, that includes a listing of all the NFA ESDs, is located in Section 5.2.1, and states, "During the SCOU investigation and remedy selection process, the Air Force, with concurrence of the BCT, changed the selected remedy for several post FS NFA sites from active remediation or institutional controls to NFA. These changes were based on a variety of factors which included responding to community concerns, acquisition of additional data, and reevaluation of risk and potential water quality impacts. Sites where the NFA decision represents a significant change from previously documented preferred alternatives are noted below. The basis and justification for the changes are included in the site summaries"

   For many SCOU sites, the selected alternative has changed, and the Decision Summary of the ROD needs to explain and provide a justification for the change. It may be possible to document the significant changes in the "Comparison of Alternatives" plates for each site group; rationales for the changes could be included in footnotes to these plates.

   Additionally, the Decision Summary of the ROD needs to explain why remedial decisions for certain SCOU sites have been deferred to the CB Part 2. The RI/FS and

Proposed Plan specified preferred alternatives for these sites, and the delay in decision making is a significant change.

Explanation of Significant Difference text (Section 4.3) has been added to the Decision Summary to further explain removal of sites from SCOU Part 1 ROD. This text states, "The SCOU comprises a total of 231 individual sites. The SCOU RI/FS and Proposed Plan addressed all 231 of these sites. However, because the Air Force and regulatory agencies have been unable to reach agreement on a variety of SCOU issues, including VOC remedial action objectives (RAOs), soil vapor extraction shut-off criteria, implementation and monitoring requirements for Institutional Controls and Deed restrictions, and selected remedies, a total of 65 SCOU sites have been removed from SCOU PART 1 ROD. Final decisions for these 65 sites will be documented in SCOU PART 2 ROD or in the CB Part 2 ROD. The Declaration includes a listing of all 231 SCOU sites organized by decision document and site characteristics".

2. [Section 5.1.1.1, Building 51 Group (p. 5.1-4)] A remedial action objective (RAO) is listed for benzo(a)pyrene at Building 1253, yet no corresponding remedial action is specified (only SVE). The discussion under "Risk Management Decision" indicates that the exposure pathway is incomplete since the site is paved. It seems that institutional controls are an implicit component of the remedy for this site, although they are not discussed. The potential requirement for ICs needs to be clarified and the selected remedy needs to be modified as necessary. All corresponding tables at the end of the VOC site section should be amended as necessary.

   Additionally, if the intention is to leave waste in place, a narrative RAO for BAP (i.e., interrupting potential exposure pathway and preventing contact exposure) needs to be added.

   VOC sites have been removed from SCOU PART 1 ROD. All comments related to SCOU PART 1 ROD will be addressed during development of SCOU PART 2 ROD.

3A. [Section 5.1.1.2, Building 54 Group] Institutional controls are not specified as a component of the remedy for Building 1260 (Building 54 group). This is a concern since 1,4-dichlorobenzene contamination at Building 1260 poses an unacceptable risk to human health. This is not a concern for the other VOC sites, since the remediation is driven by water quality impacts. The potential requirement for ICs needs to be clarified and the selected remedy needs to be modified as necessary. All corresponding tables at the end of the VOC site section should be amended as necessary.

   VOC sites have been removed from SCOU PART 1 ROD. All comments related to SCOU PART 1 ROD will be addressed during development of SCOU PART 2 ROD.

3B. Under "Risk Management Decision," (p. 5.1-6) the following statement requires clarification: "Based on data gathered at other SCOU sites, it is unlikely that metals at concentrations exceeding PRAOs are possible from the B54 source area." The ROD

should explain why using data from other sites as a basis for making decisions at this site is valid.

VOC sites have been removed from SCOU PART 1 ROD. All comments related to SCOU PART 1 ROD will be addressed during development of SCOU PART 2 ROD.

4A. [Section 5.1.1.9, Sanitary Sewer 4 (p. 5.1-13)] The second paragraph, last sentence in Section 5.1.1.9 states, "...soil gas results for vinyl chloride and CFCs were considered inconclusive due to GC calibration problems and most likely represented false negatives for these compounds." This is unacceptable. Remedial decisions need to be based on acceptable RI data or a data gap still exists.

Assuming the Air Force has adequately resolved this data quality issue, the discussion of the calibration problem should be omitted from the ROD. Did the Air Force perhaps fill the data gap by resampling or by using other data (of acceptable quality) from adjacent sampling locations? Alternatively, it may have been possible to make the assumption that definitively quantifying vinyl chloride and CFCs was not critical since the selected remedy will address these contaminants in addition to TCE.

VOC sites have been removed from SCOU PART 1 ROD. All comments related to SCOU PART 1 ROD will be addressed during development of SCOU PART 2 ROD.

4B. The estimated volume of VOC contaminated soil at this site was omitted.

VOC sites have been removed from SCOU PART 1 ROD. All comments related to SCOU PART 1 ROD will be addressed during development of SCOU PART 2 ROD.

5. [Section 5.1.4, The Selected Remedy for VOC Sites (p. 5.1-17)] The first paragraph, last sentence, discusses a potential "pilot SVE project" for Hangar F4. The purpose of the "pilot project" is unclear; it should be explained. Also, it is unclear whether conducting a "pilot project" may potentially alter the selected remedy.

VOC sites have been removed from SCOU PART 1 ROD. All comments related to SCOU PART 1 ROD will be addressed during development of SCOU PART 2 ROD.

6A. [Section 5.2.1.2, Landfill 2 (pp. 5.2-4 through 5.2-6)] The text should explain why conducting a removal action was considered necessary. This comment applies to the other landfill sites as well.

As suggested, information on why Removal Actions are being performed has been added to site text for all applicable landfill sites.

6B. Under "Water Quality Impacts," 1,2,4-trimethylbenzene is listed as a COC. Carbon tetrachloride probably should be specified instead.

The correction has been made as suggested. Carbon tetrachloride, not 1,2,4-trimethylbenzene exceeded the WQSA screening levels at LF2.

6C. The text under "Risk Management Decision" discusses meeting occupational reuse standards for Landfill 2. It is unclear why unrestricted reuse would be unacceptable since the landfill is being excavated. This issue should be clarified and a justification, which could explain why institutional controls are not required, should be presented. This comment applies to all of the landfills that are being excavated.

As suggested, the following text has been added to the Risk Management Decision, "The remedial decision for LF2 is driven by the BHHRA and WQSA goals. The occupational exposure was considered appropriate for the LF2 site because the proposed future land use is industrial/commercial. However, because all waste has been excavated and removed from the site under Removal Action authority, institutional controls will not be required and the site will be open for unrestricted reuse".

6D. Under "Risk Management Decision," in the second paragraph, second sentence, the text "...and benzo(a)pyrene is a Class B2 carcinogen.." should be deleted. Is this sentence implying that the potential presence of BAP is less of a concern since it is only a "probable human carcinogen"? This comment also applies to the discussion of Landfill B (Section 5.2.1.7, p. 5.2-16), which includes the same statement.

Because LF2 and CVLFB have been "clean" closed, there is no longer need to justify risks in excess of 10-6 at these sites. For this reason, all of the discussion concerning benzo(a)pyrene has been removed from the Risk Management Decision text.

6E. Under "Risk Management Decision," third paragraph (p. 5.2-6), the discussion of RAOs for carbon tetrachloride and freon is confusing. The text states, "Carbon tetrachloride and FC12, detected up to a depth of 20 feet are soil gas COCs. RAOs for these COCs are established as cleanup standards but do not apply as acceptance criteria since soil gas is not a material waste that would be excavated or consolidate." It is unclear how the Air Force intends to meet the specified RAOs for these compounds. The statements above imply that contamination may be left in place beyond the depth of the excavation. This issue needs to be clarified.

The referenced paragraph has been removed from the Landfill text. Based on confirmation samples collected after Removal Action excavation work was completed, no soil contamination above RAOs remains at LF2.

7. [Section 5.2.1.3, Landfill 3 (p. 5.2-6)] The purpose of the new text at the bottom of the first paragraph, regarding the transfer of land to the Federal Bureau of Prisons, is unclear. Specifically, what is intended by the statement "...LF3 will continue to be under control of the federal government"?

The Landfill introduction text has been revised to state, "LF3 is a part of a land parcel that has been transferred to Federal Bureau of Prisons, Department of Justice. The prison footprint is not within the LF3 boundary. To ease property transfer and reduce risks from potential human exposure to site contaminants, waste from LF3 will be excavated and disposed of at a designated on base consolidation landfill. This work will be accomplished under Removal Action authority and is scheduled to begin in the fourth quarter of FY98. *Clean closure of LF3 will allow for unrestricted reuse of the site".*

8A. [Section 5.2.1.4, Landfill 4] Discussion of the removal action for Landfill 4 has been omitted from the introductory section, which is inconsistent with the other landfill discussions. Also, the text should explain why the removal action was considered necessary.

The following text has been added to the LF4 summary to document the Removal Action status at this site, "LF4 has been designated as one of the Castle Consolidation Landfills. As part of consolidation efforts, waste at LF4 will be consolidated into a smaller area, and waste excavated from other SCOU sites has been taken to LF4 for disposal. This work was begun in 1997 under Removal Action Authority. The Removal Action was needed satisfy state regulatory landfill closure requirements, address community concerns, reduce the land area impacted by contaminants. Information on the LF4 waste acceptance criteria is discussed in the COC/RAO summary".

8B. Under "Site COCs and RAOs" (p. 5.2-10), the discussion of the RAO for freon is confusing. The text states that the RAO applies to soil gas cleanup standards, rather than acceptance criteria. However, it is unclear how the Air Force intends to address this concern since no specific remedial action to address soil gas is specified.

Capping is the selected remedy for LF4. The objective of the Zoned Cap remedy is to reduce potential infiltration of surface water into buried waste and reduce the potential for leachate production and ground water impact. This explanation has been added as part of the LF4 RAOs.

Additionally, the RAOs need to include the waste acceptance criteria for Landfill 4. One of the remedial objectives is to ensure that designated or hazardous wastes are not placed in this landfill. This comment also applies to Landfill 5.

The following narrative RAO has been added to for both LF4 and LF5. "The LF4/LF5 Landfill Acceptance Criteria was developed as part of the LF4/LF5 Closure/Post Closure Maintenance Plan. The Acceptance Criteria specifies that "hazardous" or "designated" wastes cannot be disposed of at LF4/LF5. The objective of the Acceptance Criteria is to prevent potential human exposure to contaminants and potential vertical migration of contaminants to ground water.

9A. [Section 5.2.1.6, Castle Vista Landfill A (pp. 5.2-13 and 5.2-14)] The introduction should explain why in a removal action was considered necessary.

The following Removal Action rationale has been added to the CVLFA text, "The CVLFA Removal Action was needed to satisfy state regulatory landfill closure requirements, address community reuse concerns, reduce the land area impacted by contamination, and for cost effectiveness (by conducting the work concurrently with the consolidation of LF-4)".

9B. The text in the first paragraph on p. 5.2-14 include the statement "...method blank contamination was reported in all samples that contained detectable levels of TEPH, and therefore the identification of TEPH was considered tentative." The same concern as that expressed in comment 4A above applies in this case, although it is not as critical since the ROD is not identifying remedies for petroleum contamination.

TEPH data was included in the WQSA screening summary. The noted levels were well below Water Board DLM screening levels. Reference to TEPH levels being considered tentative have been removed from ROD1.

9C. The discussion of detected metals ("slightly above TBVs"--what does this mean?) should be more definitive in its conclusion that metals do not present a concern, and, therefore, do not necessitate remedial action. The statement that "they are most likely naturally occurring" is rather unconvincing.

CVLFA site data was reviewed, and it was determined that only manganese exceeded WQSA screening levels. However, based on confirmation samples collected after waste had been removed from CVLFA, it was determined that manganese did not present a significant risk at the site. The following explanation is presented in the Risk Management Decision text, "Although only manganese exceeded WQSA screening levels, CVLFA was retained as a Removal Action site because of community concern regarding potential residential reuse. Because the selected remedy required all waste to be removed from CVLFA, and collection of confirmation samples confirmed site cleanup was complete, CVLFA will not require Institutional Controls and will be open for unrestricted reuse".

9D. ***The last sentence in the "Water Quality Impacts" section, "Although the site did not exceed WQSA risk levels, it was retained as a RA site because of community concerns regarding potential residential reuse," should be deleted. This discussion belongs under the "Risk Management Decision' section.***

As suggested, information regarding community concerns for residential reuse has been moved to the Risk Management discussion.

10. [Section 5.2.2, Description of Alternative for Landfill Sites; Plate 5-2-2, Alternatives for Landfill Sites; Plates 5-2-3 through 5-2-11, Cost Summaries; Plate 5-2-12, Comparison of Alternatives for Landfill Sites] For all landfill remedies that involve capping and leaving waste in place, the alternative should be listed as "Cap and Institutional Controls" (e.g., Class III Landfill Cap and Institutional Controls) as they are in Plate 5-2-1 (Summary of Alternative Considered for Landfill Sites and Disposal Pits). This comment

also applies to Section 5.2.2.4 (Class III Landfill Cap); Section 5.2.2.5 (Evapotranspiration Landfill Cap); Section 5.2.2.6 (Zoned Landfill Cap); and the plates cited above. The titles of Sections 5.2.2.4, 5.2.2.5, and 5.2.2.6 should be modified accordingly.

Changes made as suggested.

The description of each alternative involving capping in Plate 5-2-2 discusses access restrictions; however, the headers for these alternatives do not call out institutional controls as a component of the remedy. For the cost estimate tables, the costs of institutional controls appear to be included, although these costs are not itemized, which would be helpful. Information on institutional controls could be included in Sections 5.2.2.4, 5.2.2.5, and 5.2.2.6 by reference to Section 5.2.2.8 (Institutional Controls and Deed Restriction), although any remedy-specific or site-specific institutional controls should be described.

Institutional Controls has been added to the heading for each capping remedy. References to section 5.2.2.8 (now 5.1.2.8) have been included as suggested.

11A. [Section 5.2.2.7, Landfill Acceptance Criteria (p. 5.2-19)] The title of this section should be changed to "On-Site Landfill Waste Acceptance Criteria."

Change made as suggested.

11B. The third sentence should be replaced with "Designated or hazardous waste will be disposed off-site."

The third sentence was modified to state, "Designated and hazardous waste will be characterized and taken off-site for disposal".

11C. ARARs need to be specified in the ROD for landfill waste acceptance. It is unacceptable to defer ARARs identification to the Closure/Post Closure Maintenance Plans identified in the last two sentences of this section.

The ARAR section has been modified to match the ARAR section from the recently submitted Draft of the Landfill 1, 3, 4, and 5 Removal Action Memorandum. This section identified specific ARARs related to the Castle Landfills.

12A. [Section 5.2.2.8, Institutional Control and Deed Restriction] In the second paragraph (p. 5.2-19), the first two sentences should be deleted. The Air Force is responsible for ensuring that institutional controls are effectively implemented. Although it is the Air Force's prerogative to arrange to have the transferee oversee the institutional controls, the Air Force is responsible for ensuring that the remedy does not fail. This needs to be reflected in the ROD.

Sentences removed as suggested. Further details regarding implementation, maintenance, and possible removal of Institutional Control/Deed restriction will be presented in SCOU Part 2 ROD.

In the last sentence of the same paragraph, "...unless lifted by the AF or the regulators..." should be replaced with "...unless lifted by the AF with concurrence of the regulatory agencies..."

The entire paragraph has been removed from the SCOU ROD. Further details regarding implementation, maintenance, and possible removal of Institutional Controls/Deed restriction will be presented in SCOU PART 2 ROD.

12B. On p. 5.2-20, the first paragraph (at the top of the page) and the first sentence of the second paragraph should be deleted. The CERCLA 120(h) covenants are unrelated to remedy selection, and, therefore, should not be addressed in the ROD. This is an independent requirement imposed upon the Air Force during property transfer.

The covenant listing has been removed from the ROD.

13A. [Section 5.2.4, The Selected Remedy for Landfill Sites] In the first sentence, the selected remedy specified should be "zoned capping with institutional controls." Additionally, the discussion will need to be updated to address changes to the selected remedies for Landfill 3.

Changes made as suggested.

13B. The text should specify where excavated landfill wastes will be transported: primarily to Landfill 4, with overflow to Landfill 5, pending regulatory agency approval.

The text was revised to state, "Excavation and On-site Disposal at the designated on-base consolidation landfills (LF4 and LF5) was selected for Landfills LF1, LF2, LF3, and Castle Vista Landfills A and B".

Comments

14. [Section 5.1.1.3, Building 1350 (p.5.1-7)] Under "Water Quality Impacts," the first sentence appears to include a typographical error. It should probably state, "The maximum allowable soil concentration of TPH *was* exceeded *in the* WQSA VLEACH1 screening analysis."

B1350 is a VOC site that has been removed from ROD1. This comment will be addressed as part of SCOU PART 2 ROD.

15. [Section 5.1.1.8, Hangar F4 (p. 5.1-12)] Under "Water Quality Impacts," the discussion indicates that only TCE concentrations exceeded the WQSA screening criteria. It can be inferred that cis-1,2-DCE concentrations did not exceed the screening criteria since a

RAO is not specified but this is not stated. The text should explain how the cis-l,2-DCE levels compared to action levels.

Hangar F4 is a VOC site that has been removed from ROD1. This comment will be addressed as part of SCOU PART 2 ROD.

16. [Section 5.1.3, Comparative Analyses for VOC Sites (p. 5.1-7)) In the second sentence, "...the selection of remedial alternatives," should be replaced with "...the selection of remedies."

VOC sites have been removed from ROD1. This comment will be addressed as part of SCOU PART 2 ROD.

16. [Plate 5-1-1, Summary of Considered Alternatives for VOC Sites] In the legend, "preferred alternative" should be replaced with "selected remedy." This comment applies to all tables of this type in subsequent sections.

VOC sites have been removed from ROD1. This comment will be addressed as part of SCOU PART 2 ROD.

17. [Plate 5-1-7, Comparison of Alternatives for VOC Sites] Under "Implementability" for Building 1260, the statement regarding disruption of reuse activities, as specified for Hangar F4, should be included. This will fully address EPA's comment 57B on the draft ROD.

VOC sites have been removed from ROD1. This comment will be addressed as part of SCOU PART 2 ROD.

18. [Section 5.2.1, Site Summaries for Landfill Group] Each of the site summaries for landfill sites, under "Risk Management Decision," include the statement "The ROD provides alternatives for addressing identified COCs and meeting...closure requirements..." The "ROD provides alternatives" portion of the statement seems to imply that more than one remedy is specified for these sites. This statement needs to be clarified.

The phrase, "ROD provides alternatives" has been removed from the Landfill Risk Management Decision text.

20A. [Section 5.2.1.5, Landfill 5] The text under "Human Health Risk Assessment" (p. 5.2-11) includes discussion of the WQSA. This discussion should be moved to the "Water Quality Impacts" discussion. Also the sections referenced are incorrect: 5.5.3.5 and 5.5.3.6 are the correct citations.

Changes made as suggested.

20B. The following incomplete sentence is included under "Risk Management," "Also, because DP-7, DP-9, and DP-10 do not contain identified contaminants at concentrations exceeding WQSA RAOs ... and were not considered when estimating quantities for waste burial." Perhaps the sentence should be combined with the following sentence, "DP-7 and DP- 10 are recommended for no further action."

The referenced sentence was changed to state, *"With the possible exception of beryllium, DP7, DP9, and DP10 do not contain contaminants at concentrations exceeding WQSA RAOs. For this reason, these areas were not considered when estimating quantities for waste burial. DP7 and DP10 require No Further Action. More information on these sites can be found Section 5.2."*

20C. A rationale should be provided to explain why the occupational exposure scenario is appropriate, despite the future use of the Landfill 5 area as a penitentiary (i.e., prison footprint is a safe distance from contaminated soil at Landfill 5).

The following justification has been added to the LF5 Risk Management Decision text, "LF5 is part of a land parcel that has been transferred to the Federal Bureau of Prisons. Because LF5 is <u>not</u> within the prison footprint, and because the planned reuse of the area is industrial/commercial, the occupational exposure scenario is appropriate for the site".

21. [Section 5.2.1.7, Castle Vista Landfill B] The introduction should explain why a removal action was considered necessary. Also, the third paragraph of the introduction should explain that the presence of cis-1,2-DCE is consistent with its presence in the adjacent off-base plume, for which the landfill is the probable source.

The following justification has been provided for the CVLFB Removal Action, "The CVLFB Removal Action was needed to satisfy state regulatory landfill closure requirements, address community concerns for residential reuse, reduce the land area impacted by contamination, to remove ground water contamination source area, and for cost effectiveness (by conducting the work concurrently with the consolidation of LF-4).

The following information has been added to the discussion of cis-1,2 DCE at CVLFB, "Cis-1,2-DCE (up to 300.0/µg/L) and other VOCs including PCE, TCE, and vinyl chloride (up to 282.5/µg/L at 20 feet bgs also were detected in soil gas samples in all but three borings. Cis-1, 2-DCE has also been identified in an off-base ground water plume, for which CVLFB is the probable source. This off-base ground water plume is being addressed by remedial action specified in the CB Part 1 ground water ROD."

22. [Section 5.2.2, Description of Alternative for Landfill Sites] The sections referenced in the third paragraph (p. 5.2-17) are incorrect: 5.2.2.7, 5.2.2.8, and 5.2.2.9 are the correct citations. Also, Section 5.2.2.6 should be referenced under Section 5.2.2.3 (Excavation and On-Site Disposal).

The reference citations have been corrected. It should be noted that these sections are now Sections 5.1.3.7, 5.1.3.8, and 5.1.3.9.

23. [Section 5.2.2.5, Class III Landfill Cap (p. 5.2-18)] In the second paragraph, second to the last sentence, please add "during routine monitoring" after "... if elevated concentrations of landfill gases are identified..."

Text modified as suggested.

24. [Section 5.2.2.9, Long-Term Monitoring (p. 5.2-22)] The text "specified in the monitoring plan" should be added to the end of the second to last sentence: "The samples will be analyzed to meet State and EPA requirements for landfill monitoring specified in the monitoring plan."

Change made as suggested.

25. [Section 5.2.5.4, Use of Permanent Solution, etc.] The text in the last sentence describing the decisive factors in the selection of landfill alternatives should be modified. "Compliance with ARARs" should be deleted (ARARs must be met), and "community concerns" should be added.

Text modified to state, "The decisive factors in the selection of the landfill alternatives were community and state acceptance, implementability, and cost.

26. [Plate 5-2-2, Alternatives for Landfill Sites] For Landfill 3, the same groundwater monitoring requirements are specified for the alternatives involving both excavation and capping (i.e, installation of one well, semiannual sampling for 10 years, annual sampling for 20 years). This appears to be incorrect; limited monitoring likely would be appropriate for the excavation alternatives. The text should be clarified.

Change made as suggested.

USEPA Comments on the Source Control Operable Unit
Record of Decision Version 3
June 1998

7/27/98

SCOU ROD Version 3 - Preliminary Comments from Lisa Hanusiak

Concerns

1. [Institutional Controls] ICs prohibiting residential reuse need to be specified for all sites not cleaned up to unrestricted reuse levels, or justifications need to be presented. Site specific comments related to this are provided below and in my previous comments of 7/21 and 7/23.

   Agreed. Institutional Controls are included as part of the remedy for all sites not cleaned to unrestricted reuse. For SCOU PART 1 ROD, Institutional Controls are part of the capping remedy for LF4 and LF5.

2. [Section 5.3.1, Site Summaries for Shallow Soil Contamination Sites] The RAOs for the shallow contamination sites need to include the waste acceptance criteria for the receiving landfills. One of the remedial objectives is to ensure that designated or hazardous wastes are not placed in these landfills.

   Discussion of the Shallow Contamination group has been removed from SCOU PART 1 ROD. Final decisions for the Shallow Contamination sites will be documented in SCOU Part 2 ROD.

3A. [Section 5.3.1.2, Building 1344] The BCT should reevaluate the selected remedy for this site. The risk is within the target risk range for occupational reuse. It may be sufficient to target this site for institutional controls that restrict residential reuse rather than excavate it.

   The final decision for Building 1344 will be documented in the SCOU Part 2 ROD. Discussion of the selected remedy and potential alternatives has been removed from SCOU Part 1 ROD.

3B. Under "Risk Management Decision," a statement is included regarding non-cancer reference doses. It is unclear whether the conservative approach of excavation was identified as the appropriate remedial action based on this uncertainty. The sentence is confusing. Also, the abbreviation RfD should be spelled out.

   The final decision for Building 1344 will be documented in the SCOU PART 2 ROD. Discussion of Risk Management Decisions associated with this have been removed from SCOU PART 1 ROD.

3C. In the first paragraph (p. 5.3-3), the reference to Building 1344 being a "Further Action Data Gap Site" should be deleted.

Discussion of B1344 has been removed from SCOU Part 1 ROD.

4A. [Section 5.3.1.3, Discharge Area 3 (p. 5.3-5)] The rationale for conducting remedial action at DA-3 is somewhat unclear. The basis for remedial action is that lead concentrations in soil exceed the RAO based on Water Board DLM. Lead was reported at a concentration of 887 mg/kg at 5 feet bgs, and the RAO is 855 mg/kg. The reported lead concentration at DA-3 exceeded the RAO by 4%.

At another shallow excavation site, ETC-8, manganese was detected at a concentration of 247 mg/kg, and the RAO based on Water Board DLM is 228 mg/kg. The reported manganese concentration at ETC-8 exceeded the RAO by 8%. However, under "Risk Management Decision" (p. 5.3-9), the manganese is written off as background.

The approach taken at DA-3 for lead seems inconsistent with the approach taken at ETC-8 for manganese. Was the lead contamination more widespread at DA-3 than is indicated in the site summary? Was the decision for DA-3 based on the greater toxicity of lead as compared to manganese? This needs to be clarified. Given analytical error, which likely equals or exceeds 4%, it is unclear whether the lead RAO was significantly exceeded.

Also, it should be noted that in the introduction for DA-3, lead and TVPH concentrations are both listed as 887 mg/kg. Although this may be a coincidence, the results should be verified for accuracy.

Discussion of the selected remedy and potential alternatives for DA3 have been removed from SCOU PART 1 ROD. Final decisions for this site will be presented in SCOU PART 2 ROD.

4B. The text under "Site COCs and RAOs" in Section 5.3.1.3 states "Lead to the depth of groundwater is the only COC identified by the WQSA." If, as this statement implies, lead is present throughout the vadose zone at levels that will potentially impact water quality, it is unclear how shallow soil excavation will remediate the problem. The statement above probably should be revised to mimic the text under "Site COCs and RAOs" for other shallow excavation sites that exceeded WQSA levels. For example, for ETC-10, the text states "Metals concentrations exceeded the WQSA criteria for arsenic..." The discussion of "to the depth of groundwater" has been omitted and it, therefore, does not raise the same issue.

Discussion of the selected remedy and potential alternatives for DA3 have been removed from SCOU PART 1 ROD. Final decisions for this site will be presented in SCOU PART 2 ROD.

4C. The discussion under "Risk Management Decision" (p. 5.3-6) identifies this site as appropriate for industrial reuse, but, based on the absence of unacceptable human health risks, unrestricted reuse would be acceptable.

Discussion of Risk Management Decisions for DA3 have been removed from SCOU PART 1 ROD. Final decisions for this site will be presented in SCOU PART 2 ROD.

4D. Under "Risk Management Decision" the text in the second paragraph, first three sentences, needs to be modified or eliminated. It discusses problems with TPH data, which were not comparable and were suspect (false positives). Has the Air Force resolved this data quality issue? Assuming it has been resolved, the discussion should be omitted from the ROD. Did the Air Force perhaps fill the data gap by resampling or by basing decisions on other data (of acceptable quality) from adjacent sampling locations?

Data Quality issues regarding TPH results at DA3 will be addressed in SCOU PART 2 ROD.

5A. (Section 5.3.1.4, Earth Technology Corporation Site 2] The BCT should reevaluate the selected remedy for this site. The risk is within the target risk range for occupational reuse. It may be sufficient to target this site for institutional controls that restrict residential reuse rather than excavate it.

Discussion of the selected remedy and potential alternatives for ETC2 have been removed from SCOU Part 1 ROD. Final decisions for this site will be presented in SCOU PART 2 ROD.

5B. Under "Site COCs and RAOs" (p. 5.3-7), the discussion of the "WQSA screening level" probably should be replaced with a reference to the "BHHRA."

Discussion of COCs and RAOs for ETC2 have been removed from SCOU PART 1 ROD. Final decisions for this site will be presented in SCOU PART 2 ROD.

6A. [Section 5.3.1.5, Earth Technology Corporation Site 8] The BCT should reevaluate the selected remedy for this site. The risk is within the target risk range for occupational reuse. It may be sufficient to target this site for institutional controls that restrict residential reuse rather than excavate it.

Discussion of the selected remedy and potential alternatives for ETC8 have been removed from SCOU PART 1 ROD. Final decisions for this site will be presented in SCOU PART 2 ROD.

6B. The text in the first paragraph (p. 5.3-7) that discusses the delay investigating ETC-8 is probably unnecessary (i.e., the sentences starting with "Because the area has been developed and reworked, the RPMs decided...," and "It was decided to proceed with evaluation of other current and suspected skeet ranges..."). The key background

information in the second paragraph about the SCOU Data Gap Investigation is probably adequate.

Discussion of the ETC8 investigation has been removed from SCOU PART 1 ROD.

6C. The text should explain why barium was eliminated as a COC. Under "Water Quality Impacts" (p. 5.3-8), the text states "Barium and manganese exceeded Water Board, DLM PRAOs for groundwater." The "Risk Management Decision" section explains why elevated manganese levels were not considered a concern, but omits discussion of barium. Also, it should be noted that the text under "Risk Management Decision" misidentifies manganese in one sentence as "magnesium."

Discussion of the site investigation at ETC8 has been removed from SCOU PART 1 ROD. Discrepancies noted above will be addressed in SCOU PART 2 ROD.

7A. [Section 5.3.1.7, Firing Range] The text under "Water Quality Impacts" (p. 5.3-11) states "The maximum allowable soil concentration of lead was not exceeded in the vadose zone screening analysis." This statement seems to contradict the text under "COCs and RAOs" which identifies lead as a COC. This discrepancy needs to be clarified.

COC and WQSA screening issues at the Firing Range will be resolved in SCOU PART 2 ROD.

7B. The discussion under "Risk Management Decision" identifies this site as appropriate for industrial reuse, but, based on the absence of unacceptable human health risk, unrestricted reuse would be acceptable.

Discussion of reuse options for the Firing Range will be developed in SCOU PART 2 ROD.

8. [Section 5.3.2, Description of Alternatives for Shallow Contamination Sites] Discussion of institutional controls should be added to this section. ICs prohibiting residential reuse need to be specified for all sites not cleaned up to unrestricted reuse levels. Also, in the first paragraph of Section 5.3.2, the section numbers listed are incorrect and should be revised, and the VOC site section does not include a description of intrinsic remediation, as is stated. Additionally, the fourth paragraph on page 5.3-15, which discusses remedies for petroleum contamination, probably should be deleted.

Discussion of potential Institutional Controls for the Shallow Contamination sites will be developed in SCOU PART 2 ROD.

9. [Section 5.4, Miscellaneous Sites Requiring Institutional Controls] As requested in the teleconference on 7/23/98, I have reviewed Section 5.4 to determine whether it addresses my comments 4A, 4B, 4C, 5A through 5E, 6A, and 6B of 7/21/98. Unfortunately, Section 5.4.2 does not address my previous concerns. Of particular concern is the

omission of any specific discussion of how the Air Force intends to enforce institutional controls. There is no discussion of operation and monitoring of institutional controls.

SCOU PART 1 ROD includes Institutional Controls as part of the remedy for LF5 and Castle Vista Landfill B. Details of implementation, enforcement, and maintenance will be presented in SCOU PART 2 ROD.

9. [Section 5.4.2.2, Description of Alternatives at Miscellaneous Sites Requiring Institutional Controls, Institutional Controls] All discussion of CERCLA 120(h) covenants should be deleted from Section 5.4.2.2 and elsewhere in the ROD. These covenants are unrelated to remedy selection, and, therefore, should not be addressed in the ROD. This is an independent requirement imposed upon the Air Force during property transfer.

Reference to CERCLA 120(h) Covenants have been removed from the SCOU PART 1 ROD.

10. [Section 5.4.5.3, Statutory Determinations for Miscellaneous Sites Requiring Institutional Controls, Cost Effectiveness (p. 5.4-9)] The text states "the costs of implementing institutional controls...are nominal." No costs are presented in the ROD to support this statement. Costs for enforcing (operating and maintaining) institutional controls need to be presented.

Miscellaneous Sites requiring Institutional Controls have been removed from SCOU PART 1 ROD. Details regarding the Institutional Controls process will be presented in SCOU PART 2 ROD.

12. [Section 5.4.5.4, Statutory Determinations for Miscellaneous Sites Requiring Institutional Controls, Use of Permanent Solutions, etc.] The text in the second paragraph (p. 5.4-9) includes the statement, "After transfer, deed restriction enforcement will be the responsibility of Merced County." This statement should be deleted. The Air Force is responsible for ensuring that institutional controls are enforced. Although it is the Air Force's prerogative to arrange to have the transferee oversee the institutional controls, the Air Force is responsible for ensuring that the remedy does not fail. This needs to be reflected in the ROD.

Details regarding the Institutional Controls process will be presented in SCOU PART 2 ROD.

13A. [Section 5.5.2.13, Building 1405] The data quality issue raised for Building 1405 needs to be resolved. The text in the third paragraph (p. 5.5-15) states "...because of benzene and xylene field blank contamination, the soil gas data for these analytes may not be accurate." This is unacceptable, particularly since Building 1405 is a no further action site. Remedial decisions need to be based on acceptable RI data or a data gap still exists.

Has the Air Force resolved this data quality issue for benzene and xylenes? Assuming it has, the discussion of the field blank contamination problems should be deleted from the ROD (along with footnote 2 of the table under "WQSA Evaluation"). Did the Air Force perhaps fill the data gap by resampling or by using other data (of acceptable quality) from adjacent sampling locations?

The Air Force made the conservative assumption that the data was valid. It was used in the WQSA assessment. Benzene exceeded screening levels (1.5 ug/L vs screening level of 1.4 ug/L). TVPH also exceed WQSA screening levels. However, the site was recommended for NFA because it was determined that the TVPH and benzene hits were related to nearby FS4 and not a result of a contaminant release at the site.

13B. The last sentence in the fourth paragraph (p. 5.5-15), which states "The metals reported above TBV were isolated detections not reported in samples above or below the detection," needs to be clarified. What does this mean?

The referenced text was clarified to indicate, "Cadmium, silver, molybdenum, zinc and lead were detected above TBVs in eight soil samples. However, because elevated levels of metals were not noted in samples collected above or below the elevated detections, it is likely that the above TBV metals are a result of natural background variation and were not caused by a contaminant release at the site. No TPH or VOC contamination was noted in the HydroPunch ground water sample.

13C. Under "Risk Evaluation," the discussion needs clarification. First, the text states that risk screening levels were exceeded for lead, although the SRA results are not presented. This seems inconsistent with the other site discussions which present SRA results. Second, the following statement needs to be clarified: "Based on the sampling outcome, the SRA and Hazard Index calculations were waived in favor of estimated blood level calculation using a residential/child exposure scenario." I'm not sure it makes sense to "waive" the SRA and Hazard Index calculations. The discussion probably should be revised to explain why the estimated blood level calculation and residential/child exposure scenario were considered more appropriate. Alternatively, maybe it would make sense to simplify the text as under the "Risk Evaluation" section for Building 1562 (p. 5.5-17) (i.e., "A summary of the Risk Evaluation that included SRA., hazard index and blood-lead level calculation... is provided below").

Because lead was the only HHRA COC identified at the B1404, SRA and Hazard Index calculations were not developed for the site. As indicated in the Lead Exposure Assessment section of the Decision Summary (Section 4.4.2.3.3), risks associated with exposures to lead were evaluated using Cal/EPA blood-lead biokinetic model (DTSC, 1992). This was done because most human health effects data are based on blood lead concentrations rather than on the external dose. B1562 differs from B1404 in that contaminants, other than lead, were found above health risk screening levels.

13D. Under "WQSA Evaluation," the term "WQSA cut-off levels" should probably be replaced with "WQSA screening levels," which I believe is the term used in other portions of the ROD.

Change made as suggested.

14. [Section 5.5.2.22, Hangar F-6] The data quality issue raised for Hangar F-6 needs to be resolved. The text in the third paragraph (p. 5.5-24) states "Analyses of shallow soil gas samples from the site indicated the presence of ... dichlorodifluoromethane (FC12)... However, the FC12 data was (sic) rejected based on matrix interference." It is unacceptable to base remedial decisions on rejected data! Remedial decisions need to be based on acceptable RI data or a data gap still exists.

Has the Air Force resolved this data quality issue for FC12? Assuming it has, the discussion of the matrix interference problems and rejected data should be deleted from the ROD. Did the Air Force perhaps fill the data gap by resampling or by using other data (of acceptable quality) from adjacent sampling locations?

The reported FC12 level was 0.0222 ug/L at 10 ft. This level is well below the VLEACH2 screening level for vinyl chloride (FC12 surrogate) of 620.6 ug/L (10-20 ft bgs). The Air Force has made the conservative assumption that the data is valid and has included it in the WQSA screening summary.

15A. [Section 5.5.3.2, Building 1529] The data quality issue raised for Building 1529 needs to be resolved. The text in the second paragraph (p. 5.5-38) states "...the TEPH results are suspect due to field blank contamination." Has the Air Force resolved this data quality issue? Assuming it has been resolved, the discussion should be omitted from the ROD. Did the Air Force perhaps fill the data gap by resampling or by using other data (of acceptable quality) from adjacent sampling locations?

Low levels of TEPH were found in the site soil samples. 11 mg/kg was noted at 20.5 ft and 17 mg/kg was found at 50 ft. The Air Force made the conservative assumption that the data was valid and presented the TEPH hits in the WQSA screening summary. However, because screening levels have not been developed for TEPH below 20ft, the hits were not compared to a screening standard.

15B. In the table under "WQSA Evaluation," it would be preferable if some abbreviation other than "ND" were used to denote that WQSA screening levels have not been developed. ND is likely to be confused with "not detected."

For clarification the abbreviation ND has been changed to NA.

16A. [Section 5.5.3.4, Detonation and Burn Facility] Under "Risk Evaluation" (p. 5.5-42), the screening risk assessment result exceeded 10^{-6} (i.e., 5.8x10-6) but quantitative risk assessment results are not presented, nor is a rationale for not conducting a quantitative risk assessment provided. This needs to be explained.

The text has been revised to indicate that SRA calculations were based on initial RI sampling. After the initial sampling was conducted, the DBF structures were removed and associated soil was sifted to remove any remnants of ammunition or large pieces of explosives. A follow up investigation was conducted after the DBF had been filled in and brought to grade. This investigation found no evidence of contaminants above health based standards at the site, and there was no need to complete the Quantitative Risk Assessment. The text also makes reference to the RPM NFA consensus statement and DTSC closure letter.

Also, generally, institutional controls restricting residential reuse are necessary for sites that do not meet unrestricted reuse standards; however, this site is recommended for no further action. The text should explain why institutional controls are unnecessary.

The follow-up investigation conducted after site demolition found no contamination above health based standards. Because there is no contamination, there is no need for Institutional Controls.

16B. The text under "Remedial Action Evaluation" provides an explanation for why the presence of manganese at concentrations exceeding WQSA screening levels are not considered a concern. The following justification is presented: "Because elevated levels of manganese were not noted in the up-hole samples it is likely that they represent a background anomaly and are not representative of site contamination." This statement does not seem to make sense. The manganese is being attributed to "a background anomaly," but the absence of elevated levels of manganese in the up-hole samples does not seem to support this conclusion. A more persuasive rationale should be provided.

The manganese discussion was modified to state, "With the exception of manganese at 20.5 ft bgs, no contaminants exceeded WQSA vadose zone screening levels. Because elevated levels of manganese were only slightly above the TBV (258 mg/kg vs TBV of 228 mg/kg) and because elevated manganese levels were not noted in the up-hole soil samples, it is likely that the 258 mg/kg represents a background anomaly rather than a release contaminants at the site.

16C. In the fourth paragraph of the introduction, the text states that "a 'trace' (0.10 mg/kg) of the explosive RDX" was detected. It would be helpful to if the text cited the threshold level against which this "trace" level was compared. Also, the abbreviation RDX needs to be defined.

The text was modified to include the definition of the RDX acronym (hexahydro-1,3,5 trinitro-1,3,5-triazine). Furthermore, the threshold level used to compare the "trace" level of RDX was defined as the United States Environmental Protection Agency Region 9 cancer Preliminary Remediation Goal (PRG) which is the more stringent criteria when evaluating the cancer and noncancer effects of RDX. The document was modified to include the following text: "The one trace sample with RDX at a concentration of 0.1 mg/kg is well below the cancer Preliminary Remediation Goal

(PRG) of 4.0 mg/kg for residential soil described in the Environmental Protection Agency Region 9 list of PRGs dated May 1998. The RDX PRG corresponds to a fixed levels of risk (i.e., a one-in-one million [10^{-6}]). In the case of the compound RDX, the more stringent cancer risk criteria applies rather than the non cancer risk.

17. [Section 5.5.3.5, Disposal Pit 7; Section 5.5.3.6, Disposal Pit 10; Section 5.5.3.8, Fire Training Area 2; Section 5.5.3.14, Storage Area B1] The residential risks for these sites exceeded 10^{-6}. Generally institutional controls restricting residential reuse are necessary for sites that do not meet unrestricted reuse standards; however, these sites are recommended for no further action. The text should provide justifications stating why institutional controls are unnecessary.

Justification of the NFA Risk Management Decisions at the referenced sites is provided in the ROD Part 1 text and in Summary Table 5-5-3. A synopsis of the NFA RMDs is provided below:

DP7- a large percentage of this risk at this site was driven by the presence of beryllium, which was found at levels less than TBV, it was determined that the site did not present a credible risk to human health. Based on this determination, the site was recommended for No Further Action.

DP10 - was included as part of the LF5 Area 2 Risk Assessment. Risks at LF5, Area 2 were primarily driven by the VOC 1,4-Dichlorobenzene, which was found in LF5 Area 2 trenches B and D, but not at DP10. Based on this evaluation, it was determined that DP10 did not present a significant threat to human health and No Further Actions were required.

FTA2 - The Risk Assessment for FTA2 was re-evaluated based on findings of the site Data Gap investigation. Based on the revised risk assessment, surface and subsurface soil presented an unacceptable risk level under the residential scenario. These risk values were heavily influenced by one sample (FTA2SB01) which was collected from soil containing surface asphalt. The elevated PAH levels FTA2SB01 are most likely the result of asphalt mixing with the surface soil. Due to the uncertainty concerning the sample composition, the calculated risk levels over estimate actual risks. Lower PAH levels were found in samples collected from beneath the layer impacted by asphalt and are likely more representative of actual site conditions. Based on this determination, the existing PAH concentrations in shallow soil poses a minimal threat to human health, No Further Action is required.

SAB1 - Beryllium, which was found at levels slightly above TBV (0.477mg/kg vs. TBV of 0.39 mg/kg) is the primary contributor to the estimated risk for all exposure scenarios. Ingestion of homegrown produce is the primary contributing exposure pathway. Manganese at 3.5 ft bgs slightly exceeded WQSA screening levels (287 mg/kg vs. 228 mg/kg TBV). However, as noted at several other SCOU sites, it is likely that the presence of beryllium and manganese represents a variation in site lithology and is most likely not anthropogenic. The investigation results indicate that there is no

discernable pattern to the distribution of these naturally occurring inorganic constituents, and that these slightly elevated levels represent an aberration in the normal distribution of background and are not anthropogenic. Based on this determination, beryllium and manganese do not present a credible risk to human health or water quality, and No Further Action is recommended.

18. [Section 5.5.3.9, PCB 1,2,3; Section 5.5.3.10, PCB 4; Section 5.5.3.11, PCB 5; Section 5.5.3.12, PCB 6; Section 5.5.3.13, PCB 8] The discussions presented in the "Risk Evaluation" and "Remedial Action Evaluation" sections for these sites should be replaced with the information presented in EPA's risk screening and assessment summary. Risk values were calculated and rationales for no further action at these sites were presented in EPA's letter of 10 July 1998. EPA's assessment also provided rationales for not requiring institutional controls at these sites. It is recommended that all existing discussion of previous State of California cleanup standards (25 mg/kg) and occupational risks be deleted. The risk evaluation supersedes this information and limiting the discussion to the final evaluation will reduce potential confusion. Additionally, the text in Section 5.5.3 (Post Feasibility Study NFA Sites) (first paragraph, p. 5.5-36) needs to be updated to provide the new information on PCB sites.

As suggested, the EPA risk evaluation information has been incorporated into the text and tables of the ROD1 NFA section.

Comments

18. [Section 5.4.4, The Selected Remedy for Miscellaneous Sites; Section 5.4.5.4, Use of Permanent Solutions, etc.] Sections 5.4.4 and 5.4.5.4 both contain the following statement: "The decisive factors in the selection of institutional controls as a RA were overall protection of human health, compliance with ARARs, and regulatory acceptance." The threshold criteria (i.e., overall protection of human health and compliance with ARARs) should be deleted from this sentence; these criteria must be met.

Details regarding selection of Institutional Controls will be developed as part of SCOU PART 2 ROD.

20A. [Plate 5-2-2, Alternatives for Landfill Sites] For Landfills 5 and CVLFB, the table needs to clarify that SVE will be conducted as a component of a remedy that includes either excavation or zoned capping. In its current form, the table implies that the alternatives for these sites include capping, excavation, *or* SVE.

Plate 5-2-2 has been modified to show that the capping and excavation alternatives were considered for landfill waste while SVE/Bioventing and Thermally enhanced SVE were considered for VOC contamination.

20B. For CVLFB, under the SVE alternative, the references to Landfill 5 should be replaced with references to CVLFB.

Change made as suggested.

21. [Plate 5-2-12, Comparison of Alternatives for Landfill Sites] Under "Long-Term Effectiveness" for Landfills 2, 4, A, and B, the text should be corrected to state that alternative 2 (excavation and off-site disposal) is the most effective in the long-term; alternative l (excavation and on-site disposal) is incorrectly listed instead. Also, on the second page, "Removal Action" should be deleted from the title.

Changes made as suggested.

22. [Section 5.3, Shallow Soil Contamination Sites (p. 5.3-1)] The first paragraph includes the sentence, "These sites have been grouped together because they contain a relatively small volume of contamination that is limited' to shallow depths that are readily accessible by digging." This sentence also should state that, as a result, the same remedy (excavation and on-site disposal) has been identified for all of the sites.

Discussion of the Shallow Contamination Site group has been removed from ROD1. Final decisions for the Shallow Contamination group will be presented in SCOU PART 2 ROD.

23. [Section 5.3.1.6, Earth Technology Corporation Site 10] The first paragraph, second sentence on page 5.3-10 states, "Because no subsurface soil samples were collected at the site, QRA evaluation was conducted for surface soil only." This contradicts the statement in the introduction, first paragraph, last sentence (p. 5.3-9), which states "Subsurface samples (greater than 3 feet bgs) had soluble lead concentrations..." This discrepancy should be clarified.

ETC10 is part of the Shallow Contamination group. Discussion of the Shallow Contamination Site group has been removed from ROD1. Final decisions for the Shallow Contamination group will be presented in SCOU PART 2 ROD.

24A. [Section 5.3.1.8, PCB-9] Under "Human Health Risk Assessment," much of the text in the first paragraph on page 5.3-13 repeats the information already presented in the table and can be deleted.

PCB9 is part of the Shallow Contamination group. Discussion of the Shallow Contamination Site group has been removed from ROD1. Final decisions for the Shallow Contamination group will be presented in SCOU PART 2 ROD.

24B. Under "Risk Management Decision," the second paragraph (p. 5.3-13) discusses risk from heptachlor epoxide. It would be helpful to include a statement explaining that the removal action, by default, also addressed the problem with potential exposure to heptachlor epoxide in surface soil.

PCB9 is part of the Shallow Contamination group. Discussion of the Shallow Contamination Site group has been removed from ROD1. Final decisions for the Shallow Contamination group will be presented in SCOU PART 2 ROD.

25A. [Plate 5-3-2, Alternatives for Shallow Contamination Sites] For Building 1344, under soil washing and solidification/stabilization, the reference to "Category 1 sites" should be deleted. (This would also apply for Building 871, although this site should be moved to the NFA section of the ROD.)

B1344 is part of the Shallow Contamination group. Discussion of the Shallow Contamination Site group has been removed from ROD1. Final decisions for the Shallow Contamination group will be presented in SCOU PART 2 ROD. B871 has been moved to the NFA group and is included in ROD1.

25B. For PCB 9, under soil washing, the discussion of metals should be deleted. Metals are not COCs for this site.

PCB9 is part of the Shallow Contamination group. Discussion of the Shallow Contamination Site group has been removed from ROD1. Final decisions for the Shallow Contamination group will be presented in SCOU PART 2 ROD.

26. [Plate 5-3-3, Summary of Cost Estimates for Shallow Contamination Sites] It is unclear why the costs for excavation and disposal of soils from ETC 10 and PCB 9 (approximately $1.1 million) are so much higher than the costs for other excavation sites (approximately $30K to $70K). These figures should be verified for accuracy. Also, footnotes 4, 5, and 6 should be deleted; they no longer apply.

Discussion of costs associated with the Shallow Contamination Site group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

27. [Plate 5-3-9, Comparison of Alternatives for Shallow Contamination Sites] On the second page, "Contingency" should be deleted from the title.

Discussion of the Shallow Contamination Site group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

28. [Plate 5-3-10, Major Treatment Components for Shallow Contamination Sites] The RAOs for these sites need to be verified; some are incorrect.

Discussion of the Shallow Contamination Site group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

29A. [Section 5.4, Miscellaneous Sites Requiring Institutional Controls] It is suggested that the title of this section be changed to "Sites Requiring Institutional Controls Only." This is a more descriptive title. The title of Section 5.4.1 could then be changed to, for example, "Site Summaries for Institutional Controls Only Sites."

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

29B. It is recommended that the sentences describing the stain sites and storm drain system in the introduction on page 5.4-1 (i.e., "The stain sites were a result of combusted jet fuel..." and "The storm drain system has been impacted...") be deleted. These sentences are repeated in the subsequent sections, and could be replaced with text stating simply "Descriptions of these sites are presented below."

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

29C. In the second paragraph, last sentence, the text "residential exposure criteria" should be replaced with something like "levels that would allow for unrestricted reuse." (i.e., "Contamination at these sites, however, does exceed levels that would allow for unrestricted reuse.").

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

30A. [Section 5.4.1.1, Stains 33 to 44] The first paragraph of Section 5.4.1.1. (p. 5.4-1), last sentence, states "Of the 44 stains, all but Stains 38 and 44 are on approximately 3 feet of reinforced concrete." What is the condition of the ground under Stains 38 and 44?

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

30B. The following discrepancy needs to be resolved. In the second paragraph of Section 5.4.1.1 (p. 5.4-1), first sentence, the text states "A surface concrete scrape contained maximum concentrations of PAHs, including up to 130 mg/kg of benzo(a)pyrene and 210 mg/kg benzo(b)fluoranthene." This sentence seems the contradict the following sentence, which states "The scrape sample contained up to 3.8 mg/kg of benzo(a)pyrene with other PAHs ...."

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

30C. Under "Water Quality Impacts," the following sentence needs clarification: "...the surface scrape and subsurface samples collected in hand auger samples at the edge of the parking apron did not contain similar levels of PAHs near Stain 41." "Subsurface samples collected in hand auger samples" is confusing. Also, what is meant by "similar levels of PAHs near Stain 41"? Were the samples collected near Stain 41, or were PAH concentrations less than the levels detected at Stain 41?

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

30D. Under "Human Health Risk Assessment," the table summarizing quantitative risk assessment results is missing the headers indicating risk numbers based on subsurface soil data. Also, the last paragraph of this section, first sentence, can be deleted: it repeats the numbers already presented in the table.

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

30E. Under "Site COCs and RAOs," the paragraph just preceding the table (p. 5.4-3) will need to be revised once the RAOs are sorted out (i.e., when the RAO that is driving the remedy is identified).

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

30F. Under "Risk Management Decision," the text should explain why "the exposure pathway was not considered complete for the concrete chip samples." Also, what is meant by "The concrete chip samples were used primarily to assess contaminant characteristics"? Is this referring to "characteristic" waste under RCRA?

In the second paragraph, under the bullets, the text should highlight that the occupational exposure is appropriate since the site use will remain the same (i.e., an airport).

Under the first bullet, the text "...and benzo(a)pyrene is a Class B2 carcinogen" should be deleted. Again, is this sentence implying that the presence of BAP is less of a concern since it is only a "probable human carcinogen"? This comment applies to the storm drain system also.

Discussion of the Institutional Control group has been removed from ROD1. These comments will be addressed in SCOU PART 2 ROD.

31A. [Section 5.4.1.2, Storm Drain System] Under "Human Health Risk Assessment" (p. 5.4-5), the text discusses bis(2-ethylhexyl)phthalate as contributing to 99 percent of the residential risk and 90 percent of the occupational risk. Results for this compound, however, are not discussed in the introduction (p. 5.4-4). Also, bis(2-ethylhexyl) phthalate is a common laboratory contaminant. Was it determined that this compound was actually present (i.e., results were not false positives)?

The text under "Human Health Risk Assessment" which describes the information presented in the tables is redundant.

Discussion of the Institutional Control group has been removed from ROD1. These comments will be addressed in SCOU PART 2 ROD.

31B. Under "Risk Management Decision," the text should highlight that the occupational exposure is appropriate since the site use will remain the same (i.e., storm drain system).

Discussion of the Institutional Control group has been removed from ROD1. This comment will be addressed in SCOU PART 2 ROD.

32. [Section 5.5.1, Pre-Remedial Investigation NFAs] In the first sentence (p. 5.5-2). The second half of the sentence, which states "...or that the site was not owned or operated by the Air Force, or was not part of base operations," should be deleted.

This text has been retained to help explain the NFA decision for the HI, H2, and H3 sites. These sites were automobile service stations that were not owned or operated by the Air Force. They were included in the original SCOU site count based on proximity to the base. These sites were not investigated as part of the SCOU. The potential use, storage, or release of hazardous substances or the environmental conditions at these sites is not known.

33. [Sections 5.5.1.4 through 5.5.1.15] The coordinates on Plate 5-1 for these sites have been omitted.

Site coordinates have been added to the summary text for the LG1 site. HI, H2, and H3 were reportedly located in the Castle Vista and Castle Gardens residential areas. N2, N3, N6, N7, N8, N9, and N10 were reportedly located in open areas north and east of the flightlines. The exact coordinates for these sites are not known. This information has been added to the NFA text and to Plate 5-1.

34. [Section 5.5.l.15, PCB 7] The former use of PCB7, or the reason it was identified for preliminary assessment, should be specified.

PCB7 was part of a radio transmitter facility. This information has been added to the site description text.

35A. [Section 5.5.2, Pre-Feasibility Study NFAs; Section 5.5.3, Post Feasibility Study NFAs] The subsection titles used in Sections 5.5.2 and 5.5.3 (i.e., "WQSA Evaluation," "Risk Evaluation," and "Remedial Action Evaluation") are inconsistent with those used in the preceding sections of the ROD (i.e., "Water Quality Impacts," "Human Health Risk Assessment," and "Risk Management Decision").

The text headings have been changed as suggested.

35B. In the first paragraph of Section 5.5.2 (p. 5.5-5), the statement "RAOs for VOCs are still in development and will be finalized during CB Part 2," should be deleted. This is irrelevant with respect to NFA sites: defining RAOs will not change the outcome. In the third paragraph, the tables cited should be "5-5-2" and "5-5-3" rather than 5-5-2 and 5-5-3 (this error was noted throughout the discussion of NFA sites).

Changes made as suggested.

36A. [Section 5.5.2, Pre-Feasibility Study NFAs] The following discrepancies between the site data presented in the site summary introductions and the COC tables were identified. These discrepancies should be resolved.

[Section 5.5.2.12, Building 1404 (pp. 5.5-13 and 5.5-14)] The text in the second paragraph discusses several metals, including antimony and beryllium, which were detected at concentration exceeding TBVs. However, antimony and beryllium were omitted from the summary table under the "WQSA Evaluation" section. Also, lead is included in the table, but not discussed in the text.

As suggested, antimony and beryllium were added to the summary table and lead was added to the text list of inorganics that exceeded TBVs.

[Section 5 5.2.17, ETC-12 (pp. 5.5-19 and 5.5-20)] Under "WQSA Evaluation," lead and benzene are included in the table, but are not discussed in the preceding text.

Discussion of lead and benzene have been added to the ETC-12 text.

[Section 5.5.2.18, Hangar F1 (pp. 5.5-20 and 5.5-21)] Under "WQSA Evaluation," 1,2,4- and 1,3,5-trimethylbenzene are included in the table, but are not discussed in the preceding text.

The text was modified to indicate that trace levels of 1,2,4- and 1,3,5-trimethylbenzene had been identified in site soil samples.

[Section 5.5.2.23, Hazardous Waste Site 4] In the fifth paragraph (p. 5.5-25), numerous VOCs detected at "trace levels" are identified. However, only a subset of these VOCs are included in the table under "WQSA Evaluation." It is unclear why some of these VOCs were included in the table and others were omitted. Additionally, it is unclear why soil results for PCE and TCE appear separately (on p. 5.5-26) in the WQSA screening table from the other soil results (on p. 5.5-25).

The HWS4 table has been revised to include all VOC detections. The text has been reformatted so that all summary tables fit onto one page.

[Section 5.5.2.24, Industrial Waste Line] Boron is identified as a metal that exceeded TBVs in the text (p. 5.5-26, third paragraph), but is it not included in the table under "WQSA Evaluation." Also, the abbreviation "4-EBZME" should be defined.

Boron has been added to the WQSA summary table. However, it should be noted that a WQSA screening level was not developed for Boron. The term 4-ethyltoluene was added to define the acronym 4-EBZME.

[Section 5.5.2.26, Storage Area B4] The text in the investigation summary does not describe collection of soil gas samples, although the table under "WQSA Evaluation" includes soil gas results. Also, the depths specified for soil gas samples should be reviewed. The table lists depths of 0; it is unclear whether this is accurate.

Because surface run-off was considered the main contamination threat, soil gas samples were not collected at SA B4. The WQSA Summary Table was corrected to indicate the trace VOC hits were from soil samples, not from soil gas. The soil sample depth of 0 ft bgs was correct.

[Section 5.5.2.33, Underground Fuel Line 4 (UFL-4)] Also, under "WQSA Evaluation," methylene chloride and 1,1-DCE are included in the table, but are not discussed in the preceding text.

Because methylene chloride was also identified in sample blanks, it was flagged "b" as a lab contaminant, and has been removed from the UFL4 discussion. The text has been modified to note that 1,1-DCE was detected in the soil gas samples. For completeness, the benzene and ethylbenzene soil gas levels were added to the WQSA summary table.

36B. The following concerns with potential false positive results were identified. These concerns need to be clarified.

[Section 5.5.2.9, Building 1207] The discussion of di-n-butylphthalate needs clarification. The last sentence in the second paragraph (p. 5.5-10) states "Only the SVOC di-n-butyl phthalate, a common laboratory contaminant, was identified." This statement implies the result was determined to be a false positive, in which case, it does not need to be discussed. However, since WQSA and risk evaluations were performed, it seems as though the result was not considered a false positive, so the fact that it is a common laboratory contaminant would be irrelevant.

The hazard index calculations for B1207 considered the presence of di-n-butyl phthalate. The reference to di-n-butylphthalate as a lab contaminant have been removed.

[Section 5.5.2.21, Hanger F-5 (pp. 5.5-22 and 5.5-23)] Under "WQSA Evaluation," methylene chloride and benzene are included in the table, but are not discussed in the preceding text. Di-n-butylphthalate is discussed in the text but is not included in the WQSA table. Also, were methylene chloride and di-–butylphthalate results determined to be real or false positives (they are common

laboratory contaminants)? If the latter case applies, they probably do not need to be discussed.

Methylene Chloride was detected in some field and trip blanks and was flagged as a lab contaminant. Based on this evaluation, discussion of methylene chloride has been removed from the site summary. However, because Di-n-butylphthalate was not flagged as a lab contaminant discussion of this compound has been retained. Also, benzene was added to the summary table.

[Section 5.5.2.23, Hazardous Waste Site 4; Section 5.5.2.26, Storage Area B4; Section 5.5.2.29, Sanitary Sewer 5; Section 5.5.2.30, Sanitary Sewer 9] Under "WQSA Evaluation" for these sites, results for methylene chloride are included in the tables, and corresponding footnotes indicate methylene chloride is a laboratory contaminant. If these are false 'positive results, they do not need to be discussed.

For all of the listed sites, methylene chloride was fagged as a lab contaminant. Based on this evaluation, discussion of methylene chloride has been removed from the site summary text.

37. [Section 5.5.2.4, Building 545 (p. 5.5-7)] It is unclear why this site is not grouped with the "Pre-Remedial Investigation NFA" sites. The text states that "hazardous substances were not used or stored" at this site.

The NFA determination for B545 was a result of site inspection and record search work that was undertaken in conjunction with early phases of RI planning. For this reason B545 was not included in the pre-RI NFA list.

38. [Section 5.5.2.11, Building 1335; Section 5.5.2.13, Building 1405; Section 5.5.2.16, ETC-11; Section 5.5.2.31, Structure 1201 (p. 5.5-33); Section 5.5.2.32, Structure 1571; Section 5.5.2.33, Underground Fuel Line 4 (UFL4)] Under "Remedial Action Evaluation" for these sites, the text describes considered alternatives, including:

For Building 1335 (p. 5.5-13), alternatives for Category 1 sites (Engine Maintenance Shops);

For Building 1405 (p. 5.5-16) and UFL-4 (p. 5.5-36), alternatives for Category 4 sites (Storage Tank and Tank Farm);

For ETC-11 (p. 5.5-19), alternatives considered for Category 3 sites (Landfill Group);

For Structure 1201 (p. 5.5-33) and Structure 1571 (p. 5.5-34), alternatives considered for Category 2 sites (Washracks and Discharge Areas);

It is unclear why remedial alternatives are discussed for these sites if they are considered "Pre-Feasibility Study NFA" sites. Either the discussion of remedial alternatives should be deleted or the sites should be grouped with the "Post Feasibility Study NFA" sites. Also, since the alternatives for Building 1405 and UFL-4 seem to apply to petroleum contamination, the extent to which they should be discussed at all is unclear. Additionally, the discussion of Structure 1201 includes an incorrect reference to B1335, and the discussion of UFL-4 includes an incorrect reference to B1405.

Discussion of remedial alternatives were included in the B1335, B1405, ETC11, ST1201, and UFL4 site summaries because these sites failed either the WQSA or HHRA Screening Assessments are considered "Risk Management Decision" NFAs. ST1571 passed WQSA and HHRA screening assessments and was not a risk management NFA. Text describing alternatives considered for ST1571 has been removed.

39. [Section 5.5.2.12, Building 1404 (pp. 5.5-13)] In the first paragraph, the potential COC "PD-680" should be clarified. What is this?

The text has been revised to indicate PD-680 is also known as stoddard solvent and is comprised of mineral spirits and degreaser.

40. [Section 5.5.2.23, Hazardous Waste Site 4] In the second paragraph (p. 5.5-24), the discussion of soil gas samples should be reviewed and corrected. The text states soil gas samples were collected from depths of "95, 170, 199, and 258 feet bgs." This does not make sense since these depths are below the water table.

The text has been revised to indicate that the deep samples were soil samples, not soil gas samples. Also, based on the lack of shallow contamination identified during RI work, the text states that the elevated levels noted in 1991 were the result of ground water off-gassing.

41A. [Section 5.5.2.33, Underground Fuel Line 4 (UFL4)] In the first paragraph (p. 5.5-34), the text discusses in installation of a monitoring well west of Building 1337. The relevance of this well to UFL-4 should be explained.

The text was revised to state, "One monitoring well (MW-130) was installed within the boundary of the UFL4 site, west of Building 1337".

41B. The discussion of site investigation activities and results for this site is very confusing. It would be helpful if it were simplified.

The UFL4 text was revised to state:

The Underground Fuel Leak-4 site consists of Building 1337, a JP-4 hydrant storage tank group, and includes six 50,000 gallon USTs, one 2,000 gallon UST and an

aboveground pump and transfer facility (N11, Plate 5-1). Materials handled at the site included fuels and solvent.

A soil gas survey and soil sampling effort that included a collection of nine soil gas samples and 12 soil samples were conducted at the site in 1988 (ITT, 1988). The soil gas survey indicated a maximum of 16 ppb TCE and 4 ppb TPH. Laboratory analyses of 12 soil samples indicated a maximum of 0.038 mg/kg toluene and 91.1 TPH from a depth of 6 feet. One monitoring well (MW-130) was installed within the site boundary, west of Building 1337. Laboratory analyses of a ground water sample from this well indicated 2.1 mg/L TPH. No VOCs, SVOCs, or lead were detected.

To further evaluate the site, 11 soil borings were installed as part of the SCOU RI. A total of 31 soil samples and 19 down hole soil gas samples were collected from these borings. Soil analyses indicated trace levels (less than 2 ug/kg) BTEX, 1.8 ug/kg methylene chloride, and 19 ug/kg 1,2,4-trimethylbenzene. Lead levels were less than TBV.

Down hole gas samples indicated the presence of low levels of TCE, 1,1-DCE, and BTEX. A maximum of 10.4 ug/L toluene was noted in the 20 feet sample of SB-1. All other BTEX soil gas detection were less than 3 ug/L. Soil gas TCE was noted in five of the borings (SB-5, 8, 9, 10, and 11). TCE concentrations ranged from 1.2 ug/L (at 20 feet bgs in SB5) to 8.4 ug/L (at 40 feet bgs in SB-8). However, soil samples from 19.5 feet bgs in SB-5 and 34.5 feet bgs in SB-8 did not indicate the presence of TCE. Because TCE was not identified in shallow gas samples, the isolated down hole TCE soil gas detections suggest that the TCE is attributable to a deeper source, possibly in ground water.

42. [Section 5.5.3.1, Building 84 (p. 5.5-38)] Under "Remedial Action Evaluation," the text should explain that the alternatives were considered based on potential silver contamination. However, after last sampling effort, it was determined that no further action was necessary since the threshold criteria already have been met.

The test was added as suggested.

43. [Section 5.5.3.3, Building 1532] It is unclear how the COCs evaluated against WQSA screening levels in the table under "WQSA Evaluation" were selected from the list of detected compounds in the preceding discussion (second paragraph, p. 5.5-40). This should be clarified. Also, something is amiss with the fourth sentence in the second paragraph that starts with "VOCs detected in the shallow 10 feet soil gas samples..." and ends with "...were found in the down hole soil gas samples."

The text and tables for B1532 have been revised to more clearly present the site data. The text references only detections that were greater than WQSA screening criteria. The table was updated to include maximum detections for each constituent.

44A. [General] A thorough spell check of chemical names is necessary. Numerous misspellings are included throughout the document.

Spelling corrections have been made throughout the document.

44B. The SCOU Data Gap Investigation (1997) needs to be consistently identified Certain sections reference this investigation by other names, such as "Data Gap/Technical Evaluation project" (p. 5.5-38, Section 5.5.3.2); "Data Gap Evaluation process" (p.5.5-39, Section 5.5.3.2); and "Further Action Data Gap sampling effort" (p. 5.5-46, Section 5.5.3.8). SCOU Data Gap Investigation probably is the best title since it is consistent with the report that was generated. All other references should be globally replaced with it.

Changes made as suggested.

USEPA Comments on the Source Control Operable Unit
Record of Decision Version 3
June 1998

8/5/98

Castle Airport Source Control Operable Unit Record of Decision Version 3 (June 1998) - Comments from Lisa Hanusiak

Comments

1. [Plate 4-15, Property Transfer Process] Based on the flowchart presented in Plate 4-15, it is unclear whether the Castle Joint Powers Authority (CJPA) will be provided an opportunity to review draft finding of suitability to transfer documents (FOSTs). The community has repeatedly requested that they be allowed to review actual deed restriction text in property transfer documents for Castle Airport. Providing the CJPA with draft FOSTs for review may partially address this concern. Refer to comment 8F below for additional discussion of this concern.

   The details of implementing deed restrictions at selected Castle SCOU sites will be developed in SCOU PART 2 ROD.

2. [Section 6, Applicable or Relevant and Appropriate Requirements] The ROD continues to contain references to Applicable or Relevant and Appropriate Requirements (ARARs) for Mather Air Force Base. Although the Mather ROD may have been used as an example, the source of ARARs for Castle Airport should not be "Mather ARARs," but the regulations. The SCOU ROD needs to present ARARs that are specific to Castle Airport.

   References to the Mather ARARs have been removed from the ARAR section.

3. [Section 6.1.1, Chemical-Specific ARARs for Air] The text in Section 6.1.1 omits discussion of ARARs for potential dioxin emissions from soil vapor extraction (SVE) systems using catalytic oxidation units, which is a concern for sites with mixed hydrocarbon/chlorinated solvent plumes. I believe this issue is not a concern for the SCOU ROD since Fire Training Area 1 (FTA-1) and the other petroleum contaminated sites are not included. However, the BRAC Cleanup Team (BCT) needs to consider it. (EPA management is particularly sensitive to this issue.) Is this a concern for any sites in the SCOU ROD?

   ROD1 deals with Landfills and NFA sites only. The selected remedy for Castle Vista Landfill B does include SVE. However, the off-gas treatment at CVLFB is accomplished using a granular activated carbon (GAC) filtration system. Because GAC is not known to yield dioxin, it is not necessary to include dioxin as a COC for the site.

4. [Section 6.1.3, Chemical-Specific ARARs; Section 6.1.5, Action-Specific ARARs (pp.6-5 and 6-6)] It is unclear whether ARARs related to monitored natural attenuation (intrinsic remediation) and petroleum hydrocarbons should be identified since remedies for petroleum contaminated sites are not identified in the ROD.

References to monitored natural attenuation have been removed from this ROD. However, the LUFT guidance has been retained as a TBC because it was as a guidance in developing screening levels for TEPH and TVPH.

5. [Section 7.l, Responsiveness Summary, Introduction (p. 7-1)] One of the purposes of the Responsiveness Summary is to document how the Air Force has considered public comments during the decision making process and provide answers to major comments. This function of the Responsiveness Summary needs to be specified in Section 7.1, and also in the second paragraph of Section 7.4 (Summary of Comments Received and Agency Responses).

The sentence "The Air Force responses document how the Air Force has considered public comments during the decision making process and provide responses to those public comments" has been added to Section 7.1.

6A. [Section 7.2, Responsiveness Summary, Selected Remedies] Under "Multiple Contaminant Sites" (p. 7-1), the text explains that remedies for the sites will be addressed in the Comprehensive Basewide (CB) Part 2 ROD. The text should explain that the public will have an opportunity to comment on the preferred alternatives for sites in the CB Part 2 Proposed Plan before the CB Part 2 ROD is issued. This comment also applies to other sections of the Responsiveness Summary where discussion of the CB Part 2 ROD is presented, such as on pages 7-4, 7-7, 7-12, and 7-18 regarding FTA-1.

The text has been revised to indicate that FTA-1 will be addressed as part of the SCOU Part 2 ROD. The Air Force will release a SCOU Part 2 Proposed Plan with the preferred alternative for FTA-1. The public will have an opportunity to comment on this Proposed Plan before the remedy selection is finalized.

6B. In Table 1 (Description of Selected Alternatives) of Section 7.2 (p. 7-2), the description of institutional controls (ICs) also should explain that the ICs will be enforced and their effectiveness monitored by the Air Force. Also, the title of Table 1 should be changed to "Description of Selected *Remedies*."

Text has been added to Table 1 to explain that deed restrictions/access restrictions will be enforced and that the Air Force will monitor their effectiveness. Also, the title of Table 1 has been changed to "Description of Selected Remedies."

6C. The information presented in Table 4 (Sites Under Review) and in the corresponding discussion (p. 7-4) regarding the Storm Drain System (SDS) and ETC-7 is outdated and should be either deleted or incorporated into the site specific information presented in Section 7.2. Institutional controls have been identified as the remedy for the SDS; and no further action was determined to be necessary for ETC-7. Additional discussion of the SDS is provided below in comment 7B.

Table 4, Sites Under Review, and the corresponding text regarding ETC-7 and SDS has been deleted.

6D. Under "Preferred Remedies" (p. 7-4), it might be helpful to explain that from a waste management perspective, the landfill alternative of excavation and off-site disposal considered in the Remedial Investigation/Feasibility Study (RI/FS) is not preferable. Not only would it be more costly, but it would not reduce the volume of waste; the waste still would need to be capped in place in some other city or county.

The following sentence has been added to the text: "because these landfills are located in areas were further development is unlikely, and because excavation and off-site disposal are more costly and would not reduce the volume of waste (the waste would still need to be capped in place in another county), the Air Force selected zoned capping with institutional controls and long-term monitoring and maintenance as the best alternative for LF4 and LF5."

7A. [Section 7.3, Background on Community Involvement (pp. 7-5 to 7-7)] The discussion that begins at the bottom of page 7-5, with "In response to community concern, the Air Force has modified the following site remedy...," and continues to page 7-7, should be moved to Section 7.4 (Summary of Comments Received and Agency Responses). It would be more appropriate to include it under "Summary of Comments Received and Agency Responses."

The above referenced text has been moved to a new section titled Modifications Resulting from Public Comments.

7B. In Section 7.3, the discussion of the SDS should be either deleted or modified. Although the preferred alternative specified in the Proposed Plan, institutional controls, was reevaluated, the ROD currently identifies institutional controls as the selected remedy. Additionally, the discussion of the NPDES permit is confusing and appears to contain inaccuracies.

The text on SDS has been deleted.

8A. [Section 7.4, Summary of Comments Received and Agency Responses] The first paragraph of Section 7.4 probably should be moved to Section 7.3. In addition, with respect to the extension of the public comment period, the text should explain that the agencies also were concerned the community was provided an inadequate review period prior to the first public hearing. The Restoration Advisory Board members received copies of the Proposed Plan only one or two days beforehand. Also, the title of Section 7.4 should be changed to "Summary of Comments Received and *Air Force* Responses."

The first paragraph of the old Section 7.4 has been moved to a new section titled Public Participation Activities. Text was added to explain that the agencies were also concerned that the community was provided an inadequate review period prior to the first public

hearing. Also, the title of the old Section 7.4 (new Section 7.6) has been changed to "Summary of Comments Received and Air Force Responses."

8B. It would be helpful if the introductory portion of Section 7.4 listed the categories used to group comments (i.e, A. Remedial Alternative Preferences, B. Remedial Investigation, etc.). Also, as discussed above in comment 5, the text should state that the Air Force responses document how the Air Force has considered public comments during the decision making process.

A listing of the categories used to group comments has been added to the new Section 7.6, Summary of Comments Received and Air Force Responses. Also, the sentence "The Air Force responses document how the Air Force has considered public comments during the decision making process and provide responses to those public comments" has been added to the text.

8C. Under "Remedial Alternative Preferences," the response to comment (2) regarding deed restrictions (pp. 7-8 to 7-11) is confusing and difficult to follow. It is unclear whether the detailed discussion under "Castle Risk Assessment" is appropriate or useful. It might be clearer to simplify the response by explaining which sites the Air Force was able to address the concern for (such as is already presented in Section 7.3) and why, and which sites the Air Force was unable to address the concern for and why. A site by site discussion may be more effective than a general discussion. Also, it would be helpful to explain on a site specific basis why institutional controls are not expected to hinder reuse (e.g., for the SDS, the future use will remain the same as the current use; for Stains 33-44, because the area is located along the flight line and the institutional controls are consistent with the proposed reuse of the area, the ICs will not adversely impact reuse and development; etc.).

The Castle Risk Assessment text has been removed and replaced with a reference to ROD 1 section 4.3.2, Human Health Risk Assessment. Site-specific text was added to explain institutional controls for the landfill sites only. Also, text was added to address (1) the sites that have been modified and are no longer listed for institutional controls in the SCOU ROD 1 and (2) the sites that have been removed from SCOU ROD 1 and will be addressed in either SCOU ROD 2 or CB Part 2 ROD.

Additionally, the text should clarify that removing deed restrictions is possible once the Air Force agrees and the regulatory agencies concur. The text at the top of page 7-9 implies that this determination is solely the responsibility of the agencies.

The text has been changed to state that removal of the deed restriction is possible once the Air Force and the regulatory agencies concur that risks to human health and the environment are no longer present at the site.

8D. Under "Remedial Alternative Preferences," the third paragraph of the response to comment (5) regarding FTA-1 (pp. 7-12 and 7-13) needs to be reworded. The tone used

in the discussion which evaluates the Restoration Advisory Board's estimate of excavation costs is unacceptable

The last two sentences in the third paragraph have been reworded.

8E. On page 7-15, in the second paragraph, the following statement should be reworded: "The tremendous cost to remove these landfills and dispose of the waste off site is not justified by the intended reuse of that property." The tone used is unacceptable.

The above reference sentence has been reworded.

8F. Under "Language Used in Proposed Plan or Record of Decision" (p. 7-19), the response to comment (2) ("Several community members requested that the Air Force include the actual deed restriction language...in the SCOU ROD...") does not fully address the concern. Refer to comment 1 above for further discussion of this issue.

Text has been added to explain that all institutional control sites except LF-4 and LF-5 (and associated disposal pit sites) have been removed from SCOU Part 1 ROD and will be addressed in either SCOU ROD 2 or CB Part 2 ROD. Actual institutional control language for the landfill sites will be developed in accordance with state and federal requirements. The Castle Joint Powers Authority will be briefed on deed restriction language for LF-4 and LF-5 sites.

8G. Under "RAB Assistance" (p. 7-23), the information concerning the EPA Technical Assistance Grant (TAG) in the Air Force response needs to be updated. Castle Now and Beyond has been awarded a grant and they have hired Kleinfelder to provide them with technical advice on the Castle project. Also, the reference to the Restoration Advisory Board (RAB) seeking professional experts should be deleted. The professional experts were sought by Castle Now and Beyond. The RAB is ineligible for a TAG since it has members who are government employees; TAGs are available only to incorporated non-profit organizations.

The text on TAGs has been updated, and the reference to the RAB seeking professional experts has been deleted.

8H. Under "Decision Process" (p. 7-24), in the response to comment (2), the text should explain that because of this concern (i.e., the perception that the Air Force and the agencies make "back door agreements"), RAB members currently are routinely provided copies of Remedial Project Managers meeting minutes. Additionally, it would be helpful if the text explained how the TAG recipient, Castle Now and Beyond, will play a role in decision making.

The sentence "Because of the concern that there are Perceived 'back door agreements' between the Air Force and the agencies, RAB members are routinely provided copies of RPM meeting minutes" has been added to the text.

8I. Under "Off-Base Property" (p. 7-25), in the response to comment (1), it would be helpful to explain the role the county may play in overseeing the installation of off-base wells, and the importance of having effective plume capture, which could be adversely impacted by off-base wells.

Text has been added to explain that Merced County has jurisdiction over water well permitting in the vicinity of Castle Airport and that off-base wells could adversely impact effective plume capture.

9. [General] The discussion for several sites of "off-gassing" of volatile organic compounds (VOCs) from the Main Base Plume needs to be clarified. The concept is confusing (i.e., how is off-gassing defined or demonstrated?), and there is disagreement among the BCT that "off-gassing" is responsible for contamination detected at depth. This phenomenon has not been formally investigated or documented at Castle Airport.

The presence of VOC ground water plumes has been well documented at Castle. These ground water plumes migrate away from source areas in the direction of ground water flow. Currently these plumes are located beneath many areas on and off the base property that show no sign of soil contamination. Off-gassing has been used to explain the presence of VOCs in soil gas at depth when no shallow soil contamination or shallow source area for VOC contamination has been identified.

Comments from Sophia Serda

10. [Plate 4-10c, Remedial Action Objectives for Metals/Others Inorganic; Section 5.2.1.1, Site Summaries for Landfill Group, Landfill 1 (p. 5.2-3)] The remedial action objective (RAO) of 5,725 mg/kg for lead listed in Section 5.2.1.1, which is based on human health risk, should be reviewed. This RAO is not included in Plate 4-10c and it is unclear whether the agencies concurred on it. EPA believes that the RAO based on the Cal-EPA model should be approximately 1,000 mg/kg. The RAO should be reevaluated, although the issue may be moot for Landfill 1 since water quality appears to be the risk driver.

Lead is a COC at LF1 based on both human health and water quality risks. However, because the water quality RAO was more stringent, it was selected as the site RAO for lead. Reference to the lead HHRA RAO was deleted.

11. [Plate 4-14, Summary of Carcinogenic Risks and Noncarcinogenic Hazards] Plate 4-14 should include a footnote referencing the document (SCOU Risk Assessment) from which the information was obtained.

Plate 4-14 (now Plate 4-12) was originally released as part of the SCOU RI/FS Baseline Human Health Risk Assessment (JEG, September, 1996). Plate 4-12 has been modified to reflect this reference.

12. [Sections 5.1 through 5.5, Site Summaries] The tables presented in the site summaries under "Human Health Risk Assessment" should highlight all risks greater than 10^{-4} and

all hazards greater than 1 Although this information is discussed in the text, a footnote to the tables or some other type of identifier would be helpful.

As suggested, all risk summary tables have been modified to hold risks greater than 10-6.

M. Rooney
Secretary for Environmental Protection

Ed J. Schnabel
Chair

17 August 1998

Mr. Rizgar Ghazi
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SOURCE CONTROL OPERABLE UNIT RECORD OF DECISION, VERSION 3, CASTLE AIR FORCE BASE, MERCED COUNTY

We have reviewed *Version 3 of the Source Control Operable Unit Record of Decision*, (ROD) dated l5 June 1998. The ROD was prepared for the Air Force by Waste Policy Institute. The agencies (USEPA, DTSC, and the RWQCB) agreed to use an iterative approach to review this document and communicate comments to the Air Force. Weekly teleconferences were held each week during the month of July 1998. Due to the nature of this process, we have also reviewed the incremental comments prepared by the USEPA and DTSC and have, for the most part, not duplicated those comments where we have similar concerns. We have also not duplicated all of our verbal comments to the Air Force which were communicated both in the weekly teleconferences, and also during the Remedial Project Manager's meeting held on 29 July 1998 (our comments should be incorporated in the meeting minutes for that RPM meeting). We have the following comments on Version 3 of the ROD:

1. General Comment. We are still awaiting responses from the Air Force to many of our original comments, particularly legal-related comments, on the 15 November 1997 Draft SCOU ROD. At the time this letter was written, we had not received any responses to those comments, other than the notation in the "Response to Comments" section in Version 3 of the ROD that "Air Force response to this comment will be developed during the review period for Version 3 of the SCOU ROD". As such, those outstanding comments should be responded to by the Air Force. Also, at the time of this letter, resolution of legal issues was proceeding on a parallel track, so this letter does not include comments from our legal counsel.

   The ARAR portion the SCOU Part 1 ROD has been revised to match the ARAR section from the recently submitted Landfill Removal Action Memorandum. The text and tables have been revised based on discussions between Air Force and Agency legal counsels.

2. Section 4.3.1 page 9. Delete references to human health risk from the title of this section and the body of the text of this section since section 4.3.1 concerns assessments of impacts to water quality. Section 4.3.2 pertains to human health risk.

   Changes made as suggested.

3. Section 4.3.1.2.1, page 9. A discussion of the use of background concentrations in defining contaminants of potential concern (COPCs) should be added to this section. Comparison to background concentrations, as was done in the SCOU RI/FS (Section 6.1.5) is a critical step in determining COPCs, especially for metals and other naturally occurring inorganic compounds.

   Section 4.4.1.1, which describes the development of Castle background levels and the use of background levels as part of the site screening process has been added to the decision summary.

4. Section 4.3.1.2.1, page 10. The Air Force had previously proposed (during a meeting held on 5 May 1998) to not consider total petroleum hydrocarbons (TPH), total volatile petroleum hydrocarbons (TVPH) as gasoline, and total extractable petroleum hydrocarbons (TEPH) as diesel as contaminants of concern (COCs). At that meeting we did not agree that the various TPH compounds should be dropped as COCs in favor of using only their constituent compounds as COCs. We will still believe that TPH compounds, due to toxicity and nuisance properties (taste and odor) associated with them, must be listed as COCs for sites. These COCs will be remediated under State requirements as they are exempt from CERCLA due to the petroleum exclusion in CERCLA, however. Delete the whole paragraph that discusses TPH in this section.

   As suggested, TVPH and TEPH COC and RAO values have been retained for the applicable SCOU Part 1 ROD sites. Also, the paragraph that discussed removal of TPH as a WQSA COPC has been removed from SCOU PART 1 ROD.

5. Section 4.3.1.4, page 11. This section still does not accurately reflect the water quality site assessment (WQSA) that was used to evaluate the risk to groundwater from semi-volatile organic compounds (SVOCs). This section must be revised to correctly describe the WQSA evaluation that was performed for SVOCs as discussed in Section 8 of the RI/FS. This section currently states that "Sites with SVOC contamination were evaluated using VLEACH1 (mixing zone) scenario only", which is not true. VLEACH modeling was performed on specific compounds during the WQSA evaluations, not on specific sites. Also, both VLEACH1 and VLEACH2 modeling were performed for naphthalene, the surrogate that was used as for the SVOCs. This should be added to the text.

   The text explaining the WQSA process for SVOCs was revised to state, "Screening levels for selected SVOC compounds were developed using VLEACH1 (mixing zone) scenario. All SVOC compounds were modeled using the fate and transport characteristics of naphthalene,

the most mobile SVOC identified during the Castle RI/FS. Because of its relative mobility, Naphthalene was also modeled using VLEACH2 (no-mixing zone) scenario."

6. Section 4.3.1.5, page 11. The text should be revised to indicate that both 10 foot mixing zones, and no mixing zone simulations were modeled for the technical and economic evaluations. Also, although technical and economic evaluations were performed for selected sites, the results of those evaluations are still being discussed, as there is disagreement between the State and the Air Force on the use of the mixing zone vs. no mixing zone in the interpretation of the evaluations. The last paragraph of the section should be revised to indicate that the results of the technical and economic evaluations are currently under discussion, and that most sites subjected to this evaluation were deferred to the CB Part II ROD because of the lack of agreement on those sites. The paragraph as written currently implies that agreement has been reached on these sites, and they are in the SCOU ROD.

   The discussion of Technical and Economic Evaluations has been revised to state, "Summaries of the T&E evaluations completed in late 1997 and early 1998 have been presented in the Draft Final Data Gap Investigation report (July 1998). Earlier T&E Evaluations have been documented in the Draft CB Part 2 RI/FS. The results of these evaluations are currently under discussion. The Air Force and Regulatory Agencies have yet to agree on the use of mixing zone and or non-mixing zone as part of these evaluations. Based on this lack of consensus, final decisions for several of the T&E evaluated sites, including FTA3, B551, B325, B1541, SS2, and DA5 have been deferred to SCOU Part 2 ROD. Details of the Data Gap and T&E evaluations can be found in site summary sections of this ROD"

7. Section 4.4, page 19. In addition to a lot of unnecessary, single-viewpoint editorializing, the last paragraph of this section contains inaccurate information. In some instances, deed restrictions are intended to "last forever". For landfills closed by capping, California regulations require deed notation. This notation, among other things, is required to state that the future site use is restricted in accordance with the Closure/Postclosure Maintenance Plan. Revision of the Closure/Postclosure Maintenance Plan to change future land uses is possible allowable, but the deed notation is intended to remain with the deed in perpetuity to alert any future land owners that the land is a capped landfill with limited allowable site uses. This paragraph should be revised to be both more factually correct and more editorially neutral ("It must be recognized that deed restrictions are not perfect nor can be made to be perfect". Is any remedy, or anything for that matter, perfect or made to be perfect?)

   The scope of the Institutional Controls discussion presented in SCOU PART 1 ROD has been greatly reduced. The test now merely explains why Institutional Controls and Deed Restrictions will be needed and what the overall goals of these remedial measures will be. Details regarding deed restriction language, implementation, and maintenance will be finalized as part of SCOU Part 2 ROD.

8. Plate 4-8. Prior to final publication, the numbers of sites in each category should be rechecked and verified, since the disposition of some of the sites are still being discussed.

Plate 4-8 (now Plate 4-4) has been revised to reflect recent SCOU scope changes and the four decision documents (SCOU PART 1 ROD, SCOU PART 2 ROD, CB Part 2 ROD, and RCRA) that will be utilized to document final remedial decisions for SCOU sites.

9. Plate 4-10a. Revise the footnote to indicate that the TEPH/TVPH PRAOs were derived by Laguna Construction Company based on the RWQCB's Designated Level Methodology.

   The Plate indicates that RWQCB DLM method was used to determine TEPH/TVPH PRAOs. The Air Force prefers not to include the contractor's name.

10. Plate 4-10b. In this ROD, the values for the SVOCs in Table 4-10b are both the preliminary remedial action objectives of the SCOU RI/FS and the final remedial action objectives of the ROD. The table, and associated text, should be revised to indicate that in this instance the PRAOs for the SVOCs were acceptable for use as RAOs. Also, footnote 2 should be revised to indicate that VLEACH1 used a 1 foot mixing zone.

    Section 4.4.1.6 WQSA RAOs has been revised to state, "Because they are relatively immobile in the subsurface, SVOC and metal contamination was generally limited to shallow soil intervals. Based on this limited vertical extent, the Base Closure Team (BCT) has accepted the PRAOs (VLEACH1 for SVOCs and DLM for metals) values as final RAOs for these contaminants". Also, the footnote on the SVOC PRAO/RAO table has been revised to indicate VLEACH1 and a one foot mixing zone were used to determine values.

11. Section 5.l, page 5.1-1. The introduction to this section should be expanded to explain that the selected remedy of SVE for these sites is agreed upon by all parties, although the cleanup criteria for VOCs in the vadose zone, and the related topic of SVE shut off criteria, are still being discussed by the Air Force and the regulatory agencies.

    Section 5.1 has been removed from SCOU Part 1 ROD. Final decisions for remediation at the VOC sites will be presented in SCOU Part 2 ROD.

12. Section 5.1.1.3, page 5.1-7. The "Water Quality Impacts" subsection for the B1350 discussion should be revised to note that TPH exceeds the TPH cleanup level, not the VLEACH1 screening analysis.

    Section 5.1 has been removed from SCOU Part 1 ROD. Final decisions for remediation at the VOC sites will be presented in SCOU Part 2 ROD.

13. Section 5.1.1.6, page 5.1-10. The "Site COCs and RAOs" subsection of the DA-4 discussion should be revised to indicate that cis-1,2-DCE has been identified in soil samples (revision required for table in this section).

    Section 5.1 has been removed from SCOU PART 1 ROD. Final decisions for remediation at the VOC sites will be presented in SCOU PART 2 ROD.

14. Plate 5-1-8. Add footnote to the table to indicate that the "Castle VOC Soil Standards" are still being negotiated.

    The plates associated with Section 5.1 have been removed from SCOU PART 1 ROD. Final decisions for remediation at the VOC sites will be presented in SCOU PART 2 ROD.

15. Landfill Section (General). A discussion of acceptance criteria should be added to the appropriate sections for Landfills 4 and 5, since these landfills are to receive waste being consolidated from other landfills being excavated.

    As suggested, reference to the landfill acceptance criteria has been added to the discussion for LF4 and LF5. As discussed during the July telecons, this information has been added to the COC/RAO portion of the LF4 and LF5 text.

16. Section 5.2.1. For readability and usability of the document, the selected remedy for each landfill should be succinctly stated in the introductory narrative for each of the landfills, since the remedy for all landfills are not identical. Although the selected remedy for each of the landfills is adequately described later in the landfills section, portions of the text for each individual landfill (notably the risk management decision) would make more sense to the reader if he/she knew what the selected remedy was and why certain risk management decisions were required.

    As suggested, the introduction portion of the Landfill section has been revised to clearly state the selected remedy for each site.

17. Section 5.2.1.5, page 5.2-11. The "Water Quality Impacts" subsection should be revised to include a brief discussion of xylene, toluene, and FC11, since these compounds are of concern, as discussed in the "Site COC's and RAO" subsection.

    The Water Quality Impacts portion of the Landfill 5 text has been revised to include a summary of key contaminants (including xylene, toluene, and FC11) compared to appropriate WQSA screening levels.

18. Section 5.2.1.7, page 5.2-15. The "Water Quality Impacts" subsection should be revised to include a brief discussion of copper, manganese, and antimony, since these compounds are of concern, as discussed in the "Site COC's and RAO" subsection.

    The Water Quality Impacts portion of the Castle Vista B text has been revised to include a summary of key contaminants (including copper, manganese, and antimony) compared to appropriate WQSA screening levels.

19. Section 5.2.2.7, page 5.2-19. This section on landfill waste acceptance criteria should be revised to indicate that in addition to narrative acceptance criteria, specific numerical acceptance criteria will also be included in the Closure/Post Closure Maintenance Plan for LF-5. Section 5.2.5.2 (last paragraph on page 5.2-24) of the ROD also contains narrative acceptance criteria that may be more appropriate to be placed in this section of the ROD.

Finally, this section should be revised to indicate that specific acceptance criteria will be developed in the Closure/Post Closure Maintenance Plan to be in compliance with the ARARs identified in this ROD.

Section 5.2.2.7 has been revised to state, "The discharge of 'hazardous waste' or 'designated waste' is prohibited at landfills where consolidation or capping is part of the selected remedy. Waste removed during consolidation or Excavation and On-site Disposal activities will be classified prior to disposal. Designated and hazardous waste will be characterized and taken off-site for disposal. Site specific narrative acceptance criteria will be included with the Closure/Post Closure Maintenance Plan for LF5. The Closure/Post Closure Maintenance Plan for LF4 has already been issued, approved by the BCT, and implemented".

Also the referenced paragraph from the Statutory Determinations section has been moved to Section 5.2.2.7 as suggested, with an addition that indicates, "Discussion of ARARs that provide the regulatory framework of the Castle landfill requirements are included in Section 6 of this ROD".

20. Section 5.2.2.8, page 5.2-19. In general, the section on institutional controls and deed restrictions for landfills needs to be more specific in how the Air Force is going to implement the institutional controls and deed restrictions discussed. As described in the ARARs section of the ROD, many of the institutional controls and deed restrictions discussed in this section are State requirements. The Closure/Post Closure Maintenance Plan, also required by State regulations, is not even discussed in this section, although the State believes that it is an integral, and required, element in establishing and enforcing the various institutional controls and deed restrictions necessary for landfills to protect both the public and the remedy itself. The State believes that the Closure/Post Closure Maintenance Plan for the capped landfills is a primary, enforceable document, and should be described as such in the ROD. A discussion of how the institutional controls and deed restrictions described will be incorporated into the Closure/Post Closure Maintenance Plan, and who and how the Closure/Post Closure Maintenance Plan will be enforced, needs to be added to the ROD.

    The implementation and maintenance of the Institutional Controls remedy will be developed as part of SCOU PART 2 ROD. ROD1 text has been scaled down to only state why Institutional Controls are needed and what their purpose will be.

21. Section 5.2.2.8, page 5.2-19, second paragraph. The reference to DTSC should be replaced with "the State" as both the RWQCB and the IWMB need to be told of, and approve, any changes to the Closure/Post Closure Maintenance Plan, where land use restrictions are prescribed.

    The referenced text has been removed for the SCOU Part 1 ROD. Information pertaining to changes to the Closure/Post Closure Maintenance Plan will be addressed in the SCOU Part 2 ROD.

22. Section 5.2.2.8, page 5.2-20. All of the specific restrictions should be also be contained, as required by State regulations, in the Closure/Post Closure Maintenance Plan. As noted in the previous comments, the ROD should state that an enforceable Closure/Post Closure Maintenance Plan will be prepared, and describe how the Air Force will enforce these requirements.

    The following text has been added to the general discussion of landfill Institutional Controls and Deed Restrictions (Section 5.1.3.9).

    (2) Ensuring the Protectiveness or Integrity of the Landfill Caps and Remedial Systems.

    (a) <u>Institutional Controls</u>. The integrity and protectiveness of the remedy will be ensured much in the same manner as (1)(a) above. Restrictive covenants will be used to prevent reuse activities which could potentially damage the landfill caps. Use restrictions will be tailored to prevent digging, excavation, construction and other development which could significantly impact the landfill caps.

    (b) <u>Land Use Restrictions</u>. With respect to the property on which LF-5 is located, the property has been transferred to the Department of Justice for use as a correctional facility. In order to ensure that adequate controls are implemented on this property, the Memorandum of Agreement (MOA) between the Air Force and the Bureau of Prisons will be amended to ensure the transferee has adequate notification of the use restrictions necessary to maintain the remedial action, and the applicable Federal and State closure/post-closure requirements.

23. Section 5.2.2.8, page 5.2-22, bullet "g". The process described in the ROD for variance or termination of land use restrictions should be revised to more closely reflect State requirements. The deed notation required by State regulations will specify that land use restrictions for the site will be in accordance with the Closure/Post Closure Maintenance Plan. The land use restrictions may be lifted through revision of the Closure/Post Closure Maintenance Plan, which requires State concurrence.

    A brief description of Institutional Controls has been retained in the SCOU PART 1 ROD landfill text. Details regarding variance and termination of Institutional Controls will be presented in the SCOU Part 2 ROD.

24. Section 5.2.2.9, page 5.2-22. The section on long-term monitoring should also be expanded to describe the mechanisms that the Air Force intends to use to implement long-term monitoring of both the cap and the underlying groundwater as required by State regulations. Long-term monitoring of the cap, and provisions for repairing any deficiencies, should be included in the Closure/Post Closure Maintenance Plan. The Air Force has previously proposed, and the State has agreed, that long-term groundwater monitoring at the closed landfill sites may be conducted through the existing long-term groundwater sampling program that the Air Force is currently already conducting.

Changes made as suggested. The Long-term Closure/Post Closure Maintenance Plan is referenced as the source of details regarding the cap monitoring plan, and the text indicates that ground water monitoring will be conducted through the existing long-term ground water sampling program that the Air Force is currently conducting.

25. Section 5.2.5.2, page 5.2-25. There are many State ARARs besides those discussed in this section that pertain to institutional controls and/or deed restrictions at closed landfills. This section should be expanded to briefly discuss those requirements, or reference the ARARs section of the ROD that more fully discusses all the State requirements that are ARARs for the landfill sites.

    The text has been revised as suggested. The text references the ARAR section of the ROD (Section 6.0) as the source for additional information regarding Institutional Controls/deed restrictions.

26. Section 5.2.5.2, page 5.2-24. In the "Excavation and On-Site Disposal" sub-section, add LF-1 and LF-3 to the discussion, since these will also be consolidated into either LF-4 or LF-5.

    As suggested, LF-1 and LF-3 have been identified as the "Excavation and On-site Disposal" landfills addressed in ROD1.

27. Section 5.3.1.4, page 5.3-7. In the "Site COCs and RAOs" subsection, clarify whether Benzo(a)pyrene exceeded the WQSA or the BHHRA screening level, and what the RAO is based on.

    The Shallow Contamination sites have been removed from ROD1. Final decision for the Shallow Contamination group will be presented in SCOU PART 2 ROD. This comment will be addressed in ROD2.

28. Section 5.3.1.5, page 5.3-9. In the "Site COCs and RAOs" subsection, add barium and manganese to the listed COCs. For example, it appears that using the agreed upon process that manganese is a legitimate COC for the site, but the risk management decision was to not develop an RAO for it based on its very limited occurrence at concentrations exceeding the PRAOs. Also, in the "Risk Management Decision" subsection, manganese and magnesium are both used in the same discussion. This discrepancy should be corrected.

    The Shallow Contamination sites have been removed from ROD1. Final decision for the Shallow Contamination group will be presented in SCOU PART 2 ROD. This comment will be addressed in ROD2.

29. Section 5.3.1.6, page 5.3-10. In the "Site COCs and RAOs" subsection it is not clear which RAO, the one based on the BHHRA or the one based on the WQSA, is being used to determine cleanup levels for the site, since both are listed for several of the metals. Revise the subsection to indicate which RAO will be used for the final cleanup number.

The Shallow Contamination sites have been removed from ROD1. Final decision for the Shallow Contamination group will be presented in SCOU PART 2 ROD. This comment will be addressed in ROD2.

30. Section 5.3.1.7, page 5.3-11. It is not clear in this section whether lead is a COC at the site or not. The "Water Quality Impacts" subsection indicates that the PRAOs for lead were not exceeded, yet the "Site COCs and RAOs" subsection lists it as a COC with an RAO. Clarify the discrepancy.

    The Shallow Contamination sites have been removed from ROD1. Final decision for the Shallow Contamination group will be presented in SCOU PART 2 ROD. This comment will be addressed in ROD2.

31. Section 5.3.2.2, page 5.3-16. Revise the text to indicate that LF-3 will now be excavated and clean closed and will not be accepting waste.

    The SCOU Part 1 ROD has been revised to indicate LF3 will be excavated and consolidated into LF4 and LF5. LF3 will not receive waste from other landfills.

32. Section 5.4.1.2, page 5.4-4. The selected remedy for the Storm Drain System is institutional controls, although lead, molybdenum, and cadmium have been identified in the soil/sediment in the system at levels that pose a threat to water quality. The Air Force has proposed using the existing NPDES permit, in addition to the institutional controls, to monitor for contaminants in the storm water discharge. If contaminant levels greater than those set in the permit are detected, best management practices, such as dredging of selected portions of the drainage system, would be implemented. Molybdenum, one of the constituents of concern, however, is not currently monitored for under the NPDES permit. The Air Force must add a provision to the ROD to commit to adequate monitoring of the storm drain system if the selected vehicle, the NPDES permit, is to be effective in minimizing threats to water quality.

    Also, the "Risk Management Decision" subsection currently only discusses how institutional controls will be used to protect human health. This subsection should be revised to also indicate that institutional controls include compliance with the requirements of the NPDES permit, and specifically how compliance with the NPDES permit will be protective of water quality.

    The SDS site is part of the Miscellaneous Sites Requiring Institutional Controls group. This site group has been removed from ROD1. Final decisions for the Miscellaneous Sites Requiring Institutional Controls will be documented in ROD2. This comment will be addressed at that time.

33. Section 5.4.2.2.3, page 5.4-8. Effluent limits set in the NPDES permit are not always equivalent to MCLs. The text should be revised for accuracy.

    This comment pertains to the Miscellaneous Sites Requiring Institutional Controls group. This site group has been removed from ROD1. Final decisions for the Miscellaneous Sites

Requiring Institutional Controls will be documented in ROD2. This comment will be addressed at that time.

34. Section 5.5, global comment for NFA section. Each "WQSA Evaluation" for each site contains new boilerplate text that reads: "A summary of the analytical results compared to the VLEACH1 and VLEACH2 RAOs, is provided below. Based on the analytical results, the site does not pose a threat to water quality." For each of the sites, this text should be revised to reflect the actual comparison that was conducted. For example, for Building 1205, the metals are compared to the DLM-derived PRAOs, and TCE and PCE are compared to the VLEACH2 levels. No compounds are compared to the VLEACH1 value, even though the text states that they are.

    The introductory text to the WQSA evaluations has been revised to more accurately describe the basis of the WQSA screening criteria.

35. Section 5.5.2, page 5.5-5. The description of how sites were determined to be eligible for NFA status in the pre-feasibility study phase, with regard to the water quality site assessment screening, is incorrect and should be revised for accuracy. In the water quality site assessment screening, site data was compared to the PRAOs based on the DLM for metals, and VLEACH1 for SVOCs. The site data for VOCs was compared to both VLEACH1 and VLEACH2. If the site data indicated that contaminant concentrations were below the PRAOs for metals and SVOCs and below the VLEACH2 levels for VOCs the site was considered to not represent an unacceptable threat to water quality. In this phase of the screening PRAOs, not RAOs, were used. Due to the conservative nature of the screening process, typical of most screening processes, the base closure team agreed that if the site concentrations did not exceed the PRAOs, or VLEACH2 concentrations, the site could be referred to NFA status.

    The text of this section should be revised to delete references to RAOs, since they are irrelevant in the context of this section, and more accurately describe the use of the PRAOs and the VLEACH1 and VLEACH2 values in the screening process. At this phase, the VLEACH2 values were especially critical in determining if sites qualified for NFA status. Also, it is not clear what is implied by the use of the caveat "For comparison purposes only" in the last paragraph. If definitive decisions are to be made on these sites, the AF and the rest of the base closure team should be willing to firmly commit to the agreed upon screening methodology that was used to select these sites for NFA status.

    The subject text was revised to clarify the role of PRAOs in the determination of NFA status and to include the following text, "If the site data indicated that contaminant concentrations were below the PRAOs for metals and SVOCs and below the VLEACH2 levels for VOCs the site was considered to not represent an unacceptable threat to water quality. Due to the conservative nature of the screening process, the base closure team agreed that if the site concentrations did not exceed the PRAOs, or VLEACH2 concentrations, the site could be referred to NFA status, pending the outcome of Human Health risk screening".

36. Section 5.5.2.23, page 5.5-24. The section of the text for this site (HWS4) that references the four deep soil gas samples (95, 170, 199, and 258 feet bgs) should be checked for accuracy. The text states that TCE was detected at 1,700 ppb at 95 feet, which is above screening levels required for further action. If this concentration is correct as listed, the text should explain why the Air Force believes this site is still eligible for NFA status.

    The referenced sample data came from pre-RI study conducted by International Technology Corporation in 1991. Review of the RI summary of the IT work suggests that ground water samples, not soil gas samples, were collected. Because there is no evidence of significant shallow TCE contamination in site soil, it was determined that TCE found in ground water at the site was most likely related to the DA4 VOC contamination site, and not related to a TCE release at HWS4.

37. Section 5.5.2.24, page 5.5-26. The text states that the stainless steel portion of the industrial waste line is still in service, transporting wastes to the Castle Airport treatment facility. As far as we are aware, however, the treatment facility is no longer in operation. The text should probably be revised to indicate that the stainless steel pipeline is still in place, rather than in service.

    The text has been revised to state that the line is no longer in use.

38. Section 5.5.3.4, page 5.5-41. The text should be noted to indicate that although the CB Part 2 RI/FS has not been finalized, and is still being actively worked on, the regulatory agencies have informally accepted the NFA recommendation for Building 1532, based on the evaluation in the Draft CB Part 2 RI /FS that has been submitted by the Air Force.

    The B1532 text has been revised to state, "The B1532 T&E evaluation was included as part of the Comprehensive Basewide CB Part 2 RI/FS, which concluded that the site did not present a significant threat to ground water and that no further action were required. The regulatory agencies have informally accepted the NFA recommendation for Building 1532, based on the evaluation in the Draft CB Part 2 RI/FS. Additional information on the T&E evaluation process is located in Section 4.3.1 of this ROD".

39. Section 5.5.3.8, page 5.5-47. The text for this site doesn't justify why the site should be considered for NFA status even though PCE exceeds the VLEACH2 screening value. An adequate justification for NFA status should be added, or the site should be removed from the NFA list.

    The risk management discussion for FTA2 has been modified to indicate: Risk at FTA2 is driven by the presence of PAHs in one surface soil sample. The elevated PAH levels FTA2SB01 are most likely the result of asphalt mixing with the surface soil. Due to the uncertainty concerning the sample composition, the calculated risk levels most likely over estimate actual risks. Lower PAH levels were found in the Data Gap samples collected from beneath the surface soil layer impacted by asphalt are likely more representative of actual site conditions. Based on this determination, the existing PAH concentrations in shallow soil poses a minimal threat to human health, and No Further Action is required.

40. Section 6.1.2, page 6-4. The discussion of SWRCB Resolution 92-49 in the third paragraph should be clarified that it is not the consolidation of the landfills that triggers 92-49, but the excavation of waste that triggers the requirement. In this case 92-49 pertains to the excavated sites, and other requirements (Title 27 of the CCR) pertain to the waste acceptance criteria, consolidation and capping of the excavated waste

    The ARAR text has been completely revised based on the recently submitted Draft Final Action Memorandum for landfill 1, 3, 4, and 5. Discussion of Res 92-49 is not included in the revised text.

If you have any questions or comments, please call me at (9l6) 255-3066.

JOHN RUSSELL
Associate Engineering Geologist

Comments from Department of Toxic Substance Control
on
November 15, 1998 Draft of the SCOU Record of Decision Part 1

1. Declaration page, SCOU ROD Part 1 Table, Page ii.

   The closure report for PCB-9 was recently completed and it is considered as a no Further Action site. Please revise the table to indicate PCB-9 as an NFA site.

   Response: As suggested, PCB9 has been included as a Post Feasibility Study NFA site.

2. Section 4.2, Comprehensive Basewide Program.

   Plate 4-2 is unnecessary since the flow diagram in Section 4-2 and Plate 4-4 provide the adequate information that Plate 4-2 is illustrating. Please delete Plate 4-2 and all references to the plate.

   Response: The Air Force concurs with this assessment. Plate 4-2 has been deleted from the SCOU Part 1 ROD.

3. Section 4.4, Assessment of Impact to the Water Quality, Human Heath and the Environment, Page 8.

   Please rewrite the third and fourth sentences to state the following: "Final decisions on Water Quality and Human Health Risks in the vadose zone are presented in this ROD. Final decisions on ecological risks and Human Health Risks will be presented in the CB Part 2 ROD."

   Response: Because ecological risks and non-vadose zone Human Health Risks may be addressed in the SCOU Part 2 ROD, the referenced sentences were changed to say, "Final decisions on Water Quality Risks and Human Health Risks <u>in the 0 to 15 foot interval of the vadose</u> zone are presented in this ROD. Final decisions on ecological risks <u>and vadose zone human health risks from 15 feet to the top of the water table</u> will be presented in the <u>SCOU Part 2 ROD</u> or in the CB Part 2 ROD."

4. Section 4.6, Institutional Controls

   The institutional controls language provided by the California Waste Management Board and contained in the previous version of SCOU ROD (SCOU ROD, Version 3) in the landfills section is a requirement of the ARARs and should remain as part of this ROD. Please bring out that section of the text and include it in this ROD.

   Response: The Institutional Control discussion has been revised to be consistent with AFBCA policy and Federal and state requirements. A portion of Institutional Control requirements for consolidation landfills are imposed by Federal and state regulatory

requirements as ARARs. This revised discussion can be found under Institutional Controls and Deed Restriction (Section 5.1.3.9 and 5.1.6.2).

5. Section 5.1.3, Description of Alternatives for Landfill Sites, Page 44

   The text provides an incomplete listing of the six alternatives for the landfills. The alternative in the third through sixth bullet should include Institutional controls as part of their remedy. Please revise the text to correct this error.

   Response: Changes made as suggested. All of the capping remedies now list Institutional Controls as part of the remedy.

6. Plate 5-1-3, Summary of cost analysis for landfill group

   Please revise this plate to include the updated costs for the different alternatives.

   Response: Cost estimates provided in the RI/FS served as a basis for the landfill remedial decisions. The ROD is based primarily on information developed during the SCOU RI/FS. For these reasons, updated landfill costs have not been included in the SCOU Part 1 ROD.

7. Response to DTSC general comment #3.

   In our comment we stated that information from the CB Part 2 RI/FS can not be used to make final decisions in the SCOU ROD. This comments specifically applies to building 1532 where information has been used from the CB Part 2 RI/FS to make a final decision in the SCOU ROD Part 1. As stated in our previous comment, it is unacceptable to use information from a document that has not been considered final. We suggest that the site be retained in the CB Part 2 program.

   Response: B1532 has remained on the SCOU Part 1 ROD as a No Further Action site based on BCT Consensus Agreement No. 9, dated 29 July 1998, which documented final remedial decisions for the SCOU sites.

Comments from Environmental Protection Agency
on
November 15, 1998 Draft SCOU Record of Decision Part 1

Evaluation of Responses to EPA Comments on SCOU ROD, Version 3

1. (Initial Bechtel Comments, June 26, 1998) [Response to Comment 3, Declaration, Site Grouping Inconsistencies] Apparent inconsistencies continue to exist in the number or grouping of SCOU sites. The first paragraph of the Declaration (new text) refers to 180 remedial action sites and 51 outstanding sites. However, these groupings are not reflected in Plate 4-8 (Decision Summary), which describes the disposition of SCOU sites. Plate 4-8 should be revised to clearly show how the 180 site and 51 site groupings have been derived, or the text in the Declaration should be revised. (Additional inconsistencies in site groupings exist between Plate 4-5 and Plate 4-8., described below.)

This concern has been partially addressed. Some inconsistencies still remain:

On page iv of the Declaration, in the table subheading "SWMU Data Gap Sites & FTA1", please insert "(15 sites)" under this subheading to be consistent with the rest of the table.

Response: The table has been modified as suggested.

In the Declaration, Statement of Basis and Purpose, page I, the text indicates the remaining 65 sites will be addressed in either the SCOU ROD Part 2 or the CB ROD Part 2, yet the table (page iii) indicates they will be addressed in SCOU ROD Part 2.

Response: The Declaration text has been modified to state, "Final decisions for the remaining 64 SCOU sites will be documented in the SCOU Part 2 ROD which is scheduled for completion in October 1999. These selected remedies may be modified in the future in response to ecological concerns identified during development of the Comprehensive Basewide (CB) Remedial Investigation/Feasibility Study (RI/FS). Any ecologically driven modifications will be documented in the SCOU Part 2 ROD or in the CB Part 2 ROD, scheduled for completion in September of 2000."

The Declaration Table heading has remained unchanged. The 64 remaining sites will be addressed in the SCOU Part 2 ROD.

<u>Note:</u> The site count for SCOU Part 2 ROD/CB Part 2 ROD was changed to 64 based on inclusion of PCB9 as an NFA site

The table in the Declaration (page ii) indicates there are seven "excavation and on-site disposal" sites, while Plate 4-4 (Site Disposition Flow Chart) indicates there are only six such sites.

Response: The Declaration table has been revised to show only six Shallow Contamination Sites. PCB9 which was previously listed with this group has been moved to the NFA group based on recently finalized PCB9 closure report and regulatory concurrence.

The table in the Declaration (page ii) indicates there are seven "zoned capping with institutional control" sites, while Plate 4-4 indicates there are eight such sites.

Response: The Declaration and Plate 4-4 (now Plate 4-3) have been revised to show eight Zoned Cap and Institutional Control sites. These sites include: LF4, LF5, DP5, DP6, DP8, DP8A, DP9, and the LF5 trenches.

The table in the Declaration (page iv) identifies the category "SWMU Data Gap Sites & FTA1" while Plate 4-4 identifies this category as "SWMU sites." This latter title in Plate 4-4 is misleading, as a reader could assume it contains all the SWMU sites. Please change the name of this category to "SWMU Data Gap Sites & FTA1" to be consistent with the Declaration.

Response: Change made to the Plate 4-4 (now Plate 4-3) Flow Chart.

2. (Initial Bechtel Comments, June 26, 1998) [Response to Comment 17, Inconsistent Evaluation of NFA Sites] EPA Comment 30B states that "any site which was not determined to require NFA based on pre-FS decision should be evaluated in a manner similar to sites in Section 3." Section 5.5 of the ROD identifies 71 Post-FS sites which would fall into this category. However, only six of these sites were evaluated in a manner similar to sites in Section 3 (Plate 5-5-3). Post-FS sites which were not evaluated according to the seven criteria are Building 84, ETC7, SAB1, Stains 1 through 32, Structure T85, Structure 1206, all of the PCB sites, and 23 SWMU sites. Additionally, five of the Pre-FS sites were evaluated with respect to the seven criteria in Plate 5-5-3. Thus, Section 5.5 presents a convoluted mixture of evaluation methods to address NFA sites. It appears that some sites which passed both WQSA and risk screening were evaluated in the SCOU FS even though they did not need to be, and that some sites which failed either WQSA or risk screening were not evaluated in the FS, even though they should have been. All sites for which risk management decisions were made need to be evaluated in detail.

This concern has been partially addressed. Although the response explains why only 19 of the NFA sites have a complete development and comparison of alternatives, this new category of sites is not explained in the text. The text at the top of page 90 (Section 5.2.4) provides only a partial explanation, which is also inaccurate since it refers to only three of the 19 sites in this category. The text in Section 5.2.4 should cite the agreement reached by the BCT, including the complete date of the agreement ("July telecom" is insufficient). Additionally, these 19 sites represent a

fourth category of NFA sites which are not identified in Sections 5.2 and 5.2.1 (page 56), which present a "road map" of NFA sites. By not defining this new category of NFA sites up front, a reader may become confused in this already complex section. These 19 sites overlap two of the three existing categories: seven of these sites are in the "Pre-FS NFA group" and 12 sites are in the "Post-Feasibility Study NFA group." For clarity, please consider removing these 19 sites from those two groups mentioned and include them as a separate fourth category, entitled "Risk Management NFA Sites." Thus, Section 5.2 would be structured as follows:

Pre-RI NFA sites (15 sites)
Pre-FS NFA sites (26 sites)
Post-FS NFA sites (60 sites)
Risk Management NFA sites (19 sites)

Response: The NFA section has been restructured as suggested. BCT Consensus Agreement No. 9 (dated July 29, 1998) was cited as the basis for regulatory concurrence with the Risk Management Decision NFAs. It should be noted, the Post FS NFA group was modified to include the recently closed PCB9 . Also, based on further review of the nature of the NFA decision, the B84, ETC7 and ST1206 sites were removed from the Post FS NFA group and moved to the Risk Management Decision NFA. Based on these revisions, the Post FS NFA group consists of 58 sites and the Risk Management NFA group consists of 22 sites.

3. (Preliminary Comments from Lisa Hanusiak, July 15, 1998) [Response to Comment 19, EPA July 14, 1997 Comments] EPA's 14 July 1997 comments on the preliminary draft ROD appear to have been omitted from Version 3, and also from the Administrative Record listing. The response to comments presented in the 11/15/97 draft ROD should be maintained.

This concern has been inadequately addressed. The response to this comment implies that the Air Force's responses to EPA's July 14, 1997 comments on the preliminary draft ROD have been included in the SCOU ROD Part 1. However, neither these comments nor the responses to these comments have been included. The Air Force's response to EPA's July 14, 1997 comments, which were presented in the November 11, 1997 draft ROD, should also be included in the SCOU ROD Part 1.

Response: As requested, the response to comment table for EPA comments on the Preliminary Draft of the SCOU ROD dated January, 1997 have been included as part of the Response to Agency Comments section of the ROD.

4. (Preliminary Comments from Lisa Hanusiak, July 21, 1998) [Response to Comment 15C, Completion date of CB Part 2 ROD] [Section 4.2, Comprehensive Basewide Program] In

the last paragraph, last sentence, p. 8, verify the date listed for CB Part 2 (April 1999). Also, is this supposed to be the date for the ROD?

Although the completion date of the CB Part 2 ROD has been changed to January 2000 (page 7), the October 26, 1998 master schedule indicates completion of this document is September 2000. Additionally, page I of the Declaration indicates that both the SCOU ROD Part 2 ROD and the CB Part 2 ROD are scheduled for completion in late 1999. Please revise these dates to be consistent with the latest master schedule. These dates also should be reflected in the Responsiveness Summary.

Response: Because the schedule for CB and SCOU Part 2 continues to change, the best we can do is document the latest schedule at the time of publication. The text has been revised to indicate the CB part 2 ROD will be finalized September 2000, and the SCOU Part 2 ROD in October, 1999.

5. (Preliminary Comments from Lisa Hanusiak, July 23, 1998) [Response to Comment 6A, Landfill Removal Actions] [Section 5.2.1.2, Landfill 2 (pp. 5.2-4 through 5.2-6)] The text should explain why conducting a removal action was considered necessary. This comment applies to the other landfill sites as well.

This concern has been addressed, except with respect to Landfill 5. Text explaining why the removal action is necessary at Landfill 5 (Section 5.1.1.5) should be added.

Response: The Landfill Text (Section 5.1.1.5) has been revised to include, "This work has been initiated under Removal Action authority. The Removal Action was needed to accommodate waste that is currently being excavated from the Removal Action landfills".

6. Preliminary Comments from Lisa Hanusiak, July 23, 1998 [Response to Comment 8B, Landfill 4 Freon] [Section 5.2.1.4, Landfill 4] Under "Site COCs and RAOs" (p. 5.2-10), the discussion of the RAO for freon is confusing. The text states that the RAO applies to soil gas cleanup standards, rather than acceptance criteria. However, it is unclear how the Air Force intends to address this concern since no specific remedial action to address soil gas is specified.

Additionally, the RAOs need to include the waste acceptance criteria for Landfill 4. One of the remedial objectives is to ensure that designated or hazardous wastes are not placed in this landfill. This comment also applies to Landfill 5.

This concern has been partially addressed. The text of Section 5.2.1.4 still does not indicate how FC12 soil gas exceeding WQSA will be adequately addressed by the selected remedy (capping).

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Response: The following text has been added to Section 5.1.5 (Selected Remedy for Landfill Sites) to further explain the rational for capping at both LF4 and LF5, "Zoned Capping will be implemented to decrease surface water infiltration, reduce potential for development of leachate, decrease potential for ground water impact from waste and residual VOCs, and eliminate the surface exposure pathway. Because concentrations of VOCs at LF4 and LF5 are relatively low and sporadically distributed, capping was considered the most effective and economical remedy for these landfill contaminants".

7. (Preliminary Comments from Lisa Hanusiak, July 23, 1998) [Response to Comment 10, Landfill Institutional Controls] [Section 5.2.2, Description of Alternative for Landfill Sites; Plate 5-2-2, Alternatives for Landfill Sites; Plates 5-2-3 through 5-2-11, Cost Summaries; Plate 5-2-12, Comparison of Alternatives for Landfill Sites] For all landfill remedies that involve capping and leaving waste in place, the alternative should be listed as "Cap and Institutional Controls" (e.g., Class III Landfill Cap and Institutional Controls) as they are in Plate 5-2-l (Summary of Alternative Considered for Landfill Sites and Disposal Pits). This comment also applies to Section 5.2.2.4 (Class III Landfill Cap); Section 5.2.2.5 (Evapotranspiration Landfill Cap); Section 5.2.2.6 (Zoned Landfill Cap); and the plates cited above. The titles of Sections 5.2.2.4, 5.2.2.5, and 5.2.2.6 should be modified accordingly.

   The description of each alternative involving capping in Plate 5-2-2 discusses access restrictions; however, the headers for these alternatives do not call out institutional controls as a component of the remedy. For the cost estimate tables, the costs of institutional controls appear to be included, although these costs are not itemized, which would be helpful. Information on institutional controls could be included in Sections 5.2.2.4, 5.2.2.5, and 5.2.2.6 by reference to Section 5.2.2.8 (Institutional Controls and Deed Restriction), although any remedy-specific or site-specific institutional controls should be described.

   This concern has been partially addressed. Plate 5-1-2 and the cost summary plates still do not embody the term "and institutional controls" to describe the landfill cap alternatives. Please revise the plates accordingly.

   Response: As suggested, Institutional Controls has been added to the table.

8. (Preliminary Comments from Lisa Hanusiak, July 27, 1998) [Response to Comment 1, Institutional Controls] [Institutional Controls] Institutional controls (ICs) prohibiting residential reuse need to be specified for all sites not cleaned up to unrestricted reuse levels, or justifications need to be presented. Site specific comments related to this are provided below and in my previous comments of 7/21 and 7/23.

   This concern has been partially addressed. The text under "Risk Management Decision" implies the reuse for the Landfill 1 site will be restricted to occupational

uses. Since the landfill is being excavated, residential reuse should be acceptable. This should be clarified in the text. Otherwise, if restricted reuse is applicable, institutional controls would be necessary. This concern can be addressed by including a statement similar to the one included for Landfill 2 (". . . because all the waste will be excavated and removed . . . institutional controls will not be required and the site will be open for unrestricted reuse").

Response: Changes made as recommended. Landfill 1 text now states, ".....because all the waste will be excavated and removed as part of the selected remedy, institutional controls will not be required and the site will be open for unrestricted reuse".

Additionally, the discussion under Landfill 3 (Section 5.1.1.3) should include a similar statement. The Landfill 3 discussion is missing a Risk Management Decision section which should address such details. Also, some of the text for Landfill 3 has not been revised to reflect the change from zoned capping to the excavation and on-site disposal remedy. In Section 5.1.1.3, bottom of page 31, item 2, the last sentence states "Soil screening values will be used as RAOs, cleanup standards, and acceptance criteria for wastes being consolidated onsite." This sentence implies consolidation at Landfill 3, which is incorrect. This sentence should be revised to clearly indicate excavation and onsite disposal at another receiving landfill.

Response: As suggested, a Risk Management section has been added to the Landfill discussion. This discussion includes, ".....because all waste has been excavated and removed from the site under Removal Action authority, institutional controls will not be required and the site will be open for unrestricted reuse.

9. (Preliminary Comments from Lisa Hanusiak, July 27, 1998) [Response to Comment 14, Hanger F-6, Rejected Data] [Section 5.5.2.22, Hangar F-6] The data quality issue raised for Hangar F-6 needs to be resolved. The text in the third paragraph (p. 5.5-24) states "Analyses of shallow soil gas samples from the site indicated the presence of ... dichlorodifluoromethane (FC12)... However, the FC12 data was (sic) rejected based on matrix interference." It is unacceptable to base remedial decisions on rejected data! Remedial decisions need to be based on acceptable remedial investigation data or a data gap still exists.

   Has the Air Force resolved this data quality issue for FC12? Assuming it has, the discussion of the matrix interference problems and rejected data should be deleted from the ROD. Did the Air Force perhaps fill the data gap by resampling or by using other data (of acceptable quality) from adjacent sampling locations?

   This concern has not been adequately addressed. The Air Force indicates they have resolved the data reject problem by conservatively assuming the data are valid and by removing reference to the rejected data in the text (now Section 5.2.3.22, page

78). Since matrix interference was the problem, this approach seems somewhat logical. Nonetheless, the data point was rejected so it should not be used. The decision that NFA is necessary at Hangar F-6 needs to be supported by valid data.

Response: Based on the assumption that the FC11 and FC12 analytical results were valid, the noted levels were well below VLEACH2 screening levels. A summary of levels noted versus screening levels is provided below:

COC	*Detected Level and Interval*	*VLEACH2 Screening Level*
FC11	*0.0011 @ 10 ft*	*621 (10-20 ft)*
FC12	*0.0222 @ 10 ft*	*621 (10-20 ft)*

The remaining soil gas data front the Hangar F6 site was not rejected. All of this data indicated soil gas VOC levels well below VLEACH2 screening levels and indicated there is not a VOC soil gas problem at this site. The soil gas VOC data that was not rejected provides sufficient justification for the NFA decision. Based on this rationale, FC11 and FC12 has been removed from the Hangar F6 discussion.

10. (Preliminary Comments from Lisa Hanusiak, July 27, 1998) [Response to Comment 20B, Castle Vista Landfill B SVE Alternatives] [Plate 5-2-2, Alternatives for Landfill Sites] For CVLFB, under the SVE alternative, the references to Landfill 5 should be replaced with references to CVLFB.

This concern has not been addressed despite the Air Force's response indicating otherwise. Plate 5-2-2 (previously 5-1-2) for Castle Vista Landfill B remains unchanged and still references LF5. Please modify Plate 5-2-2 to address EPA's original concern.

Response: As noted, references to LF5 have been removed from the CVLFB summary of Plate 5-1-2 (now Plate 5-1-3).

11. (Preliminary Comments from Lisa Hanusiak, July 27, 1998) [Response to Comment 36A] [Section 5.5.2, Pre-Feasibility Study NFAs] The following discrepancies between the site data presented in the site summary introductions and the COC tables were identified. These discrepancies should be resolved.

> [Section 5.5.2.23, Hazardous Waste Site 4] In the fifth paragraph (p. 5.5-25), numerous VOCs detected at "trace levels" are identified. However, only a subset of these VOCs are included in the table under " WQSA Evaluation." It is unclear why some of these VOCs were included in the table and others were omitted. Additionally, it is unclear why soil results for PCE and TCE appear separately (on p. 5.5-26) in the WQSA screening table from the other soil results (on p. 5.5-25).

[Section 5.5.2.26, Storage Area B4] The text in the investigation summary does not describe collection of soil gas samples, although the table under " WQSA Evaluation" includes soil gas results. Also, the depths specified for soil gas samples should be reviewed. The table lists depths of 0; it is unclear whether this is accurate.

This concern has been only partially addressed with respect to Hazardous Waste Site 4. 1,2,4-Trimethylbenzene is not listed on the WQSA Screening table even though it is discussed in the text for Hazardous Waste Site 4. Also, the PCE and TCE values from the previous (SCOU ROD Version 3) table were in units of mg/kg (soil concentrations), however, now they are in units of ug/L (soil gas concentrations). Is this correct? Also, according to the text, trace concentrations of TCE and styrene were reported in soil (in contrast to soil gas) samples, however, the table does not reflect these results. Please revise the table to be consistent with the text, per EPA's original comment.

Response: To complete the list of trace VOCs identified at HWS4, 1,2,4-trimethylbenzene was added to the soil gas summary and Styrene and TCE were added to the soil summary. PCE was not identified in the HWS4 soil samples. All units were double checked for accuracy.

Additionally, this concern has been only partially addressed with respect to Storage Area B4. Although the WQSA table was revised to reflect no soil gas sample results, the WQSA screening limits for organics appear incorrect (e.g., 315,150 mg/kg for toluene). Please check and revise this table accordingly.

Response: The summary was revised to indicate VOC analytical parameters and screening limits are presented in ug/kg.

12. (Preliminary Comments from Lisa Hanusiak, July 27, 1998) [Response to Comment 38, Remedial Alternatives for Pre-Feasibility Sites] (Section 5.5.2.11, Building 1335; Section 5.5.2.13, Building 1405; Section 5.5.2.16, ETC-11; Section 5.5.2.31, Structure 1201 (p. 5.5-33); Section 5.5.2.32, Structure 1571; Section 5.5.2.33, Underground Fuel Line 4 (UFL-4)] Under "Remedial Action Evaluation" for these sites, the text describes considered alternatives, including:

    For Building 1335 (p.5.5-13), alternatives for Category 1 sites (Engine Maintenance Shops);

    For Building 1405 (p. 5.5-16) and UFL-4 (p. 5.5-36), alternatives for Category 4 sites (Storage Tank and Tank Farm);

    For ETC-11 (p. 5.5-19), alternatives considered for Category 3 sites (Landfill Group);

For Structure 1201 (p. 5.5-33) and Structure 1571 (p. 5.5-34), alternatives considered for Category 2 sites (Washracks and Discharge Areas);

It is unclear why remedial alternatives are discussed for these sites if they are considered "Pre-Feasibility Study NFA" sites. Either the discussion of remedial alternatives should be deleted or the sites should be grouped with the "Post Feasibility Study NFA" sites. Also, since the alternatives for Building 1405 and UFL-4 seem to apply to petroleum contamination, the extent to which they should be discussed at all is unclear. Additionally, the discussion of Structure 1201 includes an incorrect reference to B1335, and the discussion of UFL-4 includes an incorrect reference to B1405.

This concern has been inadequately addressed. The text continues to discuss remedial alternatives for pre-FS sites. Each of the sites in question is a Risk Management NFA site. This illustrates the need to place all Risk Management NFA sites into a separate category of NFA sites. (See EPA comment above on separating Risk Management NFA sites.) It does not make sense to describe remedial alternatives for sites that were not evaluated in the FS. Please separate out all Risk Management NFA sites into a fourth NFA category.

Response: As suggested, a subgroup for all Risk Management Decision NFAs has been added to the SCOU Part 1 ROD. This subgroup (Section 5.2.5) includes B1335, B1405, ETC11, ST1201 and 18 other Risk Management Decision NFAs. Discussion of considered alternatives is included for Risk Management Decision NFAs that were based on post FS decisions.

Additional Comments

13. [Explanation of Significant Differences] New sections titled "Explanation of Significant Differences" have been added to the site summaries. These sections were added in response to EPA's request that the ROD explain remedy changes between those specified in the ROD and those specified in the SCOU RI/FS and Proposed Plan. Another title, such as "Changes from Prior CERCLA Documentation," should be used to replace "Explanation of Significant Differences." The term "Explanation of Significant Differences" has a distinct regulatory meaning under CERCLA and applies to changes from a previously approved ROD. Since the SCOU ROD was never approved in final form, this terminology does not apply in this case and, therefore, is misleading.

Response: As suggested, the heading "Explanation of Significant Differences" has been changed to "Changes from Prior CERCLA Documentation."

14. The following inconsistencies or discrepancies which should be clarified were noted:

Comments from Environmental Protection Agency
on
November 15, 1998 Draft SCOU Record of Decision Part 1

[Table 4-8a] A footnote should be included indicating that final RAOs for VOCs will be presented in SCOU ROD, Part 2 or CB ROD, Part 2.

Response: Changes made as suggested.

[LF1 Water Quality Impacts, page 24, DLM] Please define "DLM" in the table and in the List of Acronyms, presented at the beginning of the ROD.

Response: Changes made as suggested. DLM is defined in the text preceding the WQSA summary table and in the Acronyms list.

[Plate 5-1-1] The symbol for the preferred alternative in the legend is incorrect.

Response: Change made as suggested. Please note, Plate 5-1-1 has been renumbered and is now Plate 5-1-2.

[Plate 5-2-1] The number of Post-Feasibility sites, as shown in the plate title, differs between pages (72 sites versus 64 sites).

Response: The summary tables presented at the beginning of the NFA section and Plate 5-2-1 have been revised and are now consistent. These tables/plates now indicate: 15 Pre-RI NFAs, 26 pre-FS NFAs, 58 post-FS NFAs, and 22 Risk Management Decision NFAs.

[Plate 5-2-3] The seven criteria discussion for Structure 1201 refers to Alternative 3. However, there is no Alternative 3 listed in the "Alternatives Considered" row.

Response: Because the NFA decision for ST1201 was based on a pre-RI decision, discussion of alternatives considered for ST1201 has been removed from Plate 5-2-3. ST1201 is not included on Plate 5-2-3.

[Responsiveness Summary] The text on page 141, third paragraph, contains a remnant of the previous section numbering system. Please delete the reference to Section 7 in the sentence, "Concerns regarding remedial design/remedial action can be found in Section 7 of this Responsiveness Summary."

Response: Reference to Section 7 of the Responsiveness Summary has been deleted.

[Responsiveness Summary] The citation to the Human Health Risk Assessment discussion at the bottom of page 142 is incorrect. The text refers to Section 4.3.2. The correct section is 4.4.2. Also, on page 153, second from last paragraph, there is an incorrect citation to "ROD Section 4.5, Deed Restriction." Please remove.

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Response: The cited Responsiveness Summary references were corrected. The HHRA reference is Section 4.4.2, the Deed Restriction references are Section 4.6 and Section 5.1.3.9.

> [Response to Agency Comments] The ROD should state that the comments from Lisa Hanusiak and Bechtel were provided on behalf of the U.S. EPA.

Response: The heading of the Bechtel and Lisa Hanusiak Response to Comment summaries have been revised to indicate comments were submitted on behalf of the USEPA.

> [Administrative Record] The Administrative Record should have an introductory paragraph. As presented, a reader has no way of knowing what this listing represents. The term Administrative Record is not even indicated; only "AR" appears in the header of the listing, which is not defined.

Response: The following explanation has been added as a preface to the Administrative Record summary: "The following provides a summary of the Administrative Record (AR) for the Castle Airport environmental program. Listed in the AR summary are all environmentally relevant documents that have been developed for Castle Airport. Copies of the documents listed in the AR can be found at the Merced County Library and at the Base Conversion Agency (BCA) headquarters located at Castle Airport."

Regional Water Quality Control Board Comments
On November, 1998
Draft SCOU Part 1 ROD

General Comments

1. Institutional Controls. We believe that the general institutional control language contained in the current ROD is too brief. We acknowledge that we expect most of the specific institutional control language to be included in the SCOU ROD Part 2, but we still believe that additional generic language, especially with respect to landfills, should be inserted into the current ROD. Please see our specific comments below for a more complete discussion of this issue.

   Response: The Institutional Control discussion has been revised to be consistent with AFBCA policy and Federal and state requirements. A portion of Institutional Control requirements for consolidation landfills are imposed by Federal and state regulatory requirements as ARARs. This revised discussion can be found under Institutional Controls and Deed Restriction (Section 5.1.3.9 and 5.1.6.2).

2. ARARS. The ARARs tables should be revised to be in accordance with the ARARS in the Final Landfill Action Memorandums, which were finalized after the issuance of the Draft ROD, and represent the most up-to-date version of the ARARs tables agreed to by the State and the Air Force.

   Response: As suggested, the ARAR tables from the Final Action Memorandum for Landfill 1, Landfill 3, and Landfill 5 dated November 12, 1998 have been incorporated into the Draft Final SCOU Part 1 ROD. Per Water Board request, one ARAR, Title 27 CCR 21170, regarding recording, has been added to the State ARAR list.

Specific Comments

1. Section 4.4.1, page 8. In the second sentence, replace “extractable” with “leachable”.

   Response: Change made as suggested. The sentence now states, “The WQSA procedure for soils established leachable contaminant concentrations in soil that are protective of ground water quality.”

2. Section 4.4.1.5, page 11. This section on technical and economic evaluations should be removed in that it has no relevance to any of the sites in this ROD, with the exception of Building 1532 (see comment below). This issue, along with other issues related to VOCs and SVE, will be addressed in the SCOU ROD Part 2.

   Response: The Air Force believes that Building 1532 is still eligible for closure based on data provided in the Draft CB RI/FS. Regulatory concurrence with the NFA status is documented in BCT Consensus Agreement No. 9 dated 29 July 1998. This agreement documents the final remedies for all of the SCOU sites. For this reason the explanation of T&E Evaluations and Building 1532 remain in the Part 1 ROD.

3. Section 5.1.1.5, "Site COCs and RAOs" subsection, page 38. Item 3 should be revised to state that acceptance criteria were developed as part of the LF5 Closure/Post-Closure Maintenance Plan and that these acceptance criteria are included in the ROD (see comment below).

   Response: Acceptance Criteria for LF4 and LF5 have been included in the SCOU Part 1 ROD as Plate 5-1-1. The Acceptance Criteria were taken from the C1osure/Post Closure Maintenance Plan for these landfills and incorporated by reference.

4. Section 5.1.1.5, "Risk Management" subsection, page 38. The second paragraph should be clarified with respect to the discussion of beryllium. The text currently states that "with the possible exception of beryllium, DP7, DP9, and DP10 do not contain contaminants at concentrations exceeding WQSA RAOs." Did sampling of these disposal pits document beryllium in excess of WQSA RAOs or not? Also, beryllium is not discussed in the "Water Quality Impacts" subsection of 5.1.1.5 and should be added if it was detected above WQSA RAOs.

   Response: Review of the RI data determined that although beryllium was the main risk driver at DP7, DP9, and DP10, it was found at concentrations below WQSA screening level (7.6 mg/kg). The Risk Management subsection has been revised to clarify this point. A summary of maximum beryllium concentrations at DP7, DP9, and DP10 is provided below:

   DP7 – 0.64 mg/kg
   DP9 – 0.64 mg/kg
   DP10- 0.81 mg/kg

5. Section 5.1.3.7, page 48. The specific landfill waste acceptance criteria for both Landfills 4 and 5 from the Closure/Post-Closure Maintenance Plans should be added to the ROD in the same manner that it was added to the Action Memorandum for landfill 5.

   Response: As suggested, the RAO development process and landfill waste acceptance criteria from the Closure/Post Closure Maintenance Plans for LF4 and LF5 has been added to the SCOU Part 1 ROD. (See Plate 5-1-1). Reference to Plate 5-1-1 is provided in the RAO and COC subsections for LF4 and LF5.

6. Section 5.1.3.9, page 49. As noted above, we believe that additional institutional control language should be added to the ROD. Pages 5.2-20 to 5.2-23 of the SCOU ROD Version 3 have brief discussions of several institutional controls that address most of our concerns. This text from the previous version of the SCOU ROD should be reinserted into section 5.1.3.9. Additional language on institutional controls that should be reinserted into the ROD is located on page 5.2-25 of the SCOU ROD Version 3. This language covers the situation where property is transferred by deed, but not where property is transferred in other ways (such as federal to federal ownership transfer) or not transferred. A mechanism for ensuring integrity of the remedy in those cases should also be addressed. Additional discussion should be added to the text for these situations.

Response: ***The Institution Control discussion has been revised to be consistent with AFBCA policy and Federal and state requirements. The following information has been added with regard to ensuring integrity of the remedies and federal to federal transfers:***

(2) Ensuring the Protectiveness or Integrity of the Landfill Caps and Remedial Systems.

(a) ***<u>Institutional Controls</u>. The integrity and protectiveness of the remedy will be ensured much in the same manner as (1)(a) above. Restrictive covenants will be used to prevent reuse activities which could potentially damage the landfill caps. Use restrictions will be tailored to prevent digging, excavation, construction and other development which could significantly impact the landfill caps.***

(b) ***<u>Land Use Restrictions.</u> With respect to the property on which LF-5 is located, the property has been transferred to the Department of Justice for use as a correctional facility. In order to ensure that adequate controls are implemented on this property, the Memorandum of Agreement (MOA) between the Air Force and the Bureau of Prisons will be amended to ensure the transferee has adequate notification of the use restrictions necessary to maintain the remedial action, and the applicable Federal and State closure/post-closure requirements.***

7. Section 5.2.4.4, page 96. We believe that the NFA discussion for Building 1532 should be removed from this ROD and included in the SCOU ROD Part 2 or the CB Part 2 ROD in that it is not adequately documented in the administrative record. The NFA recommendation for this site was based on a technical and economic evaluation of the site in the Draft CB Part 2 RI/FS. This RI/FS has not been finalized to date. In the response to agency comments on the Draft CB Part 2 RI/FS, dated 23 September 1997, the Air Force stated that the technical and economic evaluation of this site and two other sites would be removed and finalized separately to respond to agency comments. To our knowledge this has not been done, and the evaluations have not been finalized. The State comments on the SCOU ROD Version 3 also requested that the technical and economic evaluation for this site be finalized and presented to the agencies, but this has also not been completed. Therefore we believe that the recommendation for NFA status for this site is inadequately documented in the administrative record.

Response: Building 1532 has not been removed from the SCOU Part 1 ROD. The basis for closure of B1532 is contained in the Draft CB Part 2 RI/FS. Regulatory concurrence with the NFA status is documented in BCT Consensus Agreement No. 9 dated 29 July 1998. This agreement documents the final remedies for all 231 of the SCOU sites.

8. ARARs, Plate 6-2. The following State requirements should be added to the list of State ARARs:

27 CCR 21170, which deals with deed notation for closed landfills; and

27 CCR 21200: which deals with change of ownership notification.

Response: Title 27 CCR 21170, Recording, is a state ARAR and will be included in the list of state ARARs as an applicable requirement for LF 4 and LF 5. However, it does not require deed

notations, as asserted by the Regional Water Board. The provision requires the Air Force to provide a detailed description of the closed landfills, including a map, with the County Recorder, the state regulatory agency, and the local agency that maintains the County's integrated waste management plan. The provision does not state that the description must be annotated or recorded on the property deed. The site description will include the date of closure, boundaries of the filled area, locations where closure and postclosure plans can be obtained, and a statement that future site use will be restricted pursuant to the postclosure maintenance plan.

The Air Force does not consider Title 27 CCR 21200, Change of Ownership During Closure or Postclosure Maintenance, as a state ARAR. It is primarily procedural (i.e., notifications) and duplicates requirements already imposed on the Air Force by CERCLA Section 120(h).

Comments from
USEPA Attorney Thelma Estrada
on
November 15, 1998 Draft of SCOU Part 1 ROD

1 page iv, Declaration: Last paragraph - first sentence states that in some instances, contaminants may remain on site at concentrations exceeding health protective levels. I think its more accurate to say that these concentrations are at levels that do not allow unrestricted use.

Response: As suggested, the sentence was revised to state, "In some instances, contaminants may remain on-site at concentrations that do not allow unrestricted use."

2. page 3, Decision Summary: First full par., second to the last sentence -delete reference to USEPA and State of CA since this sentence refers to requirements that the AF must comply with pursuant to the FFA during cleanup at Castle.

Response: As suggested, reference to USEPA and State of CA removed from cited text.

3. page 7: Last par., first and second sentences - Insert the word "ROD" after CB Part 2.

Response: Change made as suggested.

4. page 11: First full sentence on this page - states that the T&E evaluation will further assess the potential groundwater impact from site contaminants. I am assuming this T&E evaluation is different from the T&E feasibility analysis required under the State's regulations (RCRA and Water) which requires a T&E feasibility analysis if the groundwater cannot be cleaned up to background. We may just want to make this distinction here.

Response: This section has been included in the Part 1 ROD to explain one facet of how sites were evaluated during the SCOU RI/FS process. The T&E evaluation process explained in this text followed all applicable State guidelines.

Also on this page, there is a reference to a Draft CB Part 2 RI/FS. When was this document completed?

Response: The CB Part 2 RI/Fs was issued in Draft Form in December of 1996. Finalization of this document is tentatively scheduled for late FY99 or early FY00.

On the same page, second to the last par., the first sentence - states that the groundwater screening values were used as WQSA PRAOs "to secure regulatory cleanup approvals." I don't understand what is meant by "secure regulatory cleanup approvals." I suggest we delete that phrase.

Response: Phrase deleted as suggested.

Comments from
USEPA Attorney Thelma Estrada
on
November 15, 1998 Draft of SCOU Part 1 ROD

5. page 15: Second to the last par., last sentence - we may just want to delete this sentence since it seems to repeat the idea in the preceding sentence.

   Response: Sentence deleted as suggested.

6. page 18: Last par., last sentences - these definitions of wetland habitat and upland habitat seem out of place here. They may fit better in the first par. under this section.

   Response: As suggested, the wetlands and upland habitat definitions were moved to the introductory paragraph. This paragraph now states, "Ecological Risk Assessments (ERAs) have been completed on all of the Castle SCOU sites. This includes the Scoping, Phase 1, and Phase 2 ERAs. These studies identified a total of 27 sites with sensitive ecological habitat. These habitats were wetlands and or wetland uplands. A wetland habitat is characterized by standing water or moisture sufficient to sustain wetland vegetation. An upland habitat is an area that drains to a wetland."

7. page 19: First par. under Risk Management Decisions - the first sentence states that many sites that failed either WQSA or the risk screening analysis were further evaluated to confirm the screening results. How many were these sites? Are these the 19 sites referred to in the last sentence in this paragraph?

   Response: You are correct. However, based on further evaluation of the NFA site group, 22 sites are now included as Risk Management Decision NFAs.

8. page 23: First par. - Second sentence states that four of the landfills are being addressed under Removal Action Authority. This gives the impression that that would be the final action for these sites. I think it would be better to state that these landfills are the subject of a removal action.

   Response: The Introductory paragraph for the Landfill section was revised to state, "There are seven landfills incorporating a total of 16 separate SCOU sites at Castle Airport that have been designated for cleanup or closure. All of these landfills are subject of Removal Actions. A landfill summary organized by selected remedy is presented below."

9. page 27: First two sentences at the top of the page - there are 2 typos here: insert the word "been" before "backfilled;" insert the word "to" before "satisfy."

   Response: Changes made as suggested.

10. page 28: Last sentence on this page - I think I understand what we mean to say here but this sentence should be reworked to make our point clearer, i.e., soil gas RAOs are not applicable nor relevant and appropriate as acceptance criteria for the consolidation landfill.

Response: Sentence revised as suggested. The text now reads, "However, because any residual soil gas will be released during excavation and consolidation of LF2 soils, soil gas RAOs are not applicable nor relevant and appropriate as acceptance criteria for the consolidation landfill."

11. page 29: First par. under Risk Management Decision - states that institutional controls will not be required for the site because all waste has been excavated and removed under Removal Action. Would soil gas still be a concern for these sites even after the waste has been removed?

    Response: Yes, based on findings of the SCOU RI, soil gas was a concern at LF2. However, during excavation of LF2, no hazardous waste or soil gas source material was found. The waste excavated was primarily household waste and debris. After the waste excavation was completed, three soil gas samples were collected from soil gas hot spot areas noted during the RI. These soil gas samples confirmed soil gas levels at LF2 were below VLEACH2 PRAOs for VOCs. The results of the post excavation soil gas sampling effort will be documented in the Castle Vista A and Landfill 2 Closure report which is scheduled for release in February of 1999. The ROD has been modified to include a brief summary of the soil gas confirmation sample results.

    Also, the second par. here states cleanup confirmation samples for VOC COCs were compared to WQSA VLEACH2 values. What were the results of this comparison?

    Response: The following sentence has been added to explain comparison results, "This comparison confirmed VOC remediation was complete".

12. page 29: Second par. under Landfill 3 - the second sentence states that the prison footprint is not within LF3 boundary. What is the significance of this information?

    Response: This sentence was left over from when LF3 was still going to be capped. The location of the landfill footprint was important at that time because of concerns regarding prison construction and deed restrictions. However, since the decision has been made to excavate LF3, the sentence is no longer needed and has been deleted.

13. page 31: Last par., last sentence states that soil or waste materials that exceed the RAOs are designated waste which should not be consolidated onsite. I think we mean the soil or waste materials that exceed the soil screening values, not the RAOs.

    Response: WQSA screening values have been accepted as RAOs for SVOCs and Inorganic contaminants. RAO for VOCs have yet to be established. However, to gain regulatory acdeptance of landfill cleanup operations that are currently underway, the Air Force and regulatory agencies have agreed to use VLEACH2.

screening levels as the cleanup criteria for VOCs. The referenced sentence has been modified to better explain this conundrum.

Also, please explain to me again why we have both RAOs and cleanup standards for a site that we are just excavating. In other words, we seem to be making a distinction here between RAOs and cleanup standards and I'm not sure what the distinction is.

Response: RAOs are equivalent to cleanup standards. The following paragraph has been added to clear up lingering confusion on this issues. "WQSA soil screening values have been accepted as RAOs for SVOCs and Inorganics and will be used as acceptance criteria for wastes being consolidated onsite. RAOs for VOCs have not been established. However, based on Air Force and regulatory agency agreement, VLEACH2 screening levels will be used as cleanup standards during landfill excavation and acceptance criteria at the consolidation landfills. Soil or waste materials that exceed the RAOs for SVOCs and metals, and VLEACH2 screening levels for VOCs are considered designated wastes and are not to be consolidated onsite".

14. page 38: First par. (# 3) states that the landfill acceptance criteria will be developed as part of the LF5 Closure Plan. What's the difference between this to-be-developed acceptance criteria and the acceptance criteria discussed in # 2 above?

    Response: Since the November 15, 1998 Draft of the Part 1 ROD was issued, the LF5 Closure Plan was finalized. The Acceptance Criteria for LF5 that was developed as part of the LF5 Closure Plan has been added to the ROD as Plate 5-1-1.

15. page 48 Under On-Site Landfill Waste Acceptance Criteria - the second par. seems repetitive of the first par. in this section. In the first sentence of the second par., move the phrase "to base consolidation landfills" towards the end of the sentence before "is prohibited."

    Response: Paragraph modified as suggested.

    This par. also references ARARs "listed above." Where are these ARARs?

    Response: You are correct, ARARS are not "listed above." The text has been revised to indicate ARARs are provided in Section 6 of the Part 1 ROD.

    Also on this page, second to the last par., last sentence states that cap monitoring and repair provisions are available in the Closure Plan for LF4 and LF5. Are these documents part of the ROD or they documents that are still to be developed? It seems to me that some of these provisions (at least the general requirements) are part of the remedy and should be in the ROD.

Response: As presented, Section 5.1.3.8 provides the "general requirements" cap monitoring and repair. Specific details are available in the Final Closure Plans for L4 and L5, which were primary documents that have been finalized.

16. page 49: Under Institutional Controls- this section starts off with a reference to state law requirements for deed restrictions as part of the Closure Plan. I suggest we remove this sentence or move it towards the end of this paragraph.

    Response: Sentence structure changed as suggested.

    We are implementing ICs here primarily because they are an integral part of the remedy selected for the site. For the same reason, it is necessary to have more a detailed discussion here of what these ICs are, i.e., the use or activities they will regulate or prohibit, the reason for these restrictions and the general outline of what mechanisms we expect to use for implementing these restrictions. Some of the details can wait until the SCOU Part 2 ROD but the above information should be discussed here as part of the discussion of the remedy.

    Response: The Institutional Control discussion has been revised by AFBCA legal counsel to be consistent with AFBCA policy and Federal and state requirements. A copy of the revised discussion is provided below:

The selected alternatives for LF-4 and LF-5 will result in a remedy that is protective of human health and the environment. In order to ensure the protectiveness of these alternatives, the following goals/objectives must be met: (1) prevention of exposure to residual contamination; (2) ensuring the protectiveness or integrity of the landfill caps and remedial systems (including the drainage and erosion controls developed for the landfill covers as well as the monitoring and gas perimeter systems); and (3) ensuring site access for long-term monitoring and maintenance activities.

Institutional Controls (ICs) (which are considered to be non-engineering remedial mechanisms that may be used to prevent human exposure to contaminants remaining at hazardous waste sites at concentrations above health-risk levels), along with site controls and land use controls, will be used to ensure the above-cited goals/objectives are met. These mechanisms will be implemented by means of the strategy set forth below. This strategy is designed to combine mutually reinforcing controls to achieve the identified goals/objectives as follows:

(1)<u>Prevention of Exposure to Residual Contamination</u>. The prevention of exposure to residual contamination will be accomplished through the implementation of a variety of overlapping controls.

(a) <u>Institutional Controls (ICs)</u>. ICs will be implemented by means of restrictive covenants in the instrument conveying title to the property. These restrictive covenants will

be intended to bind all future owners from undertaking any actions which may result in exposure to contaminants.

(b) Site Controls. In order to more fully prevent exposure to residual contaminants, all points of access to LF-4 and LF-5 will be restricted by means of physical barriers such as fencing and notice will be posted to delineate landfill boundaries.

(2) Ensuring the Protectiveness or Integrity of the Landfill Caps and Remedial Systems.

(a) Institutional Controls. The integrity and protectiveness of the remedy will be ensured much in the same manner as (1)(a) above. Restrictive covenants will be used to prevent reuse activities which could potentially damage the landfill caps. Use restrictions will be tailored to prevent digging, excavation, construction and other development which could significantly impact the landfill caps.

(b) Land Use Restrictions. With respect to the property on which LF- 5 is located, the property has been transferred to the Department of Justice for use as a correctional facility. In order to ensure that adequate controls are implemented on this property, the Memorandum of Agreement (MOA) between the Air Force and the Bureau of Prisons will be amended to ensure the transferee has adequate notification of the use restrictions necessary to maintain the remedial action, and the applicable Federal and State closure/post-closure requirements.

(3) Ensuring Site Access for Long-Term Monitoring and Maintenance Activities.

(a) Institutional Controls. In order to ensure adequate site access to LF-4 and LF-5 for the purpose of conducting long-term monitoring and maintenance activities, appropriate access mechanisms will be established and implemented through the instruments of conveyance for these properties. With respect to LF-_, the MOA between the Air Force and the Bureau of Prisons allows access for long-term monitoring and maintenance activities. As for LF-_, the deed conveying the property for airport purposes will retain necessary access.

State and Federal Closure/Post Closure Requirements
The California Integrated Waste Management Board Requirements and the federal regulation pertaining to the closure of a municipal solid waste landfill (40 CFR 258.60(i)) contain site security, access, notification, monitoring and maintenance requirements and land use controls that are similar to the both the ICs which supplement the remedy selected for landfills 4 and 5 and to the tools which will be used by the Air Force to implement the ICs.

The State requirements are ARARs only if they are more stringent then the federal requirements. USEPA, the Air Force and the State have agreed to disagree on the applicability of some of the state regulations.

Response: Change made as suggested.

Also can this page, under Thermally Enhanced SVE, please note that EPA has taken the position that RCRA Incinerator requirements may be ARARs for an SVE system that has a unit that incinerates hazardous waste.

Response: The Threshold Criteria compliance text for Thermally Enhanced SVE has been modified to state, "All SVE systems will be designed to meet all ARARs, including air and waste disposal requirements. Also, RCRA incinerator requirements may be ARARs if the thermally enhanced SVE system includes a unit that incinerates hazardous waste."

17. page 52: Under Zoned Caps - move the last sentence here to the beginning of the par.

    Response: Change made as suggested.

18. page 53: First par., the sentence that starts with "[T]he zoned capping alternative is intended to comply with many of the chemical-specific ARARs" - this should state will comply with all ARARs.

    Response: Sentence changed as suggested.

    Also on this page, second par. - the last sentence discusses the CA IWMB requirements. It seems out of place in this par.

    Response: Text reformatted to include CA IWMB requirements for site security, site control, and long-term monitoring and maintenance with discussion of TSDF access restriction fencing requirements.

    Also can this page, under Excavation and On-Site Disposal - there's a discussion here on T&E feasibility. Does this just apply to the SVE alternative or all the alternatives?

    Response: To avoid confusion with technical and economic evaluation associated with SVE remediation, the referenced text has been revised to state, "....no contaminated soil will be left in place with concentrations of constituents that threaten water quality unless it is technically impossible or infeasible to remove.

19. Section on ARARs, beginning with page 128: This section should delete references to EPA as the Agency that identifies the federal ARARs. This comes up in such sentences as "EPA believes that Title 27...." The AF is the lead Agency and therefore it is the AF that makes these calls on the ARARs. EPA just concurs. Also, in general, this narrative discussion of the ARARs needs to be reorganized. As it is currently written, it is repetitive and confusing. I would suggest organizing the discussion of the ARARs either according to the usual categories of ARARs, e.g.,

action-specific ARARs (in which case, please identify the activity that triggers the ARARs), etc., or divide the ARARs into two broad categories - ARARs for consolidation landfills and ARARs for the excavation landfills.

Response: The Air Force agrees. Revisions have been made in the ARAR text to indicate that the Air Force, not just EPA are responsible for identifying Federal and state ARARs. With regard to ARAR text format, this section has been organized into Chemical-specific, Location-specific, and Action-specific sections.

Specific comments:
page 128: Last sentence in first par. refers to removal actions. I think we mean remedial actions.

Response: Change made as suggested.

Second par. identifies CA's Hazardous Waste Control ARARs regarding classification of wastes. What about the Federal and State Subtitle D requirements for closure of MSWLFs?

Response: Discussion on pages 132-135 of the ARAB section addresses this comment. It identifies the portions of the State regulations, as well as EPA's 40 CFR Part 258 Subtitle D regulations, as ARARs for the consolidation landfills, including their closure.

page 129: Under Action Specific ARARs, first sentence - add the phrase "remediation of" before "the waste."

Response: Change made as suggested.

page 130: The par. which begins with "Disposal Site Operation regulations — the statement that "the more stringent State requirements and any EPA Part 258 requirements equal in stringency to the State requirements are the ARAR is awkward. It should read: The federal Subtitle D requirements in 40 CFR Part 258 and any State Subtitle D requirements (which are in Title 27 CCR) that are more stringent than the federal requirements are ARARs.

Response: Change made as suggested.

Responses to Comments from USEPA
on
March 8, 1999 Draft Final SCOU ROD Part 1

Concerns

1. [Declaration, page iv] The second to last paragraph in the Declaration, which states "It is the AFBCA position, consistent with the Land Use Control Guidance . . .," should be deleted or placed elsewhere in the document. EPA considers this statement inappropriate for the Declaration.

   The referenced paragraph was removed from the SCOU Part 1 ROD.

2. [Section 5.1.3.9, Description of Alternatives for Landfill Sites, Institutional Controls and Deed Restriction, page 50] The last paragraph (sentence) of Section 5.1.3.6 should clarify that although the Air Force and the State have agreed to disagree on the applicability of some of the state regulations governing landfill closure, the Air Force will nevertheless comply with the substantive requirements of the regulations. Also, in the paragraph numbered (3)(a), the identification numbers for the landfills were omitted from the last two sentences.

   Change made as suggested. See revised text at the end of Section 5.1.3.9. Also, references to LF-4 and LF-5 have been added to appropriate places paragraph 3 (a).

3A. [Plate 6-1, Federal ARARs (Applicable or Relevant and Appropriate Requirements), Castle Landfills] Castle Vista Landfills A and B appear to have been omitted from the ARARs tables. The tables need to be revised to specify ARARs for these landfills

   Reference to Castle Vista Landfill A (CVLFA) and Castle Vista Landfill B (CVLFB) as well as Landfill 2 (LF-2) was added to the status column of Plate 6-1 for any ARAR that was applicable or relevant and appropriate for LF-1, LF-2 and LF-3, the excavation and removal landfills.

3B. The ARARs tables include "TBCs" (to be considered guidance). At the ROD stage, it is no longer appropriate to include TBCs in the ARARs discussion and tables. TBCs are intended for consideration by the lead agency (the Air Force in this instance) during the feasibility study stage for the following reasons: 1) when there is no ARAR that addresses a particular chemical or activity and therefore, to achieve protectiveness, it is necessary to go outside of promulgated standards; or 2) when there is a promulgated standard addressing a chemical or contaminant of concern (COC) but because of concern about cumulative impacts from multiple COCs, it becomes necessary, to achieve protectiveness, to use to be considered guidance. If the lead agency decides to use the TBCs, the TBCs should be identified as "Additional Performance Standards" in the ROD because the lead agency is then committing to meet these standards.

The TBCs cited in Table 6-1 (page 7) are soil lead cleanup guidance levels, EPA Region IX Preliminary Remediation Goals (PRGs), and proposed Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs). Since there are no standards for lead in soil, it makes sense to consider the guidance for lead. It is unclear why, based on the above discussion, the Air Force believes, to achieve protectiveness, it is necessary to consider PRGs and proposed MCLs and MCLGs. The Air Force should clarify whether it is committing in this ROD to apply these standards.

After review of the referenced TBCs, it was determined that they were not used and are not required to be included as performance standards for the SCOU Part 1 ROD. Rationale for the removal of each TBC is provided below:

EPA, OSWER Directive 9335.4-02. Interim Guidance on establishing soil lead cleanup levels at Superfund sites. This TBC was removed because lead cleanup levels at the Castle landfill sites was driven by WQSA process and not human health concerns. If a SCOU Part 1 site required risk assessment for lead contaminated soil, the State of California model, not the Federal standard was used to calculate blood lead levels.

EPA Region IX, Preliminary Remediation Goals. Castle specific cleanup levels were calculated for the SCOU Part 1 ROD. Even though these values may be equivalent to Region IX PRGs, they are not considered a performance standards.

EPA, Office of Water, Drinking Water Regulations and Health Advisories. Reference to proposed MCLs and MCLGs related to ground-water cleanup have already been documented in the CB Part 1 ROD. This TBC is not considered applicable for the SCOU Part 1 ROD.

4A. [Plate 6-2, State ARARs] As noted above, Castle Vista Landfills A and B appear to have been omitted from the ARARs tables.

Reference to Castle Vista Landfill A (CVLFA) and Castle Vista Landfill B (CVLFB) was added to the status column of Plate 6-2 for any ARAR that was applicable or relevant and appropriate for LF-1, LF-2 and LF-3, the excavation and removal landfills.

4B. On page 5, fourth row, under "Description," the text that states "open burning and burning" appears to be incorrect and should be clarified.

The referenced section was revised to indicate "open burning and controlled burning" in the ARAR description column.

4C. On pages 8 and 9, under "Comment," the references to Title 14 appear to be incorrect.

The reference to Title 14, Section 17760 was changed to Title 27 Section 21100 which covers performance standards and the minimum substantive requirements for proper closure, post-closure maintenance and ultimate reuse of disposal sites.

4D. On page 11, the applicability of the requirement to Landfills 1 and 3 should be verified. On the following page, storm water discharge requirements are listed as relevant and appropriate to these landfills.

The Status column for Order 92-08-DQO was revised to indicate the ARAR was applicable for LF-4 and LF-5, the permanent base consolidation landfills, and Relevant and Appropriate for: CVLFA, CVLFB, LF-1, LF-2, and LF-3 which are to be excavated and removed. The referenced ARAR is considered relevant and appropriate only during the excavation time period).

4E. On page 12, the title of the cited Order should be specified.

California General Permit for Storm Water Discharges Associated with Construction Activity, NPDES General Permit No. CAS000002, has been added as the title of the referenced ARAR.

4F. On page 14, second row, if the monitoring program referred to is already addressed in the Comprehensive Basewide Part 1 ROD, it need not be included in the SCOU ROD Part 1.

The cited ARAR (27 CCR 20080(g)) has been retained because the monitoring referred to has not been addressed in the Comprehensive Basewide Part 1 ROD. It should be noted that eventually, the landfill monitoring will fall under the Comprehensive Long-Term Monitoring program.

4G. On page 17, first row, under "Comment," the second sentence states "LF-4 and LF-5 will be accepting wastes from LF-1 and LF-3, so this provision is considered applicable to the wastes from these landfills." The text should clarify that "these landfills" are LF-1 and LF-3.

The referenced sentence was revised to state, "LF-4 and LF-5 will be accepting wastes from LF-1, LF-2, LF-3, CVLFA and CVLFB so this provision is considered applicable to the wastes LF-1, LF-2, LF-3, CVLFA and CVLFB".

4H. On page 17, third and fourth rows, under "ARAR Status," the applicability of the regulations to Landfills 4 and 5 versus Landfills 1 and 3 should be verified.

The referenced ARARs regarding disposal of designated and non-hazardous solid waste is applicable for all of the Castle landfills. For the consolidation landfills (LF-4 and LF-5) they are applicable to perimeter wastes that are excavated and re-deposited beneath the landfill cap. For the excavation landfills (LF-1, LF-2, LF-3, CVLFA, and CVLFB) they are applicable to all removed wastes. Based on this assessment, the ARAR status column for these ARARs has been revised to indicate applicability for all of the Castle landfills.

Comments

5. [Section 4.6.1, Applicable State and Federal Municipal Solid Waste Closure Requirements] The text in Section 4.6.1 should be editorially reviewed. The first sentence is incomplete.

The referenced sentence was revised to state, "The California Integrated Waste Management Board Requirements and the Federal regulation pertaining to the closure of a municipal solid waste landfill contain site security, access, notification, monitoring and maintenance requirements. They also contain land use controls that are similar to the Institutional Controls which supplement the remedy selected for Landfills 4 and 5 and include the tools which will be used by the Air Force to implement the ICs".

6. [Plate 5-1-13, Comparison of Alternatives for Landfill Sites] Under the evaluation of implementability for all of the landfill proposed actions, the availability of local Class I or II facilities should have no impact on Alternative 1 (excavation and onsite disposal).

In Section 5.1.1.3, the text indicates that under Alternative 1, waste would be excavated, temporarily stockpiled, and characterized. All hazardous or designated waste would be taken off-site to a Class I or Class II facility for disposal, all non-hazardous, non-designated, and Municipal waste would be consolidated into either LF4, the primary Castle Airport consolidation landfill, or LF5, if waste volumes exceed capacity at LF4. Based on this definition, Alternative 1 would be affected by the availability of Class I or Class II facilities and the referenced text remains unchanged.

7. [Section 5.2.6, Statutory Determinations for No Further Action Sites, page 130] Sections 5.2.6.2 through 5.2.6.5 can be deleted. Since the sites do not pose an unacceptable risk, no action is necessary, and therefore there are no ARARs.

The referenced ARAR section has been revised to state, "Because it has been determined that the NFA sites do not pose a threat to human health, water quality, or the

environment, and therefore no remedial actions are necessary, and there are no ARARs for these sites".

Sections 5.2.6.3, 5.2.6.4, and 5.2.6.5 pertain to a) Cost Effectiveness, b) The Use of Permanent Solutions, Alternative Treatment Technologies, and Resource Recovery Technologies to the Maximum Extent, and c) Preference for Treatment that Reduces Toxicity, Mobility of Volume (TMV) as a Principal Element, respectively. Although these criteria are not applicable for NFA sites, the section headers have been retained to meet ROD format requirements.

8. [Plate 5-2-3, Comparison of Alternatives for Risk Management Decision No Further Action Sites] In the rows entitled "WQSA" (Water Quality Site Assessment) and "Human Health Risk," "failed" should be replaced with "failed initial assessment."

Change made as suggested.

9A. [Section 6.3, Action Specific ARARs, pages 133 through 135] In the third full paragraph on page 133, the text "For the onsite consolidation landfills," should be inserted at the beginning of the sentence.

Change made as suggested.

9B. In the first paragraph on page 134, the text "that are more stringent than the federal Subtitle D requirements," should be inserted following ". . . and state regulations governing closure and post-closure of municipal solid waste landfills promulgated by CIWMB and SWRCB (27 CCR, Division 2)."

Change made as suggested.

9C. The text in the second paragraph on page 134 should clarify whether the ROD is referring to federal or state regulations. Also, in this paragraph, "obtaining regulatory agency concurrence on closure" should be deleted from the list of substantive requirements; this activity is considered an administrative requirement.

The text has been modified to reference to the Federal SWDA requirements. Also, the referenced text regarding obtaining regulatory agency concurrence on closure has been removed.

9D. In the last paragraph on page 135, first sentence, the four landfills being referred to should be identified in parentheses. Also, in the second bullet, the discussion of "passive gas venting at site 2,3, and 4" should be reviewed for accuracy.

The referenced sentence has been revised to state, "The excavation and removal activities involving LF-1, LF-2, LF-3, CVLFA, and CVLFB would be subject to SJVUAPCD air emission and air quality control requirements that are substantive, not procedural, in

nature".

Also, the second bullet has been revised to indicate passive gas venting is applicable for LF-4 and LF-5, not the CVLFA, CVLFB, LF 2, 3 and 4 sits.

Response to Regional Water Quality Control Board Comments
on
March 8, 1999 Revised Draft Final Version of the SCOU ROD Part 1

General Comments

1. At this time we are not in agreement that Building 1532 (Section 5.2.5.6, page 106) should be closed at this time, and are no longer in agreement with the recommendation for NFA status for this site. In order for the ROD to be acceptable, Building 1532 must be removed from this ROD and deferred to a later record of decision.

We no longer agree with the NFA determination for Building 1532 for the following reasons:

- Although the ROD text claims that the NFA status for this site is based on a Technical and Economic Feasibility (T&E) evaluation performed after the RI/FS was issued, in fact, no T&E evaluation was ever performed or submitted to us for this site. In the draft CB Part 2 RI/FS (which itself has not been finalized due to numerous deficiencies in the report) the Air Force presented modeling results indicating that no T&E evaluation was necessary, and thus none was performed. The modeling used in the draft CB Part 2 RI/FS, however, included a 10-foot thick mixing zone. Since the use of the 10-foot thick mixing zone for establishing cleanup levels is a central point of disagreement between the Air Force and the State, we grant no site closure at this time to sites where it has been used to determine final site disposition. This issue is currently under informal dispute between the Air Force, USEPA and the State, and those sites affected by it have been deferred to the SCOU Part 2 ROD. We believe that Building 1532 is one of the sites that is affected by the VOC cleanup/10-foot mixing zone issue and should be deferred to that ROD.

  As suggested, the B1532 site has been removed from the Part 1 SCOU ROD and will now be addressed as part of the SCOU Part 2 ROD.

- The ROD also notes that the regulatory agencies have informally accepted the NFA recommendation for Building 1532, based on Consensus Agreement No. 9, dated 29 July 1998, which documented the final selected remedies for all SCOU sites. Since that time, however, the Air Force has elected to re-evaluate the remedies for almost all the sites contaminated with VOCs that were agreed upon by the BCT in this consensus agreement to receive a remedy of soil vapor extraction. We now believe that the remedy for Building 1532 should also be re-evaluated with the group of VOC sites that is currently being discussed, since the remedy (NFA) for Building 1532 was selected based on the use of a ten-foot mixing zone. Due to the Air Force's recent re-evaluation, Consensus Agreement No. 9 no longer has much relevancy to the agreement of selected remedies for VOC sites.

  As suggested, the B1532 site has been removed from the Part 1 SCOU ROD and will now be addressed as part of the SCOU Part 2 ROD.

2. Institutional, Site and Land Use Controls. The State believes that the Institutional, Site and Land Use Controls (Controls) portions of the ROD should be revised to include and address the following items.

The Air Force has reviewed the State comments, both general and specific, regarding institutional controls as they are currently addressed in the SCOU Part 1 ROD. In general response to the States comments, the Air Force has developed a strategy for addressing the implementation, monitoring, and enforcement of institutional and land use controls at closing Air Force installations. A fact sheet describing this management strategy is included for your reference at the back of this response summary and can be found at http://www.afbca.hq.af.mil/closeout, under the heading of AFBCA Internal Initiatives.

The AFBCA management strategy defines the various types of controls affecting clean up activities, to include land use controls, as distinguished from institutional controls which are addressed in CERCLA through the NCP. Moreover, this strategy requires AFBCA Operation Locations, such as the one at Castle, to prepare base specific tools for addressing the implementation of institutional and land use controls in accordance with this internal guidance. These base specific tools will explore various means of implementation mechanisms which will be mutually reinforcing. We have also clarified the text of the ROD to address Sates specific concerns over implementation mechanisms, parties involved, action specific timelines, and process for development and implementation of specific controls. The revised ROD text can be found in Section 5.1.3.9. Responses to specific State questions are provided below:

- Legal Instrument. Implementation of Controls should also be linked to a specific legal instrument, such as a covenant or recorded deed restriction. The ROD should specify which legal instruments will be used to implement each of the Controls for a site.

The SCOU Part 1 ROD has been revised to indicate that ICs will be implemented by means of restrictive covenants in the instrument conveying title. This conveying instrument will be a quitclaim deed between the Air Force and Initial transferee.

- Involved Parties. The ROD should specify which parties need to be involved for each Control at a site. In theory, involved parties for a Control at a site may include the Air Force, USEPA, DTSC, the Regional Board, the County, the new property owners, etc. It is probable that not all parties need to be involved in all the Controls that may be implemented.

The ROD has been revised to indicate the involved parties include the Air Force, initial transferee, and transferee successors, and that any change to the proposed land use would require the transferee or successor to notify both the Air Force and regulatory agencies and require appropriate modification of the landfill CPCMP.

- Enforceability by the State. Institutional controls should also be enforceable by the State, since the ROD is enforceable. The State should be able to enforce the Controls to assure that the remedy is properly implemented and protected after its implementation.

The ROD has been modified to include the following background information on IC enforcement.

"At the enforcement stage, relationships and arrangements will be put in place with appropriate state or local governmental entities to ensure that institutional controls are enforced in the event a violation occurs. Many stakeholders have a vested interest in maintaining ICs. Federal, state and local entities will need to work together to ensure the integrity of an IC and the protection of public health and safety."

- Timeline. The ROD should identify a timeline for implementing Controls at sites where they are necessary. This timeline can be either date-specific, in which identification and implementation of Controls are tied to calendar dates, or action-specific, in which the identification and implementation of Controls within a certain timeframe are tied to the specific actions at a site, such as the beginning or completion of a remedial action.

The implementation of specific restrictions shall be accomplished in conjunction with development of the Finding of Suitability to Transfer or other appropriate decision document supporting the transfer of each affected parcel. This process shall occur generally upon compliance with the requirements in 120(h) of CERCLA pertaining to the transfer of real property from the federal government to private parties, which occurs upon the completion of all remedial action necessary to protect human health and the environment with respect to hazardous substances remaining on the property as further defined in Section 120(h)(3) of CERCLA.

- Process. The ROD should identify the primary document which will address the process that will be used to identity, describe and implement the specific Controls at sites where they are required.

The AFBCA IC strategy can be found in a Fact Sheet under AFBCA Internal Initiatives at the AFBCA website (http:///www.afbca.hq.af.mil/closeout/). A copy of the fact sheet is provided at the back of this response summary. An overview of the AFBCA IC process is provided below:

The AFBCA IC strategy establishes an interactive process that involves environmental, real estate and legal staff working together with the community to produce a sound, realistic and effective approach for implementing ICs at each installation.

To assist in this interactive process, tools have been developed to be used either separately or in conjunction with one another. During the implementation phase, grantees, the LRA (local reuse

authority), regulators, and the larger community will be given information (base-specific tools) about the ICs associated with various clean up actions on the property. The information consists of a:

- ***map depicting the Remedial Actions and institutional controls on each conveyance parcel***
- ***pamphlet describing ICs that includes a toll-free 800 number for grantees' use for reporting any damage to monitoring wells or interference with the ICs***
- ***description of the six cleanup scenarios commonly found at Air Force bases (for example, excavation of contaminated soil and off site disposal) and associated ICs***
- ***layering strategy worksheet and IC classification document for the base***

The strategy is designed to be a living process at the user level, and it will be amended and augmented as information is obtained from each phase of the process. For example, information obtained in the implementation phase will be used to formulate a monitoring profile.

Additional comments on the proposed Institutional, Site and Land Use Controls language in the ROD is included with our specific comments below.

Specific Comments

1. Section 4.4, page 8. The first sentence of the new text should be rewritten for clarity. The sentence currently reads, "Final decisions on Water Quality Risks and Human Health Risks in the 0 to 15 foot interval of the vadose zone are presented in this ROD." The sentence should be rewritten to more clearly indicate that the "0 to 15 foot" qualifier only pertains to the human health risks, as in, "Final decisions on Water Quality Risks in the vadose zone and Human Health Risks, in the 0 to 15 foot interval of the vadose zone, are presented in this ROD."

   As suggested, the referenced sentence was revised to state, "Final decisions on water quality risks in the vadose zone and human health and environmental risks in the 0 to 15 foot interval of the vadose zone are presented in this ROD".

2. Section 4.4.1.6, page 11. In our comments on the Draft ROD, we recommended that this section on technical and economic evaluations should be removed in that it has no relevance to any of the sites in this ROD, with the exception of Building 1532, which we also believe should be removed from the ROD (see comment below). This technical and economic feasibility issue, along with other issues related to VOCs and SVE, will be addressed in the SCOU ROD Part 2. Since we continue to believe that Building 1532 should be removed from this ROD, and will actively oppose its inclusion, we also believe that this section does not provide any benefit to this current ROD and should be included in the SCOU ROD Part 2. Section 4.4.1.6 should therefore be removed from the ROD.

As suggested, the B1532 site has been removed from the Part 1 SCOU ROD and will now be addressed as part of the SCOU Part 2 ROD. Also, the text describing the technical and economic evaluation has been removed from the Part 1 ROD.

3. Section 5.1.3.9, page 49. We agree wholeheartedly with the goals and objectives outlined in the first paragraph of this section. Unfortunately, there is some confusion in the subsequent text on how these goals and objectives will be met based on the use of institutional and other controls. Part of this confusion seems to be related to how the various control terms are defined. This section contains an explicit definition for "institutional controls" but does not include a detailed explanation for the complimentary terms "site controls" and "land use controls". In order to clarify this section, definitions should be added for these terms as well. We also believe that the definition for "institutional controls" is too narrow, as institutional controls also generally include engineered controls to protect the remedy and control land use. Also, in the definition for institutional controls, the term hazardous waste should be changed to hazardous substances, since by regulatory definition these landfills are not hazardous waste sites.

The ROD has been modified to include the following IC definition: "non-engineering, non-technical mechanisms used to prevent exposure to contaminants and which can be used to complement treatment or containment remedies and to meet specific objectives within the overall remediation strategy developed for a site."

Definitions of site controls and land use controls have also been added:

"Site controls" refer to measures taken to provide security for the physical structures that are part of the remedial action and to ensure the safety of the public during and after construction of the remedial action.

"Land use controls" is an a overarching term that encompasses institutional controls, land use restrictions, and site controls. It means any type of physical, legal, or administrative mechanism that restricts the use of, and limits access to, real property to prevent exposure to hazardous substances above permissible levels. These controls are intended to both protect the integrity of the engineering remedy (if present) and limit exposure of individuals by limiting land use.

As suggested IC reference to the term "hazardous waste" has been replaced with "hazardous substances."

4. Section 5.1.3.9, page 49, bullet 1. Instead of overlapping, a more appropriate word would be "complimentary" to describe the variety of controls.

Change made as suggested.

5. Section 5.1.3.9, page 50, bullet 2a. It is difficult to understand how institutional controls as defined can be used to ensure the protectiveness or integrity of the landfill caps and remedial systems when, by ROD definition, institutional controls are only designed to prevent human exposure to residual contaminants remaining at hazardous substances sites at concentrations above health-risk levels. The ROD definition should be broadened to include this kind of protectiveness. The restrictive covenants and reuse restrictions described should also be more appropriately discussed in the Land Use Restrictions [bullet 2(b)] subsection. Also, it is not clear who the "restrictive covenants" will be between? Between the State and the Air Force or the State and the new owner? The ROD should be revised to clarify this. Other sections of the ROD state that "deed restrictions" will be used for these purposes as well. The implementation of deed restrictions should be described in this section.

The definition of ICs has been broadened as suggested. The ROD IC definition now indicates ICs are, "non-engineering, non-technical mechanisms used to prevent exposure to contaminants and which can be used to complement treatment or containment remedies and to meet specific objectives within the overall remediation strategy developed for a site". Definitions of site access and land use controls have also been added to further understanding of the IC concept.

Section 1 (a) has been modified to indicate restrictive covenants found in the Castle ICs will bind the transferee and its successors, while implementation of the ICs will the responsibility of the Air Force and its transferee.

With further regard to IC implementation, the ROD has been modified to indicate, "The implementation of specific restrictions shall be accomplished in conjunction with development of the Finding of Suitability to Transfer or other appropriate decision document supporting the transfer of each affected parcel. This process shall occur generally upon compliance with the requirements in 120(h) of CERCLA pertaining to the transfer of real property from the federal government to private parties, which occurs upon the completion of all remedial action necessary to protect human health and the environment with respect to hazardous substances.

6. Section 5.1.3.9, page 50, bullet 2b. The Memorandum of Agreement should also be modified to include notification to the regulatory agencies when changes to land use are proposed by either the new owner or the Air Force. The text for this section should also be revised to indicate that the land use shall be restricted as specified in the Closure/Post-Closure Maintenance Plan (CPCMP) for the landfill, as specified in CCR Title 27, and that proposed land use changes will be implemented through the CPCMP revision process required by CCR Title 27. The land uses for each landfill are currently specified as open use in the current CPCMPs. Deed restrictions and/or notifications should be recorded with the County to provide that the CPCMP restriction of open space land use be known by the County so that may be taken into consideration when the County zones these areas in the future.

The referenced text was modified to address the above concerns. Bullet 2B now states:

<u>Land Use Restrictions</u>. With respect to the property on which LF-5 is located, the property has been transferred to the Department of Justice for use as a correctional facility. In order to ensure that adequate controls are implemented on this property, the Memorandum of Agreement (MOA) between the Air Force and the Bureau of Prisons will be amended to ensure 1) regulatory agencies are notified of any proposed land use changes, 2) the transferee has adequate notification of the use restrictions necessary to maintain the remedial action, and 3) the applicable Federal and State closure/post-closure requirements, including those restrictions noted in the LF-5 Closure Post Closure Maintenance Plan (CPCMP) as specified in CCR Title 27 are enforced.

Any proposed changes to the land use at either of the base consolidation landfills (LF-4, LF-5) would require modification of the landfill CPCMP as specified in CCR Title 27. Deed restrictions and/or notifications will be recorded with the county so that these restrictions can be taken into consideration in the future when the county develops a zoning strategy for the base.

7. Section 5.1.3.9, page 50, bullet 3(a). Again, it is difficult to understand how institutional controls, as defined in the ROD, can be used to ensure site access for long-term monitoring and maintenance activities when, by ROD definition, institutional controls are only designed to prevent human exposure to residual contaminants remaining at hazardous substances sites at concentrations above health-risk levels. Again, we feel that the definition of institutional controls should be broadened to include land use and site controls. The restrictive covenants and reuse restrictions described should be more appropriately discussed in a section on Site Controls subsection. The landfill numbers need to be added to this section. Also, for both landfills 4 and 5, the legal instruments that ensure access to the site for monitoring and maintenance activities should include access provisions for both the Air Force and the regulatory agencies.

As suggested, the definition of ICs has been broadened to include, non-engineering, non-technical mechanisms used to prevent exposure to contaminants and which can be used to complement treatment or containment remedies and to meet specific objectives within the overall remediation strategy developed for a site. For clarity, definitions of land use and site controls have been added to the ROD explanation of ICs.

8. Section 5.1.3.9, page 50. In the first sentence of the "State and Federal Closure/Post Closure Requirements" subsection, "California Integrated Waste Management Board Requirements" should be changed to "Combined California State Water Resources Control Board / Integrated Waste Management Board Requirements (CCR Title 27)".

The referenced text was revised to state, "The combined California State Water Resources Control Board / Integrated Waste Management Board Requirements (CCR Title 27) and the federal regulation pertaining to the closure of a municipal solid waste landfill (40 CFR 258. 60(i))

contain site security, access, notification, monitoring and maintenance requirements and land use controls that are similar to the both the ICs which supplement the remedy selected for landfills 4 and 5 and to the tools which will be used by the Air Force to implement the ICs".

9. Section 5.1.5, page 53. The last sentence should be revised to read: "Zoned capping will include institutional, site, and land use controls to protect human health, maintain the integrity of the cap and other remedial systems, and restrict use as appropriate."

The referenced sentence was revised to state, "Zoned Capping will include institutional, site, and land use controls to protect human health, maintain the integrity of the cap and other remedial systems, and restrict use as appropriate".

10. Section 5.1.6.1, page 54, "Closure Post Closure Requirements" subsection. Reference should be made in this section to the approved CPCMP that is required by CCR Title 27. The CPCMP specifically describes many of the institutional, land use and site controls that are required for the landfills. The third sentence of the section should also be revised to read: "Deed restriction will prevent human exposure to waste capped in place and maintain cap integrity by preventing activities that would be incompatible with or damage the selected remedy (zoned cap).

The referenced section was revised to state, "Closure Post Closure Requirements are required by CCR Title 27 and are part of the remedy for all zoned capped landfills (LF-4 and LF-5). These requirements include many of the institutional, land use, and site controls that are required for landfills to protect human health and the environment. They combine deed and access restriction provisions. Deed restriction will prevent human exposure to waste capped in place by preventing activities that would be incompatible with or damage the selected remedy (zoned cap). Access restriction and signage would prevent access to areas where waste is capped and warn of hazards associated with the landfill. Regulatory concurrence on the Closure Post Closure Maintenance Plans for LF-4 and LF-5 has been achieved.

11. Section 5.1.6.2, page 54, "Zoned Caps" subsection. Add "post-closure" to the last sentence of the first paragraph. In the second paragraph, revise the next to last sentence to read: "The cap design will reduce or prevent infiltration of rainwater, which will prevent or retard vertical contaminant transport of residual low levels or VOCs in the vadose zone soil gas and transport of other constituents in the vadose zone.

The referenced sentence was revised to state, "The cap design will reduce or prevent infiltration of rainwater which will prevent or retard vertical contaminant transport of residual low levels of VOCs in vadose zone soil gas and transport of other constituents in the vadose zone".

12. Section 5.1.6.2, page 55, "Zoned Caps" subsection. In the first sentence on the page, "California Integrated Waste Management Board Requirements" should be changed to "Combined California State Water Resources Control Board / Integrated Waste Management Board Requirements (CCR Title 27)".

The referenced section was revised to state, "Combined California State Water Resources Control Board / Integrated Waste Management Board requirements (27 CCR) for site security, noise, gas, dust, and vector control, and Long-term Monitoring and maintenance will be met".

13. Section 5.1.6.2, page 55, "Excavation and On-site Disposal" subsection. We suggest that the second sentence be revised to read: "With the exception of VOC contamination at CVLF-B, *which will be remediated via SVE*, no contaminated soil...". Also, add the Basin Plan to the list of requirements that will be used to determine technical and economic feasibility.

The reference to SVE remediation at CVLFB has been added as suggested.

14. Section 5.1.6.2, page 55, "SVE" subsection. This subsection should be revised to indicate that it pertains to the removal action at CVLF-B, which included SVE as one of the components of the remedial strategy. It should also be revised to indicate that the ARAR compliance for the SVE systems in terms of cleanup of VOCs in the vadose zone is currently being discussed amongst the agencies and the Air Force, and a final determination on this matter will be postponed to the SCOU Part 2 ROD.

The introduction to the referenced SVE section was revised to state, "SVE is one component of the overall remedial strategy for the CVLFB Removal Action site. Compliance with ARARs in terms of vadose zone. VOC cleanup is under discussion amongst the Air Force and Agencies. Final determination in this matter will be postponed to the SCOU Part 2 ROD.

15. Section 5.1.6.2, page 55, "Closure/Post Closure Requirements" subsection. The last sentence should be modified to indicate that additional information on the Closure and Post/Closure requirements can also be found in the CPCMP.

The referenced sentence was revised to state, "Additional information on Closure/Post Closure requirements can be found in the ARAR section of this ROD (Section 6.0) and in the approved Closure Post Closure Maintenance Plans for LF-4 and LF-5.

16. Plate 5-1-1. In our comments on the Draft ROD, we had requested that the acceptance criteria for Landfills 4 and 5 be included in the ROD, and this Plate adequately accomplishes that. This plate also discusses the development of cleanup objectives (remedial action objectives [RAOs]) for Landfills 4 and 5. Since the development of the RAOs is essentially the same process for all landfills, this plate should be revised to indicate that it describes the general procedure for

development of RAOs for **all** the landfills (LF-1, LF-2, LF-3, LF-4, LF-5, CVLF-A and CVLF-B) in addition to the acceptance criteria for LF-4 and LF-5. This simple revision would greatly clarify how RAOs were developed for the landfill sites. Also, this Plate also references "Table I-1" in several places. We could not find an associated Table I-1 in the ROD.

The title of the referenced plate was revised as suggested. Plate 5-1-1 is now titled:

Cleanup Objectives for LF-1, LF-2, LF-3, LF-4, LF-5, CVLFA, CVLFB,
and
Acceptance Criteria for LF-4 and LF-5

With regard to Table I-1, it was determined that this table was a summary of landfill COCs and RAOs. This information is now included as part of the site narrative. The references to Table I-1 have been changed to tell the reader the COC/RAO information can be found in the landfill site narratives.

17. Section 6.1, page 132. The last sentence of the new text states: "These substantive requirements are identified in the Appendix." The text should be revised to indicate what appendix is being referred to. This Appendix seems to need to be added to the ROD.

The reference to appendix was changed to Plate 6-2. The sentence now reads, "These substantive requirements are identified on Plate 6-2".

18. Plate 6-2, page 9. State ARARs. Castle Vista Landfill A and Castle Vista Landfill B have been omitted from the State ARARs table. These landfills should be added to the "ARAR Status" column as appropriate.

As suggested, Castle Vista Landfill A and Castle Vista Landfill B have been added to the status column for appropriate ARARs. In addition, Landfill 2 has also been added where appropriate.

19. Plate 6-2, page 9. State ARARs. In response to one of our previous comments, 27 CCR 21170 has been added to the list of State ARARs. 27 CCR 21170 requires that detailed descriptions of closed landfills be filed with various local and state agencies. The ARAR Status column indicates that this ARAR is applicable for LF-4 and LF-5. In addition to these landfills, this ARAR, is also applicable for all the landfills being clean-closed (LF-1, LF-2, LF-3, CVLF-A, and CVLF-B). We believe that future property owners should be afforded some mechanism to be alerted to the fact that the property was once a landfill, as the excavation and backfill procedures may have some impact upon future land-use of the property. One simple mechanism to insure this notification would be to file the landfill closure report with the appropriate agencies.

As suggested, Landfill Closure Reports for all of the "Clean Closed" landfills (LF-1, LF-2, LF-3, CVLFA, and CVLFB) will be filed with appropriate agencies. These closure reports will include maps depicting the former landfill boundaries and areas of clean fill.

20 Response to Comments, pave RC-231 and RC-233. The Air Force response to our comments on the Draft ROD that the sections on technical and economic feasibility and Building 1532 be removed from the ROD was: "The Air Force believes that Building 1532 is still eligible for closure based on data provided in the Draft CB RI/FS. Regulatory concurrence with the NFA status is documented in BCT Consensus Agreement No. 9, dated 29 July 1998. This agreement documents the final remedies for all of the SCOU sites. For this reason the explanation T&E Evaluations and Building 1532 remain in the Part 1 ROD." As explained in detail above, we no longer concur with the NFA recommendation for Building 1532 because: 1) it is based on modeling using a 10-foot mixing zone; 2) no T&E evaluation was ever performed for this site to justify NFA status as the ROD claims; and 3) recent events have superseded the relevancy of Consensus Agreement No. 9 with respect to selected remedies for the VOC sites.

As suggested, B1532 has been removed from the Part 1 ROD and will be addressed along with other VOC sites in the Part 2 ROD. Also, since T&E evaluations are not relevant to any of the sites addressed in the Part 1 ROD, the text section (Section 4.4.1.6) that describes the T&E process has been deleted

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RESPONSES TO COMMENTS (USEPA)
DRAFT FINAL SCOU ROD DATED DECEMBER 2000

Comment	Response
A. **GENERAL COMMENTS** 1. Because of the addition of sites to the March 8, 1999 version of the SCOU ROD Part 1, the Air Force needs to conduct sound technical proofreading of the entire document for consistency, accuracy, and clarity. And because this is a decision document that will be made available for stakeholders and interested parties to read, the document needs to be readable and understandable.	The document has been proofread for completeness, consistency, and clarity.
2. Although organized a bit differently from the suggested format in EPA's 1999 ROD guidance, this document generally conforms substantively to the guidelines.	No response required.
3. In terms of informational content, the ROD is generally exhaustive. Sometimes it was difficult to follow, but that may be attributed to the effort to integrate information on the new sites and the changing status of existing sites, as well as the complicated history of the OU, which necessitated very detailed explanations of the different levels of investigation and data gathering.	No response required.
4. The Air Force needs to add a separate reconciliation subsection in Section II of the ROD (e.g., 5.0 A) to discuss how RAOs for all the sites were reassessed to ensure that the remedial decisions made were still protective of human health in light of EPA's current information on toxicity and risk factors for some hazardous substances. This includes reassessment of residual contaminant levels of those sites which the Air Force has performed remedial work since the March 8, 1999 version of the ROD (e.g., the newly-added sites and the remediated sites which have been moved to NFA since the March 8, 1999 ROD). This reconciliation effort needs to be an integral part of this ROD. Should the Air Force find that a remedial decision is no longer protective, then this section should include the determination that the site is removed from SCOU ROD Part 1 and transferred to SCOU ROD Part 2 for additional follow-on work.	An additional paragraph has been added on page 11-22 before the sentence that reads: "Information provided in these sections includes the following:" in Section 5.0 as follows: **"All risk assessment results and RAOs were reviewed and updated based on changes to toxicity factors and other risk assessment parameters that have occurred since completion of the SCOU risk assessment in 1996. A detailed presentation of this review and update is provided in Appendix E. Sites affected by the update are identified in the respective site summary section and the reader is referred to Appendix E for additional information."** The following comment has been added as a reader note in each of the following sections 5.2.3.11 Building 1562 (B1562). 5.2.4.2 Building 1344 (B1344), 5.2.4.12 Landfill 1 (LF1 Including Disposal Pits 1,2, and 3), 5.2.4.14 Landfill 3 (LF3), 5.2.5.19 Storm Drain System, and 5.2.5.23 Discharge Area 2 (DA-2): **"The following discussion represents the evaluation of this site as presented by the 1996 SCOU RI/FS. A re-evaluation of all sites included within this ROD was conducted in 2001 in consideration of changes in toxicity factors and other parameters that occurred between 1996 and 2001. Although the overall conclusions regarding this site have not changed, the reader is referred to Appendix E for a more current risk assessment for this site."**

RESPONSES TO COMMENTS (USEPA)
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Comment	Response
5. The results of the screening risk assessment (SRA) are presented along with the results of the baseline human health risk assessment (BHHRA) for various sites in Subsection 5.2. A BHHRA was conducted for sites only when the results of the SRA indicated that further evaluation was warranted. The results of the BHHRA supercede the SRA. As such, whenever a BHHRA has been conducted for a site, the results of the SRA have no bearing on the subsequent remedial decision. To avoid confusion, present only the results of the BHHRA for each instance where one has been conducted.	The ROD should provide a summary of what was done including the SRA results which explain why a QRA was required. The ROD clearly states, "A QRA was conducted based on SRA results." The SRA results will remain in the document. However, the terminology within the ROD has been changed in response to EPA's Comment No. 31. Please see response to Comment No. 31 for specific changes regarding issues relating to terminology.
6. All throughout Section II, the tables have been inconsistent with respect to highlighting exceedences of a cleanup goal or a standard. In many incidences, the Air Force has neglected to highlight exceedences for some sites. All tables need to be reviewed in this regard, and corrected as necessary.	All of the tables in Section II have been reviewed with respect to the highlighting of exceedences of a cleanup goal or standard and were corrected as necessary.
7. All throughout Section II, proper document citations need to be inserted where a cleanup action has been completed or a decision or determination has been made (e.g., technical memoranda, closure reports, concurrence letters, and risk management decisions). This is particularly noted for sites where more recent removal actions have been taken, or reassessments have been made.	Citations have been documented for completed cleanup actions, decisions, or determinations for site in Section II.
8. In addressing ARARs both in the text and in the Appendix D ARARs tables, the Air Force needs to simplify these ARARs by focusing on just the ARARs that are applicable to sites which require followup actions (i.e., those pertinent to LF4 & LF5). Keep in mind that most, if not all, ARARs that had applied to LF1, LF2, LF3, CVLFA, and CVLFB via Action Memos are no longer ARARs for the purpose of this ROD because removal actions for those sites have already been completed. Of course, if there are any active ARARs remaining from the removal actions, then these have to be included in this ROD.	The ARARs tables in Appendix D and related discussions in Section III have been changed to reduce ARARs to those which are applicable. As a result of removal of LF-4 and LF-5 from the SCOU ROD Part 1, no ARARs apply to the remaining sites for this ROD. Section III has been reduced to an explanatory paragraph that points to Appendix D which now serves as a placeholder with an explanation that Plates 6-1 (federal ARARs) and 6-2 (state ARARs) are no longer required due to the removal of LF4 and LF5 from this ROD.
9. The references listed in Section VII are incomplete and need to be updated with key documents pertaining to newly added sites to the ROD; sites with changes from the decisions specified in the March 8, 1999 ROD; and sites where risk management decisions were made. The closure-type of reports, consensus agreements, and regulatory determinations for all thee sites are key documents in support of the decisions set forth in the ROD, and needs to be included here. For example, the final Closure Report for CVLFB dated September 2000 is critical to the NFA decision set forth in the ROD, yet it is missing in the Section II text and in Section VII. Likewise, the EPA concurrence letter for the closure & postclosure maintenance plan for LF4 & LF5 date June 4, 2000 is missing.	References for final documents have been added to Section VII.
10. The Administrative Record listed in Section VIII is incomplete in that it only lists documents up to the August 14, 2000 date. There are other pertinent documents that have been developed and published since then.	The Administrative Record in Section VIII has been updated to include documents developed and published since August 14, 2000.

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Comment	Response
B. **SPECIFIC COMMENTS** 1. Page vi: Add Subsection 5.0.A to Section II entitled "Reassessment of Site Decisions."	A new Appendix E entitled "Reassessment of Site Decisions" has been added to the ROD and referenced on page ix in lieu of a new Subsection 5.0 A.
2. Page vi: Update this by adding the current round of comments and response on the December 2000 version of the draft final SCOU ROD Part 1.	Page vii has been changed to include an entry for the current round of comments and responses based up on the December 2000 version of the draft final SCOU ROD Part 1.
3. Page x, Section II, needs to be supplemented with a statement that this section includes a reassessment of site decisions due to changes in toxicity and risk factors for some hazardous substances since development of the March 8, 1999 version of the draft final SCOU ROD Part 1.	Page x, Section II has been changed to contain the following sentence at the end of the paragraph: **"Appendix E includes a reassessment of site decisions in Section II, due to changes in toxicity and risk factors for some hazardous substances implemented since development of the March 8, 1999 version of the draft final SCOU ROD part 1."**
4. Page x, Section V, will need to be updated with response to comments on the December 2000 version of the SCOU ROD Part1.	The sentence in Section V, Page x has been changed to read. "Contains Air Force responses to regulatory agency comments on the ~~November 15, 1997~~ **December 8, 2000** Draft of the SCOU ROD."
5. Page I-1, Statement of Basis and Purpose header, 2nd paragraph: Provide a sentence or two explaining why is became necessary to split up the SCOU sites and to address the remaining 51 sites in a separate SCOU ROD Part 2. Also, explain why the ecological concerns will only be addressed in CB ROD Part 2.	The following sentence has been added as the 4th sentence to the 2nd paragraph of Statement of Basis and Purpose on Page I-1: **"Two SCOU RODs were created so that selected remedies could be finalized in Part 1 for SCOU sites on which their was early BCT agreement while, in the mean time, BCT consensus in regard to selected remedies was developed for the remaining SCOU sites to be included in Part 2 with the exception of FTA1 and ETC10 which will be included in the CB Part 2 ROD."** The following sentence has been added as the last sentence of the 2nd paragraph of Statement of Basis and Purpose on Page I-1: **"The incorporation of ecological concerns into a Castle ROD was delayed to allow completion of a Focused Feasibility Study to address unacceptable risks identified by the ecological risk assessment."**

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Comment	Response
6. Page I-1, Statement of Basis and Purpose header, 2nd paragraph, 2nd sentence: For clarity, insert the words "for risks to human health and potential impact to groundwater" at the end of the sentence.	The 2nd sentence of the 2nd paragraph of Page I-1, Statement of Basis and Purpose, has been changed to read: "This decision document (SCOU ROD Part 1) addresses 173 of the 233 sites **for risks to human health and the potential impact to groundwater."**
7. Page I-1, Statement of Basis and Purpose header, 2nd paragraph, 4th sentence: For clarity, insert the words "for any SCOU site" after the word "remedies".	The 4th sentence of the 2nd paragraph of Page I-1, Statement of Basis and Purpose, has been changed to read: "These selected remedies **for any SCOU site** may be modified in the future in response to ecological concerns identified during development of the Comprehensive Basewide (CB) Remedial Investigation/Feasibility Study (RI/FS).
8. Page I-1, Statement of Basis and Purpose header, 2nd paragraph, last sentence: For clarity, insert words ", the final basewide ROD for Castle AFB," after the words "CB ROD Part 2".	The last sentence of the 2nd paragraph of Page I-1, Statement of Basis and Purpose, has been changed to read: "Any ecologically driven modifications will be documented in the SCOU ROD Part 2 or in the CB ROD Part 2, **the final basewide ROD for Castle AFB,** scheduled for completion in April of 2003."
9. Page I-1, Statement of Basis and Purpose Header, 3rd paragraph, last sentence: The implication here is that all 33 petroleum-only sites have USTs on them. Is this really the case?	The last sentence of the 3rd paragraph of Statement of Basis and Purpose on Page I-1 has been changed to read: "Since the petroleum hydrocarbon only sites are not subject to Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requirements, final remedial decisions for these sites will be addressed under Resource Conservation and Recovery, Act (RCRA) Subtitle I and the authorized State of California Underground Storage Tank (UST) Program, **as appropriate and applicable.**"
10. Pages I-1 & I-2, Statement of Basis and Purpose header, 5th paragraph, 1st sentence: What is intended here by use of the phrase "to the extent practicable" in reference to compliance with the NCP?	The 1st sentence of the 5th paragraph of Statement of Basis and Purpose on Page I-2 has been changed to read: "This decision document presents the Selected Remedies for the listed sites at Castle Airport (formerly Castle Air Force Base) at Merced County California, which were chosen in accordance with CERCLA, as amended by Superfund Amendments Reauthorization Act (SARA), and ~~to the extent practicable,~~ the National Oil and Hazardous Substances Contingency Plan (NCP)."

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Comment	Response
11. Pages I-1 & I-2, Statement of Basis and Purpose header, 5th paragraph, last sentence: This implies that the State of California is the lone entity concurring with selected remedies in the ROD. What about EPA's concurrences?	The last sentence of the 5th paragraph of Statement of Basis and Purpose on Pages I-1 and I-2 has been changed to read: "These decisions are based on the Administrative Record file, and **EPA and** the State of California concurs with the selected remedies."
12. Page I-2, Assessment of the Sites header, 3rd paragraph: For clarity and completeness, add the following sentence the 1st sentence: "For some NFA sites, the Air Force has undertaken cleanup activities under its Removal Action Program.	The following sentence has bee added after the 1st sentence of the 3rd paragraph of Assessment of the Sites on Page I-2: **"For some NFA sites, the Air Force has undertaken cleanup activities under its Removal Action Program.**"
13. Page I-2, Assessment of the Sites header 3rd paragraph, 2nd sentence: First, the term "Lead Agency" needs to be defined. Secondly, for clarity, insert the word "additional" before the word "action" since some actions were taken at some NFA sites. Finally, for accuracy, the words "or the environment" needs to be deleted because this implies that an ecological risk assessment has been performed to make this determination, which is not true.	The last sentence of the 3rd paragraph of Assessment of the Sites on Page I-2 has been changed to read: "The **Air Force, as the** Lead Agency has determined that no **additional** action is necessary to protect public health or the welfare ~~or the environment.~~"
14. Page I-5, No Further Action Sites header: For clarity, insert the word "additional" before the word "remedial" since removal actions were performed on some NFA sites. For completeness, insert he following sentence as the first sentence: "Some NFA sites did not require cleanup actions, while the Air Force actually performed cleanup actions on other NFA sites."	The following sentence has been inserted as the first sentence of No Further Action Sites on Page I-5: **"Some NFA sites did not require cleanup actions, while the Air Force actually performed cleanup actions on other NFA sites."** and the existing sentence was changed to read: "Based on human health risk, water quality site assessments, and, in selected cases, risk management decisions, the NFA sites do not require **additional** remedial action to protect human health or water quality."
15. Page I-5, Description of Remedies header: For accuracy, insert the word "Selected" before the word "Remedies" in the header. Also, "No further Action Sites" is listed as a selected remedy here. It would be more accurate to create a separate header entitled "NFA Sites" rather than listing NFA as a remedy.	The heading entitled "Description of Remedies" on Page I-5 has been changed to read: "Description of **Selected** Remedies" and the colon will be removed from the heading entitled "No Further Action Sites:" and the bullet removed from the sentence that follows, thus making this section separate from the "Description of Remedies" section.

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Comment	Response
16. Page I-5, Statutory Determinations header, 1st paragraph, 3rd sentence: For clarity and accuracy, rewrite this sentence as follows: ".....that employ treatment as a principal element of the remedy, i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants or contaminants as a principal element through treatment."	Because this paragraph referred to sites LF4 and LF5 which have been deferred to a subsequent ROD, it has been removed from the ROD.
17. Page I-5, Statutory Determinations header, 2nd paragraph, 1st sentence: This "layering strategy" was not agreed upon by regulatory agencies, instead agreed-upon institutional control language of Subsection 5.1.3.9 in the ROD was to have taken precedence.	Because this paragraph referred to sites LF4 and LF5 which have been deferred to a subsequent ROD, it has been removed from the ROD.
18. Page I-5, Statutory Determinations header, 3rd paragraph, 1st sentence: For clarity, insert the word "residual" before the word "levels".	The 1st sentence of the 3rd paragraph of Statutory Determination on Page I-5 has been changed to read: At the No Further Action sites, **residual** levels of contaminants do not present a threat to human health or welfare or the environment.
19. Page I-5, Statutory Determinations header, 3rd paragraph, 2nd sentence: Define the term "Lead Agency".	This comment is addressed by response to Comment No. 13.
20. Page I-5, Statutory Determinations header, 4th paragraph, last sentence: For clarity and accuracy, rewrite the sentence into the following 2 sentences: "The Air Force and the regulatory agencies have agreed to a criteria for terminating the SVE system, and operation of the SVE system was terminated for CVLFB. The criteria and the decision to terminate are documented in the Castle Vista Landfill B Closure Report."	The last sentence of the 4th paragraph of Statutory Determinations on Page I-5 previously written as: ~~"The Air Force and the regulatory agencies have agreed to a criteria for terminating the SVE system, which is documented in the Castle Vista Landfill B Closure Report."~~ has been replaced with the following two sentences: **"The Air Force and the regulatory agencies have agreed to a criterion for terminating the SVE system, and operation of the SVE system was terminated for CVLFB. The criterion and the decision to terminate are documented in the Castle Vista Landfill B Closure Report."**
21. Page I-6, ROD Date Certification Check List header, 7th bullet item: Typo - replace the word "capitol" with the word "capital".	The 7th bulleted item has been changed to read: Estimated ~~capitol~~ **capital**, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which estimates are projected."

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Comment	Response
22. Page II-1, Decision Summary header, 1st sentence: For clarity and completeness, insert the following words after the word "soil": "at 182 of the 233 SCOU sites".	The 1st sentence of Decision Summary on Page II-1 has been changed to read: "This summary provides an overview of the environmental concerns posed by contaminated soil **at 173 of the 233 SCOU sites** at Castle Airport and the remedies selected to address those concerns."
23. Page II-5, Subsection 2.1, last paragraph, last sentence: For completeness and accuracy, add a sentence which states that the data gap and T&E evaluations have since been completed.	The following sentence has been added as the last sentence of the last paragraph for Subsection 2.1 on Page II-5: **"The Data Gap/T&E evaluations have since been completed in accordance with the provisions of the Proposed Plan."**
24. Pages II-4 & II-5, Subsection 2.1: For completeness and continuity, add the following as the last paragraph: "In March 8, 1999, the Air Force issued a draft final Record of Decision for 167 SCOU sites. However, that ROD was never finalized because of disagreements with the regulatory agencies on institutional control language. In the interim, the Air Force has since conducted cleanups and reassessments of additional SCOU sites which have been added to the SCOU ROD Part 1 to total 182 SCOU sites."	The following has been added as the last paragraph to Subsection 2.1 on Pages II-4 and II-5: **"In March 8, 1999, the Air Force issued a draft final Record of Decision for 167 SCOU sites. However, that ROD was never finalized because of disagreements with the regulatory agencies on institutional control language. In the interim, the Air Force has since conducted cleanups and reassessments of additional SCOU sites which have been added to the SCOU ROD Part 1 to total 173 SCOU sites."**
25. Page II-5, Subsection 3.0, 2nd continuing paragraph, 2nd sentence: For accuracy, replace the word "monthly" with the word "regularly".	The 2nd sentence of the 2nd paragraph of Subsection 3.0 on Page II-5 has been changed to read: "The RAB meets ~~on a monthly basis~~ **regularly** to provide the community representatives with up-to-date information on recent events."

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Comment	Response
26. Page II-5 & II-6, Subsection 3.0, last paragraph: For clarity and accuracy, rewrite the paragraph as follows: "The decision document presents the selected remedies for 182 of the 233 SCOU sites at the former Castle Air Force Base located in Atwater, California. The remedies are chosen in accordance with CERCLA, as amended by SARA, and the NCP. These remedial decisions are based on informational documents in the Administrative Record. A summary of the Administrative Record is provided in Section VIII of this ROD. The public participation requirements of CERCLA Sections 113(K)(2)(B)(I-v) and 117 have been substantively met."	The last paragraph of Subsection 3.0 on Pages II-5 and II-6 has been rewritten to read: This decision document presents the selected **remedies for 173 of the 233 SCOU sites** ~~RAs for the SCOU~~ at **the former** Castle **Force Base** ~~Airport~~ **located** in ~~Merced~~ **Atwater**, California. **The remedies are** chosen in accordance with CERCLA, as amended by SARA, and~~, to the extent practicable,~~ the NCP. ~~The decision for this site is~~ **These remedial decisions are** based on information contained in the Administrative Record.; ~~a~~ **A**-summary of the Administrative Record is provided ~~as an appendix to this ROD~~ **in Section VIII of this ROD**. The public participation requirements of CERCLA Sections 113(K)(2)(B)(1-v) and 117 have been **substantively** met."
27. Page II-6 & II-7, Subsection 4.1: For clarity and completeness, insert the following as the last paragraph: "The Air Force's approach for the SCOU sites is to document its remedial decisions for the sites in two (2) RODs: SCOU ROD Part 1 and SCOU ROD Part 2. SCOU ROD Part 1 is intended for the lesser contaminated vadose zone sites (182 SCOU sites), and SCOU ROD Part 2 is intended for the remainder of the SCOU sites (51 SCOU sites)."	The following paragraph has been added as the final paragraph to Subsection 4.1 on Page II-7: **"The Air Force's approach for the SCOU sites is to document its remedial decisions for the sites in multiple RODs: SCOU ROD Part 1 and follow-on RODs, including SCOU ROD Part 2. SCOU ROD Part 1 is intended for the lesser contaminated vadose zone sites (173 SCOU sites), SCOU ROD Part 2 will address 50 of the remaining sites, and one site, FTA1, will be addressed in the CB Part 2 ROD, LF4 and LF5 will be considered in the more appropriate follow-on ROD."**
28. Pages II-7, Subsection 4.2, last paragraph, last sentence: This date should be April 2003 according to the Statement of Basis and Purpose (2nd paragraph) on page I-1.	The last sentence of the last paragraph of Subsection 4.2 on Page II-7 has been changed to read: "The CB ROD Part 2 is scheduled for completion in ~~August 2004~~ **April 2003**."
29. Page II-9, Subsection 4.4.1.2, next to last sentence: Plate 4-6 is referenced here. What is the significance of the COPCs marked with an "x"?	The complete list consists of the compounds identified as COPCs in the Human Health Risk Assessment. The "x" indicates the compound in question is a COPC based on protection of groundwater.

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Comment	Response
30. Page II-11, Subsection 4.4.2, Human Health Risk Assessment, 3rd paragraph: The text states that the screening risk assessments utilized age-adjusted values for soil ingestion. For clarity, the text should be revised to note that age-adjusted values were also for evaluating exposure via the inhalation and dermal routes.	The 2nd sentence of the 3rd paragraph of Subsection 4.4.2 has been changed to read: **"When calculating the average daily dose (ADD), age-adjusted values for soil ingestion, inhalation rates, and dermal exposure were used** ~~ADD, (age adjusted values for soil ingestion), inhalation rates, and dermal exposure were used~~ to determine carcinogenic risk, while non-carcinogenic hazard was calculated based on exposure to a child." The acronym "**ADD Average Daily Dose**" has been added to the acronym list on Page xi.
31. Page II-11, Subsection 4.4.2, Human Health Risk Assessment, 3rd & 4th paragraphs: The text refers to a quantitative human health risk assessment (quantitative HHRA), and then a quantitative risk assessment (QRA). In the site-specific discussions presented in Subsection 5.2.4: Post-Feasibility Study No Further Action Sites, tables presenting summary results of the baseline human health risk assessment are titled "Human Health Risk Assessment Summary". Site COCS and RAOs are presented in several instances as selected based on the BHHRA. However, the discussion of the baseline human health risk assessment presented in Subsection 4.4.2.1 uses HHRA, not BHHRA, as the acronym for the baseline risk assessment. In addition, the risk assessment summary tables presented in Subsection 5.2 list the estimated carcinogenic risks under the headings "SRA" or "QRA", depending on the type of risk assessment completed for the site. Noncarcinogenic hazard is presented under the heading of HI. This varied and inconsistent use of terminology and acronyms is unnecessarily confusing. Two types of human health risk assessment were conducted in the SCOU RI/FS. First, a screening risk assessment was performed for all sites for which contaminants were detected in soil. When the results of the screening risk assessment indicated that a site warranted further evaluation, a baseline human health risk assessment was then performed. Carcinogenic risk and noncarcinogenic hazard was calculated in both types of risk assessment. For clarity, information presented in the SCOU ROD regarding the risk assessments should be consistent in reference to the terminology used to describe the risk assessments, and should refer to either the results of the screening risk assessment (SRA), or the baseline human health risk assessment (BHHRA). Carcinogenic risk (or "cancer risk", or simply "risk") should be presented as such, not as SRA or QRA.	To clarify carcinogenic risk and non-carcinogenic hazard, the headings in the Section 5.2.4 HHRA tables have been revised to "Cancer Risk' and "Non -Cancer Hazard Index (HI)". Additionally, all uses of quantitative risk assessment or QRA and baseline human health risk assessment or BHHRA have been changed to human health risk assessment or HHRA.

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Comment	Response
32. Page II-11, Subsection 4.4.2, Human Health Risk Assessment, last paragraph: The text states that "as part of the quantitative risk assessment (QRA), a base background study and baseline risk assessment was conducted." This is incorrect. The base background study was conducted as part of the remedial investigation, not as part of the risk assessment per se. Additionally, as noted in Specific Comment #31, QRA is not a term that was used in the SCOU RI/FS process (which included the BHHRA), and to avoid confusion, this term should not be used in the SCOU ROD.	The last paragraph on page II-11, Subsection 4.4.2 Human Health Risk Assessment has been changed to read: "~~As part of the quantitative risk assessment (QRA),~~ A~~a~~ base background study and a baseline risk assessment were conducted. ~~The purpose of this background study and baseline risk assessment was~~ to;" Same response as for Comment No. 31 for the second part of this comment.
33. Page II-12, Subsection 4.4.2, Human Health Risk Assessment: The last bullet at the top of page II-12 should be deleted. It makes essentially the same point as the first bullet. In addition, insert the following as a separate bullet item: "Determine appropriate response actions".	The last bullet of Subsection 4.4.2 Human Health Risk Assessment in the 1st paragraph on Page II-12 has been deleted: "~~Document the magnitude of risk at a site, and the primary causes of that risk~~" The 1st bullet of Subsection 4.4.2 Human Health Risk Assessment in the 1st paragraph of Page II-12 has been split into two separate bullets: "Identify the risks and hazards associated with potential human exposure to contaminants in soils at Castle Airport~~, and d~~**D**etermine ~~the~~ appropriate response actions"
34. Page II-12, Subsection 4.4.2.1, HHRA COPCs, 1st paragraph, last sentence: The text references "Section II, Subsection 4" of the BHHRA (SCOU RI/FS Part 2). There is no Section II, Subsection 4 in SCOU BHHRA. Recheck the appropriate reference. For clarity, all references to specific sections of the SCOU RI/FS should utilize the same numbering system as presented in that document.	The last sentence of the 1st paragraph of Subsection 4.4.2.1 HHRA COPCs on Page II-12 has been changed to read: "The determination of anthropogenic or man made inorganic analytes is presented in detail in the SCOU RI/FS Part 2, Baseline Human Health Risk Assessment (HHRA), ~~Section II, Subs~~Section 4.0."
35. Page II-12, Subsection 4.4.2.1, HHRA COPCs, last continuing paragraph: The 1st sentence refers to the 97 COPC chemicals on Plate 4-6. But Plate 4-6 only contains 95 chemicals. Clarify. In the 3rd sentence, the text states that "some of the COPCs identified in soils at Castle Airport are considered potential human carcinogens, while others are known to have adverse noncarcinogenic health effects." This statement is misleading in that it implies an either/or mechanism. The text in this subsection should be revised to state that because chemicals that are suspected carcinogens may also give rise to noncarcinogenic effects, they must be evaluated for both carcinogenic and noncarcinogenic effects.	The 1st sentence of the last paragraph of Subsection 4.4.2.1 on Page II-12 has been changed to read: "Based on the above evaluations, the risk assessment identified a total of ~~97~~ **95** chemicals (13 inorganics and ~~84~~ **82** organics) as COPCs in soils at Castle Airport." The 3rd sentence of the last paragraph of Subsection 4.4.2.1 on Page II-12 has been changed to read:

Comment	Response
	"~~Some of~~ **T**~~t~~he COPCs identified in soils at Castle Airport **may be** ~~are~~ considered potential human carcinogens, ~~while others are known to have adverse noncarcinogenic health effects~~ or **they may have known adverse non-carcinogenic health effects or they may exhibit both carcinogenic and non-carcinogenic health affects**."
36. Page II-13, Subsection 4.4.2.3, Risk Characterization: The text references integrating information gathered in the exposure and toxicity assessments without ever presenting information defining or describing the exposure and toxicity assessments. According to the 1999 EPA guidance on RODs discussion of the risk assessment in the ROD should parallel the major sections of the risk assessment itself (i.e., identification of COCs, exposure assessment, toxicity assessment, and risk characterization). Information presented as such facilitates the understanding of the basis for the remedial action for those readers who are not familiar with the CERCLA sites.	The title of Section 4.4.2.2 has been changed from "~~Pathways and Exposure Scenarios~~" to "**Exposure Assessment**" and the title of Section 4.4.2.3 has been changed from "~~Risk Characterization~~" to "**Toxicity Assessment and Risk Characterization**." Results of the exposure assessment are presented in Section 4.4.2.2 The following sentences have been added to the end of Subsection 4.4.2.2 for completeness: **"Exposure point concentrations were represented by the UCL^{95} or the maximum detected concentration, whichever was less. The UCL^{95} is the 95% upper confidence limit of the arithmetic mean. The ADD, or the amount of the chemical incorporated into the body is determined differently for carcinogens and non-carcinogens:** • **Carcinogens- The ADD for carcinogens is based on the estimated exposure duration, extrapolated over an estimated 70-year lifetime.** • **Non-carcinogens- The ADD is averaged over the estimated exposure period."** The text of Section 4.4.2.3 has been deleted and replaced with: **"The toxicity assessment is composed of two steps: 1) hazard identification and 2) dose-response assessment. Hazard identification is the process of determining whether exposure to a chemical may result in a deleterious health effect on humans. It consists of characterizing the nature of the effect and the strength of the evidence that the chemical will cause the observed effect. Dose-response assessment characterizes the relationship between dose and the incidence and/or severity of the adverse health effect in the exposed population.**

Comment	Response
	For risk assessment purposes, COPCs are generally separated into categories based on their toxicological properties. The primary basis of this categorization is whether a chemical exhibits potentially carcinogenic or non-carcinogenic health effects. Because chemicals that are suspected carcinogens may also give rise to non-carcinogenic effects, COPCs must be evaluated separately for both effects. Based on the exposure and toxicity assessments, risk characterization is performed to provide a quantitative and qualitative expression of the likelihood of adverse effects on a potentially exposed population. The following sections briefly describe important aspects of the SCOU BHHRA toxicity assessment and risk characterization for carcinogens, non-carcinogens and lead."
37. Page II-13, Subsection 4.4.2.3, Risk Characterization: The text states that "during risk characterization, chemical-specific information is compared against both measured contaminant exposure levels (HHRA) and those levels predicted through fate and transport models (WQSA)....". This statement is not correct. The exposure assessment estimated a dose, expressed in terms of milligrams of chemical per unit of body weight per day (mg/kg-day). The risk characterization used these results to estimate the probability of carcinogenic risk or likelihood of adverse health effects. This analysis did not involve a direct comparison of toxicity criteria to measured or modeled concentrations as indicated. Further, results of fate and transport modeling conducted as part of the WQSA (i.e., VLEACH, MODFLOW and MTD3) were not used in the SCOU risk assessments. Clarify this apparent misinformation by revising the text in this subsection appropriately	The 3rd sentence of the referenced paragraph has been deleted, as it is not accurate or required: "~~During risk characterization, chemical-specific toxicity information is compared against both measured containment exposure levels (HHRA) and those levels predicted through fate and transport modeling (WQSA) to determine whether levels at or near the site are of concern.~~"

Comment	Response
38. Pages II-13 & II-14, Subsection 4.4.2.3.1, Cancer Risk: Although carcinogenic weight-of-evidence classifications based on EPA's 1986 guidance are provided, they are not used elsewhere in the ROD, and the individual classification of each COC is not provided. Hence, the purpose for presenting this information is not clear and provides no useful information for evaluating the risk posed by specific contaminants. Further, inasmuch as this draft final SCOU ROD represents a document that is intended to be issued as a final document in 2001, information presented in this section should, at a minimum, summarize EPA's revised 1996 cancer assessment guidelines.	The first paragraph and the bullet list regarding weight-of evidence classifications included in Section 4.4.2.3.1 have been deleted since the classifications are not used elsewhere in the ROD and the individual classification of each COC is not provided: "~~Currently, the EPA uses a two-step approach for evaluating potential carcinogenic effect of constituents. First, the substance is assigned a weight-of evidence classification reflecting the likelihood that the constituent is a human carcinogen. Second, a cancer slope factor is calculated for known or probable human carcinogens:~~ ~~The EPA weight of evidence classification system for carcinogenicity has the following categories.~~ • ~~Group A constituents (human carcinogens) are agents for which there is sufficient evidence of carcinogenicity from human studies.~~ • ~~Group B1 and B2 constituents (probable human carcinogens) are agents for which there is limited evidence of carcinogenicity from human studies (B1) or sufficient evidence in animal studies and inadequate evidence from human studies (B2).~~ • ~~Group C constituents (possible human carcinogens) are agents for which there is limited evidence of carcinogenicity in animals.~~ • ~~Group D constituents (not classifiable as to human carcinogenicity) are agents for which the evidence of human and animal carcinogenicity is inadequate or for which no data are available.~~ • ~~Group E constituents (no evidence of carcinogenicity) are agents for which there is no evidence of carcinogenicity in adequate human or animal studies.~~"

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39. Page II-15, Subsection 4.4.2.4, HHRA Conclusions and Summary: The WQSA is not associated with the risk assessment. Please delete all references to the WQSA, as well as decisions resulting from the WQSA process from this subsection. In addition, as this subsection's purpose is to discuss the results of the *human* health risk assessment, references to the ecological risk assessment should be deleted.	The 1st paragraph of Section 4.4.2.4 on Page II-15 has been changed to read: "Final decisions on ~~ecological and~~ human health risks from the 0 to 15 foot interval of the vadose ~~zone and final decisions on risks to groundwater quality from the entire vadose zone (ground surface to the water table)~~ are presented in this ROD. ~~The groundwater quality risk analysis was performed based on the WQSA process and RWQCB guidance. Any SCOU site exceeding the WQSA criteria were given the appropriate remedial consideration in the FS. Ecological risks are typically not evaluated for soil deeper then 5 feet and it is assumed that the stringent WQSA criteria more than adequately address any potential human health risk for the vadose zone below 15 feet. Consequently, no additional ecological or human health risk assessment will be performed for the vadose zone interval beneath 15 feet.~~"
40. Page II-15, Subsection 4.4.2.4, last paragraph, last sentence: For accuracy, insert the words "have been completed or are" after the word "actions".	The last sentence of the last paragraph of Subsection 4.4.2.4 on Page II-15 has been changed to read: "Removal actions **have been completed or** are currently underway at a number of SCOU sites."
41. Page II-16: In the denominator of the equation for calculating the RAO for carcinogenic endpoints, there is a comma and a period following the term ED_{derm}. These should be deleted.	The last expressions in the denominator of the carcinogenic endpoints equation on Page II-16 has been changed to read: $(EF_{derm} \times ED_{DERM}\cancel{,} \times AF \times CF \times ABS \times SA \times SF_{o})$
42. Page II-16: The units for the Henry's Law constant should be atm-m^3/mole, not atm-m3/mole.	The 4th sentence of on Page II-16 has been changed to read: "Note: For VOCs (defined as having a molecular weight of less than 200 g/mole and a Henry's Law constant greater than 1×10^{-5} atm-m~~3~~^{3}/mole-K), the volatilization factor (VF) is used in place of the particulate emission factor (PEF)."

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Comment	Response
43. Page II-16: The units for skin surface area for adult residential and occupational receptors (SA_R and SA_I) should be cm^2/day, not cm^2/da.	Entries in the table Exposure Parameters on Page II-16 have been changed to read: "Surface Area (Adult Residential) (cm^2-day)" and "Surface Area (Adult Residential) (cm^2-day)"
44. Page II-16: The units for the oral and inhalation reference doses (RfD_O and RfD_I) should be mg/kg-day, not mg/kg-da.	Entries in the table Exposure Parameters on Page II-16 have been changed to read: "Oral non cancer reference dose (mg/kg-day)" and "Inhalation non cancer reference dose (mg/kg-day)"
45. Page II-17, Subsection 4.4.2.5, HHRA RAOs: The information presented in this subsection regarding the differences between the Region 9 PRG and the calculated RAOs is out-of-date, and should be updated. Revise Plates 4-7a, 4-7b, and 4-7c in Appendix B accordingly. Because of recent changes in toxicity factors and/or risk factors, at least the RAO's for the following chemicals of concern need to be revisited to determine if cleanup decisions for which the RAO's were based are still protective: dichlorodifluoromethane; cis-1,2 dichloroethene; 1,2 dichloropropane; toluene; ethylbenzene; naphthalene; trichlorofluoromethane; trimethyl benzene; vinyl chloride; xylene; PCBs; dioxins; aluminum; antimony; cadmium; chromium; copper; manganese; mercury; vanadium; and zinc.	A complete review, update and evaluation of the SCOU BHHRA results in light of changes to toxicity factors and other risk assessment parameters that have occurred since the SCOU BHHRA was completed in 1996 has been conducted. A complete presentation of the evaluation is provided in Appendix E. Where appropriate, risk assessment results were revised, site decisions were reviewed, RAOs were updated and completed removal actions were reviewed to evaluate attainment of the updated RAOs. The text of Section 4.4.2.5 has been revised as appropriate in accordance with the results of the evaluation. The evaluation document and the revised text for Section 4.4.2.5 have been issued under separate cover.
46. Page II-18, Subsection 4.5. In the 3rd sentence, for clarity, rephrase this sentence to read: "Based on these evaluations, it was determined that for selected sites that failed WQSA and/or Risk Screening Analysis, remediation was not warranted."	The 3rd sentence of Subsection 4.5 on Page II-18 have been changed to read: "Based on these evaluations, it was determined that for selected sites that failed WQSA and/-or Risk **S**~~s~~creening **A**~~a~~nalyses, remediation was not warranted."

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47. Page II-19, Subsection 4.6, 1st paragraph, 2nd sentence: This sentence is not necessarily true because sometimes ICs are the stand-alone remedy.	The 2nd sentence of the 1st paragraph of Subsection 4.6 on Page II-19 have been changed to read: "ICs **may be a stand-alone remedy or may be** ~~are~~ used as necessary to supplement and complement the treatment or engineering remedial actions."
48. Page II-19, Subsection 4.6.1.2, 1st paragraph, last sentence: If possible, specify the branch or unit of "Government" being referred to here. Air Force? FAA?	Because of deferral of LF4 and LF5 to a subsequent ROD, this section has been removed from the SCOU ROD Part 1.
49. Page II-19 & II-20, Subsection 4.6.1.2, 2nd paragraph, last sentence: This is ambiguous as to whether a Letter of Transfer exists or not. Please clarify. Also, does this Letter of Transfer limit the use of the property to a prison, or just "institutional use" in general?	Because of deferral of LF4 and LF5 to a subsequent ROD, this section has been removed from the SCOU ROD Part 1.
50. Page II-20, Subsection 4.6.1.3: Why are these ARARs requirements listed under the header of "Institutional Controls" (Subsection 4.6)?	Because of deferral of LF4 and LF5 to a subsequent ROD, this section has been removed from the SCOU ROD Part 1.
51. Page II-20, Subsection 4.6.1.5, 3rd paragraph: This paragraph discusses leasing the property to the LRA. Does this apply to both LF4 am LF5? If not, clarify.	Because of deferral of LF4 and LF5 to a subsequent ROD, this section has been removed from the SCOU ROD Part 1.
52. Pages II-20 & II-21, Subsection 4.6.1.5, 5th paragraph: In the 3 bullet items listed under monitoring profiles, particularly the 2nd bullet item, it is unclear what, if any requirements or standards, the Air Force is committing to implement here. This section needs to be revised so that the requirement and/or standard is an enforceable one under the ROD.	Because of deferral of LF4 and LF5 to a subsequent ROD, this section has been removed from the SCOU ROD Part 1.
53. Page II-22, Subsection 4.7: This subsection needs to include the fact that one of the primary goals of the 5-Year Review is to confirm that cleanup levels are being achieved in accordance with the selected remedy.	The 2nd sentence of the 1st paragraph of Subsection 4.7 has been changed to read: "The goal of the reviews will be to confirm that the selected Remedial Actions are meeting performance standards established in the Castle RODs, **that cleanup levels are being achieved in accordance with the selected remedy,** and that the selected Remedial Actions continue to be protective of human health."

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54. Page II-23 & II-24, Subsection 5.1, 1st sentence: For completeness and accuracy, replace the word "Removal" with the word "Remedial". In addition, for completeness, insert here and in the text for LF4 & LF5 the following sentences: "Removal actions were undertaken for LF4 and LF5 as per Action Memoranda dated _____ and _____, under which LF4 and LF5 were zoned capped with ICs to follow. Zone capping for LF4 and LF5 were completed on _____ and _____, respectively."	The 1st sentence of Subsection 5.1 on Page 11 has been changed to read: "There are two landfills incorporating a total of eight separate SCOU sites at Castle Airport that have been designated for cleanup and that are subject to ~~Removal~~ **Remedial** Actions." The following sentence has been added to Subsection 5.1 on Page II-23. **"Removal actions were undertaken for LF4 and LF5 as per Action Memoranda dated August 27, 1997 and November 12, 1998, under which LF4 and LF5 were zoned capped with ICs to follow. Zone capping for LF4 and LF5 was completed in September 2000 and October 1999, respectively."** Subsections 5.1.1.1 (includes LF4 Removal Actions) and 5.1.1.2 (includes LF5 Removal Actions) have been removed from the SCOU ROD Part 1.
55. Pages II-24 thru II-27, Subsection 5.1.1.1, Risk Management Decision header, 3rd paragraph, last sentence: For accuracy, replace the word "Removal" with the word "Remedial" in the context of this paragraph since removal actions undertaken were primarily applicable to the excavated landfills and the zoned capping of LF4. Also, delete the words, "site cleanup".	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.1.1 has been removed from the SCOU ROD Part 1.
56. Page II-27, Subsection 5.1.1.2, 1st paragraph: A statement on the anticipated use of LF5 is needed here because it is important to the reader in evaluating the latter portion on HHRA. (We understand that LF5 has been transferred to the Bureau of Prisons even though how LF5 will be used is not specified.)	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.1.2 has been removed from the SCOU ROD Part 1.
57. Page II-29, Subsection 5.1.1.2, Site COCs and RAOs header, Item #1: Explain why the occupational exposure scenario is assumed here rather than the residential exposure scenario.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.1.2 has been removed from the SCOU ROD Part 1.
58. Page II-30, Subsection 5.1.1.2, Risk Management header, 1st paragraph: Provide a more specific rationale here in support of the occupational exposure scenario (e.g., the inmates will not live in the area of LF5). Also, will LF5 qualify as a recreational area for the inmates?	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.1.2 has been removed from the SCOU ROD Part 1.
59. Pages II-30, Subsection 5.1.1.2, Risk Management header, last paragraph, last sentence: For completeness and accuracy, replace the word "Removal" with the word "Remedial", and delete the words "site cleanup".	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.1.1 has been removed from the SCOU ROD Part 1.
60. Page II-31, Subsection 5.1.2: For completeness and accuracy, insert a statement here that removal actions were initiated and completed for LF1, LF2, LF3, CVLFA, and CVLFB under Action Memoranda dated _____ and _____, and Closure Reports for these removal actions were finalized on _____ and _____.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.2 has been removed from the SCOU ROD Part 1.

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61. Page II-34, Subsection 5.1.3.5, threshold Criteria header, last sentence: For clarity and completeness, add the words "for the landfill cap" at the end of the sentence.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.3.5 has been removed from the SCOU ROD Part 1.
62. Page II-35, Subsection 5.1.3.7: This subsection appears to be out of place here because this really isn't an alternative under Subsection 5.1.3 Description of Alternatives for Landfill Sites. It is more appropriate in the ARARs section (Section III).	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.3.7 has been removed from the SCOU ROD Part 1.
63. Pages II-35 & II-36, Subsection 5.1.3.8: This subsection appears to be out of place here because this really isn't an alternative under Subsection 5.1.3 Description of Alternatives for Landfill Sites. Perhaps it is more appropriate to be located in a new Subsection 5.1.7.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.1.1 has been removed from the SCOU ROD Part 1.
64. Page II-36, Subsection 5.1.3.9, 2nd paragraph, 1st sentence: This statement is not necessarily correct since ICs can be a stand-alone remedy.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.3.9 has been removed from the SCOU ROD Part 1.
65. Page II-38, Subsection 5.1.3.9, Item #(4)(b): Add the fact that the restrictions will also be enforced by DTSC.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.3.9 has been removed from the SCOU ROD Part 1.
66. Page II-41, Subsection 5.1.6.1: Delete the words "and Environment" from the title and throughout the discussions that follow since use of the word "environment" implies that an ecological risk assessment has been done to support the discussions of protectiveness of ecological receptors at the SCOU sites.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.6.1 has been removed from the SCOU ROD Part 1.
67. Page II-42, Subsections 5.1.6.1, Closure/Post Closure Requirements header: These requirements are more appropriately discussed under the sections on ARARs (Section III).	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.6.1 has been removed from the SCOU ROD Part 1.
68. Pages II-42 & II-43, Subsection 5.1.6.2, Zoned Caps header, 3rd paragraph, 2nd & last sentences: Since LF4 & LF5 are not TSDFs, delete the 2nd sentence. Also, if it is determined that wetlands and historic structures are non-issues with this ROD, then there are no such ARARs in that regard. Therefore, delete the last sentence if this is indeed true.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.6.1 has been removed from the SCOU ROD Part 1.
69. Page II-43, Subsection 5.1.6.2, SVE header, 2nd sentence: Delete this sentence because it is not accurate. The Air Force and EPA do not agree that SVE is required as a State ARAR for source sites overlying contaminated groundwater that is being remediated. Rather, SVE is a decision made based on enhancement of the groundwater remedy.	Because of deferral of LF4 and LF5 to a subsequent ROD. Subsection 5.1.6.2 has been removed from the SCOU ROD Part 1.
70. Pages II-45 thru II-148, Subsection 5.2: The anticipated use of each of the NFA sites is not consistently noted in the discussions. Correct this deficiency in the discussions where applicable.	Where applicable in Subsection 5.2 pages II-45 through II-148 anticipated use of each of the NFA sites is noted in a consistent manner.
71. Page II-45, Subsection 5.2, 1st sentence: For clarity and completeness, rewrite the sentence as follows: "Based on information gathered during the SCOU RI/FS, subsequent Data Gap investigations, follow-on confirmation sampling after cleanups, and reassessments of information and data sets, it has been determined that 141 SCOU sites at Castle require no further action (NFA) to protect human health and water quality."	The 1st sentence of Subsection 5.2 on Page II-45 has been rewritten as: "Based on information gathered during the SCOU RI/FS, ~~and~~ subsequent Data Gap **i**~~I~~nvestigations, **follow-on confirmation sampling after cleanups, and reassessments of information and data sets,** it has been determined that 141 Castle SCOU sites require ~~NFA~~ **no further action (NFA)** to protect human health ~~or~~ **and** water quality."

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Comment	Response
72. Page II-57, Subsection 5.2.3.12: Although contamination found were minimal, for consistency, include the soil sampling and soil gas sampling results, WQSA screening, and HHRA summary in tabular forms to support the no risk and NFA conclusions.	As specified in the last sentence of the 4th paragraph in the referenced section, laboratory analyses of the soil gas samples collected during the SCOU RI indicated no VOC contamination. Therefore, neither a WQSA nor a risk assessment was performed. As these assessments were not conducted there is no information to present in a tabular format. Providing the requested tables for WQSA and BHHRA results might imply that such assessments were performed.
73. Pages II-71 thru II-112, Subsection 5.2.4: For each of these post-feasibility sites with an NFA determination, properly cite the Action Memorandum and accompanying Closure Report for removal actions that have been initiated and completed in support of the NFA.	The proper references for Action Memoranda and accompanying Closure Reports for removal actions that have been initiated and completed to support a determination of NFA for post-feasibility sites in Subsection 5.2.4 have been added.
74. Page II-71, Subsection 5.2.4, 4th sentence: For clarity and specificity, insert the word "(e.g., Structure T85)" after the word "Sites".	The 4th sentence of Subsection 5.2.4 on Page II-71 has been changed to read: "The NFA determinations for the Data Gap Sites (**e.g., Structure T85**) were based on the findings of the Data Gap Investigation that was conducted during 1997."
75. Pages II -71 thru II-73, Subsection 5.2.4.1, Human Health Risk Assessment header: The SRA number in the table (2.8 x 10-6) should be bold-faced to indicate that it failed the screening risk assessment evaluation, and thus proceeded to a quantitative risk assessment. Also, insert the following transitional sentence right after the SRA HHRA Summary Table for B871: "Because the SRA exceeded 1 x 10-6, a QRA was conducted." The September 1996 Technical Report for Removal Action at B871 should be included in Section VII as a supporting reference document. This document should also contain information on the levels of dieldrin & PCBs in the excavated soils that was as placed in FTA-1, and the post-excavation residual levels at B871. The 2nd paragraph mentions the 0.081 mg/kg maximum concentration of PCBs found in surface soils, but failed to mention dieldrin, the other primary contributor to risk from surface soils. Finally, insert a statement as the last sentence under this header, which states that the anticipated use of the B87l site is occupational, which is why the occupational exposure scenario was used here.	The SRA number **2.8 x 10^{-6}** in the table B871-Human Health Risk Assessment Summary was made bold-face. The following sentence was added immediately after the table. **"Because the SRA exceeded 1 x 10^{-6}, an HHRA was conducted based on the SRA results."** A sentence indicating level of dieldrin was added as the 3rd sentence of the 1st full paragraph on Page II-72: **"Dieldrin was detected at a maximum concentration of 0.022 mg/kg."** The following was added to the end of the 1st full paragraph on Page II-72:

Comment	Response
	"This site is located in an area that has a future use designated as commercial. The anticipated use of the B871 site is occupational, which is why the occupational exposure scenario was used here. Based on this, levels of PCBs, pesticides and TPH from soils excavated at B871 are below the PRAOs and PCLs for FTA-1. This was in accordance with the approved WP/QPP. The maximum post excavation concentration for dieldrin was <0.0006 mg/kg (detection limit) as compared to the proposed clean up level of 0.3 mg/kg, Note that all confirmation samples were below detection limits and residential PRAOs, thus no land use restrictions are required"
76. Page II-74, Subsection 5.2.4.4, 1st paragraph: In the 2nd sentence, change "CVLFB" to "CVLFA" to correct this error. Also, insert a statement here that removal action was undertaken as per Action Memo dated_____ authorizing excavation and removal of the wastes from CVLFA, and a Closure Report dated_____documents this action.	The 2nd sentence of Subsection 5.2.4.4 on Page II-74 was changed to read: "No applicable COCs were identified for CVLF~~B~~**A**; however, the site was recommended for evaluation in the FS, based on the California Integrated Waste Management Board's (CIWMB) closure requirements for landfills." The following sentence was added as the 4th sentence of Subsection 5.2.4.4 on Page II-74: **"Removal actions were undertaken in accordance with Action Memorandum Removal Action for Castle Vista Landfills A and B and Castle Airport Landfills 2 & 4 (JEG, 1997h) dated June 3, 1997 authorizing excavation and removal of the wastes from CVLFA; Castle Vista A and Landfill 2 Closure Report Final (JEG, 1999c) dated May 1999 documents this action."**
77. Page II-77, Subsection 5.2.4.5, 1st paragraph: Insert a statement here that removal action was undertaken as per Action Memo dated_____authorizing excavation & removal of the wastes from CVLFB and implementation of SVE for the VOCs, and a Closure Report dated_____ documents this action.	The following sentence was added as the 4th sentence of Subsection 5.2.4.5 on Page II-77: **"Removal actions were undertaken in accordance with Action Memorandum Removal Action for Castle Vista Landfills A and B and Castle Airport Landfills 2 & 4 (JEG, 1997h) dated June 3, 1997 authorizing excavation and removal of the wastes from CVLFA and implementation of SVE for the VOCs; Landfill 1 and Landfill B Closure Report Final (JEG, 2000d) dated September 2000 documents this action."**

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Comment	Response
78. Page II-79, Subsection 5.2.4.5, Castle Vista Landfill B: Sample data and WQSA screening values for soil gas as presented are shown with units of mg/kg. Soil gas results for Castle Airport are typically presented in units of µg/L. Please correct.	The 2nd subheading of the table CVLFB-WQSA Water Quality Impact on Page II-79 was changed from ~~mg/kg~~ to **µg/L.**
79. Pages II-79 & II-80, Subsection 5.2.4.5, Castle Vista Landfill B: *cis*-1,2-DCE is presented as *cis*-1,2-dichloroethene in the table of WQSA values on page II-79, and as *cis*-1,2-dichloroethylene in the text on page II-80. Consistent terminology should be used throughout the document. Because the SCOU ROD represents a legal decision document, it must be readable, and thus should be thoroughly proofed for such errors as well as for other typographical and punctuation errors. Finally, the 3.3x10-6 SRA under the HHRA Summary table should be bold-faced since this is an exceedence.	*Cis*-1,2-dichloroethene is first abbreviated as *Cis*-1,2-DCE on Page II-77. All further references to this compound (and the errant referral to *cis*-1,2-dichloroethylene), including within tables, have been changed to *cis*-1,2-DCE. The value of **3.3×10^{-6}** for SRA in table CVLFB-Human Health Risk Assessment Summary on Page II-79 has been made bold-faced.
80. Page II-81, Subsection 5.2.4.5, Risk Management Decision header: Include a statement on State concurrence with clean closure of CVLFB (similar to statement made for CVLFA). Also, provide reference citation for regulatory concurrence with the removal action site cleanup that is referred to in the 2nd paragraph.	The following sentence was added as the last sentence of the 1st paragraph of Risk Management Decision header in Subsection 5.2.4.5 on Page II-81: **"State concurrence with clean closure for CVLFB was received in May 1999."** The following sentence was added as the last sentence of the 2nd paragraph of Risk Management Decision header in Subsection 5.2.4.5 on Page II-81: **"The EPA, DTSC, and RWQCB closure acceptance letters were dated August 24, 2000; July 24, 2000; and July 11, 2000; respectively."**
81. Page II-82, Subsection 5.2.4.7, 5th paragraph, 1st sentence: For clarity and accuracy, replace the words "In the absence of a SCOU ROD" with the words "Prior to the finalization of the SCOU ROD".	The 1st sentence of the 5th paragraph of Subsection 5.2.4.7 on Page II-82 was changed to read: "~~In the absence of a SCOU ROD~~ **Prior to the finalization of the SCOU ROD,** the Air Force elected to implement removal actions at selected sites, including DA-8, that posed the highest risk to human health or that have the greatest potential to impact groundwater."

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82. Pages II-82 thru II-83, Subsection 5.2.4.7, last paragraph: Include a statement that regulatory agencies concurred with the Air Force's decision to terminate operation of the SVE, and provide proper reference citations for Action Memorandum and Closure Report.	The following sentences were added after the last sentence of the last paragraph of Subsection 5.2.4.7 on Page II-83: **"Regulatory agencies concurred with the Air Force's decision to terminate operation of SVE as documented in the CERCLA Closure Report for VOC Contamination at Discharge Area 8/Sewer Segment 6, Final, (JEG, 2000a). This action was taken in accordance with the Action Memorandum Removal Action for Discharge Area 8 (Castle Air Force Base, 1996a)."**
83. Page II-84, Subsection 5.2.4.9, Earth Technology Corporation 8 (ETC8), 1st complete paragraph, 2nd sentence: The statement is made that the only analyte detected above the WQSA RAO was "manganese, which is naturally occurring and not considered a contaminant at Castle AFB." It is likely that most, if not all metals detected at Castle AFB are "naturally occurring." One of the questions the RI was designed to answer was whether or not reported concentrations of these naturally occurring analytes represented contamination. For clarity, this sentence should be revise to say that the reported concentrations of manganese at ETC8 are not considered contamination.	The 3rd sentence of the 1st complete paragraph of Subsection 5.2.4.9 on Page II-84 was changed to read: "The only constituent to exceed a Water Quality Site Assessment RAO was manganese, **at reported concentrations that are not indicative of contamination** ~~which is naturally occurring and not considered a contaminant~~ at Castle AFB."
84. Page II-84, Subsection 5.2.4.9, 3rd complete paragraph, 5th sentence: The sentence should read: "Second, PAHs, if still present...", not "PAH".	The 5th sentence of the 3rd complete paragraph of Subsection 5.2.4.9 on Page II-84 was changed to read: "Second, PAHs, if still present, do not pose a threat to groundwater quality since elsewhere at ETC-8, PAH contamination is largely limited to the top one foot of surface soils decades after having been deposited."
85. Pages II-84 & II-85, Subsection 5.2.4.10, 1st continuing paragraph, 3rd sentence: "PAH" should be "PAHs".	Due to the deferral of ETC-10 to a subsequent ROD, this section has been reduced to a placeholder section only for SCOU ROD Part 1.
86. Page II-84 & II-85, 1st continuing paragraph, 8th sentence: Replace the word "ecology" with the word "ecological".	Due to the deferral of ETC-10 to a subsequent ROD, this section has been reduced to a placeholder section only for SCOU ROD Part 1.
87. Pages II-84 thru II-85, Subsection 5.2.4.10, last paragraph: The carcinogenic risks for adult and child residential slightly exceeds the 1 x 10-6 starting point for the acceptable risk range. Cite the regulatory document where a risk management decision was made to accept this as a NFA site for residential reuse.	Due to the deferral of ETC-10 to a subsequent ROD, this section has been reduced to a placeholder section only for SCOU ROD Part l.

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88. Page II-86. Subsection 5.2.4.12, 2nd paragraph, 1st sentence: This sentence is not true and must be corrected because not all excavated materials from LF1 were disposed of at the onsite consolidated landfills. Materials not meeting the criteria for onsite disposal were disposed of off-site. Note that the Cd & CN sludge that was disposed of at DP2, and subsequently excavated, is most likely a hazardous waste which would not meet the criteria for onsite disposal.	The 1st sentence of the 2nd paragraph of Subsection 5.2.4.12 on Page II-86 was changed to read: "To ease property transfer concerns and reduce potential human exposure risks, waste from LF1 was excavated and disposed of at a designated on-base consolidation landfill **with the exception of three small radioactive sources, which were disposed of off base**." No hazardous waste, was detected according to the Landfill 1 and Landfill B Closure Report.
89. Pages II-94 thru II-95, Subsection 5.2.4.14, 2nd paragraph, 3rd sentence: This sentence can be misconstrued to mean that LF3 has not yet closed - - key word "will". Make necessary language change.	The 4th sentence of the 2nd paragraph of Subsection 5.2.4.14 on Page II-94 was changed to read: "Clean closure of LF3 ~~will~~ allows for unrestricted reuse of the site."
90. Pages II-94 thru II-95, Subsection 5.2.4.14, 2nd paragraph, last 3 sentences: For completeness, provide information on the number of CY of hazardous waste that was taken off-site for disposal.	The actual volume of hazardous waste was not reported in the Closure Report, therefore no amount was indicated within the ROD.
91. Page II-94 thru II-98, Subsection 5.2.4.14: It is confusing to discuss residential exposures under Item #1 of the Site COCs and RAOs header, and yet conclude in the Risk Management Decision header that occupational exposure RAOs were appropriate because the proposed future land use is industrial/commercial. Clarification is needed here for the reader. If the point being made here is indeed LF3 is remediated to residential levels in spite of its proposed industrial/commercial reuse plan, then simply state this.	The last sentence of Risk Management Decision header in Subsection 5.2.4.14 on Page II-98 was changed to read: "However, because all waste has been excavated and removed from the site under Removal Action authority, **and the residential RAOs were achieved,** ICs are not required and the site will be available for unrestricted reuse." In addition, the risk-based residential RAOs have been identified in the Remediation Target table, instead of the occupational RAOs. In this manner, the RAOs that were attained are clearly identified and discussed, while the fact that the area is designated for industrial/commercial reuse is also identified.

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92. Page II-98 thru II-100, Subsection 5.2.4.15, Polychlorinated Biphenyls Site 9: The text states that based on the results of the BHHRA the estimated carcinogenic risk ranged from greater than 1 x 10^{-5} for the occupational scenario to greater than 1 x 10^{-4} for the residential scenario. Heptachlor epoxide was identified as the primary contributor (greater than 70 percent) to the estimated risk in each case. The text also states that "surface soil presents the greatest risk because heptachlor epoxide (0.0045 mg/kg) was detected at 4.5 feet bgs." However, PCB 1260 is identified as the sole COC, and the text states that the remedial action for the sites was driven by BHHRA concerns resulting from PCB 1260 in surface soil. Clarify this apparent discrepancy.	Text following the PCB-9 Human Health Risk Assessment Summary was revised as follows: 1) The first sentence is correct and will remain the same: "The maximum cumulative residential risk was 1.1 x 10^{-4} and the maximum cumulative occupational risk was 1.3 x 10^{-5}." 2) The 2nd sentence was revised to: "~~Heptachlor epoxide contributed approximately 70 percent of the carcinogenic risk for both residential and occupational exposure scenarios.~~ **Depending on the scenario, PCBs contributed 83 to 92 percent of the residential surface soil risk with the remaining risk contributed by chlordane (α and γ), DDE and DDD.**" 3) The existing 2nd sentence (now 3rd sentence) was changed to read: "~~Heptachlor epoxide contributed approximately 70 percent of the carcinogenic risk for both residential and occupational exposure scenarios.~~ **For the subsurface adult residential scenario, heptachlor epoxide and PCBs contributed 72 and 27 percent respectively while for the child residential subsurface scenario, heptachlor epoxide and PCBs contributed 70 and 30 percent respectively.**" 4) The existing 3rd sentence (now 4th sentence) was changed to read: "~~The HI for residential exposure was 1.8.~~ **The maximum HI values are for the adult (1.8) and child (9.5) surface soil residential scenario. In each case PCBs contribute 75 percent of the hazard, with the remaining hazard contributed by α-chlordane (15 percent), γ-chlordane (9percent) and DDT (1 percent).**"

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	5) In addition, the Site COCs and RAOs subheading was revised as follows- Item 1: "~~PCB was identified as a COC by the BHHRA assuming an occupational surface exposure pathway scenario. The Air Force has completed a Removal Action at this site.~~ **Although PCB-9 is located in the industrial/commercial reuse area of Castle Airport, attainment of residential RAOs precludes the need for institutional controls. Accordingly, residential RAOs for chlordane (α and γ), DDE, DDT, PCBs and heptachlor epoxide were identified based on the BHHRA.** 6) The RAO table was revised, as appropriate. The residential RAOs for each of the COCs were attained by the Removal Action.
93. Page II-99: The "6.4 x 10-5" SRA for PCB9 HHRA Summary table should be bolded-faced to highlight it exceedence.	The value for SRA of **6.4×10^{-5}** in the 1st table PCB9-Human Health Risk Assessment Summary was made bold-faced
94. Page II-104: The "240" mg/kg for B325SB02-25 should be bold-faced to highlight its exceedence.	The value of 240 Maximum (mg/kg) for B325SB02-25 feet bgs was made bold-faced.
95. Pages 104 thru 105, Subsection 5.2.4.54: Include a concluding statement here that "no further action" is needed for SWMU 4.11.	The following sentence was added in Subsection 5.2.4.54 after the table SWMU 4.11 on Page II-105: **"No further action is needed for SWMU 4.11."**
96. Page II-112, Subsection 5.2.5, 2nd sentence: For clarity, replace the words "NFA was needed" with the words "no further action (NFA) was necessary".	The 2nd sentence of Subsection 5.2.5 on Page II-112 was changed to read: "However, based on further evaluation of environmental conditions at these sites, it was determined that the screening results did not accurately assess site risks and that ~~NFA was needed~~ **no further action (NFA) was** necessary to protect human health or water quality."
97. Page II-112, Subsection 5.2.5, 1st paragraph, last sentence: First, the Consensus Agreement cited here should be included in Section VII & VIII as a reference and a part of the Administrative Record, respectively. Secondly, this statement is not completely true in that Consensus Statement No. 9 could have included all 22 of these NFA risk management decision SCOU sites. Cite all applicable NFA consensus documents for these sites in order to be complete.	The consensus agreement was added to Section VII and VIII. The last sentence of the 1st paragraph of Subsection 5.2.5 on Page II-112 was removed: "~~Regulatory concurrence with these decisions was documented as part of the BCT Consensus Agreement No. 9, dated 29 July 1998.~~" Subsections 5.2.5.1 - 5.2.5.22 were changed to include citations of all applicable NFA consensus documents.

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98. Page II-113, Subsection 5.2.5, last paragraph, 2nd sentence & table: It is unclear which of the sites in the table are the 13 sites referred to in this sentence. Note that 14 sites are footnoted with a "1 ".	The 2nd sentence of the 2nd paragraph of Subsection 5.2.5 on Page II-113 was changed to read: "For ~~13~~ **12** of these sites, the NFA decision was made after completion of the SCOU FS." ETC7 and ST1201 did not change from previous CERCLA documentation as indicated. The superscript "1 " was removed from entries in the table Risk Management NFA (23 Sites) on Page II-113 and the "1 " footnote was removed.
99. Page II-117: The "398 " mg/kg value for Manganese in the Water Quality Impact table for B1404 should be bold-faced to indicate its exceedence.	The value of **398** mg/kg for Manganese in table B1404-Water Quality Impact on Page II-117 was made bold-faced.
100. Page II-131 thru II-137, Subsections 5.2.5.12; 5.2.5.13; 5.2.5.14; 5.2.5.15; and 5.2.5.16: In all these subsections regarding PCB sites, for completeness, provide the proper citation and documentation where EPA had re-evaluated the PCB data and made NFA determinations.	The following sentence was added as the last sentence to the last paragraph to Subsections 5.2.5.12 – 5.2.5.16 on Pages II-131 – II-137: **"Regulatory concurrence with these decisions was documented in the EPA letter of July 10, 1998 which commented on Remedial Decisions for Source Control Operable Unit Polychlorinated Biphenyl Sites 1,2,3,4,5,6,and 8, Castle Airport."**
101. Page II-132, Subsection 5.2.5.12, Changes from Prior CERCLA Documentations header: For completeness, include a statement here on the residual levels of PCBs that exceeded residential RAO.	The 2nd sentence of the Changes from Prior CERCLA Documentations header of Subsection 5.2.5.12 on Page II-132 was changed to read: "However, after the RI was issued, further review of confirmation sample data indicated PCBs at levels (**up to 2.2 mg/kg**) in excess of ~~residential~~ RAOs (**residential 0.57 mg/kg, occupational 0.72 mg/kg**) remained at the site."
102. Pages II-132 thru II-133, Subsection 5.2.5.13: For completeness, this subsection should mention the occupational use RAO for PCBs.	The revision specified in response to Comment 101 addresses this comment.

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103. Pages II-136 thru II-137; Subsection 5.2.5.16: In regards to the statements made here several times on TSCA and the 50 ppm PCB level, the language used here over-emphasized this point. TSCA should not be reason for an NFA determination. TSCA's 50 ppm level for PCBs is a regulatory level applied to the oil in the transformer itself. In addition, the TSCA PCB spill cleanup policy may not necessarily apply to PCB8, perhaps because of the oil contained less than 50 ppm before it spilled. Contrary to what is stated here, 50 ppm is not a trigger level for PCB spill cleanup action under CERCLA, which now controls the cleanup. In spill cases, the cleanup is risk-driven, and risk management decisions are often made in these cases as well. Revise the language of this subsection accordingly. Regarding the last sentence under the Changes from Prior CERCLA Documentations header, revised this sentence to read: "Based on the above factors, an NFA determination was made for this site."	The last sentence of the 1st paragraph of Subsection 5.2.5.16 on Page II-136 was changed to read: "~~Since a transformer containing PCBs at concentrations less than 50 mg/L is considered to be a non-PCB oil transformer, no confirmation samples were collected and no site remediation was conducted.~~ **This concentration is less than the concentration of 50 mg/kg specified by the Toxic Substances Control Act (TSCA) to define a PCB transformer. Accordingly, no additional samples were collected and no remediation pursuant to TSCA was conducted. On this basis, PCB-8 was originally considered as an NFA site prior to the SCOU RI."** The last sentence of the Human Health Risk Assessment header of Subsection 5.2.5.16 on Page II-136 was changed to read: "Since the spill was reportedly confined to a paved area and did not impact soil, and because the PCB level of the transformer oil was well below the Toxic Substance Control Act (TSCA) ~~cleanup trigger levels (50ppm), it was determined that NFA is required at this site~~ **levels that define a PCB transformer (50 mg/kg), a determination of NFA was made for this site.**" The last sentence of Changes to Prior CERCLA Documentation header of Subsection 5.2.5.16 on Page II-136 was changed to read: "~~This ROD has been revised to reflect the NFA decision.~~ **Based on the above factors, an NFA determination was made for this site.**"
104. Pages II-138 thru II-139, Subsection 5.2.5.18, Human Health Risk Assessment header: For completeness, include a closing sentence that states it is unlikely that there will be exposure from homegrown produce given the anticipated commercial reuse for this site.	The following sentence was added as the last sentence to Subsection 5.2.5.18 Human Health Risk Assessment header: **"However, it is unlikely that there will be exposure from homegrown produce given the anticipated commercial reuse for this site."**

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105. Page II-140, Subsection 5.2.5.19, Storm Drain System (SDS), 2nd paragraph: The text uses the term "overly conservative" to describe the risk assessment for this site. The 1996 risk assessment conducted for the SDS utilized EPA's concept of reasonable maximum exposure. Use of the maximum reported concentration as the exposure point concentration was predicated by the large degree of variability in a very limited data set. While it is appropriate for the RPMs to make a risk management determination that actual exposures are likely to be significantly lower than was estimated in the risk assessment, it should be noted that the conservativeness of the 1996 risk assessment resulted primarily from the Air Force's reluctance to collect sufficient data to more accurately estimate an exposure point concentration. Hence, the use of the term "overly conservative" is subjective, and should be avoided in the ROD.	The 2nd sentence of the 2nd paragraph of Subsection 5.2.5.19 on page II-140 has been changed to read: "~~Overly~~**C**conservative approaches in the 1996 risk assessment included unrealistic residential exposure time to the maximum reported concentration for each COPC (all detected at a single sample location), no backfill soil and grading during any future residential construction, a high degree of transfer of contaminants to the edible portions of homegrown produce, and a high frequency of ingestion of homegrown produce." The text for the referenced section was revised to follow the sequence of presentation provided for the other sites, namely: 1) Brief site description and summary of SCOU RI findings, 2) Water Quality Impacts 3) Human Health Risk Assessment (including reassessment) 4) Changes from Prior CERCLA Documentation, and 5) Risk Management Decision The reassessment of risk has not been changed to be presented in terms of how "overly conservative" the SCOU BHHRA was, but rather in terms of the risk management decision reached by the BCT based on the BHHRA uncertainties and site-specific considerations.
106. Pages II-140 thru II-143, Subsection 5.2.5.19: This discussion on the Storm Drain System is missing the "Risk Management Decision" subpart of the discussion. The discussion, particularly on SDS1 should be consistent with the language in the November 30, 2000. Technical Memorandum on this subject. Furthermore, the Tech Memo should be cited and listed in Section VII as part of the reference document list, and in Section VIII as part of the Administrative Record.	The Storm Drain documentation has been reworked as part of the risk assessment re-evaluation and is included within Appendix E. The November 30, 2000 Tech Memo has never been finalized and is incorporated into Appendix E.
107. Page II-147, Subsection 5.2.6.1: Delete the words "and Environment" from the title and throughout the discussions that follow since use of the word "environment" implies that an ecological risk assessment has been done to support the discussions of protectiveness of ecological receptors at the SCOU sites.	The heading of Subsection 5.2.6.1 on Page II-147 has been changed to read: "Protection of Human Health ~~and the Environment~~" The 1st sentence of Subsection 5.2.6.1 has been changed to read:

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	"~~Based on RI data, t~~ **T**he **141**~~Castle~~ SCOU NFA sites **at Castle** do not pose a current or future risk to human health; **or to** water quality, ~~and the environment.~~" The 1st sentence of Subsection 5.2.6.2 has been changed to read: "Since it has been determined that the NFA sites do not pose a threat to human health, **or** water quality, ~~or the environment,~~ no remedial actions are necessary, and there are no ARARs for these sites."
108. Page II-147, Subsection 5.2.6.1, 1st & 2nd sentences: For accuracy and completeness, rewrite the first 2 sentences to read: "The 141 SCOU NFA sites at Castle do not pose a current or future risk to human health or to water quality. At the majority of the sites, contamination noted was below the WQSA and human health risk threshold levels, based on RI data."	The first two sentences of Subsection 5.2.6.1 on Page II-147 have been rewritten to read: "~~Based on RI data, the Castle~~ **The 141** SCOU NFA site **at Castle** do not pose a current or future risk to human health~~,~~ **or to** water quality~~, and the environment.~~ At the majority of the sites, contamination noted was below the WQSA and human health risk threshold levels, **based on RI data.**"
109. Appendix B, Plate 4-6: Explain what is the significance of the "x" mark for those COPCs indicated versus the ones without an "x".	See response to Comment No. 29.
110. Section III and Appendix D: It is noted that except for a few federal Subtitle D ARARs, most of the Subtitle D requirements are principally form Title 27. Provide the rationale for this in Section III (e.g., Title 27 requirements were more stringent than the federal 40 CFR 258 requirements?).	Due to the deferral of LF4 and LF5 to a subsequent ROD. Section III has been reduced to a reference to the deferral, since none of the remaining SCOU ROD Part 1 sites require the development of ARARs. Appendix D has been retained as a placeholder with similar comment regarding the deferral of LF4 and LF5 and Plates 6-1 (federal ARARs) and 6-2 (state ARARs) have been removed.
111. Section III and Appendix D: there appears to be redundant requirements from Title 27 and RWQCB Orders. Review and delete redundancies.	Same response as for comment No. 110.
112. Section III and Appendix D: LF4 and LF5 are not RCRA hazardous waste landfills per se. Thus, most if not all, of the Title 22 requirements (RCRA Subtitle C) listed are not ARARs.	Same response as for comment No. 110.

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Comment	Response
1. Page I-3; This table should indicate and the text in sections 4 and five should discuss the fact that the following sites which are described in this ROD as no further action sites are being investigated further to determine if the remaining contaminants posed a threat to ecological receptors on the former base. The sites that will be further investigated that are discussed in this ROD include; ETC-10, ETC12, LF-3, LF-5 and disposal pit 9.	The table SCOU ROD Part 1 in Section 1 on Page I-3 has been changed to add a reference to footnote "#" to sites ETC-12 and LF-3 and the following footnote will be added to the table: **"These NFA sites are being investigated further to determine if the remaining contaminants pose a threat to ecological receptors on the former base."** LF5, DF9, and ETC-10 have been deferred to a subsequent ROD. The 1st sentence of the 2nd paragraph of Subsection 4.4.3 on Page II-17 has been changed to read: "Feasibility Studies will be conducted for the SCOU sites with potential ecological concerns that have on-going or planned Remedial Actions, **including ETC-12, LF-3, LF-5 and Disposal Pit 9 (LF5).**" The only one of these NFA sites that is included in Section 5 (LF-3) currently has a comment on ecological concerns in the 4th paragraph of Subsection 5.2.4.14 on Page II-95: "Ecological concerns will be addressed in the Comprehensive Basewide (CB) Record of Decision (ROD) Part 2. Although vernal pools within a natural wetland border the western edge of the site, site contaminants, such as lead, carrying the greatest potential ecological impact have been cleaned to background or near background levels. Therefore, it is anticipated that ecological concerns will have been addressed as well."

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Comment	Response
2. Page I-5; The Statutory Determinations section states that implementation of institutional controls will be done in accordance with the layering strategy described in the Department of Defense guidance. This statement is does not agree with the information presented in sections four and five in this ROD. Also the Air Force staff has informed the Base Closure Team in past meetings that the layering strategy for Castle Air Force Base is in draft and not approved by Air Force management. The Air Force should omit this statement from the ROD or update sections four and five in the next version of the ROD. Additionally, DTSC's position is that institutional controls are remedies which must be implemented to protect human health and/or the environment from the effects of hazardous substances left in place or to the physical remedy. The Air Force has the option of either cleaning up sites to contaminant concentrations which allow unrestricted use, or leaving contamination in place at concentrations which do not allow unrestricted land use. If contamination is left in place, then land use restrictions must be implemented. When institutional controls are chosen as the remedy or part of the remedy the institutional controls should be documented in a ROD. In California, institutional controls or restrictions are implemented though a land use covenant signed by DTSC and the current landowner, pursuant to Section 1471 of the California Civil Code. DTSC's strong preference is to enter into a land use covenant(s) with the Air Force. The current version of the Air Force's Layering Strategy that was presented to DTSC project management staff does not incorporate the approach described above. Therefore, unless the layering strategy has been re-drafted recently DTSC preference is that the Air Force not use the layering strategy to implement institutional controls.	Due to the deferral of LF4 and LF5 to a subsequent ROD, institutional controls are no longer an issue for SCOU ROD Part 1.
3. Page II-5; In the Highlights of Community Involvement section the text states the Restoration Advisory Board (RAB) meets monthly. Currently, the RAB meets quarterly and will continue to meet quarterly. The Air Force should revise that statement in the next version of the ROD.	The 2nd sentence of the 2nd paragraph of Section 3.0 on Page II-5 has been changed to read: "The RAB meets on a ~~monthly~~ **quarterly** basis to provide the community representatives with up-to-date information on recent events."
4. Page II-7; In Comprehensive Basewide Program section the text states the Comprehensive Basewide ROD, Part 2 is scheduled for completion in August 2004. Under the current schedule the ROD is scheduled to be completed in April 2003. The Air Force should revise the next version of the ROD to reflect the change in the overall schedule.	The last sentence of Section 4.2 on Page II-7 has been changed to read: "The CB ROD Part 2 is scheduled for completion in ~~August 2004~~ **April 2003.**"
5. Page II-19, Section 4.6.1.2; The text in this section states use of the land on and near landfill five must be consistent with the application for the land per the letter of Transfer. Air Force should include the Letter of Transfer as an attachment to the next version of the ROD. It may be necessary to revise the Letter of Transfer to include the necessary institutional control language for landfill 5.	Due to the deferral of LF4 and LF5 to a subsequent ROD, institutional controls are no longer an issue for SCOU ROD Part 1.

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Comment	Response
6. Page II-19, Section 4.6.1.2; The text in this section discusses landfill four. Within this section the text states any change from the indented use of the property as agreed upon between the Air Force and the Local Reuse Authority (LRA) requires permission of the Government. As already stated DTSC's strong preference is to enter into a land use covenant(s) with the Air Force. Within that covenant will be a requirement that DTSC and USEPA review all proposals recommending alternations to parcels that were deeded to the LRA with land use restrictions before the alternations can proceed.	Due to the deferral of LF4 and LF5 to a subsequent ROD, land use restrictions are no longer an issue for SCOU ROD Part 1.

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Comment	Response
7. Page II-20, Section 4.6.1.5; There is no discussion in this section regarding a Land Use Control Implementation Plan (LUCIP). DTSC believes in order to understand and potentially enforce land use controls and institutional controls at landfills 4 and 5 and all sites where the agencies and the Air Force have agreed that institutional controls are part of a remedy, an LUCIP must be prepare and submitted as part of the final ROD. Although, this is not the final ROD, DTSC believes this ROD should include a statement, which commits to placing the institutional controls and land use controls that will be implemented at landfills 4 and 5 in the LUCIP. The text in this ROD should state the LUCIP will be in included in the Comprehensive Basewide ROD, part 2. The LUCIP should include the following: A summary of sites where institutional controls have been put into place or will be put into place. The summary must include the specific action(s) or control(s) that have been implemented or will be implemented at each site basewide. A schedule citing when these institutional controls are due to be implemented or when the institutional control were implemented. A commitment to do a yearly performance review at all sites where institutional controls are required by the ROD(s). The results of the reviews will be placed in a report, which will be submitted to USEPA, DTSC and RWQCB. Additionally, the Air Force should include a section within the report discussing the property transfers and leases that have occurred during the past year. The information discussed in the ROD pertaining to monitoring profiles could be incorporated into the performance review report. Information on how the will Air Force will ensure the institutional controls included in past and upcoming Records of Decisions will remains in place, such as long-term monitoring, performance reviews, land-use covenants. Also note in the implementation plan if the institutional controls will be permanent or temporary. Information on the intended present and future land use basewide. Additionally, since the Air Force is leasing large portions of the airport parcel, including landfill 4 to the Local Reuse Authority (LRA), the county of Merced, in furtherance of conveyance the final LUCIP should be sent to the LRA, with a letter. The letter should amend the lease to include language ensuring that the institutional controls that are cited in the ROD and RODs yet to be approved by the agencies will be adhered to. Furthermore, the letter should include a section discussing the fact the Air Force and the regulatory agencies will take appropriate enforcement action if the institutional controls are not followed.	Due to the deferral of LF4 and LF5 to a subsequent ROD, institutional controls are no longer an issue for SCOU ROD Part 1.

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Comment	Response
8. Page II-21, section 4.6.1.6; Since it is not possible for the Air Force to enter into a land use covenant restricting use at landfill 5 DTSC has determined that a Long-Term Facility Management Plan will be necessary. This plan will be similar to a LUCIP but would be specific to landfill 5. DTSC intends for the Bureau of Prisons (BOP) to review the plan and sign it acknowledging that the Air Force is responsible party, but that BOP is aware of the institutional controls that need to remain in place.	Due to the deferral of LF4 and LF5 to a subsequent ROD, institutional controls are no longer an issue for SCOU ROD Part 1.
9. Page II-36, Section 5.3.9; This section is inconsistent with section 4.6.1 the Air Force may to update section 5.3.9 in the revised ROD. Specific inconsistencies which should be changed are cited below; The text in subsection (1a) states institutional controls will be implemented by means of restrictive covenant in the instrument conveying title (e.g., quit claim deed) to the property from the AF to the initial transferee. This is not accurate for landfill 5 and the use of an instrument such as a quitclaim deed does not agree with text in section 4.6.1.6. This section should be revised. In subsection (2) the text states The integrity and protectiveness of the remedy will be ensured much in the same manner as (1a) above a restrictive coven will be used to prevent reuse activities that could potentially damage the landfill caps. Again this statement is not accurate. This section should be revised.	Due to the deferral of LF4 and LF5 to a subsequent ROD, institutional controls are no longer an issue for SCOU ROD Part 1.
10. Page II-82, Section 5.2.4.7; The description of site DA-8 includes Building 1550, Sewer Segment 6 (SS6) and Sewer Segment 7 (SS7). In previous documents, including the *CERCLA Closure Report for VOC Contamination at Discharge Area 8/Sewer Segment 6*, dated December 2000 SS7 is not mentioned as part of site DA-8. Although SS6 and SS7 are adjacent to each other and the contaminants of concern are the same and it is logical to assume SS7 no longer poses a threat to public health or water quality More information is necessary regarding SS7. For instance, was SS7 investigated during the RI/FS? If so what were the results of the investigation. This information and any other pertinent information regarding SS7 should be included in the next version of the ROD.	Site SS7 was first linked with Discharge Area 8 (DA-8) in the executive summary of the SCOU RI/FS (May 97). Site SS7 was investigated along with all the other sanitary sewer segments. The RI concluded that SS7 was not a significant point source of VOC contamination. Table ES-3 of the executive summary of the SCOU RI/FS shows that SS7 is recommended NFA by vadose zone screening and by the risk assessment. The site was linked with DA-8 to be closed. Site DA-8 was closed in December 2000, as detailed within the CERCLA Closure Report for VOC Contamination at Discharge Area 8/Sewer Segment 6. The executive summary of the closure report states that SS7 is part of the DA-8 site. Summaries of SS6 and SS7 are included in the ROD and additional information on SS7 is not required.

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Comment	Response
11. Pages II-86, II-90, II-94, These pages discuss removal actions at Landfills 1,2 and 3. On all three pages the Air Force states the waste was excavated and deposited in a designed on-base consolidation landfill. In fact it is DTSC understanding the waste from these landfills was consolidated in Landfill 4. Please eliminate the term on-base consolidation landfill and simply state the waste was disposed in Landfill 4 in the next version of the ROD.	The 1st sentence of the 2nd paragraph of Subsection 5.2.4.12 on Page II-86 has been changed to read: "To ease property transfer concerns and reduce potential human exposure risks, waste from LF1 was excavated and disposed of at ~~a designated on base consolidation landfill~~ **LF 4, with the exception of three small radioactive sources, which were disposed of off base.**" The last sentence of the 1st paragraph of Subsection 5.2.4.13 on Page II-90 will not be changed: "In 1997 and 1998, all waste at LF2 was excavated and consolidated at LF4 under Removal Action authority." The 2nd sentence of the 2nd paragraph of Subsection 5.2.4.14 on Page II-94 has been changed to read: "To ease property transfer and reduce risks from potential human exposure to site contaminants, waste from LF3 was excavated and disposed of at ~~a designated on base consolidation landfill~~ **LF5.**"
12. Page II-95, In the fourth paragraph on this page the text states that Landfill 3 has been closed and the site poses no threat to water quality, human health, or the environment. Landfill 3 is one of the sites that are undergoing further investigation to determine if a threat to ecological receptors exists. The word environment should be eliminated from that sentence. A sentence should be added stating further investigation is being conducted at this site to determine if the contaminants remaining at this site pose a threat to ecological receptors.	The 3rd sentence of the 4th paragraph of Subsection 5.2.4.14 on Page II-95 has been changed to read: "Post-closure maintenance activities are not required because: (1) waste and residual contaminated soils have been removed, (2) identified data gaps have been closed, and (3) the site poses no unacceptable threat to water quality, or human health~~; or the environment~~." The 5th sentence of the 4th paragraph of Subsection 5.2.4.14 on Page II-95 has been changed to read: "Ecological concerns will be addressed in the Comprehensive Basewide (CB) Record of Decision (ROD) Part 2 **that will be supported by the continuing investigations that are being conducted with regard to ecological concerns.**

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Comment	Response
13. Page II-135, Section 5.2.5.14; This section is very confusing. In the subsection entitled *Changes from Prior CERCLA Documentation* the text states after the remedial investigation report was issued PCB levels in excess of the residential remedial action objectives (RAOs) at site PCB 5. The SCOU Proposed Plan recommended institutional controls as the preferred alternative. Because of community concern regarding institutional controls and their impact on unrestricted use the United States Environmental Protection Agency (USEPA) reviewed all the data pertaining to the site. As a result of that review USEPA concluded the site did pose a significant risk to human health or water quality and that further remedial measures or institutional controls were not longer required at this site. In the new subsection entitled *Risk Management Decision*, the text states that a small amount of PCBs remain at the site. The texts goes on to state that confirmation samples verify the fact that PCB contamination is not at the surface and it is not likely that a person would be exposed to PCBs via the surface soil. Additionally, since PCBs are relatively immobile, it is unlikely that the residual contamination would be a threat to water quality. Finally, this section of the ROD concludes that based on these factors and because the proposed land-use for this sites is industrial, it was determined that site PCB5 does not present a significant threat to human health, and further remedial action or institutional controls are required at this site, Therefore this is a no further action site. If the PCBs exceed the residential RAOs such that an unrestricted land-use is not possible than the preferred alternative should be institutional controls, which would include land-use controls. This would ensure appropriate long-term use of this site. No further action is not an acceptable remedy. Unless the Air Force is planning to perform further remediation at this site or DTSC and USEPA agreed based on the screening risk assessment this site does not pose a threat to human health the revised version ROD should recommend institutional controls as the remedy for this site. As mentioned previously, in California, institutional controls or restrictions are implemented through a land use covenant signed by DTSC and the current landowner, pursuant to Section 1471 of the California Civil Code. DTSC's strong preference is to enter into a land use covenant(s) with the Air Force.	The EPA Letter dated 10 July, 1998 states, "All sites (1,2,3,4,5,6, and 8) are recommended for no further action based on the absence of unacceptable risks. This will allow for unrestricted use of all sites and will result in a minimum cost savings to the Air Force of approximately $25K." The Letter later goes on to state, "EPA's final conclusions have been discussed with and concurred on by Mr. Rizgar Ghazi of the California Department of Toxic Substances Control (DTSC)." Unless there has been a change to former agreements, PCB5 is a NFA site with no ICs required.

RESPONSES TO COMMENTS (USEPA)
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Comment	Response
A. **GENERAL COMMENTS** 1. Because of the nature and extent of the comments the regulatory agencies had on the December 2000 version of SCOU ROD Part 1, this particular version of the ROD cannot be considered Final, as is indicated.	No response required.
2. The order in which the risk analysis is presented should be reversed. The ROD should first discuss risk to human health, then move on to a discussion of the threat to groundwater from the contaminated soil. This change in presentation should be made throughout the document. The section titled "Water Quality Impacts" or "Water Quality Site Assessment" should be more accurately titled "Impact to Groundwater from Contaminated Soil."	The order of risk analysis discussions has remained consistent since the development of the ROD. Changing the order of risk analysis discussion will likely lead to added difficulty to those who have reviewed prior versions, therefore the order of the risk analysis discussions will not be changed. The sections titled "Water Quality Impacts" or "Water Quality Site Assessment" will be changed to "Impact to Groundwater from Contaminated Soil."
3. The Air Force needs to double-check all the text for each of the sites in Section II of the ROD to ensure that the text and any corresponding water quality impact and/or human health risk assessment summary table(s) are indeed accurate and consistent.	A comprehensive comparison was conducted to confirm that Section II text references to constituents of concern, values cited, units, etc., were consistent with corresponding information provided in tables Additionally, a comparison was conducted between the information as presented in the ROD in Section II and information found in the RI/FS from which the data was originally derived. All discrepancies were corrected within Section II of the ROD.
B. **SPECIFIC COMMENTS** 1. Page I-1, Statement of Basis and Purpose header, 2nd paragraph, 3rd sentence: For accuracy, rewrite the last part of this sentence to read: "....Part 2, has been drafted for regulatory review in July 2001."	The 3rd sentence of the 2nd paragraph of Statement of Basis and Purpose header on page I-1 has been changed to read: "Final decisions for the remaining ~~60~~ **61** SCOU sites will be documented in subsequent RODs, one of which, the SCOU ROD Part 2~~, is scheduled for completion in September of 2001~~**has been drafted for regulatory review in July 2001**."
2. Page I-1, Statement of Basis and Purpose header, 2nd paragraph, 5th sentence: Following this sentence, add a sentence that explains the reason for this deferral of LF4, LF5 and ETC-10 from SCOU ROD Part 1 (i.e., the on-going discussion between the Air Force and the regulatory agencies regarding institutional controls). Also in the 5th sentence correct the typo from "ITC-10" to "ETC-10".	The 5th sentence of the 2nd paragraph of Statement of Basis and Purpose header on page I-1 has been changed to read: "Additionally, LF4 and LF5 and associated sites, and **FTA1, ETC-8, and ~~I~~E**TC-10 have been deferred from SCOU ROD Part 1 to a subsequent ROD **due to a lack of agreement between the Air Force and the regulatory agencies with regard to institutional control issues as they apply to these sites.**"

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Comment	Response
3. Page I-1, Statement of Basis and Purpose header, 2nd paragraph, 6th sentence: This sentence states that the "selected remedies" for the sites in this ROD may be modified based on ecological concerns. The question arises if it made sense to determine now that No Further Action is necessary at such sites when in fact later on, based on ecological concerns, it may become necessary to take an action at these sites. Based on the table on p. I-3, it appears that LF 3 and ETC-12 are the only such sites. If this is indeed the case, then we would recommend removing these sites from SCOU ROD Part 1 and deferring these sites to a subsequent ROD.	It is the Air Force's position that the evaluation of sites at Castle with respect to ecological concerns is an issue separate from the scope of the SCOU ROD 1 which addresses potential human health and groundwater effects only. Although LF3 and ETC-12 will be retained as NFA sites for the SCOU ROD 1, they remain subject to further evaluation for ecological concerns as part of the ROD that will address ecological concerns for the entire base.
4. Page I-1, Statement of Basis and Purpose header, 3rd paragraph, 1st sentence: For clarity, insert the words "under CERCLA," after the words "(No Further Action [NFA] sites)".	The 1st sentence of the 3rd paragraph of Statement of Basis and Purpose header on page I-1 has been changed to read: "Sites addressed in this ROD include ~~141~~ **140 Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA)** sites characterized as not requiring further action (No Further Action [NFA] sites) and 32 sites (**non-CERCLA**) contaminated by petroleum hydrocarbons only. The 3rd sentence of the 3rd paragraph of Statement of Basis and Purpose header on page I-1 has been changed to read: "Since the petroleum hydrocarbon only sites are not subject to ~~Comprehensive Environmental Response Compensation and Liability Act of 1980 (~~CERCLA~~)~~ requirements, final remedial decisions for these sites will be addressed under Resource Conservation and Recovery Act (RCRA) Subtitle I and the authorized State of California Underground Storage Tank (UST) Program, as appropriate and applicable."
5. Page I-2, Assessment of the Sites header, 1st paragraph: This paragraph should be the last paragraph in this header since the landfill sites are secondary for the purpose of SCOU ROD 1. Also, mention that there are 8 landfill sites so that the reader can more easily correlate this text with the 8 landfill sites in the charts that follows. In addition, add the following sentence at the end of this paragraph for clarity: "However, these sites are deferred to a future ROD and their mention in this ROD is for continuity and tracking purposes only because they were initially intended to be included in earlier draft versions of this ROD."	The 1st paragraph of the Assessment of the Sites header on page I-2 has been removed: "~~The Landfill sites have been impacted by a variety of contaminants including:~~ ~~• Semi Volatile Organic Compounds (SVOCs)~~ ~~• Volatile Organic Compounds (VOCs)~~ ~~• Metals"~~ since the landfill sites have been deferred to a subsequent ROD as noted on the previous page I-1.

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6. Pages I-3 & I-4: These charts are unclear when reading the headers because one does not easily know that the 32 sites "To Be Closed Under RCRA" are included as part of the 173 total sites under "SCOU ROD Part 1 Sites". Rewrite the headers and/or reconfigure the charts to make this clear to the reader.	The tables on pages I-3 and I-4 have been reconfigured to more explicitly indicate the categories and subcategories of sites discussed in the ROD.
7. Page I-5, No Further Action Sites header: Rewrite the sentences in this section to read as follows: "Some NFA Sites did not require cleanup actions at all while at other sites the Air Force actually performed removal actions. Based on an assessment of risk to human health and threat or impact to groundwater from the contaminated sites, and in some instances, risk management evaluations, these NFA sites do not require additional remedial action to protect human health or the groundwater."	The first two headers with bulleted items on page I-5 have been removed: "~~**Description of Selected Remedies**~~ ~~**Landfill Waste:**~~ ~~• Removal, Consolidation, and Capping~~ ~~**Landfill VOCs:**~~ ~~• Soil Vapor Extraction (SVE).~~" since these no longer apply due to the deferral of the landfill sites. The paragraph headed as No Further Action Sites has been changed to read: "Some NFA sites did not require cleanup actions **at all**, while **at other sites** the Air Force actually performed **removal** ~~cleanup~~ actions ~~on other NFA sites~~. Based on **an assessment of risk to** human health ~~risk~~ **and threat or impact to groundwater from the contaminated sites**, ~~water quality site assessment,~~ and, in **some instances** ~~selected cases~~, risk management **evaluations** ~~decisions~~, ~~the~~ **these** NFA sites do not require additional remedial action to protect human health or **the groundwater** ~~water quality~~."
8. Page I-5, Statutory Determinations header, 1st paragraph, 1st sentence: Change the word "welfare" to the words "the environment."	The 1st sentence of the 1st paragraph of Statutory Determinations header on Page I-5 has been changed to read: "At the No Further Action sites, residual levels of contaminants do not present a threat to human health or ~~welfare~~ **the groundwater**."

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9. Page I-5, Statutory Determinations header, 1st paragraph, 2nd sentence: For clarity and accuracy, rephrase the last part of this sentence to read: ".....for unrestricted and unlimited reuse.".	The 2nd sentence of the 1st paragraph of the Statutory Determinations header has been changed to read: "The Air Force, as the Lead Agency, has determined that no action is necessary and that sites are suitable for ~~unlimited-use and unrestricted exposure~~ **unrestricted and unlimited reuse**."
10. Page I-5, Statutory Determinations header, 2nd paragraph: Why is it necessary to have that information regarding Castle Vista Landfill B in this particular section?	The 2nd paragraph of the Statutory Determinations header has been removed: "~~Castle Vista Landfill B (CVLFB) required VOC remediation and SVE was the selected remedy. The Air Force and the regulatory agencies have agreed to a criterion for terminating the SVE system, and operation of the SVE system was terminated for CVLFB. The criterion and the decision to terminate are documented in the Castle Vista Landfill B Closure Report.~~"
11. Page I-5, ROD Data Certification Check List header, Potential land use bullet item: Add "add groundwater use" after "Potential land use".	The Potential land use bulleted item of the ROD Data Certification Check List header on page I-5 has been changed to read: • Potential land use **and groundwater use** that will he available at the site as a result of the selected remedy.
12. Page I-6: Delete the name "Daniel A. Meer" from the signature page since he no longer holds that title at EPA. Do not insert a person's name here. Also, the correct title is now: "Chief, Federal Facilities and Site Cleanup Branch"	The signature block for EPA Region IX on page l-6 has been changed to read: "~~Daniel A. Meer~~ Date ~~Branch~~ Chief, Federal Facilities **and Site** Cleanup ~~Program~~ **Branch** Region IX, U.S. Environmental Protection Agency"
13. Page II-3, Section 2.0, 4th paragraph, last sentence: Insert the words "cleanup of" before the words "source areas."	The last sentence of the 4th paragraph of Section 2.0 on page II-3 has been changed to read: "This strategy led to the initiation of groundwater cleanup actions and **cleanup** of source areas designed to control contaminant migration and to protect human health and the environment."

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14. Page II-4, Section 2.1, 2nd paragraph, 3rd sentence: Change the word "correct" to "remediate."	The 3rd sentence of the 2nd paragraph of Section 2.0 on page II-4 has been changed to read: "Also, Castle Airport was required to implement remedial measures to ~~correct~~ **remediate** identified groundwater contamination and prevent future groundwater degradation."
15. Page II-4 & II-5, Section 2.1, last paragraph, last sentence: Change the word "cleanups" to "removals."	The last sentence of the last paragraph of Section 2.1 on page II-5 has been changed to read: "In the interim, the Air Force has since conducted ~~cleanups~~ **removals** and reassessments of additional SCOU sites which have been added to the SCOU ROD Part 1 to total ~~173~~ **172** SCOU sites."
16. Page II-6 & II-7, Section 4.1, last paragraph: What sites go into what RODs here needs to be accurate and consistent with Section I. According to Section I, there should be 50 sites planned for SCOU ROD 2, not 59. Also, there are 2 sites planned to be addressed in CB Part 2 - - FTA-1 and ETC-10. Be accurate and consistent so as not to confuse the reader.	The 2nd sentence of the last paragraph of Section 4.1 on page II-7 has been changed to read: "SCOU ROD Part 1 is intended for the lesser contaminated vadose zone sites (~~173~~ **172** SCOU sites), SCOU ROD Part 2 will address ~~59~~ **50** of the remaining sites, and ~~one site,~~ FTA1, **ETC8**, and **ETC10~~,~~** will be addressed in the CB Part 2 ROD." ETC8 has been moved in the tables in Section 1.0 from the "No Further Action" section on page I-3 to the last section "SCOU ROD Part 2 or Other Subsequent RODs" on page I-4 and has been footnoted as follows: ....[9]**indicates that this site requires notification to deed"**
17. Pages II-8 thru II-18, Section 4.4: As noted in General Comment #A.2. above, reverse the order of discussion here to start with human health, followed by discussion of impact to groundwater (i.e., the discussions in Subsections 4.4.1 and 4.4.2 should be reversed). Phrase the introductory discussion of Section 4.4 on page II-8 (and in the title) as "assessment of impacts to human health and the environment, including impact from the contaminated soil to groundwater that is a current or potential source of drinking water."	The order of risk analysis discussions will not be changed in order to maintain consistency with previous versions of the ROD. The title and 1st sentence of Section 4.4 has been changed to read: **"4.4 Assessment of Impacts to Groundwater ~~Water Quality,~~ Human Health, and the Environment** As part of the RI/FS Process, SCOU sites were assessed for potential risk to ~~groundwater,~~ human health, and the environment, **including impact from the contaminated soil to groundwater that is a current of potential source of drinking water**."

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18. Pages II-13 & II-14, Subsection 4.4.2.2, last paragraph, 2nd sentence: Spell out the acronym ADD here since this is the first time it is being used.	No change was made in response to this comment since ADD was defined earlier within Section 4 on page II-11 of the ROD.
19. Pages II-l5 & II-16, last paragraph, last sentence: This sentence states that these are still removal actions underway at a number of SCOU sites. If this is indeed true, when are these removal actions expected to be done? Ideally, these removal actions should all be completed now, and this ROD documents the determination for the sites, post-removal actions.	A sentence has been inserted before the last sentence of the 2nd paragraph of Section 4.4.2.4, and the last paragraph of Section 4.4.2.4 on page II-16 was removed to read: "**The SCOU HHRA evaluated the human health risks associated with contaminated soils at Castle Airport in the absence of Remedial Actions or ICs.** Site-specific uncertainties for the risk assessment are summarized in Appendix D of the RI/FS. ~~The SCOU HHRA evaluated the human health risks associated with contaminated soils at Castle Airport in the absence of Remedial Actions or ICs; therefore risk estimates do no reflect reductions in contamination arising from ongoing cleanup efforts. Removal actions have been completed or are currently underway at a number of SCOU sites.~~" Additionally, the 1st paragraph of Section 4.4.2.5 has been changed to read: **"4.4.2.5 HHRA RAOs** HHRA RAOs were calculated using the methodology outlined in *Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part B), (EPA, 199-1)* and updated in the Region *9* Preliminary Remediation Goals (EPA, *1996*). **All risk assessment results and RAOs were reviewed and updated based on changes to toxicity factors and other risk assessment parameters that have occurred since completion of the SCOU risk assessment in 1996. Sites affected by the update are identified in the respective site summary section and the reader is referred to Appendix E for the detailed re-evaluation results.** The RAOs are generally established at the lowest level of, (a) the concentration that represents a cancer risk of 1×10^{-6}, or (b) the concentration that represents a chemical-specific non-cancer hazard quotient of 1. The calculated values are based on exposure via ingestion,

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	inhalation (volatile emissions or airborne dust particles), and dermal absorption. However, where the calculated soil concentration exceeded the soil saturation limit for the analyte, the soil saturation value was used as the RAO. This is consistent with the Preliminary Remedial Goal (PRG) tables. The following equations were used to calculate the RAOs."
20. Pages II-19 & II-20, Section 4.6, last sentence: For clarity, insert "CERCLA" after "141".	The 2nd to last sentence of Section 4.5 on page II-19 has been changed to read: "Twenty-three of the ~~141~~ **140 CERCLA** NFA sites presented in this ROD required Risk Management Decision justification." The last sentence of Section 4.6 on page II-20 has been changed to read: "The remaining ~~141~~ **140 CERCLA** sites of this ROD do not require any further action or ICs."
21. Page Il-20, Section 4.7: In the 2nd sentence of the 1st paragraph, for accuracy and completeness, add the words "and environment" after the words "human health" because Five-Year Reviews are comprehensive. Also, conclude this section with a statement that Five-Year Reviews can include these NFA sites due to the potential for changes in toxicity and exposure factors over time.	The 2nd sentence of the 1st paragraph of Section 4.7 on Page II-20 has been changed to read: "The goal of the reviews will be to confirm that the selected Remedial Actions are meeting performance standards established in the Castle RODs, that cleanup levels are being achieved in accordance with the selected remedy, and that the selected Remedial Actions continue to be protective of human health **and the environment**." The Air Force does not agree that Five-year Reviews apply to NFA sites; therefore no response has been made with regard to the second part of this comment.

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Comment	Response
22. Page II-20, Section 5.0, 1st paragraph: For clarity and completeness, insert the following sentence after the 2nd sentence: "The landfill sites are deferred to a subsequent ROD, and are mentioned in this ROD for continuity since they were initially a part of this ROD.".	The following sentence has been added after the 2nd sentence of the 1st paragraph of Section 5.0 on page II-20: **"5.0 Site Summary Guide** Sites discussed in the SCOU ROD Part 1 have been organized into three site groups listed below. **The landfill sites are deferred to a subsequent ROD, and are mentioned in this ROD for continuity since they were initially a part of this ROD.** NFA sites are the only sites included as part of this ROD's Decision Summary. Information pertaining to Petroleum Hydrocarbon sites, which are not subject to CERCLA requirements, are included in Section VI, Subsection 8. A listing of these groups and the section where these sites can be found in this ROD is provided below. The physical locations of SCOU sites are shown on Plate 5-1, SCOU Site Selected Alternative Map, in Appendix C."
23. Page II-20, Section 5.0, 2nd paragraph, 1st sentence: Provide proper reference and citation for the 1996 SCOU risk assessment mentioned here.	The 1st sentence of the 2nd paragraph of Section 5.0 on page II-20 has been changed to read: "All risk assessment results and RAOs were reviewed and updated based on changes to toxicity factors and other risk assessment parameters that have occurred since completion of the SCOU risk assessment in 1996 (**JEG, 1997c**)."
24. Page II-22, next to last paragraph, last sentence: This sentence needs to be deleted since LFs 4 & 5 have been deferred to a later ROD, and decision summaries for them are not actually being discussed in the "following sections", nor even tracked in Section II.	The last sentence of the 2nd to last paragraph of Section 5.1 on page II-22 has been removed: "Based on the Remedial Investigation, the primary concern at these landfills is contaminants commonly associated with municipal waste. The trench portion of Landfill 5 (LF5) is also impacted by VOCs. ~~Decision summaries for these sites are provided in the following sections.~~"

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Comment	Response
25. Page II-23, Section 5.2, 1st sentence: For clarity replace the word "Castle" with the word "CERCLA".	The 1st sentence of Section 5.2 on page II-23 has been changed as follows: "Based on information gathered during the SCOU RI/FS subsequent Data Gap investigations, follow-on confirmation sampling after cleanups, and reassessments of information and data sets, it has been determined that 140 ~~Castle~~ **CERCLA** SCOU sites require no further action (NFA) to protect human health and water quality."
26. Page II-25, Subsections 5.2.2.4, 5.2.2.5 & 5.2.2.6: Sites H1, H2, and H3 were all commercial gas stations but are now designated as residential. Was there no action necessary at these sites to make them suitable for residential? Not even for petroleum releases?	Sites H1, H2, and H3 were identified in the "Aerial Photographic Analysis of Castle Air Force Base," Atwater California, U.S EPA, Oct 91. These sites are not on Air Force property and thus are not Air Force sites, which is why they are NFA in the Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Final. JEG, May 1998. In Table 1-1. "Universe of Castle Air Force Base Sites" of the RI/FS, these sites are listed as NFA and the "Reason for Exclusion Rational" column indicates "OFF BASE." From inspection of actual photographs, it is obvious that these sites are not on base property and only adjacent to Castle Gardens. These sites should not have been carried forward as IRP sites and should have been removed in the PA/SI stage as non-sites. However, the RPMs thought that they should be retained for accounting purposes. For clarity, sections describing sites H1, H2, and H3 in sections 5.2.2.4, 5.2.2.5, and 5.2.2.6, respectively, on page II-25 have been changed to read: **"5.2.2.4 H1** Site H1 was a commercial gas station located ~~in~~ **adjacent or near** the Castle Vista/Castle Gardens area that was not a part of **the** Base ~~operations~~. ~~This site is located in an area that has a future use designated as residential.~~ Based on ~~BCT~~ **RPM** concurrence, a determination ~~of NFA has~~ **to remove this site from further consideration has** been made for this site. ~~The~~ **This** ~~NFA~~ decision is documented in the ~~Final SCOU RI/FS (JEG, 1998c)~~ **Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling**

Comment	Response
	and Analysis Plan, Draft Final (JEG, 1993). **5.2.2.5 H2** Site H2 was a commercial gas station located ~~in~~ **adjacent or near** the Castle Vista/Castle Gardens area that was not a part of the Base ~~operation~~. ~~This site is located in an area that has a future use designated as residential.~~ Based on ~~BCT~~ **RPM** concurrence, a determination ~~of NFA has~~ **to remove this site from further consideration has** been made for this site. ~~The~~ **This** ~~NFA~~ decision is documented in the ~~Final SCOU RI/FS (JEG, 1998c)~~ **Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan, Draft Final (JEG, 1993)**. **5.2.2.6 H3** Site H3 was a commercial gas station located ~~in~~ **adjacent or near** the Castle Vista/Castle Gardens area that was not a part of the Base ~~operation~~. ~~This site is located in an area that has a future use designated as residential.~~ Based on ~~BCT~~ **RPM** concurrence, a determination ~~of NFA has~~ **to remove this site from further consideration has** been made for this site. ~~The~~ **This** ~~NFA~~ decision is documented in the ~~Final SCOU RI/FS (JEG, 1998c)~~ **Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan, Draft Final (JEG, 1993)**."
27. Pages II-54 & II-55, last paragraph, last sentence: This sentence states that the NFA was decided in the Action Memorandum and the Closure Report. It would be more accurate to state that following the removal and closure, which were documented in the Action Memorandum and Closure Report, and based on the analytical results of the confirmation samples at the site, an NFA has been determined for the site. This clarification is needed all throughout the ROD document.	The wording of the role of action memoranda and closure reports for all sites in Section 5 will be changed to more accurately reflect how they were relied upon in developing an NFA decision for each site.
28. Pages II-58 thru II-62, Subsection 5.2.4.5: Risk Management Decision header: Delete the term "selected remedy" in the 3rd sentence of the 1st paragraph. This sentence should now read "Since all waste was removed..."	The 3rd sentence of the paragraph headed Risk management Decision in Section 5.2.4.5 on page II-62 has been changed to read: "Since ~~the selected remedy required~~ all waste ~~to be~~ **was** removed from CVLFB and confirmation samples confirmed that site cleanup was complete, this former landfill does not require ICs and will be open for unrestricted reuse."

RESPONSES TO COMMENTS (USEPA)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
29. Pages II-64 & II-65, Subsection 5.2.4.8, 2nd paragraph, last sentence: Change "remedial" to "removal."	The last sentence of the 2nd paragraph of Section 5.2.4.8 on page II-65 has been changed to read: "The ~~remedial~~ **removal** action focused on PAH contamination of surface and near-surface soils."
30. Page II-66, Subsection 5.2.4.10: It is not necessary to have a reserved section as a placeholder for ETC-10 since this site has been deferred to a subsequent ROD. Delete this section.	This section has been retained in order to maintain consistency from one version of the ROD to the next. Removal of this section would require renumbering of all subsequent subsections and would make tracking of changes unnecessarily difficult.
31. Pages II-67 thru II-71, Subsection 5.2.4.12, last paragraph, last sentence before Additional Background Information header on page II-68: This sentence appears to contain typographical errors particularly with all the "periods" being used here.	The last sentence of the last paragraph of Section 5.2.4.12 before the header Additional Background Information has been changed to read "As proposed within Final Memorandum for Landfill 1, 2, 3, and 5 (JEG, 1998d) and follow-up Landfill 1 and Landfill B Closure Report~~.~~ Final~~.~~, September (JEG, 2000d), the residual risk is considered acceptable and was approved by the regulatory agencies."
32. Pages II-67 thru II-71, Subsection 5.2.4.12, "Risk Management Decision header on page II-71, 1st paragraph, last sentence: Insert the word "subsequently" before the word "excavated". This clarification is needed throughout the ROD document.	The last sentence of the 1st paragraph of the Risk Management Decision header of Subsection 5.2.4.12 on page II-71 has been changed to read: "However, because all waste was **subsequently** excavated and removed from the site under Removal Action authority, ICs are not required and the site is available for unrestricted reuse." Additionally, this clarification has been made for the ROD in other sections where similar phrasing exists.
33. Pages II-72 thru II-76, Subsection 5.2.4.13, Risk Management Decision header on page II-76, 1st paragraph, last sentence: Insert the word "subsequently" before the word "excavated". This clarification is needed throughout the ROD document.	The response to the previous comment addresses this comment.
34. Pages II-113 & II-114, Subsection 5.2.5.10, Risk Management Decision header on page II-114, 2nd sentence: Rewrite this sentence as follows: "Based on a risk management decision, an NFA determination has been made for the site."	The 2nd sentence of the Risk Management Decision header of Section 5.2.5.10 on page II-114 has been changed to read. "Based on a Risk Management Decision, **a determination of** NFA ~~is required at the~~ **has been made for this** site."

RESPONSES TO COMMENTS (USEPA)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
35. Page II-135, Section 5.2.6.1, 1st sentence: For clarity, insert the acronym "CERCLA" after "141".	The 1st sentence of Section 5.2.6.1 on page II-135 has been changed to read: "The ~~141~~ **140 CERCLA** SCOU NFA sites at Castle do not pose a current or future risk to human health or to water quality."
36. Page II-135, Section 5.2.6.3: For accuracy, insert the word "additional" before the word "costs" since the "no" NFA costs would be additional to any removal action costs already incurred.	The single sentence of Section 5.2.6.3 on page II-135 has been changed to read: "There are no **additional** costs associated with the NFA alternative."
C. ADDITIONAL COMMENTS ON SECTION V RESPONSES 1. Page V-265, Specific Comment #9: This response still does not answer the comment question fully. Specifically, how will a petroleum-only site whose contamination is not from a UST-related release be handled in terms of regulatory requirements? Are all 33 of these sites UST-related releases?	The last sentence of the 3rd paragraph of Statement of Basis and Purpose on Page I-1 has been changed: "~~Since~~ **T**~~t~~he sites **identified as** petroleum hydrocarbon only sites ~~are~~ **were limited to those sites that were only impacted by constituents of concern that are** not subject to CERCLA requirements.~~;~~ **F**~~f~~inal remedial decisions for these sites will be addressed under Resource Conservation and Recovery Act (RCRA) Subtitle I and the authorized State of California Underground Storage Tank (UST) Program, as appropriate and applicable."
2. Page V-269, Specific Comment #27: The response only accounted for 232 of the 233 total SCOU sites. The fate of ETC-10 is missing.	ETC-8 and ETC-10 were included in the section of the table on page I-4 entitled "53 Sites to be Included in SCOU ROD Part 2 or Other Subsequent RODs" as was FTA-1. This accounts for the change in count for this section of the table from 50 to 53 with respect to the earlier version of the SCOU ROD Part 1. The 5th sentence of the 3rd paragraph of Section I on page I-1 has been changed as indicated in response to Specific Comment No. 2. The 2nd and 3rd sentences of the last paragraph of Section 4.1 on page II-7 has been changed to read: "SCOU ROD Part 1 is intended for the lesser contaminated vadose zone sites (~~173~~ **172** SCOU sites), SCOU ROD Part 2 will address ~~59~~ **50** of the remaining sites, and ~~one site,~~ FTA1, **ETC8,** and **ETC-10** will be addressed in the CB Part 2 ROD as well. LF4 and LF5 and associated sites, ~~and ETC-10~~ will be considered in the appropriate follow-on ROD."

RESPONSES TO COMMENTS (USEPA)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
3. Page V-277, Specific Comment #53: The 5-Year Review is broader in scope than is discussed in the response. The response needs to include the fact that the 5-Year Review includes a review of protectiveness of the environment as well as human health. In addition, add a sentence to state that the Five-Year Review can include a review of these NFA sites due to the potential for changes in toxicity and exposure factors over time.	Since the sites of this ROD are all NFA sites, no 5-year (or other period) reviews are required. Otherwise, the sites, by definition, are NOT 'no further action' sites. The whole purpose of developing a Record of Decisions becomes moot if a final decision is not accomplished (i.e., with respect to characterization as "NFA"). Sites would never exit the CERCLA process if a 5-year review is required for NFA sites. The Air Force does not find within the NCP regulations where there is a requirement for a 5-year (or other period) review for NFA sites, rather the relevant section suggests that reviews are required for sites that have contaminants that remain in concentrations that require restricted access (e.g., ICs, LUCIPs, etc.) or engineering controls: 40 CFR 300.430(f)(5) The ROD also shall: (C) Describe whether hazardous substances, pollutants, or contaminants will remain at the site such that a review of the remedial action under paragraph (f)(4)(ii) of this section no less often than every five years shall be required; and (D) When appropriate, provide a commitment for further analysis and selection of long-term response measures within an appropriate time-frame.
4. Page V-288. Specific Comment #103: In the response discussion and in the text of Subsection 5.2.5.16, the July 10, 1998 EPA decision letter on various PCB sites should be cited and properly referenced. In addition, the same comment also applies to Subsections 5.2.5.12 thru 5.2.5.15 for other PCB sites. ("July of 1998" is specified in the Human Health Risk Assessment headers for those subsections, but no documentations were provided or cited.)	The first of the PCB sites, PCB1, 2, 3 (Section 5.2.5.12) contains the discussion recommended by EPA Region IX in the RPM meeting discussion held following the issuance of the February 2001 version of the SCOU ROD Part 1. Reference is made to the EPA letter within the Risk Management Decision header as: "Regulatory concurrence with these decisions was documented in the EPA letter of July 10, 1998 which commented on Remedial Decisions for Source Control Operable Unit Polychlorinated Biphenyl Sites 1,2,3,4,5,6,and 8, Castle Airport."

Comment	Response
	This sentence is repeated in similar locations of the Risk Management Decision headers of Sections 5.2.5.13, 5.2.5.14, 5.2.5.15, and 5.2.5.16. This reference is more appropriately located within the Risk Management Decision header rather than the Human Health Risk Assessment header since the information provided by the EPA letter addresses more than just human health risk, extending to risk management decision discussions.

RESPONSES TO COMMENTS (DTSC)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
GENERAL COMMENTS 1. DTSC does not consider this document final. The agencies had extensive comments on the last version of the SCOU ROD. Therefore, this document can not be considered final. The document can be submitted as a final document once all the agencies comments have be resolved and submitted in a draft final version of this ROD.	No response required.
2. The Air Force should review all the text and tables in section two of SCOU ROD 1 to ensure that the text and the tables which present water quality site assessment and human health hazard assessment data compliment each other and are accurate.	Comprehensive comparisons within the ROD with respect to text and table comparisons, as well as between the ROD and the RI/FS have been conducted and changes made to correct errors, discrepancies, and inconsistencies.

RESPONSES TO COMMENTS (DTSC)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
3. The Air Force should revise the Human Health Risk Assessment (HHRA) tables that are presented in the site summaries in section two to reflect the revised data the resulted from the Project Note #003 or revised HHRA that was completed in June 2001. DTSC is aware of the fact that the Base Closure Team agreed the text of the revised HHRA could be placed in an appendix. However, there should be a table in the main body of the SCOU ROD 1 that allows the reader to see the how the cancer risk and the hazard index changed from the 1996 version of the HHRA to the 2001 version of the HHRA.	In accordance with the approach agreed to by all parties of the Base Closure Team meetings that resulted in changed made and incorporated into the July 2001 version of the ROD, an appendix was added that includes the results and discussion regarding changes in risk based upon revised cancer and non-cancer health-based limits. We believe that the discussion in Section 5 found on page II-20 adequately alerts the reader to the changes in health based risk values that potentially had impact on the risk management decisions for this ROD. However, to further direct the reader to the results of the revised risk assessment results, the following changes have been made. The 2nd paragraph of Section 5.0 on page II-20 has been changed as follows: "All risk assessment results and RAOs were reviewed and updated based on changes to toxicity factors and other risk assessment parameters that have occurred since completion of the SCOU risk assessment in 1996. A detailed presentation of this review and update is provided in Appendix E. Sites affected by the update are identified in the respective site summary sections and the reader is referred to Appendix E for additional information. **Table 8 of Appendix E contains a summary of risk assessment results, comparing the 1996 values to the updated, most recent values, for both cancer risk and non-cancer risk.**" The following paragraph has been added to the risk assessment discussion subsection for each section for sites where the revised risk assessment values differ from the 1996 values: **"The risk assessment results in this section are the 1996 SCOU ROD values. A change in toxicity factors for constituents of concern for this site has necessitated a recalculation of more current risk assessment values, which are found in Table 8 of Appendix E. The risk assessment results do not change the conclusion of NFA for this site."**

RESPONSES TO COMMENTS (DTSC)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
SPECIFIC COMMENTS 1. Page II-18; Section 4.4.3; The text in this section states a Feasibility Study (FS) is being conducted for SCOU sites with potential ecological concerns that have on-going or planned remedial actions. Two of the sites, ETC-12 and landfill 3, that are being considered in the FS are included in this document as no further action (NFA) sites. The text goes on to state that remedies selected in this ROD for these two sites may be augmented based on ecological concerns. DTSC will consider this ROD an interim ROD for those sites. In light of the fact that the Comprehensive Basewide ROD, part 2 will document selected remedies for the other sites with potential ecological concerns DTSC recommends that the final remedy for sites ETC-12 and Landfill 3 be discussed in that ROD.	The Air Force agrees that the sites of the SCOU ROD 1 are to be investigated further with regard to ecological risk considerations. The CB2 ROD will address the ecological risk issues and will therefore include documentation of final remedies for sites ETC-12 and Landfill 3
2. Page II-19; Section 4.6 is confusing. DTSC recommends the Air Force list all the sites that the SCOU RI/FS recommended that institutional controls (ICs) be a part of or the only remedy in this section or delete this section entirely. This ROD is a NFA ROD, thus ICs are not proposed at any of the sites discussed in this ROD, including landfills four and five.	Because of the history in development of this ROD it is important that ICs be discussed briefly and a note made as to why ICs no longer apply in spite of their importance in earlier versions of the ROD. To clarify this point, the 3rd sentence of Section 4.6 on page II-19 has been changed to read: "Contaminants remain on site at **the eight** Landfill 4 and Landfill 5 sites at concentrations above the human health risk level necessary for unrestricted use of the property., **These sites were originally included in the SCOU ROD Part 1 as NFA sites;** however these sites have been removed from the SCOU ROD Part 1 for deferred consideration by another decision document. **This section, as well as discussion relating to the Landfill 4 and Landfill 5 sites are retained within this ROD in order to inform the reader as to the history of and future plans for sites that are to be deferred to one or more subsequent RODs.**"
3. Page II-23; Section 5.2.1 discusses the fact that the Air Force changed the selected remedy for several sites, the actual number is 40, from active remediation to no further action. The ROD further states that sites where the NFA decision represents a significant change from previously documented remedy in the SCOU Proposed Plan are discussed in the site summaries. The National Contingency Plan requires that the community be given an opportunity to comment on the selected remedy. Normally a revised Proposed Plan would be required. DTSC recommends the Air Force publish a fact sheet explaining why the selected remedy was changed and allow for a 30 day comment period. After the public comment has closed any comments received should be included in the response to comments section of this ROD, then the ROD can be finalized.	A fact sheet is in preparation and public notice for opportunity to comment will be made for the fact sheet which will explain the variances from selected remedies for 23 sites that have changed from the original Proposed Plan of August 15, 1997 as compared to those specified within SCOU ROD Part 1. Not all 40 sites required a fact sheet because they were public noticed during the action memorandum prepared for those sites.

RESPONSES TO COMMENTS (DTSC)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
4. Page II-25; According to the text sites H1, H2, H3 were all commercial gas stations on property owned by the Air Force, Castle Vista and Castle Gardens. These sites are located in areas that have been designated for residential use. One area already has new housing on it. DTSC recommends the Air Force explain in this ROD how the Base Closure Team reached the conclusion these sites were NFA sites without any investigation.	Sites H1, H2, and H3 were identified in the "Aerial Photographic Analysis of Castle Air Force Base," Atwater California, US EPA, Oct 91. These sites are not on Air Force property and thus are not Air Force sites, which is why they are NFA in the Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Final, JEG, May 1998. In Table 1-1, "Universe of Castle Air Force Base Sites" of the RI/FS, these sites are listed as NFA and the "Reason for Exclusion Rational" column indicates "OFF BASE." From inspection of aerial photographs, it is obvious that these sites are not on base property and only adjacent to Castle Gardens. These sites should not have been carried forward as IRP sites and should have been removed in the PA/SI stage as non-sites. However, the RPMs thought that they should be retained for accounting purposes. For clarity, sections describing sites H1, H2, and H3 in sections 5.2.2.4, 5.2.2.5, and 5.2.2.6, respectively, on page II-25 have been changed to read: **"5.2.2.4 H1** Site H1 was a commercial gas station located ~~in~~ **adjacent or near** the Castle Vista/Castle Gardens area that was not a part of the Base ~~operations~~. ~~This site is located in an area that has a future use designated as residential.~~ Based on ~~BCT~~ **RPM** concurrence, a determination ~~of NFA has~~ **to remove this site from further consideration has** been made for this site. ~~The~~ **This** ~~NFA~~ decision is documented in the ~~Final SCOU RI/FS (JEG, 1998c)~~ **Final Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan (JEG, 1993)**.

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Comment	Response
	5.2.2.5 H2 Site H2 was a commercial gas station located ~~in~~ **adjacent or near** the Castle Vista/Castle Gardens area that was not a part of **the** Base ~~operations~~. ~~This site is located in an area that has a future use designated as residential.~~ Based on ~~BCT~~ **RPM** concurrence, a determination ~~of NFA has~~ **to remove this site from further consideration has** been made for this site. ~~The~~ **This** ~~NFA~~ decision is documented in the ~~Final SCOU RI/FS (JEG, 1998c)~~ **Final Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan (JEG, 1993)**. **5.2.2.6 H3** Site H3 was a commercial gas station located ~~in~~ **adjacent or near** the Castle Vista/Castle Gardens area that was not a part of **the** Base ~~operations~~. ~~This site is located in an area that has a future use designated as residential.~~ Based on ~~BCT~~ **RPM** concurrence, a determination ~~of NFA has~~ **to remove this site from further consideration has** been made for this site. ~~The~~ **This** ~~NFA~~ decision is documented in the ~~Final SCOU RI/FS (JEG, 1998c)~~ **Final Castle Air Force Base Source Control Operable Unit Remedial Investigation/Feasibility Study Work Plan/Sampling and Analysis Plan (JEG, 1993)**."
5. Page II-32; In the site summary for Building 1207 the activity that took place in the building is described as *ground powered equipment maintenance shop.* Please clarify what ground powered equipment is in the SCOU ROD1.	The 1st sentence of Section 5.2.3.9 on page II-32 has been changed to read: "B1207 was located in the MBS (M8, Plate 5-1 in Appendix C) and was used as ~~a ground powered~~ **an** equipment maintenance shop and for gas mask testing."

RESPONSES TO COMMENTS (DTSC)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
6. Page II-42; There appears to an error in the second paragraph of the summary describing site HWS4. This paragraph discuss results we believe are from a monitoring well. However, the first sentence of the paragraph states the sample results were an outcome of soil samples. Please check this information in the ROD and revise the SCOU ROD 1 if necessary.	The cited information in the ROD has been compared to information from the RI/FS. The 3rd, 4th, and 5th sentences of the 2nd paragraph of Section 5.2.3.19 have been changed to read: "Analyses of the shallow soil gas samples indicated concentrations between 0.1 and 0.4 ~~ppb~~ **µg/L** TPH and less than 0.02 ~~ppb~~ **µg/L** BTEX. TCE was detected in groundwater at 95 feet and 170 feet bgs, respectively. Groundwater TCE levels were 1,700 ~~ppb~~ **µg/L** at 95 feet bgs, and 2.1 ~~ppb~~ **µg/L** at 170 feet bgs."
7. Page II-51; The site summary for site 871 seems incomplete. Soil from site 871 was removed and placed at site FTA-1, which was later capped. The site summary states *Two COC's, dieldrin and PCB, were applicable based on the BHHRA assuming the residential surface exposure pathway scenario.* A table in this section presents two RAOs for dieldrin and PCBs, but the text does not explain how these RAOs were derived. The site summary later states that the a removal action was completed and confirmation samples were taken, the samples results confirmed that no additional action was needed to protect human health or water quality, therefore a determination of NFA has been made for this site. The text in this section does not discuss an approved closure report, the data which resulted from the confirmation sampling or a revised table showing the revised HHRA data and a reduction in risk. This site summary should be rewritten in the revised version of this document.	RAOs for site 871 were developed consistent with all other SCOU ROD1 sites as detailed within the RI/FS. The following text has been added to the end of the last paragraph of Section 5.2.4.1 on page II-54: **"The determination of NFA for this site is documented in the closure report Final Technical Report for Removal Action at Building 871 (JEG 1996c) and agency concurrence was indicated by the DTSC letter of December 12, 1996."**
8. Pages II-107 and 108; The site summary for site DBF is confusing. DTSC tried to review the consensus agreement the Air Force cited. However we were unable to locate it. Please verify the document existence and correct the text if necessary. The information in the Human Health Risk Assessment Summary table states the cancer risk is 5.8x10-6. However, is that risk calculation based on sampling data before or after the structures were removed and soil sifting was completed. Additionally clarify what compound is driving the human health risk at this site.	The consensus agreement was noted in the July 23, 1996 AFBCA memorandum, jointly issued by BRAC, USEPA, and DTSC representatives.
9. Page II-109; The text states that human health risk assessment was conduct for sub-surface soil only. However, there is no mention of what data, including the depth was used to conduct the assessment. This information needs to be included in this site summary.	The discussion regarding risk assessment determination for this site is consistent with other site discussions in which the specific depths used for the risk assessment calculations are not specified. While this information is available in the RI/FS, there is nothing unique about this site that would necessitate specifying that information here and not in other site discussions.

RESPONSES TO COMMENTS (DTSC)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
10. Page II-116 thru 122; Regarding sites PCB 1,2,3,4,5,6, and 8 the text in the Human Health Risk Assessment sub-section simply states in July of 1998, the USEPA reevaluated the sites risk based on sample data collected in June of 1992. However, the data presented in the SCOU ROD 1 and the information provided that pertains to cancer risk and non-cancer hazard index is based on data from soil sample results taken at the sites in the 1980's. Therefore, the reviewer has no ideal looking at the data presented in this ROD why EPA reevaluated the site and what technical information USEPA evaluated. DTSC recommends the Air Force rewrite the sections in this ROD that apply to these sites in order to clearly explain what circumstances lead USEPA to reevaluate the risk at this sites. It is DTSC suggestion that the Air Force request their contactor cite completely the backgrounds portion of USEPA's letter to the Air Force on this topic, dated July 10, 1998. Additionally include a copy of that letter as an appendix to this ROD. Secondly, DTSC recommends the Air Force disclose how the Remedial Action Objectives (RAOs) were attained. Is the RAO based on residential risk or industrial risk. What was the average concentration of PCB at each site, and what document does the soil sample data appear in ? That information needs to be cited in this ROD. Also the formula showing the input variables that were used to calculated the cancer risk and hazard index need to be included in this section of the ROD. Additionally, the letter from USEPA cited two factors in the determination of NFA at these sites that troubles DTSC. The fact that most likely the areas where the sites are located will be in the industriial potion of the former base and if not them most houses in California are build on concrete pads are not appropriate factors for making a NFA determination and might suggest an institutional control are needed at these sites.	A copy of the USEPA letter of July of 1998 has been added to the SCOU ROD 1 as Appendix F. Section 5.2.5.12 through 5.2.5.16 (coverage of PCB Sites 1,2,3, PCB4, PCB5, PCB6, and PCB8, respectively) on pages II-118 through II-122 have been revised to include sampling and analysis results relied upon by the USEPA in their conclusions regarding these sites. To specify that residential risk was the basis of the HHRA, the last sentence of the Human Health Risk Assessment header of Section 5.2.5.12 on page II-117 has been changed to read: "A summary of the **residential** risk assessment is provided below."

RESPONSES TO COMMENTS (DTSC)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
11. II-134; DTSC recommends the Human Health Risk Assessment Summary Table be revised to reflect the most recent data that resulted from soil samples taken and analyzed in August 2000 if the table does already reflect that information. Additionally, the text in the *Risk Management Decision* sub-section should be revised or updated to explain why the Base Closure Team determined this site should be a no further action site. DTSC suggests the Air Force use to text in section six of the project note which is in appendix E. Currently the text in the site summary leads DTSC to believe an institutional control may be necessary at this site.	The 2nd and 3rd sentences of the second to last paragraph of Section 5.2.5.23 on page II-135 have been deleted: "~~No further action was chosen for this site due to the reuse of the property, and the relative levels of cadmium and lead with respect to occupational RAOs. The WQSA levels for protection of groundwater and the affected area is known to be small.~~" The following sentences have been added to the last paragraph of Section 5.2.5.23 on page II-135 before the last sentence: **A characterization of NFA was chosen for this site based upon a re-evaluation of risk as presented in Appendix E. The bases for the NFA determination includes: 1) reuse for the DA-2 site area is designated as aviation support, 2) the detected levels of cadmium and lead are below the Castle occupational RAOs and WQSA levels for protection of groundwater, and 3) the affected area is known to be small.**

RESPONSES TO COMMENTS (RWQCB)
FINAL SCOU ROD DATED JULY 2001

Comment	Response
1. Please correct the references to “ITC-10" made the fifth sentence of the second full paragraph on page I-1 to “ETC-10”.	The 5th sentence of the 2nd full paragraph of the Statement of Basis and Purpose header has been changed to read: “Additionally, LF4 and LF5 and associated sites, and ~~ITC~~**ETC**-10 have been deferred from SCOU ROD Part 1 to a subsequent ROD.”
2. As the landfill sites are being deferred to a later Record of Decision, remove the first paragraph under the “Assessment of the Sites” on page I-2 and the first two items entitled “Landfill Waste” and “Landfill VOCs” listed under “Description of Selected Remedies” on page I-5.	The 1st paragraph of the Assessment of the Sites header on page I-2 has been removed: “~~The Landfill sites have been impacted by a variety of contaminants including:~~ ~~• Semi Volatile Organic Compounds (SVOCs)~~ ~~• Volatile Organic Compounds (VOCs)~~ ~~• Metals”~~ since the landfill sites have been deferred to a subsequent ROD as noted on the previous page I-1. The first two headers with bulleted items on page I-5 have been removed: “~~**Description of Selected Remedies**~~ ~~**Landfill Waste:**~~ ~~• Removal, Consolidation, and Capping~~ ~~**Landfill VOCs:**~~ ~~• Soil Vapor Extraction (SVE).~~” since these no longer apply due to the deferral of the landfill sites.

RESPONSES TO COMMENTS (RWQCB)
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Comment	Response
3. On page I-5, the first paragraph under the "Statutory Determinations" section states: "At the No Further Action Sites, residual levels of contaminants do not present a threat to human health or welfare. The Air Force, as the Lead Agency, has determined that no action is necessary and that sites are suitable for unlimited use and unrestricted exposure. Review will not be required within five years." Some of the NFA sites, particularly the sites where the NFA decision could be made without additional remedial investigation efforts (i.e., pre-RI sites), five-year reviews of the sites are not warranted. However, because of potential future changes to risk assessment parameters and because many of the NFA determinations are risk based, a five review for those sites closed upon risk-based criteria might be warranted. We suggest that the Air Force coordinate this issue with US EPA and DTSC. The second paragraph of this section discusses the Castle Vista Landfill B. It is not clear why this information is presented under the Statutory Determinations section and we suggest removing it.	The 1st sentence of the 1st paragraph of Statutory Determinations header on page I-5 has been changed to read: "At the No Further Action sites, residual levels of contaminants do not present a threat to human health or ~~welfare~~ **the groundwater**." The Air Force has coordinated the five-year review issue with USEPA and DTSC. See Response No. 3, C. Additional Comments on Section V Responses, Responses to Comments (USEPA) Final SCOU ROD Date July 2001. The 2nd paragraph of the Statutory Determinations header has been removed: "~~Castle Vista Landfill B (CVLFB) required VOC remediation and SVE was the selected remedy. The Air Force and the regulatory agencies have agreed to a criterion for terminating the SVE system, and operation of the SVE system was terminated for CVLFB. The criterion and the decision to terminate are documented in the Castle Vista Landfill B Closure Report.~~"

RESPONSES TO COMMENTS (RWQCB)
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Comment	Response
4. On page II-11, under the section entitled "WQSA RAOs", it is stated that "RAOs for VOCs have been deferred pending resolution of the Castle VOC cleanup criterion". This statement is not accurate in light of the development of the "STOP" criteria for VOC sites. Please revise accordingly.	The 4th and 5th sentences of Section 4.4.1.5 on page II-11 have been changed to read: "RAOs for VOCs have been deferred **to the SCOU ROD Part 2 based upon** ~~pending resolution of the Castle VOC Cleanup Criteria. Final RAOs for VOCs will be documented in the SCOU ROD Part 2.~~ **detailed decision criteria that have been set forth by the Air Force, EPA, DTSC, and RWQCB to terminated SVE activities on a site-specific basis. The termination criteria are referred to as the SVE turn-off criteria or "STOP" evaluation. The STOP evaluation incorporates scientific, engineering, and cost variables. The process is employed after it has been determined that VOCs do not pose an adverse risk to human health. The STOP process was devised to address potential risk to water quality.** **The STOP process is initiated when contaminant concentrations have decreased to levels that no longer will result in adverse impact upon groundwater, or when concentrations have stabilized to levels that no longer result in effective contaminant removal.** **The STOP evaluation includes site-specific data regarding the contaminant mass and distribution, the physical characteristics of the contaminant and the subsurface soil, historical and potential impact to groundwater, proximity of active groundwater extraction wells, SVE removal efficiency, and long-term cost benefit analysis of SVE system operation."**
5. On page II-46, under the section entitled "Sanitary Sewer 9 (SS9)", please change the reference to SS3 to a reference to SS9.	The 2nd sentence of the 1st paragraph of Section 5.2.3.25 on page II-48 has been changed to read: "~~SS3~~ **SS9** is a collapsed section of line located in the BWS 50 feet southwest of SS2 (Q11. Plate 5-1 in Appendix C)."

RESPONSES TO COMMENTS (RWQCB)
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Comment	Response
6. On page II-51, under the section entitled "Building 871 (B871)", near the bottom of the page, the document states: "The anticipated use of the B871 site is occupational, which is why the occupational exposure scenario was used here. Based on this, levels of PCBs, pesticides and TPH for soils excavated at B871 are below the PRAOs and PCLs for FTA-1. This was in accordance with the approved WP/QPP". The second sentence does not follow from the first. Please revise these sentences:	The section cited in the comment at left from the 2nd paragraph of Section 5.2.4.1 has been changed to read: "The anticipated use of the B871 site is occupational, which is why the occupational exposure scenario was used here. ~~Based on this, l~~**L**evels of PCBs, pesticides and TPH from soils excavated at B871 are below the PRAOs and PCLs for **acceptance criteria for soil into** FTA-1 (**a ROD 2 site**). This was in accordance with the approved WP/QPP."
7. Site ETC-8 (discussed at page II-65, section 5.2.4.9) may have residual PAH contamination beneath the parking lot/roadway. The Air Force "grants that residual contamination could become an issue in the future should the parking lot/roadways within ETC-8 be demolished to make way for future development". The Air Force proposes to include a Notice to the Deed for conveying the ETC-8 property to Merced County. We do not see this site as fitting neatly into the NFA category and suggest that this site be included in a Record of Decision with other sites where institutional controls will be implemented.	Site ETC-8 is being deferred to the CB ROD2. The categorization of ETC-8 has been changed in the tables in Section I on pages I-3 and I-4 from "**SCOU ROD Part 1 Sites**" to "**SCOU ROD Part 2 or Other Subsequent RODs**" and the counts of sites per categories has been changed accordingly. Plate 4-3 in Appendix B has been changed to reflect the change in count of SCOU ROD 1 sites from 173 to 172 and deferred sites from 60 to 61. The text of Section 5.2.4.9 on pages II-65 and II-66 has been deleted and replaced with the following: **"5.2.4.9 Reserved** **This section serves as a placeholder to maintain the original organization of the SCOU ROD Part 1 from earlier versions. The site originally referenced here, Earth Technology Corporation 8 (ETC-8), has been deferred to a subsequent ROD."**

RESPONSES TO COMMENTS (RWQCB)
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Comment	Response
8. There are thirteen SWMU sites where reference is made to the RPMs who worked on the March 1999 Draft Final SCOU ROD Part 1 and the document states that those RPMs determined that NFA was appropriate for those sites. As evidence of the previous RPMs positions, the document should also state that the March 1999 Draft Final SCOU ROD Part 1 proposed NFA for those sites and that the comment letters received from the agencies did not raise any issues on these sites (please review the record to assure that this, in fact, the case).	A review of the agency comments toe earlier versions of the SCOU ROD 1 revealed that the only exception to RPM agreements to remove the subject SWMU sites from the ROD is comment #2 on Page V-9 from DTSC on the Nov. 15, 1997 Draft SCOU ROD. SWMU 4.1 was not removed from the SCOU ROD as were the other SWMUs discussed in the comment. There were no other specific comments on SWMUs where removal from the SCOU ROD did not satisfy the comment.
9. On page II-135, the section 5.2.6.2 entitled "Attainment of ARARs" states: "Since it has been determined that the NFA sites do not pose a threat to human health or water quality, no remedial actions are necessary, and there are no ARARs for these sites." Similarly, Section III of the document, entitled "Applicable or Relevant and Appropriate Requirements" states that "because the sites included within the SCOU ROD Part 1 are characterized as NFA sites, no ARARs are required for this ROD". We understand the Air Force's position that there are no ARARs required for NFA sites. However, at a number of the sites, removal actions were performed. ARARs for those removal actions were identified in the appropriate Action Memoranda. Also, the assessment as to whether a site may adversely affect groundwater quality is based upon groundwater protection standards (i.e., Maximum Contaminant Levels and others), which are, essentially, ARARs. In sum, the document should indicate that for the sites where removal actions were performed, ARARs were identified in decision documents (i.e., Action Memoranda) and the removal actions were performed in compliance with those ARARs. The site name, the nature of the removal action, and a reference to the decision document that identifies the ARARs for the removal action should be listed. ARARs are typically categorized as "action-specific", "site-specific" or "chemical-specific". For the sites currently under consideration for NFA, no site-specific or action-specific ARARs are required because no waste siting or waste handling activities are contemplated. However, chemical specific ARARs, such as MCLs, were used to assess impacts to groundwater quality and thus need to be identified in the document.	The following sentence has been added to each section that contains closure report information for sites at which removal actions were conducted: **"All ARARs were complied with as identified within Action Memoranda for all sites for which removal actions were conducted."**

RESPONSES TO COMMENTS (EPA)
FINAL SCOU ROD PART 1 DATED JANUARY 24, 2002

Comment	Responses
A. **COMMENTS** 1. Page I-1, Statement of Basis and Purpose header, 2nd paragraph: This paragraph is confusing because of the complexity of the sentence structure and does not clearly reflect what RODs will house what sites. Rewrite the 3rd & 4th sentences to read simply as follows: "Basically, two SCOU RODS were developed - SCOU ROD 1 for soil sites where there was BCT consensus on the No Further Action selected remedy, and SCOU ROD 2 for remaining soil sites where the selected remedies are non-controversial. For the few soil sites where there are remaining issues yet to be resolved (e.g., agreement on institutional control language), the selected remedies will be documented in follow-on RODs - the eight LF4 and LF5 sites will be addressed in a separate Landfill ROD, and FTA-1, ETC-8 and ETC-10 will be addressed in the CB Part 2 ROD.	To clarify the ROD status, the second paragraph has been rewritten as follows: "The SCOU consists of 233 individual soil sites. This decision document (SCOU ROD Part 1) addresses 169 of the 233 sites for which no further action is required to address risks to human health and the potential impact to groundwater. Final decisions for the remaining 64 SCOU sites will be documented in subsequent RODs. Those 64 sites were deferred due to various issues."
2. Page I-1, Statement of Basis and Purpose header, 3rd paragraph, last sentence: Provide the proper citation for the regulatory requirements(s) to clean up those petroleum releases which did not come from UST systems.	The third paragraph has been rewritten as follows: "Sites addressed in this ROD include 137 Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) sites characterized as not requiring further action (No Further Action [NFA] sites) and 32 sites (non-CERCLA) primarily contaminated by petroleum hydrocarbons. Those 32 sites are included in this ROD for tracking purposes only. The sites identified as petroleum hydrocarbon only (PHO) sites were limited to those sites that were primarily impacted by constituents of concern that are not subject to CERCLA requirements. Final remedial decisions for these sites will be addressed under all applicable laws and regulations."
3. Page I-5, Statutory Determinations header, last sentence: For completeness, rewrite this sentence to read as follows: "The Air Force does not plan to review the NFA decision on these sites as per the 5-Year Review process, however NFA sites are subject to CERCLA in the event risk characterization changes for these sites."	The following change has been made: ". A statutory five-year review is not required. However, NFA sites are subject to reevaluation under CERCLA if the risk characterization changes for these sites."

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Comment	Responses
4. Page I-6, EPA signatory: Rewrite the signatory to read: "Deborah Jordan, Chief, Federal Facilities and Site Cleanup Branch, Region 9, U.S. Environmental Protection Agency".	This change has been made.
5. It appears that some sites discussed in Subsection 5.2.4 Post-FS NA Sites actually involved risk management decisions and appear to rightfully belong under Subsection 5.2.5 Risk Management Decision NFA Sites (e.g., CVLFA & CVLFB, LF2 & 3).	The Air Force does not concur with this comment. Sites in this section are not being closed by Risk Management Decisions. These sites were clean closed.
6. General Comment: Explain why in most of the Water Quality Impact tables in Section II the depths for the WQSA screening limits are not commensurate with the depths of the sample concentrations being compared, particularly with the soil samples. This is prevalent throughout Section II.	The tables will be modified to include the depths of the applicable WQSA screening limits. There does not appear to be any discrepancy between the depths of the samples and the corresponding depths for the WQSA screening limits.
7. Page II-52, Subsection 5.2.4.1 2nd paragraph, last complete sentence on the page: FTA-1 is specifically a CB Part 2 ROD site - - change the reference from "a ROD 2 Site".	This change has been made from "a ROD 2 Site" to a "CB Part 2 ROD site".
8. Page II-54, paragraph after B871 - HHRA Summary table, 3rd sentence: The contaminants actually present a marginal risk to residential receptors, not occupational as stated.	The change from "occupational" to "residential" has been made.
9. Page II-58, Water Quality Impacts header, next to last sentence: This sentence is not true because the table lists Manganese as an exceedance.	Section 5.2.4.4 CVLFA has been rewritten in several areas to better address manganese and to clarify the response actions that were taken at this landfill.
10. General Comment: For CVLFB, the Closure Report mentioned an arsenic RAO exceedance datapoint which is not even mentioned in the ROD. This exceedance appears to be have occurred in the post excavation confirmation sampling of CVLFB. Explain this oversight.	Section 5.2.4.5 CVLFB has been rewritten in several areas to better address arsenic and to clarify the response actions that were taken at this landfill. Arsenic was detected above RAOs but below background. The following sentences were added to the last paragraph in this section: "Confirmation sampling indicated that all selected analytes were below remedial action objectives (RAO) except for

Comment	Responses
	arsenic. Arsenic is a naturally occurring soil mineral with a local threshold background (TBV) value of 9.74 mg/kg. In the 25 excavation confirmation soil samples within Castle Vista Landfill B the maximum concentration of arsenic found was 2.55 mg/kg. Seven other samples exceeded the RAO for residential use of 1.0 mg/kg. Those seven samples had concentrations of 1.1 mg/kg, 1.21 mg/kg, 1.22 mg/kg, and 1.44 mg/kg, 1.6 mg/kg, 2.09 mg/kg and 2.50 mg/kg."
11. Page II-59, Subsection 5.2.4.5, 2nd paragraph: This paragraph does not accurately reflect all the findings of the Closure Report for Castle Vista Landfill B. In addition, to cis-1,2-DCE, vinyl chloride was also found in the groundwater. PCE and dichlorobenzene were also among the contaminants found in the vadose zone soils and/or soil gas. Finally, Cu, Mn, and antimony were also detected in soils above WQSA screening levels.	This paragraph is not intended to be complete details of the site but the pertinent aspects of the site. In addition some of the information on this site can be found in subsequent paragraphs. The following sentences have been changed as follows: "Although little evidence for the presence of hazardous, designated, or radioactive materials was found, groundwater underlying the site was found to be contaminated with *cis*-1,2-dichloroethene (*cis*-1,2-DCE) and vinyl chloride. In addition, PCE, dichlorobenzene, *cis*-1,2-DCE, vinyl chloride, copper, manganese, antimony, and fuel hydrocarbons were also found in vadose zone soils and soil gas."
12. Page II-60, Additional Background Information header, last paragraph, last sentence: According to the Closure Report for Castle Vista Landfill B, antimony also exceeded WQSA screening levels for soils as per RI data. Antimony is also listed as an COC RAO later in the discussion of CVLFB in this ROD. Double-check the antimony entry on the WQSA Water Quality Impact table in the ROD.	Section 5.2.4.5, an incorrect value for Antimony was used in the table. Antimony did exceed the WQSA (12.4 mg/kg at 34.5 bgs location CVLBSB01). The value shown on the WQSA table is for 1 of 3 samples that exceeded TBV. The table has been updated with the WQSA exceedance value.

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Comment	Responses
13. Page II-60, Water Quality Impacts header: Same comment as Comment #12 above.	An incorrect value for Antimony was used in the table. Antimony did exceed the WQSA (12.4 mg/kg at 34.5 bgs location CVLBSB01). The value shown on the WQSA table is for 1 of 3 samples that exceeded TBV. The table has been updated with the WQSA exceedance value.
14. Page II-63, CVLFB - Remediation Target header: Explain the reference to "SCOU ROD Part 2" as the basis for "TBD" RAO for cis-1,2-DCE in soils.	The WQSA table has been modified to show the RAOs for cis-1,2,-DCE at the two depth intervals and the basis for these values as VLEACH2.
15. Page II-63, Risk Management Decision header, 1st paragraph, next to last sentence: This is not a true statement since there is an arsenic exceedance according to the Closure Report	The sentence has been modified as follows: "Since all waste was removed from CVLFB and confirmation samples showed that site cleanup was complete, this former landfill does not require ICs and will be open for unrestricted reuse (JEG, 2000c)." and an additional section on arsenic has been added (see comment 10).
16. Page II-76, LF2 - Remediation Targets table: Same comment as Comment #14 for the "SCOU ROD Part 2" entry for Carbon Tetrachloride and Freon 12.	The WQSA table has been modified to show the RAOs for carbon tetrachloride and Freon 12 and the basis for these values as VLEACH2.
17. Page II-79, LF3 - Water Quality Impact table - The Sample Results column is misformatted - starting with a blank entry for Freon 11.	The value was actually not missing but the column was shifted down. This and other formatting issues within this table have been corrected.
18. Page II-87, Subsection 5.2.4.50: Specific documentation need to be cited here for the January 1997 confirmation samples. Properly cite a closure report for this.	The last sentence in Section 5.2.4.50 has been modified as follows: "The NFA determination was based on the results of the confirmation sample analysis as presented in the Final Site Characterization Letter Report (JE 12/9/97) and concurred with by DTSC in a letter dated 6/25/99."

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Comment	Responses
19. Page II-88, SWMU 4.9 table: At what depths are the WQSA Screening Levels for?	A column listing the depth interval for the screening basis (all of which are 10-20) has been added to the table.
20. Page II-89, SWMU 4.10 table: At what depths are the WQSA Screening Levels for?	A column listing the depth interval for the screening basis been added to the table.
21. Page II-90, Subsection 5.2.4.54, 2nd paragraph, 3rd sentence: Proper citation is needed for this "Action Memoranda".	The OWS was removed under the Castle UST removal program, not by under removal action authority, the reference to ARARs will be removed. The third sentence of the second paragraph in Section 5.2.4.54 has been replaced with the following: "The OWS was removed under the Castle UST removal program."
22. Page II-90, SWMU 4.11 table: At what depths are the WQSA Screening Levels for?	A column listing the depth interval for the screening basis (all of which are 0-20) has been added to the table.
23. Page II-91, Subsection 5.2.4.56, 1st paragraph, 4th sentence: Proper citation is needed for this "Action Memoranda".	The OWS was removed under the Castle UST removal program, not by under removal action authority, the reference to ARARs will be removed. The fourth sentence of the first paragraph in Section 5.2.4.56 has been replaced with the following: "The OWS was removed under the Castle UST removal program."
24. Page II-91, SWMU 4.13 table: At what depths are the WQSA Screening Levels for?	A column listing the depth interval for the screening basis (TEPH 0-20, all metals 40-65) has been added to the table.
25. Page II-92, SWMU 4.19 table: At what depths are the WQSA Screening Levels for?	A column listing the depth interval for the screening basis has been added to the table.

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Comment	Responses
26. Page II-93, Subsection 5.2.4.59, last sentence: This citation is not found in the Section VII References. Provide proper citation for this.	The conversation confirmer is included in the SCOU RI section for this site.
27. Pages II-93 & II-94, Subsection 5.2.4.60: The RI data indicated contaminant(s) were above TBVs, yet there were no table nor text to indicate that they were screened as COCs. Explain how an NFA decision can be reached without additionally assessing the RI data as well as the data gap data.	The detections of VOCs and metals referenced are not attributable to SWMU 4.25 but to B84 and are addressed in that site writeup. The following sentence has been added after the fifth sentence of the first paragraph in Section 5.2.4.60: "These sample results are not evaluated in this section as they are only located in the general vicinity of SWMU 4.25 and are evaluated in the B84 section (5.2.5.1)."
28. Page II-94, Subsection 5.2.4.61, last sentence: "Final RCRA Closure Report dated 28 April 1994" needs to be properly cited and included in Section VII References.	The last sentence of Section 5.2.4.61 has been rewritten as follows and added in Section VII references: "SWMU 4.26 was previously removed and closed in accordance with RCRA requirements in 1993 and documented in the Final Report Paint Booth Sump Tank #17 Building #1253 Castle Air Force Base Merced County, California (CI, 1994) and a determination of NFA has been made for this site."
29. Page II-94, Subsection 5.2.4.62, last sentence: "Cal, Inc., 1994" needs to be properly cited and included in Section VII References.	The last sentence of Section 5.2.4.62 has been rewritten as follows: "The unit has been removed and closed in accordance with RCRA requirements in 1993 and documented in the Final Report Paint Booth Sump Tank #17 Building #1253 Castle Air Force Base Merced County, California (CI, 1994) and a determination of NFA has been made for this site."

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Comment	Responses
30. Pages II-94 & II-95, Subsection 5.2.4.63, last sentence: A report documenting the confirmation sampling event needs to be properly cited and included in Section VII References	The last sentence of Section 5.2.4.63 has been replaced with the following: "This site was evaluated as part of the DBF section (5.2.5.6) and the NFA decision was documented in an RPM Consensus Statement dated July 23, 1996, and in a letter from the DTSC dated August 26, 1998."
31. Page II-95, Subsection 5.2.4.64, 1st paragraph, next to last sentence: For completeness, indicate what response action was/will be taken to remediate the VOC that was not deemed to have come from the pad. SVE at B51?	The following has been added as the third sentence from the end of the first paragraph in Section 5.2.4.64: "VOCs are being addressed separately through remedial actions for Site B-51."
32. Page II-95, SWMU 4.31 table: At what depths are the WQSA Screening Levels for?	A column listing the depth interval for the screening basis has been added to the table.
33. Page II-98: The 1st complete sentence on top of the page appears to contradict the 2nd sentence under the Changes from Prior CERCLA Documentation header in reference to whether sampling was done under RI.	Section 5.2.4.70, the sentences as written are confusing but are not contradictory. Samples were taken in the vicinity of SWMU 4.36 as part of the B1324 investigation. The 3rd sentence in first paragraph of Section 5.2.4.70 has been modified to as follows: "During the RI, three soils gas probes (B1324SG09, 10, 11) and one soil boring (B1324SB05) were installed in the vicinity of SWMU 4.36, as part of the B1324 investigation."
34. Page II-98, Subsection 5.2.4.71, 3rd sentence: If the RI referred to here is part of the SCOU RI/FS, then refer to it as the "RI conducted on the Industrial Waste Line" to avoid confusion. Otherwise, provide proper citation for this if this was a separate RI effort.	The change has been made and reads as follows: "During the RI conducted on the Industrial Waste Line, three soil borings (IWLSB04, SB05, and SB06) were installed in key "elbow" areas along the steel portion of the pipeline."

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Comment	Responses
35. Page II-100, Water Quality Impact header, last sentence: Contrary to what is stated here, the B84-Water Quality Impact table shows Manganese in soil to potentially pose a risk to water quality.	Section 5.2.5.1, the *Water Quality Impacts*: paragraph has been changed as follows: "A summary of the analytical results compared to appropriate Water Board DLM and VLEACH2 screening levels is provided below. Based on the analytical results, only manganese may pose a risk to water quality. Manganese was the only constituent identified in site soil samples that exceeded screening levels. However, because of the limited distribution and lack of associated contaminants, it was concluded that this metal was naturally occurring and did not warrant remediation."
36. Page II-103, Risk Management Decision header: For completeness, indicate that TCE in groundwater is being remediated under the CB Part 1 ROD	Section 5.2.5.2, a sentence has been added as the third sentence of the paragraph which is as follows: "VOC contamination in groundwater is being addressed in the CB Part 1 ROD."
37. Page II-106, Risk Management Decision header: For completeness, indicate the response action taken or being taken for the FS4 plume.	Section 5.2.5.4, two sentences have been modified/added as the next to last sentences in the paragraph which is as follows: "Sites FS4 is a PHO site (section 8.1.24) impacted by constituents of concern that are not subject to CERCLA requirements. Final remedial decisions for these sites will be addressed under all applicable laws and regulations."
38. Page II-107, 3rd paragraph: For completeness, indicate that TCE in groundwater is being remediated under the CB Part 1 ROD.	Section 5.2.5.5, a sentence has been added as the next to last sentence of the third paragraph which is as follows: "VOC contamination in groundwater is being addressed in the CB Part 1 ROD."

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Comment	Responses
39. Page II-109, Subsection 5.2.5.6, 4th paragraph, 6th sentence: Use and cite the latest version of EPA's PRGs, which was published November 1, 2000.	A sentence has been added as the seventh sentence of the fourth paragraph which is as follows: "The PRG Tables were updated in 2000 with a new value of 4.4 mg/kg for RDX."
40. Page II-112, Human Health Risk Assessment header, 2nd sentence: Blood-lead levels were calculated and presented in the table to follow, but there is no additional text in the discussion interpreting the significance of this data.	Section 5.2.5.7, this sentence has been changed as follows as well as adding a table concerning for blood-lead levels: "In addition, calculated blood-lead levels for all receptors were below the 10 µg/dL level of concern."
41. Page II-129, Risk Management Decision header: This discussion is incomplete because it contains nothing on a risk management decision.	Section 5.2.5.18, the *Risk Management Decision:* paragraph has been moved to the 3rd paragraph of the introductory section and the *Risk Management Decision*: replaced with the last sentence from the *Changes from Prior CERCLA Documentation:* paragraph which is as follows: "The results of the Data Gap Investigation determined that site contamination did not present a threat to human health or water quality, and the selected remedy presented in this ROD was changed to a determination of NFA for this site."
42. Page II-129 thru II-133: There is no discussion of water quality impact for the SDS.	Section 5.2.5.19, a revised table and discussion of the water quality impacts have been added.
43. Page II-134, Risk Management Decision header: For completeness, indicate that TCE in groundwater is being remediated under the CB Part 1 ROD.	Section 5.2.5.20, the following sentence has been added as the third sentence within the *Risk Management Decision* paragraph: "VOC contamination in groundwater is being addressed in the CB Part 1 ROD."
44. Page II-136, Risk Management Decision header: For completeness, indicate that TCE in groundwater is being remediated under the CB Part 1 ROD.	Section 5.2.5.21, the following sentence has been added as the next to last sentence with the *Risk Management Decision* paragraph: "VOC contamination in groundwater is being addressed in the CB Part 1 ROD."

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Comment	Responses
45. Page II-136, Water Quality Impacts header, last sentence: Contrary to what is stated here, ethylbenzene also exceeds WQSA screening limits in the following table.	Section 5.2.5.22, the last sentence under *Water Quality Impacts* on page II-136 was changed to read as follows: "TCE and ethylbenzene in one downhole soil gas sample exceeded VLEACH2 screening levels."
46. Page II-137, Risk Management Decision header: For completeness, indicate that TCE in groundwater is being remediated under the CB Part 1 ROD.	The following sentence has been added as the next to last sentence within the *Risk Management Decision* paragraph: "VOC contamination in groundwater is being addressed in the CB Part 1 ROD."
47. Page II-137 thru II-139, Subsection 5.2.5.23: This entire subsection needs a major reconfiguration to more accurately present the data and to better support the NFA decision. (a) Cadmium, albeit in the produce pathway, is the driver of human health risk, yet cadmium data and evaluation of its risk are not even discussed in the main text at all and was left in Appendix E for a detailed discussion. This makes for a continuity problem and difficult for a reader to follow how cadmium is evaluated. (b) Contrary to the statement made in the Risk Management Decision header that the "discussion above represents the evaluation of this site as presented by the 1996 SCOU RI/FS", the HHRA Summary - Screening table is actually based on reassessment of the risk based on updated toxicity values and reassessment of the risk characterization for cadmium in the produce pathway as per Appendix E. (c) To strengthen the argument for NFA, the main text needs to sensibly integrate the points made in Appendix E regarding DA-2, and methodically lay out the rationale for NFA in the Risk Management Decision header. As written, the discussion in the Risk Management Decision header is confusing and does not strengthen the argument for unrestricted and unlimited residential reuse.	Section 5.2.5.23 concerning Site DA-2 has been modified to address this comment.
48. Page III-1, Section 6.0: Indicate here that ARARs that related to a removal action taken for a site in this ROD were complied with as per the appropriate Action Memorandum for the site and documented in the appropriate Closure Report.	The following addition has been made at the end of the first paragraph: "However, for all sites for which removal actions were conducted, all ARARs were compiled with as identified within Action Memoranda."

RESPONSES TO COMMENTS (CALIFORNIA DTSC)
FINAL SCOU ROD DATED FEBRUARY 5, 2002

Comment	Responses
A. **GENERAL COMMENTS** 1. DTSC does not consider this document final. The agencies had extensive comments on the last version of the SCOU ROD 1. Therefore, a revised draft final version must be approved by the agencies before the SCOU ROD 1 can be finalized. The document can be submitted as a final document once all the agencies comments have been resolved and submitted in a draft final version of this ROD.	The Air Force considers this submittal to be Final. The submittal will be only those pages which have changed from previous versions. A complete document for the Final SCOU ROD Part 1 will entail the previous version with the change pages based upon the current round of comments.
2. DTSC believes it is imperative that the Air Force include an adequate amount of information so that the reader understands why No Further Action (NFA) is being recommended for the sites discussed in this ROD. This is especially true of the sites discussed in section two under the heading "*Risk Management Decision No Further Action*". A clear and concise summary with all the relevant information should be in the SCOU 1 ROD so that the reader understands exactly what line of reasoning was used to arrive at the NFA determination. The reader should not be referred to census agreements that are not present in the document. Relevant information that was in the SCOU Remedial Investigation/Feasibility Study Report (SCOU RI/FS) should be brought forward and included in this document as opposed to referring to the reader to the SCOU RI/FS Report. DTSC recommends the Air Force evaluate the document in order to ensure that the SCOU ROD 1 is truly a stand-alone document.	The Air Force has reviewed the information included on the sites contained within this document and has determined that it complies with the requirements for a Record of Decision (ROD). This document cannot present all information that was gathered in an RI/FS; however it does contain a concise summary of relevant information on the sites that leads to the NFA decision.
B. **SPECIFIC COMMENTS** 1. II-109; In the previous comment letter I had a comment regarding site DBF, a site in the "*Risk Management Decision No Further Action*" portion of section two. The Air Force did not respond to my comment. I requested the information that was contained within the July 23, 1996 consensus agreement that led to the Air Force recommending NFA as the remedy for this site. My comment stated that the site summary for this site was confusing. The information in the Human Health Risk Assessment (HHRA) summary table states the cancer risk is 5.8x10-6. However, it is not clear what data was used to make that determination. I asked for the Air Force to state what compounds were driving the risk. DTSC does believe that hexahydro-1,3,5-trinitro-1,3,5-triazine(RDX) at 0.1 part per million is driving the risk, however that is the only	Section 5.2.5.6 concerning Site DBF has been modified to address this comment.

Comment	Responses
compound discussed. The Air Force responded to my comment by citing the date of a consensus agreement which discussed the remedy for this site. The text in the consensus agreements does not take the place of appropriate text in the ROD. An explanation of the decision process and the data must be presented in the ROD in order for a final decision to be reached by all parties. DTSC recommends the Air Force respond to my original comment. A copy of the consensus agreement may be placed in this document, but not in the place of a response to my comments.	
2. Page II-111; In the previous comment letter, I had a comment regarding site Disposal Pit 7, a site in the "*Risk Management Decision No Further Action*" portion of section two. I requested that further information be provided in this document regarding the soil sample data, including depths that were used to conduct the HHRA. The Air Force responded by stating; *"The discussion regarding risk assessment determination for this site is consistent with other site discussions in which the specific depths used for the assessment calculation are not specified. While this information is available in the SCOU RI/FS, there is nothing unique about this site that would necessitate specifying that information here and not in other site discussion"*. DTSC disagrees with this statement. The specific depths used for the assessment calculation should be present throughout the document whenever necessary. Additionally, this site is unique in the fact that the Air Force is recommending it for NFA, although the risk exceeds the 1 x10-6 threshold. Additionally, there is no discussion of the recalculation of the more current risk assessment values on table eight of appendix E as the text in this section implies. DTSC recommends the Air Force respond to my earlier comment regarding the soil sampling data and the revised toxicity value in Appendix E.	Section 5.2.5.7 concerning Site DP7 has been modified to address this comment..

RESPONSES TO COMMENTS (CALIFORNIA DTSC)
FINAL SCOU ROD DATED FEBRUARY 5, 2002

Comment	Responses
3. Pages II-119-126; DTSC has reviewed all the information provided in this document and has discussed the characterization of the PCB sites with staff from the Air Force and the United States Environmental Protection Agency (U.S. EPA), this information has lead DTSC to the following conclusions. Regarding sites PCB 1,2,3 and PCB 8 DTSC agrees with the Air Force's recommendation of NFA. However, regarding sites PCB 4, PCB 5 and PCB 6. DTSC believes those sites need to be fully characterized before a determination of the remedy can be agreed upon. This is due to the lack of information regarding where the spills took place and at sites PCB 4 and PCB 6, there appears to be too few soil samples to make an adequate determination. DTSC recommends the Air Force characterize these sites and provide the additional data in the next version of this ROD or propose institutional controls as the remedy for these sites. The remedial action objective will also need to be amended for these sites as the preliminary remedial goal for PCBs has been changed by the U.S. EPA.	Sites PCB 4, PCB 5, and PCB 6 will be removed from the SCOU ROD Part 1. Please note that for continuity and clarity the Sections dealing with those sites will remain in the text with a discussion stating that those sites are being deferred.

RESPONSES TO COMMENTS (EPA)
FINAL SCOU ROD PART 1 DATED MAY 22, 2002

Comment	Responses
A. **COMMENTS** 1. Additionally information on EPA Comment #4 - Not the AF's fault, but please replace "Facilities" with the word "Facility".	This change has been made and a replacement sheet will be reissued.
2. The text of the ROD and AF's response to EPA Comment #6 is not complete. The comment on apparent discrepancies with depths for which data are being compared is still a concern. This can be easily resolved by inserting a clear explanation in Subsection 4.4.1.4 WQSA Evaluation of SVOCs and Metals that rationalizes that the DLM threshold values being used for metals at 40-65 feet bgs in all the Water Quality Impact tables in Section II are conservative values because they assume levels found at shallower depths are at 40-65 feet depths..	A more clear explanation of the conservative nature of using the DLM threshold values at 40-65 feet bgs for the same contaminants found at shallower depths for SVOCs and metals has been added in Section II, Subsection 4.4.1.4..
3. Relating to EPA Comment #15, the AF's response to the comment as written is incomplete with respect to what modifications were actually made in the text. The response should actually read as follows: A sentence is inserted before the sentence in question to read as: "Under removal action authority the landfill was excavated and placed in Landfill 4." For the sentence in question, the word "confirmed" is replaced by the word "showed", and the JEG, 2000c citation is added. The last sentence is replaced with the sentence: "The EPA, DTSC, and RWQCB closure acceptance letters were dated August 24, 2000; July 24, 2000; and July 11, 2000; respectively." Finally, additional language is added to the paragraph that follows regarding arsenic (see AF response to Comment #10).	The comment has been noted; however does not require modification to the text of the ROD. The previous Response to Comment did not reflect all changes made to the text, as some of the changes were based on verbal comments made at the Technical Working Group meeting on 9 April 2002. Additionally, the responses to the comments may not detail all the exact changes when substantial changes occur but direct the reader to the location and nature of the changes.
4. Relating to the AF's response to EPA Comment #18, the (JEG 12/9/97) citation is not found in Appendix VII as one would expect. Please made this correction. In addition, the 6/25/99 DTSC letter is not found in Appendix VIII Administrative Record. Please make this correction, and make any other necessary corrections for all other relevant documents referred to in the ROD that are not presently included in Appendix VIII.	The reference document (JEG 97i) has been added to Section VII References, and the text has been modified. The 6/25/99 DTSC letter will be added during the next regularly scheduled update of the Administrative Record.

RESPONSES TO COMMENTS (EPA)
FINAL SCOU ROD PART 1 DATED MAY 22, 2002

Comment	Responses
5. Relating to the AF's responses to EPA Comments #28 & #29, the Section VII References does not include (CI, 1994) as a reference. Please make this correction, and make any other necessary corrections for all other citations in the ROD that are not presently included in Appendix VII.	The reference document (CI, 1994) has been added to Section VII References.
6. Relating to the AF's responses to EPA Comments #30, the July 23, 1996 Consensus Statement and the August 26, 1998 DTSC letter cited here are not found in Appendix VIII Administrative Record. Please make this correction, and make any other necessary corrections for all other documents referred to in the ROD that are not presently included in Appendix VIII.	Consensus Statements are not contained within the Administrative Record as they do not represent formal agreements. The actual date of the DTSC letter is August 26, 1996. This will be changed in the text and the letter is already included in the Administrative Record (AR-1244).
7. Relating to the AF's response provided to EPA's Comment #39 on the DBF, the response given does not correlate well to the text in revised Subsection 5.2.5.6. For clarity and accuracy, first mention in the response the fact that the AF moved the original 4th paragraph discussing RDX to the Response Action header, and that the 7th sentence has been added to the paragraph in response to EPA's comment. New concerns: The new RDX of 4.4 mg/kg should be footnoted in the revised Water Quality Impact table, not 4.0 mg/kg. Finally, the 1st paragraph under the Response Action header that discusses manganese exceedences should rightfully be under its own Risk Management Decision header as was originally - - after all, the DBF site is categorized under Subsection 5.2.5 Risk Management Decision No Further Action Sites.	The majority of changes to the text were also made to address DTSC Specific Comment #1, and due to the extent of changes, the specific changes were not identified. The RDX value will be changed to 4.4 mg/kg in the footnote. The title of this section was changed based upon comments received at the Technical Working Group meeting on 9 April 2002. This title will be switched back to *Risk Management Decision* for the first paragraph, however the second paragraph will be titled as *Response Action* because it describes the actions taken under a removal action authority.
8. Relating to the AF's response to EPA Comment #42, contrary to the AF's response provided, no discussion of water quality impacts was added to the subsection. The discussion needs to highlight the fact that levels of cadmium, lead, and molybdenum exceeded WQSA screening values.	A discussion of the exceedances for cadmium, lead, and molybdenum were added to the subsection.

RESPONSES TO COMMENTS (EPA)
FINAL SCOU ROD PART 1 DATED JULY 15, 2002

Comment	Responses
1a. Pg. II-104, Subsection 5.2.5.3 B1404, Water Quality Impacts header - For consistency, clarity and accuracy, delete the last sentence. (Defer discussion of risk management to the Risk Management Decision header.)	Incorporated Comment
1b. Page II-105, Subsection 5.2.5.3 B1404, Risk Management Decision header - For consistency and completeness of supporting rationale, rewrite the existing text to read as follows: Manganese in surface soil at 398 mg/kg exceeded water quality screening level of 228 mg/kg at 40-65 ft. bgs. However, the criteria level used is very conservative since surface concentrations are being compared to 40-65 ft. bgs depths which are closer to the groundwater table. Taking everything into consideration along with the fact that the difference in values are not that great, an NFA determination was made for B1404 because Manganese does not pose a threat to groundwater quality. Since the risk management decision was made prior to the Feasibility Study, remedial alternatives were not considered or developed for B1404.	Incorporated Comment
2a. Page II-106, Subsection 5.2.5.4 B1405, Human Health Risk Assessment header - For clarity, revise the 1st sentence to read as follows: “Lead in soil was the only COPC that exceeded DTSC’s 120 mg/kg screening level of concern.”	Incorporated Comment
2b. Page II-107, Subsection 5.2.5.4 B1405, Risk Management Decision header - For informational completeness, rewrite the next to last sentence to read as follows: “SVE is the remedial decision for the soil vapor plume at FS4 and is being implemented under requirements of the RWQCB.” Without this information, there is no closure on the response action to the contaminant vapors in soils at B1405, and thus may not warrant an NFA decision.	Incorporated Comment

RESPONSES TO COMMENTS (EPA)
FINAL SCOU ROD PART 1 DATED JULY 15, 2002

Comment	Responses
3a. Page II-110, Subsection 5.2.5.6 DBF, Human Health Risk Assessment header - For informational completeness, insert the following as the 3rd sentence: "The risk exceeded human health screening level, and was due largely to levels of 2,4-DNT and 1,2,3,4,6,7,8-HpCDD in soils."	Incorporated Comment
3b. Page II-111, Subsection 5.2.5.6 DBF, Response Action header, 2nd paragraph, 2nd to last sentence: For clarity and consistency, and to avoid confusion, delete the words "which in the case of RDX, the more stringent cancer risk criteria applies, rather than the non-cancer risk."	Incorporated Comment
4a. Page II-112, Subsection 5.2.5.7 DP7, Water Quality Impact table - For accuracy, replace the value for Beryllium from 0.64 mg/kg at 0 ft to 0.84 mg/kg at 9 ft.	Incorporated Comment
5a. Page II-115, Subsection 5.2.5.9 ETC7, Water Quality Impact table - For accuracy, replace the value for TCE from 2500 ug/L to 2550ug/L.	Incorporated Comment
5b. Page II-115, Subsection 5.2.5.9 ETC7, Risk Management Decision header - For accuracy and completeness of supporting rationale, replace the existing text with the following text: TCE in soil gas at 2550ug/L detected at 10-20 ft. bgs in ETC-7 exceeded water quality screening level of 19 ug/L at 10-20 ft. bgs. A field visit to ETC-7 convinced the regulatory agencies that TCE releases at ETC-7 are unlikely and that the likely source of the TCE is from the contaminated groundwater plume and Sanitary Sewer 2, an adjacent site to be addressed in a subsequent ROD. The extraction and treatment systems for contaminated groundwater is currently in full operation, and the TCE concentration in soil gas at ETC-7 will ultimately dissipate as a result. The levels of TCE in soil gas would have most likely decreased through diffusion since the procurement of the date in 1987. With this in consideration along with that fact that ground surface of the site area is covered with asphalt, concrete, and foundation pads of former buildings, it was determined that ETC-7 does not pose a threat to human health. Thus, an NFA determination was made for ETC-7.	Incorporated Comment

RESPONSES TO COMMENTS (EPA)
FINAL SCOU ROD PART 1 DATED JULY 15, 2002

Comment	Responses
6a. Page II-125, Subsection 5.2.5.18 SA B1, SA B1 - Water Quality Impact header - The 0.39 mg/kg for Beryllium should be 0.48 mg/kg according to the Data Gap Investigation Report. For accuracy, correct this apparent error.	Incorporated Comment
6b. Pages II-125 & II-126, Subsection 5.2.5.18 SA B1, Human Health Risk Assessment header, 2nd paragraph - For accuracy and consistency, replace the entire 2nd paragraph with the following: "The contaminants in soils at SA B1 poses a potential risk to human health. Beryllium in soil at 0.48 mg/kg is the primary contributor to human health risk." (Defer discussion of risk management to the Risk Management Decision header.	Incorporated Comment
6c. Pages II-125 & II-126, Subsection 5.2.5.18 SA B1, Risk Management Decision header - For consistency and completeness of supporting rationale, rewrite the text as follows: Manganese in soils at 287 mg/kg at 3.5 ft. bgs exceeded the 228 mg/kg at 40-65 ft bgs screening level for water quality. This is not a concern because the exceedence is slight and the screening criteria used is quite conservative. Beryllium in soil at 0.48 mg/kg at 3.5 ft. bgs raised some concern and is the primary contributor to risk to human health, but the risk is within acceptable risk range. Taking into consideration that the risk calculation assumed ingestion of homegrown produce as an exposure pathway, which is unlikely for this site that is slated for commercial reuse, together with the facts that the 0.48 mg/kg level of Beryllium found is below the 0.39 mg/kg background level for Beryllium in sand lithology at the site and is also within the 0.26-0.89 mg/kg range of Beryllium background levels found at Castle, it was concluded that Beryllium in soils does not pose a threat to human health. Thus, results of the Data Gap Investigation showed that the site does not pose a threat to human health or water quality. The selected remedy presented in this ROD is changed to an NFA determination.	Incorporated Comment

RESPONSES TO COMMENTS (EPA)
FINAL SCOU ROD PART 1 DATED JULY 15, 2002

Comment	Responses
7a. Page II-126 to II-131, Subsection 5.2.5.19 Storm Drain System (SDS) - For consistency and completeness, add a short discussion under a vew header entitled "Changes from Prior CERCLA Documentation". The remedy for SDS was changed from IC to NFA due to the risk management decision made. Also, add a header entitled "Risk Management Decision" and include in it the last paragraph in this subsection on page II-131.	Partially incorporated. The two requested sections were added, but the last paragraph now under the Risk Management Decision section, was modified to reflect changes made in other sections of the text.
7b. Page II-127, Subsection 5.2.5.19 Storm Drain System (SDS), Surface Soil Quality Impacts header, 1st paragraph - For completeness and accuracy, add the following sentence to the end of the paragraph: "The SDSE09 sampling location was determined to be a sediment concentration area in the storm drain system itself, and the sediment was removed by the Air Force on _____ as an Operation and Maintenance task." Without this O & M action (which was a part of the decisional discussion of the BCT) and its documentation, SDS may not warrant an NFA because the potential for risk to human health still exists.	Partially incorporated. As suggested text was added to the end of the second paragraph of the Surface Soil Quality Impacts section. However, the AF does not agree with the final requested sentence. Additionally to clarify the significance of the sample location driving risk and the re-evaluation of risk assessments the text of the Human Health Risk Assessment section was modified to include a more comprehensive picture of the potential risk at the site.

Section VI

Section VI. Petroleum Hydrocarbon Only Sites

8.0 Petroleum Hydrocarbon Only Sites

The "Petroleum Hydrocarbon Only" sites were investigated under the Castle AFB IRP and are described and evaluated in previous RI/FS document. However, there is no CERCLA authority to take action at these sites. Therefore, they will be addressed under RCRA Subtitle I and the authorized California UST Program. The "Petroleum Only" sites at Castle Airport are listed below. Site groups are noted in parenthesis where applicable.

Building 59 (PFFA)	Building 1560	JP4 Fuel Line
Building 79 (PFFA)	Building 1865/1868	JP7
Building 175	Discharge Area 1/TCC1	Petroleum Fuel Farm Area (PFFA)
Building 325	Discharge Area 6 (PFFA)	Sanitary Sewer 8 (PFFA)
Building 508 (PFFA)	Discharge Area 7 (PFFA)	Structure T61/HWS1
Building 551	ETC4 (Structure T61/HWS1)	UFL1
Building 909 (PFFA)	FTA3	UFL2
Building 917 (PFFA)	Fuel Spill 1	UFL3
Building 950 (Discharge Area 1/TCC1)	Fuel Spill 2	
Building 951 (Discharge Area 1/TCC1)	Fuel Spill 3	
Building 1324	Fuel Spill 4	
Building 1325/HWS3	H4 (UFL1)	

Site characterization information is provided below.

8.1 Characterization of Petroleum Hydrocarbon Only Sites

8.1.1 Building 59 (B59)

See Section 8.1.27, Petroleum Fuel Farm Area.

8.1.2 Building 79 (B79)

See Section 8.1.27, Petroleum Fuel Farm Area.

8.1.3 Building 175 (B175)

B175 is located in the MBS (P9, Plate 5-1 in Appendix C) and was built in 1980 to house flight simulators for aircrew training. The building has two oil/water separators (SWMUs 4.7 and 4.8). TEPH (diesel) was detected in only one soil sample. This sample, taken from a depth of 20 feet, contained TEPH at 430 mg/kg.

8.1.4 Building 325 (B325)

B325 is located in the MBS (R11, S11, Plate 5-1 in Appendix C) and was used as a vehicle maintenance facility/battery shop. The facility has a paint spray booth, a maintenance yard, and a washrack. Three OWSs (SWMUs 4.9, 4,10, and 4,11), which were associated with B325, have been removed from the site. Excavation activities began in December 1998 and continued through January 1999. Approximately 2,300 CY of soil were excavated and removed from the site. Excavations were backfilled with clean soil and compacted appropriately. The Draft Final Closure Report (GEO/Resource Consultants, November 2000) has been submitted and is currently undergoing review by the Air Force and regulatory agencies.

8.1.5 Building 508 (B508)
See Section 8.1.27, Petroleum Fuel Farm Area.

8.1.6 Building 551 (B551)
B551 is located in the MBS (S11, Plate 5-1 in Appendix C) and was used as the CAFB hobby shop. Other sites associated with B551 and comprise the B551 Group include: (1) a drum handling area, (2) the CAFB recycling area (formerly an auto repair facility [B554]), and (3) SWMU 4.14. The potential contaminants of concern include fuels, oils, detergents, paints, and solvents associated with activities conducted at the site. According to the CAFB FEIS, the site is contained within an area designated for commercial use. An evaluation similar to the START Process will be accomplished to ascertain the potential impact to groundwater.

8.1.7 Building 909 (B909)
B909 is located in the MBS (S12, Plate 5-1 in Appendix C) and was used to store pesticides and herbicides.

8.1.8 Building 917 (B917)
See Section 8.1.27, Petroleum Fuel Farm Area.

8.1.9 Building 950 (B950)
See Section 8.1.14, Discharge Area 1/Test Center Complex 1 (DA-1/TCC1).

8.1.10 Building 951 (B951)
See Section 8.1.14, Discharge Area 1/Test Center Complex 1 (DA-1/TCC1).

8.1.11 Building 1324 (B1324)
B1324 is located in the MBS (N10, Plate 5-1 in Appendix C) and served as the Aerospace Ground Equipment (AGE) Maintenance Shop. The site includes a washrack, which was served by an oil/water separator (SWMU 4.19) that discharges to the sanitary sewer. In 1990, a 700-gallon waste oil UST was removed from the site. According to Castle AFB records, the resulting hole was backfilled with excavated materials and clean fill. B1324 also includes a bermed concrete pad that was used as a 90-day hazardous waste storage area (SWMU 4.36). The pad remains in place. No evidence of contamination above risk or WQSA screening levels was noted during RI sampling in the area. No further action has been recommended for SWMU 4.36.

TVPH was detected at concentrations of up to 980 mg/kg in soil samples collected from near the washrack and oil/water separator. Benzene (up to 9.7 µg/kg) and xylene (up to 26.8 µg/kg) were detected in soil samples collected from the area of the former waste oil tank. Low levels of BTEX compounds were detected above the reporting limit in soil samples. The maximum concentration of contaminants was detected at approximately 5 feet bgs.

8.1.12 Building 1325 (B1325)/Hazardous Waste Storage 3 (HWS3)
B1325 is located in the MBS (N10, Plate 5-1 in Appendix C) and was part of the 93rd Field Maintenance Squadron Shops and AGE area. Underground tanks for gasoline, diesel, and JP4 storage were in use at the B1325 tank farm facility until base closure in 1995.

The maximum concentrations of petroleum hydrocarbons detected during the RI include: TEPH (13,000 mg/kg), TVPH (37,000 mg/kg), benzene (21 mg/kg), and xylene (252 mg/kg). All maximum concentrations were detected at approximately 50 feet bgs. Benzene was also detected in the groundwater at the site at a maximum concentration of 140 µg/L.

8.1.13 Building 1560 (B1560)

B1560 is located in the MBS (Q14, Plate 5-1 in Appendix C) and was used by the Fighter Interceptor Squadron. The building has two petroleum hydrocarbon USTs. The maximum concentrations of petroleum hydrocarbons detected during the RI include: TEPH at 3,300 mg/kg and TVPH at 170 mg/kg, approximately 5 feet bgs (sample B1560SB03). Both USTs appear to have been sources; TEPH at 32 mg/kg was detected in sample B1560SB04 at 19.5 feet bgs, near the UST in the southeastern corner of the parking lot.

8.1.14 Buildings 1865/1868 (B1865/1868)

Buildings 1865/1868 are former office buildings located in the EBS (K14, Plate 5-1 in Appendix C). The site contained two fuel oil tanks. The maximum concentrations of petroleum hydrocarbons detected during the RI include: 53,000 mg/kg TEPH and 490 mg/kg TVPH in the upper 5 feet of the vadose zone from sample B1865HA03. TVPH (99 mg/kg at 4.5 feet bgs) and TEPH (170 mg/kg at 0.5 feet bgs) also were detected in the vicinity of sample B1865HA01.

8.1.15 Discharge Area 1/Test Center Complex 1 (DA-1/TCC1)

TCC1 is located in the SBS (T13, T14, Plate 5-1 in Appendix C) and includes Buildings 950 (B950), 951 (B951) and Discharge Area 1(DA-1).

B950 was used as a jet engine testing facility, whereas B951 was the location of an electrical power generator. Hydrocarbon wastes from B950 and B951 were reportedly discharged to the surface in this area. Both buildings have been demolished.

TEPH and TVPH in excess of 1,000 mg/kg were detected in soils in the vicinity of B951. BTEX compounds were also detected in soils. SVOCs were detected in soil samples and one detection (naphthalene at 1.6 mg/kg) was above 1.0 mg/kg. BTEX concentrations are widespread in soil gas from 5 - 20 feet bgs and persist in some areas (Samples TCC1SB21 through TCC1SB24) to a depth of 60 feet bgs.

DA-1 consists of a surface depression located east of the jet engine test cell. Metals present in surface soils in the vicinity of DA-1 are the focus of ecological concerns at the TCC1 Group. The ecological quotients were well above 1.0 for terrestrial receptors, due primarily to the presence of cadmium and lead. However, metals are not COCs for protection of human health. The site was recommended for No Further Ecological Investigation/Risk Management in the CB Scoping and Phase 1 Ecological Risk Assessment (ERA) (Jacobs, 1995d). The area represents a potential uplands habitat; no wetlands are nearby. It is recommended that representatives of the appropriate state and federal agencies be involved in RD/RA planning so the affect on ecological habitats at the site are adequately addressed in accordance with both the Clean Water and Endangered Species Acts.

8.1.18 Reserved

A change in toxicity values was implemented since completion of the SCOU BHHRA resulting in the considering of Discharge Area 2 (DA-2) as other than a petroleum-only site (see Section 5.2.5.23 for complete discussion of this site). This section has been reserved to maintain the document structure for this ROD.

8.9.17 Discharge Area 6 (DA-6)

See Section 8.1.27, Petroleum Fuel Farm Area.

8.1.18 Discharge Area 7

See Section 8.1.27, Petroleum Fuel Farm Area.

8.1.19 Earth Technology Corporation 4 (ETC4)

See Section 8.1.29, Structure 61(ST61)/Hazardous Waste Storage 1(HSW1).

8.1.20 Fire Training Area 3 (FTA3)

FTA3 is located in the WBS (K7, K8, Plate 5-1 in Appendix C) north of Hazardous Waste Storage 4 (HWS4). The site was used as the fire protection training area for CAFB beginning in 1976. The burn area is unlined and surrounded by a 2-foot berm. There is a surface fluid collection system present designed to collect runoff fuel and water. The runoff is routed to an underground storage chamber within the bermed area. Jet fuel (JP-4) was used as the primary combustible in fire training exercises. The potential contaminants of concern are VOCs, SVOCs, and fuels. According to the CAFB FEIS, this site is within an area designated as aviation support. An evaluation similar to the START Process will be accomplished to ascertain the potential impact to groundwater.

8.1.21 Fuel Spill 1 (FS1)

FS1 is located in the WFLS (L11, Plate 5-1 in Appendix C) near Building 1403. USTs and underground fuel lines exist at FS1. FS1 is reported to be the site of the largest fuel spill at Castle AFB. This spill occurred in November 1977, when approximately 21,000 gallons of JP4 jet fuel were released to the surface soil.

Investigations have revealed the presence of TVPH (up to 5,400 mg/kg) and TEPH (up to 20,000 mg/kg) as well as benzene (up to 1.5 mg/kg), and xylene (up to 440 mg/kg) in soil samples collected from the site. The vertical and lateral distribution of the two contaminants was similar, and appears to be limited to the upper 40 to 50 feet of soil. Also, oil and grease ranged from non-detect to 8,600 mg/kg in soil (in pre-remedial investigation data). Benzene (up to 1,700 µg/L), toluene (up to 5,300 µg/L), and TPH (up to 33,000 µg/L) were detected in soil gas samples.

Contamination at the FS1 site includes only petroleum hydrocarbon compounds that must comply with RCRA and state requirements but are considered for NFA with regard to CERCLA and this ROD. However, a Removal Action involving SVE was implemented at the FS1 site prior to the NFA ruling. The IRA was conducted from February 1995 to October 1996. The Final FS1 Closure Report has been approved by the CVRWQCB as indicated in their letter dated 11 July 2000.

8.1.22 Fuel Spill 2 (FS2)

FS2 is located in the WFLS (K9, Plate 5-1 in Appendix C) and is the former location of five USTs (removed in 1991) at a fuel pumping station. An undetermined amount of JP4 jet fuel was reportedly released at this site prior to 1991. Previous investigations reported detection of VOCs in soil gas, including toluene (maximum 5,600 µg/L) and benzene (880 µg/L) in the shallow subsurface (below 10 feet bgs), and TVPH (790 mg/kg) and TEPH (1800 mg/kg) in the soil at 15.5 feet bgs. During the RI, maximum concentrations of TEPH (270 mg/kg) and TVPH (670 mg/kg) were found in the upper 10 feet of the vadose zone. Additionally, low levels of toluene (0.07 µg/L) and trichlorofluoromethane (1.7 µg/L) were detected in the groundwater. SVE remediation demonstration project was begun at the FS2 site under removal action authority. The SVE system ran from August of 1995 through September 1995. The Final FS2 Closure Report has been approved by the CVRWQCB as indicated in their letter dated 26 August 1999.

8.1.23 Fuel Spill 3 (FS3)

FS3 is located in the WFLS (M10, Plate 5-1 in Appendix C) near Building 1401. FS3 was the location of 11 USTs (removed in 1991) at a fuel pumping station where an undetermined amount of JP4 jet fuel was released between 1950 and 1977. Underground fuel lines still exist at FS3. Contamination at this site may be the result of one or more surface spills, UST leaks, or pipeline leaks. The ground surface at FS3 is a combination of paved ground and native soil.

Concentrations of TEPH (maximum 34,000 mg/kg), TVPH (maximum 3,800 mg/kg), xylene (maximum 353 mg/kg), and benzene (maximum 9.4 mg/kg) were detected in the upper 30 feet of the vadose zone. Maximum concentrations of benzene and total xylenes were detected in approximately the same areas as TPH contaminants. Benzene concentrations were highest near FS3SB23 and FS3SB09. BTEX concentrations in soil gas at a depth of 50 feet bgs ranged from less than 1.0 µg/L to 20.8 µg/L. Figures A-38 and A-43 depict the distribution of TPH in soil and soil gas.

8.1.24 Fuel Spill 4 (FS4)

FS4 is located in the undeveloped grassy area of the WFLS (L10, Plate 5-1 in Appendix C), southwest of Taxiway No. 9, the B-52 parking area, and the main runway, and north of Buildings 1404 and 1405. An undetermined amount of JP4 was released in the 1960s from a ruptured JP4 fuel line at FS4, affecting approximately 1.5 acres of exposed soil at or near the surface. The contaminated area identified at soil boring B1405SB01 is associated with the FS4 plume. The ground surface at FS4 is a combination of paved ground, concrete, and native soil.

TEPH (maximum 3,600 mg/kg) and TVPH (maximum 2,400 mg/kg) were detected from 5 to 30 feet bgs. There was no appreciable concentration of BTEX detected in the soil with the exception of ethylbenzene and xylene (in samples FS4SB21 and FS4SB31). Both 1,2,3- and 1,2,4-trimethylbenzene were detected at a maximum concentration of 16 mg/kg (in FS4SB04 at 25.5 feet bgs). Low BTEX concentrations were detected in the soil gas. Dissolved TPH in groundwater (maximum 500 µg/L) was previously reported in a downgradient monitoring well.

8.1.25 H4

See Section 8.1.30, Underground Fuel Leak 1 (UFL1).

8.1.26 JP4 Fuel Line

The JP4 fuel line is located in the WFLS (M10, J7, Plate 5-1 in Appendix C). The fuel line is a jet fuel distribution system that connects the Petroleum, Oils, and Lubricants Fuel Farm Area (PFFA) and the flight line and operational apron areas. The JP4 Fuel Line was installed in 1952 and modified in 1992. It consisted of approximately 4.5 miles of single-wall steel pipeline (4 - 10 inches in diameter) that is buried 3 to 6 feet bgs. A Leak Detection Monitoring System (LDMS), installed in 1991. The LDMS consisted of approximately 1,900 test points installed within the JP4 fuel line trench, with an average of one probe per 20 feet of line. Each probe had an effective detection radius of 10 to 12 feet. Monitoring involved collection of vapor samples from the each probe. LDMS detected anomalous elevated hydrocarbon peaks at certain points during various monitoring events. This LDMS vapor sampling data was used to focus RI soil and soil gas sampling. In addition to LDMS sampling, weekly static pressure testing of the JP4 fuel line indicated no significant loss of pressure. Surface and subsurface characteristics vary along the JP4 line because of its lateral extent. The ground surface is a combination of asphalt, concrete, and grass.

Soil gas surveys based on elevated LDMS readings indicated a few areas with elevated BTEX concentrations (a maximum of 100 µg/L in shallow soil and a maximum of 3,000 µg/L at 25 feet bgs). Two main source areas of TEPH (maximum 1,300 mg/kg) and TVPH (maximum 2,300 mg/kg) were detected follow-up soil borings JP4SB01 and JP4SB04. These locations coincide with the elevated soil gas survey readings.

8.1.27 JP7

JP7 is located within the MBS (R12, R13, Plate 5-1 in Appendix C) and was used for the bulk storage of JP4 and JP7 jet fuel. JP7 was evaluated as part of the 1997 Data Gap Investigation. This investigation included the installation of four soil borings and collection of soil and soil gas samples. Diesel was noted in shallow soil samples, and BTEX was noted in soil gas samples. TCE at 39.5 feet bgs was found above WQSA thresholds. However, because TCE was not found at shallow depths, it was determined that the TCE was related to the DA8 groundwater plume smear zone and not a result of a TCE release at JP7. Remediation at this site will be driven by the presence of petroleum hydrocarbons.

8.1.28 Petroleum, Oils, and Lubricants Fuel Farm Area (PFFA)

The PFFA is located at the south end of the MBS (S12, Plate 5-1 in Appendix C) and consists of the petroleum, oils, and lubricants (POL) fuel farm and several additional buildings. The PFFA is the bulk fuel storage and distribution facility for Castle AFB. The site includes 18 USTs, four ASTs with a total capacity of 3 million gallons, associated pipeline and pumping stations for the underground JP4 distribution system, receiving facilities for pipeline and tanker from off-site deliveries and the following additional areas:

- Building 59 (B59): used for vehicle refueling and maintenance for the 93rd Transportation Squadron and includes an oil/waste separator (SWMU 4.4).

- Building 79 (B79): contains an oil/water separator (SWMU 4.5).

- Building 508 (B508): fuel laboratory for the 93rd Supply Squadron. There is an oil/water separator (SWMU 4.13) north of the building. This SWMU treated wastewater and fuel contaminated with spent acids and/or solvents prior to discharge to the sanitary sewer.

- Building 917 (B917): the pumphouse for the base wastewater treatment plant.

- Discharge Area 6 (DA-6): constructed as a rinse-water evaporation area; also contained four USTs that were removed in 1990.

- Discharge Area 7 (DA-7): was a UST Tank Farm area near the base etymology lab.

- Sanitary Sewer Segment 8 (SS8), which was used to convey wastewater to the base wastewater treatment plant.

Materials historically handled at the PFFA included JP4, diesel, pesticides at DA7 (the Base etymology lab), and solvents.

The ground surface at the PFFA is predominantly flat and covered with asphalt. During the field investigations petroleum hydrocarbons were found to be widespread in shallow subsurface soil samples under most of the central portion of the PFFA. The maximum concentrations of TEPH (4,000 mg/kg) and TVPH (3,300 mg/kg) were detected at the pump station facility near Building 501 (B501). Aromatic VOCs, halogenated VOCs, and SVOCs (including PAHs) were also present in the areas of fuels contamination to depths of approximately 40 feet bgs. The maximum concentrations of SVOCs were detected in the vicinity of the railroad right-of-way, principally in soil borings PFFASB36 through PFFASB39. Benzo(a)pyrene was detected at concentrations of 0.13 mg/kg in SB07 (39 feet bgs) and SB37 (at 9 feet bgs). TEPH, TVPH, TCE, and BTEX were detected in groundwater samples collected from beneath the site.

8.1.29 Sanitary Sewer 8 (SS8)

See Section 8.1.27, Petroleum Fuel Farm Area.

8.1.30 Structure T61 (ST61)/Hazardous Waste Storage 1 (HSW1)

ST61 is located in the MBS (S12, Plate 5-1 in Appendix C) and includes Earth Technology Corporation 4 (ETC4) and Hazardous Waste Storage 1 (HWS1). The structure was built in 1941 as a temporary oil and lubricant gas station. The site had 3 USTs (removed in 1991) that originally contained fuel, but reportedly were later used for solvent and waste oil storage.

Concentrations of TEPH (at a maximum of 2,700 mg/kg) and TVPH (2,000 mg/kg) were detected in the upper 20 feet of the vadose zone. Elevated concentrations of BTEX (at a maximum concentration of 89 mg/kg for xylene) and SVOCs also were detected to a depth of 30 feet bgs. Benzo(a)pyrene was detected in backfill at a maximum concentration of 11 mg/kg in sample ST61SB01 at a depth of 10.5 feet bgs. However, it may not have been generated by site activities because volumes are minimal and appear to be limited to disturbed soils. Low

concentrations of aromatic and halogenated VOCs were detected in the groundwater at maximum concentration of 4 µg/L for xylene and 19 µg/L for TCE.

8.1.31 Underground Fuel Leak 1 (UFL1)

UFL1 is located in the MBS (R10, Plate 5-1 in Appendix C) and is the site of a former UST northeast of Building 708 and includes the H4 site. TEPH (at a maximum of 4,000 mg/kg) and TVPH (at a maximum of 120 mg/kg) were detected in the upper 10 feet of the vadose zone. Trace concentrations of BTEX were detected in the soil. Additionally, trace concentrations of TVPH (0.01 µg/L), toluene (0.14 µg/ L), and TCE (34 µg/L) were detected in groundwater samples.

8.1.32 Underground Fuel Leak 2 (UFL2)

UFL2 is located in the MBS (R12, Plate 5-1 in Appendix C) near Buildings 1253, 1260, and 1350. UFL2 is an underground jet fuel leak that apparently resulted from a faulty or ruptured valve in the JP-4 fuel line. The release was discovered in 1986 when a UST was removed. The area was used for aircraft parking, inspection, and servicing and was served by a pipeline. The ground surface at UFL2 consists of asphalt and concrete paving.

TEPH (maximum 4,300 mg/kg) and TVPH (maximum 6,900 mg/kg) were detected between 15 and 30 feet bgs. Volatile aromatics (xylene at a maximum of 263 mg/kg and benzene at a maximum of 22 mg/kg) were detected in the soil and significant concentrations of VOCs (including xylene and benzene) were detected in soil gas samples at depths approaching the groundwater (60 feet bgs). Concentrations of VOCs (xylene at a maximum of 10 µg/L, benzene at a maximum of 1.3 µg/L, and TCE at a maximum of 9.8 µg/L) and TEPH (at a maximum of 1.9 µg/L) were detected in the groundwater.

8.1.33 Underground Fuel Leak 3 (UFL3)

UFL3 is located in the MBS (P11, Plate 5-1 in Appendix C) and consists of a pump/transfer facility and an associated group of USTs. Concentrations of TEPH (at a maximum of 2,200 mg/kg) and TVPH (at a maximum of 1,500 mg/kg) are present primarily in the upper 20 feet of the vadose zone at this site. Several VOCs (including BTEX) were detected in shallow and downhole soil gas samples. No contaminants were detected in groundwater samples during the RI. However, two monitoring wells (MW124 and MW125), which were sampled during a 1987 investigation detected TPH in groundwater at a maximum concentration of 2,500 µg/L (Weston, 1988). Follow-up groundwater sampling conducted in 1988 found MW 124 dry. Samples from MW125 indicated TCE (ranging from 0.8 to 1.4 ppb) and toluene (ranging from ND to 0.3 ppb) (IT, 1998b).

Section VII

Section VII. References

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References (continued)

Section VIII, which follows, provides a summary of the Administrative Record (AR) for the Castle Airport environmental program. Listed in the AR summary are all environmentally relevant documents that have been developed for Castle Airport. Copies of the documents listed in the AR can be found at the Merced County Library and at the Base Conversion Agency (BCA) headquarters located at Castle Airport.

Section VIII

Section VIII. Administrative Record
As of December 14, 2001

Date	*Title*	*Author*	*File/CD Number*
28 Jan 83	HQ SAC Letter to Base Regarding Commencement of Phase I Records Search, TCE Contaminated Groundwater	Rasmussen, George R HQ SAC/DEP	02 CD 2
14 Mar 83	Base Letter to CRWQCB Regarding CAFB TCE Groundwater Investigation	Page, Aaron, Col 93 CSG/CC	06 CD 2
31 May 83	HQ AFESC Message to HQ SAC Regarding Implementation of Program	HQ AFESC/DEV	03 CD 2
09 Jun 83	Phase I, Pre-Performance Meeting	Mangan, Chuck Engineering-Science, Inc.	05 CD 2
02 Sep 83	Base Letter to HQ SAC Regarding Phase I Review	Hedrick, Stephen P, Capt 93 MG/SGPB	07 CD 2
Oct 83	Phase I, Records Search Report	Engineering-Science, Inc.	08 CD 2
19 Oct 83	CDHS Letter to MDPH Regarding Surveys for Abandoned Hazardous Waste Disposal Sites	Bailey, Thomas E California Department of Health Services	16 CD 2
04 Jan 84	HQ SAC Letter to USAF OEHL Regarding Final Phase I Report Completion, Oct 83, and Request for Phase II to Begin ASAP	Burnett, Ronald D, Col HQ SAC/SGPB	10 CD 2
04 Jan 84	CDHS Letter to HQ SAC Regarding Phase I Completion and Phase II Progression	Sandhu, Mohinder S California Department of Health Services	11 CD 2
04 Jan 84	CRWQCB Letter to Base Regarding Review of Phase I Report	Wolfson, James B California Regional Water Quality Control Board	12 CD 2
16 Jan 84	Base Letter to HQ SAC Regarding Community Understanding and Support for Phase II	Astorino, Loring R, Col 93 BMW/CC	13 CD 2
02 Feb 84	Base Letter to HQ SAC Regarding TCE Sample Results Collected from Wells 1-4 and Four Distribution Points, Jan 84	Hedrick, Stephen P, Capt 93 MG/SGPB	14 CD 2
03 Feb 84	Base Letter to CRWQCB Regarding Estimated Timetable for Phase II	Dempsey, Robert E, Col 93 BMW/CV	15 CD 2
15 Feb 84	Base Letter to CRWQCB Concerning Public Hearing	Astorino, Loring R, Col 93 BMW/CC	1019 CD 4
28 Feb 84	Phase II Presurvey Meeting Minutes	Hedrick, Stephen P, Capt 93 MG/SGPB	18 CD 2
Mar 84	Phase II, Problem Confirmation and Quantification Presurvey Report, Vol I, Technical Work Plan	Roy F Weston, Inc.	17 CD 2
05 Mar 84	Water Analysis Results, Wells 1-9 and 11, 12-18, and Four Distribution Points, 02 Feb 84	Hedrick, Stephen P, Capt 93 MG/SGPB	19 CD 2
05 Mar 84	Internal Base Letter Regarding Phase II Presurvey RPM Meeting Minutes, 28 Feb 84	Hedrick, Stephen P, Capt 93 MG/SGPB	32 CD 2
26 Mar 84	TCE Sample Results, Between 24 Oct 83 and 06 Mar 84	Hedrick, Stephen P, Capt 93 MG/SGPB	20 CD 2
26 Mar 84	TCE Sample Results, Mar 84	Hedrick, Stephen P, Capt 93 MB/SGPB	21 CD 2
01 May 84	TCE Sample Results, Apr 84	Hedrick, Stephen P, Capt 93 MG/SGPB	1018 CD 4
Jun 84	SOW, Phase II, Construct Water Line, Located at Wallace Road and Nearby Hospital Road	AFCEE/ESB	906 CD 3
04 Jun 84	TCE Sample Results, May 84	Hedrick, Stephen P, Capt 93 MG/SGPB	22 CD 2

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
18 Jun 84	HQ SAC Letter to HQ AFESC Transmitting Phase II Stage 1, Task Description and Presurvey Report	Hauver, Robert C, Col HQ SAC/SGPB	25 CD 2
27 Jun 84	TCE Sample Results, Jun 84	Hedrick, Stephen P, Capt 93 CSG/DEEV	23 CD 2
17 Jul 84	HQ SAC Letter to CRWQCB Concerning Base Activity	Hauver, Robert C, Col HQ SAC/SG	24 CD 2
24 Jul 84	CDHS Letter to HQ SAC Regarding Review of Phase II Stage 1	Norman, William F Merced County Department of Public Health	26 CD 2
28 Aug 84	HQ SAC Letter to USAF OEHL Regarding Comments on Phase II Stage 1 Task Description	Burnett, Ronald D, Col HQ SAC/SGPB	27 CD 2
09 Nov 84	Internal Base Letter Regarding PCB Sample Results, BCE Storage Yard and Bldg 136	Davis, Merritt G, Jr, Col 93 MG/SGPB	28 CD 2
31 Dec 84	News Articles Regarding Base Cleanup	The Atwater Signal The Merced Sun Star The Valley Bomber	29 CD 2
18 Feb 85	Soils and Ditch Sediments Lab Reports	Roy F Weston, Inc.	31 CD 2
20 Mar 85	Toxicology Summary Report	Hansen, Earl M, PhD Weston Analytical Laboratories	34 CD 2
19 Apr 85	TOC and Phenols Results - Water Samples	Hansen, Earl M, PhD Weston Analytical Laboratories	35 CD 2
11 Aug 85	Base Letter to CRWQCB Regarding Inspection and Annual Review of ISD Groundwater Monitoring Program	Snow, Verne L 93 CSG/DEEV	36 CD 2
06 Sep 85	Contamination Investigation and Sampling of Transformers and Tanks Corrosion Control Facility	Blume, Marilyn A Gray, Donald G Harding-Lawson Associates	37 CD 2
Nov 85	Phase II Stage 1, Confirmation and Quantification Technical Report, Vol I of II	Roy F Weston, Inc.	38 CD 2
Nov 85	Phase II Stage 1, Confirmation and Quantification Appendices, Vol II of II	Roy F Weston, Inc.	39 CD 2
Nov 85	News Article, “Meeting Today on TCE in Mobile Home Park”	De La Cruz, Mike The Merced Sun Star	47 CD 2
Nov 85	Base Letter to EPA, CDTSC and CRWQCB Regarding Information Requested at RPM Meeting	Cole, John R, LtCol 93 BW/CVE	180 CD 2
12 Nov 85	Base Letter to CRWQCB Transmitting Cleanup and Abatement Order	Volz, David E, Col 93 CSG/CC	41 CD 2
17 Dec 85	MDPH Letter to HQ SAC Regarding Review of Phase II Stage 1	Norman, William F Merced County Department of Public Health	43 CD 2
22 Jan 86	Base Letter to HQ SAC Requesting Initiation of Phase IVA Action Coordination Meeting	Buzak, Jan, Dr Kaiser, Donald W, LtCol 93 CSG/DE	44 CD 2
24 Jan 86	HQ SAC Memorandum Regarding Meeting on Groundwater Cleanup	Brown, Douglas, Maj HQ SAC/DEPV	45 CD 2
31 Jan 86	News Article, “CAFB Will Fund New Water Well”	De La Cruz, Mike The Merced Sun Star	33 CD 2
05 Feb 86	Meeting Minutes of Phase IV Coordination Meeting, 29 Jan 86	Kaiser, Donald W, LtCol 93 CSG/DE	46 CD 2

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
23 Apr 86	EPA Comments on Phase IVA RAP Task Report No 1, Site Characterization Plan for Main Base, South and West Flightline Sectors	EPA Region IX	48 CD 2
May 86	Base Letter to EPA Transmitting Phase II Stage 2, Draft Report for Review and Comment	Chan, Arthur D 93 BMW/CEV	49 CD 2
19 May 86	HQ SAC Letter to Base Submitting Phase II Stage 2, Draft SOW for Review	Pointer, John H, LtCol HQ SAC/SGPB	50 CD 2
Jun 86	SOW, Phase IVA, RAP	Hazardous Materials Technical Center	51 CD 2
01 Jul 86	Base Letter to MDPH Regarding JP-4 Spill, Bldg 1350	Snow, Verne L 93 CSG/DDE	52 CD 2
30 Jul 86	EPA Comments on Phase IVA RAP SOW	EPA Region IX	53 CD 2
30 Jul 86	EPA Comments on Phase II Stage 2, SOW	EPA Region IX	54 CD 2
30 Jul 86	EPA Letter to Base Regarding Comments on Draft MOU and Agreement for City of Atwater Portable Water Well, 20 Jun 86	Seraydarian, Harry EPA Region IX	911 CD 3
30 Jul 86	MOU and Agreement Between the Base and City of Atwater, OT-29	93 CSG/CC City of Atwater EPA Region IX	1050 CD 4
Aug 86	EPA Letter to Base Regarding EPA Final Comments on Phase II Stage 1 Confirmation and Quantification Technical Report and Phase IVA, RAP, SOW	Takata, Keith EPA Region IX	55 CD 2
07 Aug 86	MOU and Agreement Between USAF, DoD, EPA, CDHS, and MDPH	93 BMW/CC	898 CD 3
21 Aug 86	Summary of Meeting Regarding Domestic Well and Bellevue Road Water Main Project	Reitz, Mark Boyle Engineering Corp.	56 CD 2
21 Aug 86	EPA Letter to Sharpe Army Depot Transmitting Final Draft Initial Compliance Agreement for Review and Comment	Seraydarian, Harry EPA Region IX	900 CD 3
11 Sep 86	Internal Base Letter Transmitting Copies of Phase IVA Kickoff Meeting Minutes, 29-30 Jul 86	Kaiser, Donald W, LtCol 93 CSG/DEEV	57 CD 2
16 Sep 86	CRWQCB Letter to Base Regarding Review of Phase II Stage 2 Investigation Work Plans and Agreement for Expansion of Atwater Water Supply System	Wolfson, James B California Regional Water Quality Control Board	58 CD 2
18 Sep 86	Agreement for Installation of TCE Filtration System at Homeowners Residence	Kirbie, Darrel G, LtCol 93 CSG/DEV	59 CD 2
18 Sep 86	Phase IVA, RAP, Draft Task Report CRP, No. 7	Oak Ridge National Laboratory	60 CD 2
30 Sep 86	Base Letter to CDTSC Concerning Closure, PCB Spill Site	Volz, David E, Col 93 CSG/CC	1049 CD 4
Oct 86	Phase II Stage 2, HSP	Roy F Weston, Inc.	61 CD 2
Oct 86	Phase II Stage 2, Technical Operations Plan	Roy F Weston, Inc.	62 CD 2
14 Oct 86	Oak Ridge Lab Letter to HQ SAC Regarding Soil Augering at SD-13, DA-5	Loyd, John R Oak Ridge National Laboratory	63 CD 2
15 Oct 86	CDHS Letter to Base Regarding PCB Cleanup Level for Spill Site, PCB Storage Facility, Bldg 1203	Landis, Anthony J California Department of Health Services	64 CD 2
13 Nov 86	MDPH Letter to Base Concerning Petroleum Contaminated Soils at East Perimeter Road	Palsgaard, Jeff H Merced County Department of Public Health	65 CD 2

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Date	*Title*	*Author*	*File/CD Number*
13 Nov 86	Base Letter to EPA Regarding Development of IAG Between Castle AFB and EPA	Volz, David E, Col 93 CSG/CC	66 CD 2
18 Dec 86	Base Memorandum to USACE Concerning Procedures to Obtain Permit in Installing Monitoring Wells in Merced Irrigation District Property	Randall, Steven G 93 CSG/DEEV	68 CD 2
23 Dec 86	Base Letter to MID Requesting Permit to Construct and Maintain Pollution Monitoring on Merced Irrigation District Rights of Way	Kaiser, Donald W, LtCol 93 CSG/DE	70 CD 2
Jan 87	Chemical Groundwater Quality Evaluation Report	Boyle Engineering Corp.	86 CD 2
22 Jan 87	Phase IVA Meeting Minutes, 22 Jan 87	93 CSG/DEEV	87 CD 2
28 Jan 87	Oak Ridge Lab Letter to HQ SAC Submitting Alternatives for Removal of TCE from Groundwater	Loyd, John R Oak Ridge National Laboratory	88 CD 2
Feb 87	Phase IVA, RAP, Task Report No 1 Site Characterization Plan for Main Base, South and West Flightline Sectors	IT Corp.	89 CD 2
26 Feb 87	Base Letter to Merced Irrigation District Concerning Monitoring Wells Agreement	Volz, David E, Col 93 CSG/CC	1052 CD 4
11 Mar 87	City of Atwater Letter to Base Regarding Status of Groundwater Investigation	Haug, John A City of Atwater	899 CD 3
09 Apr 87	CDHS Memorandum Regarding Preliminary Review of Phase IVA, RAP, Task Report No 1, Site Characterization for Main Base, South and West Sectors	Buell, Reid California Department of Health Services	71 CD 2
21 Apr 87	CRWQCB Letter to Base Transmitting Memorandum on Regulatory Programs and Action	Nevins, Scott California Regional Water Quality Control Board	73 CD 2
24 Apr 87	EPA Letter to Base Transmitting Comments on Phase IVA Site Characterization Plan	Takata, Keith EPA Region IX	74 CD 2
28 Apr 87	EPA Region IX Meeting Minutes, 27 Apr 87	Hawkins, Ronald L, LtCol 93 CSG/DEEV	75 CD 2
30 Apr 87	Base Letter to CRWQCB Regarding SWAT Program Guidance for South Landfill Zone	McGuirk, Dennis P, Col 93 BMW/CV	76 CD 2
May 87	Final Wastewater Characterization and Hazardous Waste Survey	Binovi, Robert D, LtCol Tetla, Robert A, 1Lt Attebery, Charles W, 2Lt	1051 CD 4
12 May 87	CRWQCB Letter to Base Regarding SWAT Reports	Nevins, Scott California Regional Water Quality Control Board	81 CD 2
19 May 87	Oak Ridge Lab Letter to EPA Regarding Draft CRP	Loyd, John R Oak Ridge National Laboratory	82 CD 2
19 May 87	Oak Ridge Lab Letter to CDHS Submitting Draft CRP and Other Information	Loyd, John R Oak Ridge National Laboratory	83 CD 2
22 May 87	CDHS Letter to Base Submitting Memos Summarizing Meeting and Conference Calls Addressing Phase IVA Work Plan	Wang, David California Department of Health Services	84 CD 2
22 May 87	Base Letter to CRWQCB Concerning Status Report and Time Schedule for Required RA	Hawkins, Ronald L, LtCol 93 CSG/DEEV	85 CD 2
Jun 87	Phase II Stage 2, Draft Confirmation and Quantification Technical Report, Vol I of IV	Roy F Weston, Inc.	90 CD2

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Date	*Title*	*Author*	*File/CD Number*
Jun 87	Phase II Stage 2, Draft Confirmation and Quantification Technical Report, Vol III of IV	Roy F Weston, Inc.	91 CD 2
Jun 87	Phase II Stage 2, Draft Confirmation and Quantification Technical Report Appendices, Vol IV of IV	Roy F Weston, Inc.	92 CD 2
10 Jun 87	Base Letter to CRWQCB Transmitting SOW for SWAT Reports, Four Solid Waste Areas	Hawkins, Ronald L, LtCol 93 CSG/DEV	93 CD 2
13 Jul 87	Base Letter to Merced Irrigation District Requesting Permit to Construct and Maintain Groundwater Pollution Monitoring Wells Within Merced Irrigation District Lateral Canal Rights of Way	Hodges, Harold W, LtCol 93 BMW/CVE	94 CD 2
22 Jul 87	EPA Letter to Base Regarding Proposal for NPL	Zelikson, Jeffrey EPA Region IX	95 CD 2
Aug 87	Phase IVA, Site Characterization Plan	IT Corp.	96 CD 2
06 Aug 87	Base Letter to EPA Transmitting Replies to Comments on Phase IVA Work Plan	Hodges, Harold W, LtCol 93 BMW/CVE	97 CD 2
21 Aug 87	CDHS Letter to EPA Transmitting Responses to Comments During Meeting, 15 Jul 87	Buell, Reid California Department of Health Services	98 CD 2
16 Oct 87	EPA Letter to Base Regarding Comments on Sample Plan of Revised Phase IVA Site Characterization Plan, Appendix D.	Martyn Goforth, Kathleen A EPA Region IX	102 CD 2
19 Oct 87	SOW, RI/FS and RD	Martin Marietta Energy Systems, Inc.	103 CD 2
02 Nov 87	EPA Letter to Base Transmitting Comments on Draft Phase II Stage 2, Confirmation and Quantification Report	Zimpfer, Amy K EPA Region IX	104 CD 2
05 Nov 87	Base Memorandum Concerning SOV Testing for JP-4 Pipeline Project	Petersen, Alfred 93 BMW/CVE	105 CD 2
05 Nov 87	News Article, “Haug Clarifies CAFB Well Delay”	UNK	905 CD 3
09 Nov 87	Base Letter to Resident Regarding TCE Absorbed into Skin and Inhaled While Bathing	Chan, Arthur D 93 BMW/CVE	106 CD 2
09 Nov 87	CDHS Letter to Base Transmitting Review of Phase IVA Site Characterization Work Plan	Wang, David California Department of Health Services	107 CD 2
13 Nov 87	EPA Letter to Base Transmitting Comments on Phase IVA Site Characterization Plan	Zimpfer, Amy K EPA Region IX	108 CD 2
16 Nov 87	DOI Letter to Base Transmitting Plots of TCE Concentrations Sampled in Test Wells 13-18	Avon, Lizanne US Department of the Interior - Water Resources Division	113 CD 2
23 Nov 87	CDHS Letter to Base Transmitting Review Comments on HSP for Phase IVA Site Characterization Plan, Appendix B, Aug 87	Wang, David California Department of Health Services	112 CD 2
08 Dec 87	Base Letter Transmitting Agenda and Summary Regarding Coordination Meeting With Regulatory Agencies on Phase IVA Site Characterization Plan, 17 Dec 87	Chan, Arthur D 93 BMW/CVE	111 CD 2
14 Dec 87	CDHS Letter to Base Regarding Toxic RI Conducted Over the Last Five Years	Landis, Anthony J California Department of Health Services	158 CD 2

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Date	*Title*	*Author*	*File/CD Number*
15 Dec 87	SOW, RI for Proposed JP-4 Fuel Distribution System and Update of Phase IVA Site Characterization Plan	Martin Marietta Energy Systems, Inc.	110 CD 2
30 Dec 87	Base Letter to EPA Transmitting Minutes of Phase IVA Work Plan Discussion Meeting, 17 Dec 87	Chan, Arthur D 93 BMW/CVE	114 CD 2
Jan 88	Work Plan Describing SOW, Soil Contaminated with Various Petroleum Hydrocarbons	White, Glen Horizon Technologies	115 CD 2
08 Jan 88	EPA Letter to Base Regarding Receipt of Phase IVA Site Characterization Plan Aug 87	Anderson, Julie EPA Region IX	125 CD 2
19 Jan 88	Base Letter to USAF OEHL Transmitting Comments by CDHS, Draft Phase II Stage 2 Report, Jun 87	Chan, Arthur D 93 BMW/CVE	130 CD 2
21 Jan 88	CDHS Letter to Base Concerning Comments on Phase IVA Work Plan, SP, and QAPP on TCE Plume Characterization	Wang, David California Department of Health Services	124 CD 2
27 Jan 88	Base Letter to CDTSC Regarding Review of Letter, 14 Dec 87	Amerasinghe, S Felix 93 CSG/CVE	123 CD 2
03 Feb 88	EPA Letter to Base Regarding Phase IVA Work Plan	Anderson, Julie EPA Region IX	122 CD 2
04 Feb 88	CDHS Letter to Atwater City Administrator Concerning Proposed Placement of Production Well Near Bellevue Elementary	Wang, David California Department of Health Services	910 CD 3
24 Feb 88	EPA Letter to Base Confirming Kickoff Meeting for Upcoming IAG Negotiations, 02 Mar 88	Anderson, Julie EPA Region IX	121 CD 2
26 Feb 88	Draft FFA	EPA Region IX	118 CD 2
26 Feb 88	Base letter to CDHS Transmitting Meeting Minutes, 08 Feb 88	Chan, Arthur D 93 BMW/CVE	119 CD 2
26 Feb 88	Base Letter to CRWQCB Regarding Review of Requirements of Toxic Pits Cleanup Act, 84	Chan, Arthur D 93 BMW/CVE	120 CD 2
01 Mar 88	Draft Interagency FFA	EPA Region IX	117 CD 2
07 Mar 88	EPA Letter to City of Atwater Regarding Oversight of Superfund RI Activities	Anderson, Julie EPA Region IX	904 CD 3
28 Mar 88	Base Letter to EPA Regarding Response to Letters	Chan, Arthur D 93 BMW/CVE	116 CD 2
Apr 88	RI/FS, Work Plan, Vol I of IV	IT Corp.	126 CD 2
Apr 88	RI/FS, SAP, Vol II of IV	IT Corp.	127 CD 2
Apr 88	RI/FS, HSP, Vol IV of IV	IT Corp.	129 CD 2
13 Apr 88	Base Letter to EPA Transmitting IAG Negotiation Meeting Minutes, 16-17 Mar 88	Chan, Arthur D 93 BMW/CVE	134 CD 2
May 88	JP-4 Fuel Line Assessment Report	IT Corp.	133 CD 2
May 88	Groundwater Investigation, Northeast Quadrant, Technical Report, Vol I of II	Boyle Engineering Corp.	135 CD 2
May 88	Groundwater Investigation, Northeast Quadrant, Appendices, Vol II of II	Boyle Engineering Corp.	136 CD 2
26 May 88	EPA Letter to Base Transmitting Comments on Revised Basewide RI/FS Work Plan, Apr 88	Seid, Raymond EPA Region IX	138 CD 2
27 May 88	CDHS Letter to Base Transmitting Staff Review of Basewide RI/FS Work Plan, Apr 88	Wang, David California Department of Health Services	139 CD 2
Jun 88	Draft Preliminary Design Report for Production Well and Water Main	Boyle Engineering Corp.	140 CD 2
22 Jun 88	SOW, Type “A” Services for Environmental SWAT and TPCA Investigations	93 BMW/LGC	141 CD 2

Date	*Title*	*Author*	*File/CD Number*
23 Jun 88	Base Letter to CDHS Transmitting Well Installation Procedures, Test Wells 12-18	Amerasinghe, S Felix 93 CSG/CVE	142 CD 2
29 Jun 88	Base Letter to EPA Transmitting IAG Negotiation Meeting Minutes, 14 and 15 Apr 88	Chan, Arthur D 93 BMW/CVE	143 CD 2
Jul 88	Phase II Stage 2, Final Confirmation/Quantification Report, Vol I of III	Roy F Weston, Inc.	144 CD 2
Jul 88	Phase II Stage 2, Final Confirmation/Quantification Report, Vol II of III	Roy F Weston, Inc.	145 CD 2
Jul 88	Phase II Stage 2, Final Confirmation/Quantification Report, Vol III of III	Roy F Weston, Inc.	146 CD 2
01 Jul 88	IT Corp. Letter to Base Transmitting Responses to EPA and CDHS Comments on RI/FS Work Plans, Apr 88	IT Corp.	147 CD 2
01 Jul 88	EPA Response to Comments Concerning Phase II Stage 2 Report	EPA Region IX	148 CD 2
01 Jul 88	CDHS Response to Comments Concerning Phase II Stage 2 Report	California Department of Health Services	149 CD 2
06 Jul 88	IT Corp. Response to CDHS Comments on RI/FS Work Plans, Apr 88	IT Corp.	150 CD 2
14 Jul 88	EPA Letter to Base Transmitting Documentation Requirements for Data Validation of Non-CLP Laboratory Data	Seid, Raymond EPA Region IX	151 CD 2
15 Jul 88	CDHS Letter to Base Encouraging Implementation of Toxic Waste Site Characterization Phase of RI/FS, Apr 88	Wang, David California Department of Health Services	152 CD 2
15 Jul 88	USAF OEHL Letter to Base Transmitting Responses to EPA Comments on Phase II, Stage 2 Report	Williams, Joanne B USAF OEHL/TSS	153 CD 2
18 Jul 88	Minutes From Meeting on RI/FS Work Plans, 03 Jun 88 and Minutes from Conference Calls, 14 and 27 Jun 88	Amerasinghe, S Felix 93 BMW/CVE	154 CD 2
19 Aug 88	CDHS Letter to Base Regarding Review of Transcript of Meeting on RI/FS Work Plans, 03 Jun 88 and Conference Calls on 14 and 27 Jun 88	Wang, David California Department of Health Services	155 CD 2
29 Aug 88	IT Corp. Letter to Martin Marietta Transmitting Final Clarifications of Regulatory Comments on Work Plan, Sampling Plan, HSP, and QAPP, Jun 88	Erikson, Dike G IT Corp.	156 CD 2
30 Aug 88	Base Letter to CRWQCB Concerning Two Off Base Landfill Areas Within Property Line of Castle Vista	Chan, Arthur D 93 BMW/CVE	157 CD 2
Sep 88	RI/FS, QAPP, Vol III of IV	IT Corp.	128 CD 2
01 Sep 88	EPA Letter to Base Regarding Failure to Receive Addendum to Work Plan, Addressing Comments on Revised Work Plan	Anderson, Julie EPA Region IX	159 CD 2
08 Sep 88	CRWQCB Letter to Base Regarding Summary of Status of Regulatory Programs and Actions	Del Sarto, Glenn California Regional Water Quality Control Board	160 CD 2
09 Sep 88	CRWQCB Letter to Base Regarding Landfills Found in Castle Vista Housing Area	Mosbacher, Michael H California Regional Water Quality Control Board	161 CD 2
14 Sep 88	Base Letter to EPA Transmitting Minutes of RPM Meeting, 13 Sep 88	Chan, Arthur D 93 BMW/CVE	162 CD 2
87	Base Letter to Atwater Signal Concerning Response to Concerns of Resident	Wilson, James F, Col 93 CSG/CC	164 CD 2

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Date	*Title*	*Author*	*File/CD Number*
14 Sep 88	News Article, "TCE Evaluation Programs Under Way at CAFB"	The Atwater Signal	165 CD 2
15 Sep 88	News Article, "Please Output for Bill K, TCE Letter, RE: Air Force Article in Signal, 14 Sep 88, TCE Evaluation Under Way at Castle"	Resident The Atwater Signal	163 CD 2
Oct 88	RI/FS, Draft Final CRP	IT Corp.	166 CD 2
Oct 88	EPA Letter to Base Concerning Location of City of Atwater Proposed Production Well	Anderson, Julie EPA Region IX	903 CD 3
04 Oct 88	FFA With EPA Under CERCLA Section 120	93 CSG/DEEV	167 CD 2
05 Oct 88	Base Letter Transmitting Minutes from 27-29 Sep 88 IAG Negotiation Meeting and Conference Call, 05 Oct 88	Chan, Arthur D 93 BMW/CVE	168 CD 2
10 Oct 88	EPA Memorandum Regarding Review of Groundwater Documents	Joma, Hannibal EPA Region IX	909 CD 3
19 Oct 88	Geo/Resource Consultants Letter to EPA Regarding Review of Responses to EPA and CDHS Comments on Work Plan	Tryhorn, Alan D Vanek, Eva Geo/Resource Consultants, Inc.	169 CD 2
28 Oct 88	EPA Letter to City of Atwater Regarding Location of Proposed Production Well	Anderson, Julie EPA Region IX	908 CD 3
31 Oct 88	EPA Letter to Base Regarding Review of QAPP for Work Plan	Flaherty, Michael S EPA Region IX	171 CD 2
Nov 88	Castle Environmental Update, Vol I, No. 1	93 BMW/PA	173 CD 2
22 Nov 88	EPA Letter to Base Concerning Measures Taken to Mitigate Exposure to TCE Contaminated Water, Mobile Home Park	Flaherty, Michael S EPA Region IX	902 CD 3
23 Nov 88	Base Letter to EPA Transmitting Minutes of RPM Meeting, 27 Oct 88	Chan, Arthur D 93 BMW/CVE	175 CD 2
Dec 88	RI/FS, Work Plans, Addendum	IT Corp.	176 CD 2
02 Dec 88	MDPH Letter to EPA Concerning Federal Drinking Water Regulations	Palsgaard, Jeff H Merced County Department of Public Health	901 CD 3
05 Dec 88	USAF OEHL Letter to Base Transmitting Regulatory Comments on Phase II Stage 2 Report	Styles, Jerald E, Lt USAF OEHL/TSS	177 CD 2
08 Dec 88	EPA Letter to Base Transmitting Comments on Phase II Stage 2 Confirmation and Quantification Final Report	Flaherty, Michael S EPA Region IX	178 CD 2
21 Dec 88	Grain Size Analysis Data	IT Corp.	179 CD 2
26 Jan 89	Base Letter to Kleinfelder Regarding SOW for Environmental SWAT and TPCA Investigations	Houston, Walter M 93 CSG/LGCC	182 CD 2
26 Jan 89	News Article, "Mobile Home Park Taps City Water"	De La Cruz, Mike The Merced Sun Star	334 CD 2
08 Feb 89	News Article, "H2O Spells Happiness for Park Residents"	De La Cruz, Mike The Atwater Signal	172 CD 2
16 Feb 89	Base Letter to CRWQCB Concerning Status of SWAT/TPCA Investigation	Chan, Arthur D 93 BMW/CVE	186 CD 2
25 Feb 89	Press Release, New Standards for 11 Chemical Contaminants of Drinking Water, Effective 25 Feb 89	California Regional Water Quality Control Board	188 CD 2
28 Feb 89	TCE Sampling Analysis Data	California Water Labs	187 CD 2
Mar 89	Castle Environmental Update, Vol II, No. 1	93 BMW/PA	189 CD 2
Mar 89	Draft Groundwater Treatment Feasibility Report for Organics Removal, Main Base Wells 1, 2, and 3	Boyle Engineering Corp.	190 CD 2

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Date	*Title*	*Author*	*File/CD Number*
08 Mar 89	TPCA Investigation Work Plan for Fire Training Areas	Kleinfelder, Inc.	191 CD 2
08 Mar 89	SWAT Proposals	Kleinfelder, Inc.	192 CD 2
15 Mar 89	CDHS Letter to Base Regarding Attendance and Minutes of Meeting, 07 Feb 89	Wang, David California Department of Health Services	193 CD 2
05 Apr 89	EPA Letter to HQ USAF Regarding Meeting at Norton AFB, 28 Mar 89	Zelikson, Jeffrey EPA Region IX	195 CD 2
10 Apr 89	CRWQCB Letter to Base Regarding TPCA Investigative Work Plan	Del Sarto, Glenn California Regional Water Quality Control Board	196 CD 2
27 Apr 89	EPA Letter to Base Transmitting Comments on SWAT Proposal, TPCA Investigation Work Plan, and Fire Training Areas	Flaherty, Michael S EPA Region IX	198 CD 2
27 Apr 89	CDHS Letter to Base Transmitting Comments on Latest Version of CRP	O'Kane, John A, Jr California Regional Water Quality Control Board	199 CD 2
28 Apr 89	CRWQCB Letter to Base Transmitting SWAT Proposal Review Comments	Mosbacher, Michael H California Regional Water Quality Control Board	200 CD 2
May 89	FFA, Under CERCLA Section 120	HQ USAF California Department of Toxic Substances Control	78 CD 2
May 89	Groundwater Treatment Feasibility Report for Organics Removal, Main Base Wells 1, 2, and 3	Boyle Engineering Corp.	201 CD 2
04 May 89	EPA Letter to DOA Confirming IAG Negotiations, 08 May 89 - 12 May 89	Zelikson, Jeffrey EPA Region IX	202 CD 2
10 May 89	Martin Marietta Letter to CDHS Regarding Addendum to RI/FS Work Plan	Loyd, John R Martin Marietta Energy Systems, Inc.	203 CD 2
11 May 89	IAG, FFA Under CERCLA Section 120	HQ SAC California Department of Toxic Substances Control	208 CD 2
25 May 89	EPA Letter to Base Transmitting Preliminary Health Assessment, 27 Oct 88	Flaherty, Michael S EPA Region IX	204 CD 2
Jun 89	Geological and Water Quality Test Results for Production Well 12	Boyle Engineering Corp.	205 CD 2
13 Jun 89	Internal Base Letter Regarding Comments Received from CRWQCB on SWAT, TPCA Work Plans	Chan, Arthur D 93 BMW/CVE	207 CD 2
15 Jun 89	USEPA Letter to EPA Region IX Concerning Control of Air Emissions from Superfund Air Strippers at Superfund Groundwater Sites	Longest, Henry L, II Emison, Gerald USEPA	1763 CD 9
29 Jun 89	News Article, "Family Sues AF Over Tainted Well"	McCarthy, Charles The Fresno Bee	209 CD 2
Jul 89	Environmental Assessment Report for Location and Construction of New Production Well 12	Boyle Engineering Corp.	210 CD 2
Jul 89	FFA Under CERCLA Section 120	HQ USAF EPA Region IX California Department of Toxic Substances	1007 CD 4
10 Jul 89	Draft News Release, FFA to be Signed for Castle AFB	93 BMW/PA	211 CD 2

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Date	*Title*	*Author*	*File/CD Number*
20 Jul 89	EPA Letter to Base Transmitting Comments Concerning Changes to Groundwater Sampling Events and Soil Boring Locations	Flaherty, Michael S EPA Region IX	213 CD 2
21 Jul 89	Federal Facility Agreement	93 WG/PA	1245 CD 6
31 Jul 89	CDHS Letter to Base Regarding Review of Modification to Groundwater Sampling Events and Soil Boring Locations	O'Kane, John A, Jr California Department of Health Services	215 CD 2
08 Aug 89	Base Memorandum Regarding Retired SMSgt Visit to Waste Dump Site, DP-28	Tekrony, Linda 93 BMW/CVE	216 CD 2
10 Aug 89	EPA Letter to Base Regarding Ongoing RI Activities	Flaherty, Michael S EPA Region IX	217 CD 2
15 Sep 89	Geo/Resource Consultants Letter to EPA Regarding Review of Recent Water Level Data for Monitoring Wells	Vanek, Eva Tryhorn, Alan D Geo/Resource Consultants, Inc.	221 CD 2
19 Sep 89	EPA Letter to Base Regarding Several Issues Discussed at RPM Meeting, 10 Aug 89	Flaherty, Michael S EPA Region IX	222 CD 2
20 Sep 89	CRWQCB Letter to Base Regarding Review of GAC Filtration Pump Test Results	Mosbacher, Michael H California Regional Water Quality Control Board	223 CD 2
16 Oct 89	Base Letter to HQ SAC Regarding RPM Meeting, 20 Sep 89	Chan, Arthur D 93 BMW/CVE	225 CD 2
25 Oct 89	Base Letter Concerning TRC Meeting to be Held 30 Nov 89	Chan, Arthur D 93 BMW/CVE	226 CD 2
25 Oct 89	Internal Base Letter Regarding Correspondence to CRWQCB for SWAT Portion of Contract	Houston, Walter M 93 CSG/LGCC	227 CD 2
03 Nov 89	Boyle Engineering Letter to Base Transmitting Letter Report Regarding 72 Hour Pump Test	Reitz, Mark Boyle Engineering Corp.	228 CD 2
09 Nov 89	Base Letter to Oak Ridge Lab Transmitting CRWQCB Comments on Castle Vista Landfill Investigations	Chan, Arthur D 93 BMW/CVE	174 CD 2
21 Nov 89	Base Letter to CDHS Transmitting 3rd Quarter Results from Production Wells 5, 6, 9, 10, and 11 for Review	Bernier, David R 93 MG/SGPB	230 CD 2
28 Nov 89	TRC Charter	Famulare, Eugene J, Col 93 BMW/CV	231 CD 2
28 Nov 89	SOW, RI/FS, for Step 3 Tasks	Martin Marietta Energy Systems, Inc.	369 CD 3
01 Dec 89	Base Letter to Resident Regarding Drinking Water Samples	Oyelowo, Layi A 93 CSG/EM	232 CD 2
07 Dec 89	Kleinfelder Letter to Base Concerning Responses to EPA Comments	Johnson, Christopher S Carey, Russell O Kleinfelder, Inc.	234 CD 2
11 Dec 89	Base Letter to CDHS Concerning Deadline for IAG Primary Documents	Fowler, John F, Col 93 CSG/CC	235 CD 2
13 Dec 89	Kleinfelder Letter to Base Transmitting Results of Water Samples Collected From Boring B-237 in South Landfill Zone	Johnson, Christopher S Kleinfelder, Inc.	236 CD 2
21 Dec 89	Internal Base Letter Regarding TRC Meeting Agenda, 10 Jan 90	Chan, Arthur D 93 CSG/EM	381 CD 3
22 Dec 89	Base Letter to EPA and CDHS Transmitting RPM Meeting Minutes of RI/FS, Nov 89	Chan, Arthur D 93 CSG/EM	239 CD 2
22 Dec 89	EPA Letter to Base Regarding Comments on IAG Proposed Deadlines Pursuant to Section 8	Flaherty, Michael S EPA Region IX	240 CD 2

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Date	*Title*	*Author*	*File/CD Number*
Jan 90	SOW, Close Water Wells 2, 3, and 4	93 CSG/EM	1020 CD 4
02 Jan 90	Base Letter to HQ SAC Concerning First TRC Meeting, 10 Jan 90	Chan, Arthur D 93 CSG/EM	241 CD 2
03 Jan 90	Certificate of Analysis, CAC Title 22 Drinking Water Compliance	California Water Labs	242 CD 2
04 Jan 90	EPA Letter to Base Regarding Non-Concurrence With Proposed Deadlines	Flaherty, Michael S EPA Region IX	243 CD 2
05 Jan 90	Base Letter to CDHS Concerning Review and Comments on IAG Schedule	Oyelowo, Layi A 93 CSG/EM	244 CD 2
08 Jan 90	CDHS Letter to Base Regarding Response to Draft TRC Charter	O'Kane, John A, Jr California Department of Health Services	245 CD 2
10 Jan 90	Base Letter to Martin Marietta Transmitting Regulatory Review Comments on IAG Schedule	Chan, Arthur D 93 CSG/EM	246 CD 2
18 Jan 90	Base Letter to EPA and CDHS Regarding RPM Meeting on Groundwater Workshop	Chan, Arthur D 93 CSG/EM	247 CD 2
19 Jan 90	Base Letter Regarding TRC Meeting Minutes	93 BMW/PA	248 CD 2
31 Jan 90	EPA Letter to Base Transmitting Comments on Draft TRC Charter	Flaherty, Michael S EPA Region IX	250 CD 2
09 Feb 90	Martin Marietta Letter to Base Transmitting Minutes of RI/FS Review Meeting, 25 Jan 90	Loyd, John R Martin Marietta Energy Systems, Inc.	251 CD 2
12 Feb 90	Internal Base Letter Regarding Regulatory Review Comments on Proposed TRC Charter	Oyelowo, Layi A 93 CSG/EM	252 CD 2
13 Feb 90	Base Letter to EPA and CDHS Transmitting Minutes of RPM Meeting, 25 Jan 90	Chan, Arthur D 93 CSG/EM	253 CD 2
13 Feb 90	Base Letter to EPA and CDHS Regarding Final IAG Schedule	Chan, Arthur D 93 CSG/EM	254 CD 2
28 Feb 90	Base Letter to EPA and CDHS Regarding Agenda for Next RPM Meeting	Chan, Arthur D 93 CSG/EM	255 CD 2
07 Mar 90	EPA Letter to Base Transmitting Comments on Base Responses Concerning EPA Original Comments on SWAT Work Plan	Flaherty, Michael S EPA Region IX	256 CD 2
07 Mar 90	Minutes of RI/FS Project Status Meeting	93 BMW/PA	257 CD 2
21 Mar 90	CRWQCB Letter to Base Regarding Rational for MW 713 and 714 Placements	Mosbacher, Michael H California Regional Water Quality Control Board	259 CD 2
23 Mar 90	CDHS Letter to Base Regarding Rational for Locating MW 713 and 714 to Determine Potential TCE Source Areas	O'Kane, John A, Jr California Department of Health Services	260 CD 2
27 Mar 90	Base Letter to EPA and CDHS Regarding Revised IAG Schedule Presented at RPM Meeting, 07 Mar 90	Chan, Arthur D 93 CSG/EM	274 CD 2
28 Mar 90	Kleinfelder Letter to Base Transmitting Final Response to EPA Comments on SWAT Proposal	Johnson, Christopher S Carey, Russell O Kleinfelder, Inc.	261 CD 2
06 Apr 90	CDHS Letter to Base Regarding Review of IAG Final Schedule of Primary Document Deliverables Submitted 07 Mar 90	Landis, Anthony J California Department of Health Services	263 CD 2
06 Apr 90	EPA Letter to Base Confirming Agreement with Rationale Provided by Air Force for Locating MW 713 and 714	Flaherty, Michael S EPA Region IX	264 CD 2

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Date	*Title*	*Author*	*File/CD Number*
09 Apr 90	Base Letter to EPA and CDHS Transmitting Minutes of Project Manager RI/FS Status Meeting, 07 Mar 90	Ridenour, Charles B 93 CSG/EM	265 CD 2
09 Apr 90	Applicability of Toxic Pits Cleanup Act to FTA-3 Report	Kleinfelder, Inc.	266 CD 2
09 Apr 90	Base Letter to Office of Drinking Water, EPA, Dept of Health and Mayor of Atwater Concerning Closure of MOU	Fowler, John F, Col 93 CSG/CC	1055 CD 4
10 Apr 90	EPA Letter to Base Concerning Delineated Wells Sampled in Rounds 3 and 4 of Groundwater Monitoring Program	Flaherty, Michael S EPA Region IX	267 CD 2
12 Apr 90	Internal Base Letter Transmitting Kleinfelder Final Responses to EPA, 07 Mar 90	Ridenour, Charles B 93 CSG/EM	268 CD 2
17 Apr 90	Base Letter to EPA and CDHS Transmitting Agenda and Technical Memorandum for Next RPM Meeting	Chan, Arthur D 93 CSG/EM	269 CD 2
17 Apr 90	Base Letter to TRC Members Transmitting Agenda and Charter, 25 Apr 90	Steuck, Jay C, Lt 93 BMW/PA	270 CD 2
25 Apr 90	Base Letter Transmitting Minutes of TRC Meeting, 25 Apr 90	93 CSG/EM	273 CD 2
May 90	SWAT Work Plan, Castle Vista Landfills	IT Corp.	275 CD 2
02 May 90	Martin Marietta Letter to Base Transmitting RI/FS Project Status Review Meeting Minutes, 24 Apr 90	Loyd, John R Martin Marietta Energy Systems, Inc.	272 CD 2
08 May 90	SWAT Report	Kleinfelder, Inc.	276 CD 2
18 May 90	Merced Irrigation District Letter to Base Regarding Casad Canal Right of Way to Test for Monitoring Wells	Reta, Tom Merced Irrigation District	277 CD 2
23 May 90	Base Letter to EPA and CDHS Regarding Next RPM Meeting	Chan, Arthur D 93 CSG/EM	278 CD 2
25 May 90	EPA Letter to Base Regarding SWAT and TPCA Programs	Flaherty, Michael S EPA Region IX	280 CD 2
25 May 90	SWAT Report West Landfill Zone, Vol I of II	Kleinfelder, Inc.	281 CD 2
25 May 90	SWAT Report, West Landfill Zone, Vol II of II	Kleinfelder, Inc.	282 CD 2
30 May 90	CDHS Letter to Base Regarding Comments on Technical Memorandum for Proposed Long Term Pumping Test	O'Kane, John A, Jr California Department of Health Services	283 CD 2
31 May 90	Base Letter Transmitting RPM Meeting Minutes, 31 May 90	Chan, Arthur D 93 CSG/EM	284 CD 2
31 May 90	CDHS Letter to DoD Transmitting DSMOA	Kizer, Kenneth W California Department of Health Services	359 CD 3
Jun 90	SOW, TCE Filtration System for Residents	93 CSG/DEVR	72 CD 2
Jun 90	Draft Community Relations Plan	93 BMW/PA	285 CD 2
Jun 90	Environmental Update, Vol II, No 2	93 BMW/PA	286 CD 2
Jun 90	Base Letter to Residents Regarding Monthly TCE Samples Taken from Drinking Water	Sassaman, Brian L, Lt 93 MG/SGPB	287 CD 2
Jun 90	Base Letter to Residents Concerning Monthly TCE Samples Taken to Monitor Drinking Water Quality, OT-30	Sassaman, Brian L, Lt 93 MG/SGPB	288 CD 2
Jun 90	Base Letter to Resident Regarding Installation of GAC Filter to Remove TCE, OT-30	Sassaman, Brian L, Lt 93 MG/SGPB	289 CD 2
Jun 90	Base Letter to Resident Regarding Installation of GAC Filter at Residence to Remove TCE	Sassaman, Brian L, Lt 93 MG/SGPB	290 CD 2

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
Jun 90	Base Letter to Resident Regarding Monthly TCE Samples Taken at Residence to Monitor Drinking Water Quality	Sassaman, Brian L, Lt 93 MG/SGPB	292 CD 2
Jun 90	Base Letter to Resident Regarding Monthly TCE Samples Taken at Residence to Monitor Drinking Water Quality	Sassaman, Brian L, Lt 93 MG/SGPB	293 CD 2
Jun 90	Base Letter to Resident Regarding Installation of GAC Filter to Remove TCE, OT-30	Sassaman, Brian L, Lt 93 MG/SGPB	294 CD 2
Jun 90	Base Letter to Resident Regarding Water Sample Collected from Well by Bioenvironmental Engineering	Sassaman, Brian L, Lt 93 MG/SGPB	295 CD 2
Jun 90	Base Letter to Residents Regarding Water Sample Collected From Well by BioEnvironmental Engineering	Sassaman, Brian L, Lt 93 MG/SGPB	299 CD 2
01 Jun 90	SWAT Report, South Landfill Zone, Vol I of II	Kleinfelder, Inc.	296 CD 2
01 Jun 90	SWAT Report, South Landfill Zone, Vol II of II	Kleinfelder, Inc.	297 CD 2
05 Jun 90	TRC Charter	93 CSG/EM	300 CD 2
11 Jun 90	Base Letter to EPA and CDHS Transmitting Meeting Agenda for Next RPM Meeting	Chan, Arthur D 93 CSG/EM	301 CD 2
11 Jun 90	CDTSC Response to Public Comments Concerning Intent to Deny Permit to Operate Hazardous Waste Facility	California Department of Toxic Substances Control	339 CD 2
12 Jun 90	CDHS Letter to Base Regarding Review of SWAT Work Plan, Castle Vista Landfills	O'Kane, John A, Jr California Department of Health Services	302 CD 2
18 Jun 90	Base Letter to EPA and CDHS Regarding Addition of Topics to Agenda for Discussion	Chan, Arthur D 93 CSG/EM	304 CD 2
20 Jun 90	CRWQCB Letter to Base Regarding Completion of Review of SWAT Work Plan, Castle Vista Landfill	Mosbacher, Michael H California Regional Water Quality Control Board	305 CD 2
26 Jun 90	CRWQCB Letter to Base Regarding Completion of Review of TPCA, FTA-3	Pinkos, Thomas R California Regional Water Quality Control Board	306 CD 2
28 Jun 90	CRWQCB Letter to Base Regarding Disposal of Drill Cuttings From RI/FS Activities	Mosbacher, Michael H California Regional Water Quality Control Board	307 CD 2
29 Jun 90	Base Letter to EPA and CDHS Transmitting Draft Work Plan II for Review and Comment	Chan, Arthur D 93 CSG/EM	308 CD 2
29 Jun 90	Base Letter to City of Atwater Regarding Castle Vista Military Housing Area Landfills	Chan, Arthur D 93 CSG/EM	309 CD 2
Jul 90	Base Letter Regarding TRC Meeting Minutes, 14 Jun 90	93 BMW/PA	303 CD 2
03 Jul 90	EPA Letter to Base Regarding Applicability of RI/FS Requirements, Castle Vista Landfills	Work, Michael EPA Region IX	310 CD 2
17 Jul 90	RPM Meeting Minutes, 22 Jun 90	Chan, Arthur D 93 CSG/EM	312 CD 2
20 Jul 90	CRWQCB Memorandum to CDHS Regarding Preliminary Site Characterization Report	Mosbacher, Michael H California Regional Water Quality Control Board	313 CD 2
30 Jul 90	Base Letter to Resident Regarding Merced Union High School Site	Oyelowo, Layi A 93 CSG/EM	314 CD 2
31 Jul 90	EPA Letter to Base Regarding Completion and Review of Draft Preliminary Site Characterization Report	Work, Michael EPA Region IX	315 CD 2

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
31 Jul 90	CRWQCB Letter to Base Regarding Completion, Review of South Landfill SWAT Report	Mosbacher, Michael H California Regional Water Quality Control Board	316 CD 2
Aug 90	FS, Draft Report, OU-1	IT Corp.	317 CD 2
01 Aug 90	Base Letter to EPA and CDHS Transmitting Draft FS for Review and Comment, OU-1	Ridenour, Charles B 93 CSG/EM	318 CD 2
01 Aug 90	Base Letter to Martin Marietta Transmitting List of Standards that can Become ARARs	Ridenour, Charles B 93 CSG/EM	319 CD 2
06 Aug 90	RPM Meeting Minutes, 24 Jul 90	Chan, Arthur D 93 CSG/EM	320 CD 2
06 Aug 90	CRWQCB Letter to Base Regarding Disposal of Drill Cuttings From RI/FS Activities	Mosbacher, Michael H California Regional Water Quality Control Board	322 CD 2
08 Aug 90	EPA Letter to Base Regarding Need for RA, TCE	Work, Michael EPA Region IX	321 CD 2
10 Aug 90	CDHS Letter to HQ SAC Regarding IAG	Larson, Walter J California Department of Health Services	323 CD 2
10 Aug 90	News Article, “Base Eyes Possible Past Refuse Sites”	The Valley Bomber	324 CD 2
13 Aug 90	RPM Meeting Agenda, 16 Aug 90	Chan, Arthur D 93 CSG/EM	325 CD 2
22 Aug 90	Internal Martin Marietta Letter Transmitting SOW, Step III Tasks, Revision II	Loyd, John R Martin Marietta Energy Systems, Inc.	326 CD 2
25 Aug 90	Response to Comments Received on OU FS Draft in Memorandum	UNK	327 CD 2
29 Aug 90	News Article, “Public Notice, Castle AFB CRP, Public Comment Period”	The Merced Sun Star	328 CD 2
31 Aug 90	EPA Letter to Base Regarding Completion of Review of Draft RI/FS Work Plan No 2, Jul 90	Work, Michael EPA Region IX	329 CD 2
Sep 90	RI/FS, Preliminary Site Characterization Report, Vol I of III	IT Corp.	330 CD 2
Sep 90	RI/FS, Preliminary Site Characterization Report, Vol II of III	IT Corp.	331 CD 2
Sep 90	RI/FS, Preliminary Site Characterization Report, Vol III of III	IT Corp.	332 CD 2
Sep 90	SOW, Maintenance and Servicing of Three Existing Culligan Activated Carbon Water Filtration Systems	93 CSG/DEEV	907 CD 3
14 Sep 90	Base Letter to EPA and CDHS Transmitting Proposed Plan, LTM	Chan, Arthur D 93 CSG/EM	335 CD 2
20 Sep 90	Base Letter to EPA Transmitting Agenda, Status Meeting, 26 and 27 Sep 90	Baker, Thomas R, LtCol 93 CSG/EM	336 CD 2
27 Sep 90	RI/FS, Project Status Meeting Minutes, 26-27 Sep 90	93 CSG/EM	337 CD 2
28 Sep 90	RPM Meeting Minutes, 16 Aug 90	Chan, Arthur D 93 CSG/EM	338 CD 2
Oct 90	Base Environmental Update	93 BMW/PA	340 CD 2
Oct 90	Ambient Air Monitoring Report	California Department of Health Services	1003 CD 4
09 Oct 90	IT Corp. Letter to Martin Marietta Regarding Response to EPA Comments on UV/Peroxidation, RI/FS	Grummitt, Terry P IT Corp.	343 CD 2
10 Oct 90	EPA Letter to Base Regarding Upcoming Deadlines for OU FS Report No 1, Proposed Plan and ROD, OU-1	Work, Michael EPA Region IX	344 CD 2

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
12 Oct 90	Base Letter to EPA and CDHS Transmitting Draft Final of Work Plan II	Chan, Arthur D 93 CSG/EM	345 CD 2
15 Oct 90	Base Letter to CRWQCB Regarding Receipt of Comments on Draft Report, South Landfill Zone	Chan, Arthur D 93 CSG/EM	347 CD 2
16 Oct 90	RPM Meeting Minutes, 26-27 Sep 90	Chan, Arthur D 93 CSG/EM	348 CD 2
19 Oct 90	Base Letter to EPA Regarding List of OUs According to Definition in NCP	Kehoe, Michael J, Col 93 BMW/CV	349 CD 2
24 Oct 90	RPM Meeting Agenda, 30 Oct 90	Chan, Arthur D 93 CSG/EM	350 CD 2
24 Oct 90	EPA Letter to Base Regarding Failure to Submit Draft Final Work Plan No 2 Before 15 Oct 90	Work, Michael EPA Region IX	351 CD 2
31 Oct 90	Base Letter to EPA and CDHS Transmitting Draft Final RI/FS, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	352 CD 2
31 Oct 90	TRC Meeting Agenda	Leong, Linda L, Maj 93 BMW/PA	353 CD 2
Nov 90	Draft SWAT Report, Castle Vista Landfills	IT Corp.	354 CD 3
Nov 90	Work Plan No 2	IT Corp.	355 CD 3
02 Nov 90	CDHS Letter to Base Regarding Comments on LTM Sampling Plan, Sep 90	O'Kane, John A, Jr California Department of Health Services	356 CD 3
02 Nov 90	EPA Letter to Base Transmitting Comments on RI/FS Long Term Sampling Program	Work, Michael EPA Region IX	357 CD 3
08 Nov 90	EPA Letter to Base Regarding Completion of Preliminary Review of Draft Final Interim FS, OU-1	Work, Michael EPA Region IX	358 CD 3
13 Nov 90	Base Letter to EPA and CDHS Regarding Review Comments on Draft RI/FS Work Plan No 2, 08 Nov 90	Alford, Benjamin F, Col 93 CSG/CC	360 CD 3
15 Nov 90	Soil Remediation Report	Horizon Technologies	361 CD 3
16 Nov 90	Base Letter to EPA Transmitting Final FS, OU-1	Chan, Arthur D 93 CSG/EM	362 CD 3
21 Nov 90	Base Letter to EPA Concerning Position on Preferred Alternative and Corresponding Revisions to Final FS, OU-1, 16 Nov 90	Cole, John R, LtCol 93 CSG/DE	363 CD 3
26 Nov 90	EPA Letter to Base Transmitting Comments on Proposed Revisions to Proposed Plan, Executive Summary, and Section 5.1	Work, Michael EPA Region IX	364 CD 3
27 Nov 90	EPA Letter to Base Regarding Delivery of Final, FS, OU-1	Work, Michael EPA Region IX	365 CD 3
27 Nov 90	EPA Letter to Base Transmitting Additional Comments on FS and Proposed Plan, OU-1	Work, Michael EPA Region IX	366 CD 3
27 Nov 90	Base Letter to Martin Marietta Regarding Proposed Plan Revisions to FS, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	367 CD 3
27 Nov 90	EPA Letter to Base Regarding Review and Transmittal of Changes to FS and Proposed Plan, Draft Final Review Period, 30 Nov 90, OU-1	Work, Michael EPA Region IX	368 CD 3
30 Nov 90	EPA Letter to Base Regarding Additional Comments on FS and Proposed Plan, OU-1	Work, Michael EPA Region IX	370 CD 3
Dec 90	Proposed Plan for Containment and Remediation of Main Groundwater Contaminant Plume	93 BMW/PA	371 CD 3
Dec 90	ROD, UFL-3, SS-17	IT Corp.	372 CD 3
Dec 90	RCRA Facility Assessment Report	California Department of Health Services	373 CD 2

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
Dec 90	Draft Preliminary Health Risk Evaluation	IT Corp.	374 CD 2
Dec 90	FS, Interim Report, OU-1	IT Corp.	375 CD 3
03 Dec 90	EPA Letter to Base Requesting Extension for Finalization of FS Report and Proposed Plan, OU-1	Kemmerer, John R EPA Region IX	376 CD 3
05 Dec 90	TRC Meeting Minutes with Slides and Talking Papers	Vician, Todd M B, Lt 93 BMW/PA	377 CD 3
07 Dec 90	Base Letter to EPA Transmitting Revised Pages of Sections 4 and 5 of FS, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	378 CD 3
11 Dec 90	RPM Meeting Agenda, 18 Dec 90	Oyelowo, Layi A 93 CSG/DEV	379 CD 3
18 Dec 90	RI/FS, Project Status Meeting Minutes, 18 Dec 90	93 CSG/DEV	383 CD 3
27 Dec 90	Residents Vs. USAF Court Document, First Set of Interrogatories and Request for Production of Documentation	US District Court of California	983 CD 4
Jan 91	Technical Memorandum, Long Term Pumping Test	IT Corp.	382 CD 3
04 Jan 91	News Article, “Water Cleanup Public Meeting Set For Tuesday”	The Merced Sun Star	384 CD 3
08 Jan 91	Public Meeting Regarding Public Presentation on Ground Cleanup, OU-1	Vician, Todd M B, Lt 93 BMW/PA	385 CD 3
08 Jan 91	News Article, “Cleanup Plan is Aired”	The Modesto Bee	386 CD 3
08 Jan 91	RPM Meeting Minutes, 18 Dec 90	Cole, John R, LtCol 93 CSG/DE	389 CD 3
09 Jan 91	News Article, “Castle Cleanup Plan Ready for Public Comment”	De La Cruz, Mike The Merced Sun Star	387 CD 3
10 Jan 91	News Article, “Castle to Clean Up Aquifer”	The Atwater New Times The Merced County Times The Winton Times	388 CD 3
10 Jan 91	Base Letter to EPA and CDHS Regarding Change of Program 72 Hour Pump Test to 30 Day Long Term Pump Test Program	Chan, Arthur D 93 CSG/DEV	390 CD 3
15 Jan 91	IAG Schedule Extension Request	Oyelowo, Layi A Alford, Benjamin F, Col 93 CSG/DEV	391 CD 3
16 Jan 91	EPA Letter to Base Transmitting Comments on Scoping Memorandum	Work, Michael EPA Region IX	392 CD 3
16 Jan 91	News Article, “Base Ready to Begin TCE Cleanup, Public May Still Have Questions”	De La Cruz, Mike The Merced Sun Star	393 CD 3
23 Jan 91	News Article, “Castle AFB Announces Extension of Public Comment Period on Proposed Cleanup”	The Merced Sun Star	394 CD 3
24 Jan 91	RI/FS, Project Status Meeting Minutes, 23-24 Jan 91	93 CSG/DEEV	395 CD 3
30 Jan 91	EPA Letter to Base Regarding Timeframe for Responding to Proposed Schedule, OU-2	Work, Michael EPA Region IX	396 CD 3
07 Feb 91	Base Letter to EPA and CDHS Regarding IAG Schedule Extension Request for Delivery of Decision Document, OU-1	Cole, John R, LtCol 93 CSG/DE	397 CD 3
11 Feb 91	RPM Meeting Minutes, 23-24 Jan 91	Chan, Arthur D 93 CSG/DEV	398 CD 3
12 Feb 91	EPA Letter to Base Regarding Schedule Changes to Currently Identified OUs and Anticipated Changes to Overall RI/FS	Kemmerer, John R EPA Region IX	399 CD 3
20 Feb 91	Base Comments Concerning EPA Letter Regarding Basewide Overall RI/FS, 12 Feb 91	Kehoe, Michael J, Col 93 BMW/CV	401 CD 3

Date	*Title*	*Author*	*File/CD Number*
21 Feb 91	EPA Letter to Base Transmitting Comments on Draft Preliminary Health Risk Evaluation, Dec 90	Work, Michael EPA Region IX	402 CD 3
22 Feb 91	EPA Letter to Base Transmitting Comments on Draft LTM Sampling Plan	Work, Michael EPA Region IX	403 CD 3
22 Feb 91	CDHS Letter to Base Regarding Review of Draft LTM Sampling Plan, Jan 91	Wang, David California Department of Health Services	404 CD 3
25 Feb 91	Base Letter Regarding RPM RI/FS Working Session	Baker, Thomas R, LtCol 93 CSG/DEV	405 CD 3
Mar 91	LTM Sampling Plan	Martin Marietta Energy Systems, Inc.	406 CD 3
01 Mar 91	TRC Meeting Minutes, 23 Jan 90	Vician, Todd M B, Lt 93 BMW/PA	407 CD 3
06 Mar 91	RPM Meeting Agenda, 13 Mar 91	Baker, Thomas R, LtCol 93 CSG/DEV	408 CD 3
13 Mar 91	Base Letter to HQ SAC Regarding Responsiveness Summary, OU-1	Cole, John R, LtCol 93 CSG/DE	409 CD 3
18 Mar 91	Internal Base Letter Forwarding CRWQCB Comments, North Landfill Zone	Baker, Thomas R, LtCol 93 CSG/DEV	410 CD 3
18 Mar 91	SWAT Report, West Landfill Zone	Kleinfelder, Inc.	411 CD 3
20 Mar 91	Base Letter to EPA and CDHS Transmitting Draft Final LTM Sampling Plan	Baker, Thomas R, LtCol 93 CSG/DEV	412 CD 3
25 Mar 91	EPA Letter to Base Regarding Air Stripper Emissions Remediation, OU-1	Work, Michael EPA Region IX	414 CD 3
26 Mar 91	Base Letter to EPA Regarding Naming of OUs	Baker, Thomas R, LtCol 93 CSG/DEV	415 CD 3
29 Mar 91	Base Letter to CRWQCB Remitting Final Report on West Landfill Zone, Kleinfelder Letter Explaining Responses to Comments on Previous Draft Submittal	Chan, Arthur D 93 CSG/DEV	416 CD 3
Apr 91	Base Environmental Update	93 BMW/PA	417 CD 3
01 Apr 91	Northeast Research Letter to CRWQCB Transmitting Tabular Data and Mass Spectra for PETREX Samples	Lynn, Stephen M Northeast Research Institute, Inc.	419 CD 3
08 Apr 91	Draft ROD, Interim OU-1	IT Corp.	418 CD 3
08 Apr 91	Environmental Information Form, Appendix H	Baker, Thomas R, LtCol 93 CSG/DEV	420 CD 3
11 Apr 91	EPA Letter to Base Regarding Completion of Review of Final LTM Sampling Plan	Work, Michael EPA Region IX	421 CD 3
16 Apr 91	Soil Analytical Results, Step 2	EPA Region IX	422 CD 3
19 Apr 91	Kleinfelder Letter to Base Regarding Review of CRWQCB Comments on SWAT Report North Landfill Zone, Completion of Final NLFZ SWAT Report	Carey, Russell O Kleinfelder, Inc.	423 CD 3
19 Apr 91	SWAT Report, Landfill 3, LF-06	Kleinfelder, Inc.	424 CD 3
19 Apr 91	SWAT Report, North Landfill Zone	Kleinfelder, Inc.	425 CD 3
22 Apr 91	News Article, “$100 Million Cleanup Looms for Castle”	Lopez, Pablo Thome, Joe The Modesto Bee	426 CD 3
23 Apr 91	Base Letter Transmitting Minutes of RI/FS Project Status Meeting, 13 Mar 91	Baker, Thomas R, LtCol 93 CSG/DEV	427 CD 3
26 Apr 91	Base Letter to EPA and CDHS Transmitting Proposed Schedule, IAG Schedule, Schedule for All Proposed Activities and Rationale	Kehoe, Michael J, Col 93 CSG/CV	429 CD 3

Date	*Title*	*Author*	*File/CD Number*
29 Apr 91	RPM Meeting Agenda, 08 May 91	Baker, Thomas R, LtCol 93 CSG/DEV	431 CD 3
30 Apr 91	CDHS Letter to Base Regarding Review of Draft ROD, OU-1	Wang, David California Department of Health Services	432 CD 3
May 91	Limited Record Search	IT Corp.	433 CD 3
May 91	Rough Draft Development and Screening Report, 35 Investigative Sites	IT Corp.	435 CD 3
01 May 91	Draft Basis of Design Report, OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	656 CD 3
02 May 91	Base Letter to CRWQCB Transmitting Final Presentation on Landfill 3 SWAT Studies, LF-3	Baker, Thomas R, LtCol 93 CSG/DEV	436 CD 3
02 May 91	Internal Martin Marietta Letter Regarding Overview of Meeting with CDM Federal Programs Corporation and Woodward Clyde, 16 and 17 Apr 91	Wilder, William L Martin Marietta Energy Systems, Inc.	437 CD 3
07 May 91	News Article, “Treated Castle Water Could Irrigate Crops”	De La Cruz, Mike The Merced Sun Star	438 CD 3
08 May 91	Base Response to Comments Received from CDHS, 23 Jan 91	Baker, Thomas R, LtCol 93 CSG/DEV	439 CD 3
14 May 91	News Article, “Use of Castle Water Awaits State OK”	Rocha, Elisa The Fresno Bee	440 CD 3
14 May 91	News Article, “Merced Wants to Use Castle Water”	Rocha, Elisa The Modesto Bee	441 CD 3
14 May 91	SWAT Report, South Landfill Zone	Kleinfelder, Inc.	442 CD 3
15 May 91	EPA Letter to Base Regarding Comments on RPM Meeting Minutes, 23-24 Jan 91	Work, Michael EPA Region IX	443 CD 3
15 May 91	Base Letter to CDHS and EPA Transmitting Rationale for Location Monitoring Wells and Unedited Draft Meeting Minutes, 08 May 91, SD-12, (DA-4)	Baker, Thomas R, LtCol 93 CSG/DEV	444 CD 3
16 May 91	Base Letter to Martin Marietta Transmitting EPA and CRWQCB Comments on RPM Meeting Minutes, 23-24 Jan 91	Baker, Thomas R, LtCol 93 CSG/DEV	445 CD 3
21 May 91	CRWQCB Letter to Base Regarding Completion of Review of Proposed Schedule Changes and Basewide RI/FS	Mosbacher, Michael H California Regional Water Quality Control Board	446 CD 3
22 May 91	EPA Letter to Base Regarding Comments on Draft RPM Meeting Minutes, 08 May 91	Work, Michael EPA Region IX	447 CD 3
23 May 91	EPA Letter to Base Regarding Completion of Review of Draft ROD, OU-1, Apr 91	Work, Michael EPA Region IX	448 CD 3
24 May 91	CDHS Letter to Base Regarding Review of Base Response to Comments on Work Plan II, 08 May 91	Wang, David California Department of Health Services	279 CD 2
24 May 91	Base Letter to CRWQCB Transmitting Final SWAT Report on South Landfill Zone	Chan, Arthur D 93 CSG/DEV	449 CD 3
28 May 91	Base Letter to EPA and CDHS Regarding Review of Comments on Revised IAG Schedule	Kehoe, Michael J, Col 93 CSG/CV	450 CD 3
29 May 91	FTA-1 Site Description, FT-01	IT Corp.	434 CD 3
29 May 91	Base Letter to IT Corp Transmitting Comments on Draft RPM Meeting Minutes, 08 May 91	Baker, Thomas R, LtCol 93 CSG/DEV	452 CD 3
30 May 91	Base Letter to Martin Marietta Transmitting Regulatory Comments on Draft ROD, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	453 CD 3

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Date	*Title*	*Author*	*File/CD Number*
01 Jun 91	TRC Meeting Minutes, 24 Apr 91	Leong, Linda L, Maj 93 BMW/PA	454 CD 3
01 Jun 91	News Article, "Should Castle Treat, Sell Tainted Water for Crop Irrigation"	Hubbard, Greg The Merced Sun Star	455 CD 3
01 Jun 91	News Articles Concerning Castle Cleanup	The Merced Sun Star	456 CD 3
04 Jun 91	Base Letter to CDHS Concerning Specific Comments on Interim ROD, OU-1	Martinez, Pablo A 93 CSG/EM	458 CD 3
07 Jun 91	Base Letter to EPA Regarding Request for Information on Sampling Plan for Round 7 Groundwater Sampling	Chan, Arthur D 93 CSG/DEV	459 CD 3
12 Jun 91	Base Letter to CRWQCB Regarding Receipt of Regulatory Comments on Draft ROD for Proposed Interim Groundwater Remediation Project, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	460 CD 3
17 Jun 91	RPM Meeting Agenda, 27 Jun 91	Baker, Thomas R, LtCol 93 CSG/DEV	462 CD 3
18 Jun 91	Background Sample North of Castle Vista Landfill	Pigman, Cynthia Deasy, Doug BSK Analytical Laboratories	461 CD 3
27 Jun 91	RPM Meeting Minutes, 27 Jun 91	93 CSG/DEVR	464 CD 3
Jul 91	Draft Technical Memorandum for Two 30 Day Pump Tests	IT Corp.	466 CD 3
Jul 91	Data Report, 15 VOC Probes Drilled in OT-30 Area	IT Corp.	467 CD 3
01 Jul 91	News Article, "Castle Cleanup Bill Still Under Debate"	Chan, Cecilia The Merced Sun Star	468 CD 3
08 Jul 91	ROD, Interim OU-1	IT Corp.	469 CD 3
10 Jul 91	News Article, "City Tests New Well Site"	Sanders, Tammy S The Atwater Signal	470 CD 3
12 Jul 91	Environmental Checklist Form, Appendix I	California Department of Health Services	471 CD 3
12 Jul 91	Base Letter to EPA, CDHS, and CRWQCB Transmitting Draft RPM Meeting Minutes, 28 Jun 91	Baker, Thomas R, LtCol 93 CSG/DEV	472 CD 3
12 Jul 91	Base Letter to EPA and CDHS Regarding Failure to Identify Requirement to Consultant Preparing RI/FS Report, OU-2	Baker, Thomas R, LtCol 93 CSG/DEV	473 CD 3
18 Jul 91	EPA Letter to Base Regarding Late Receipt of Draft Risk Assessment for and FFA Schedule, OU-2	Work, Michael EPA Region IX	475 CD 3
19 Jul 91	News Article, "Castle Water Recycled"	The Modesto Bee	476 CD 3
19 Jul 91	EPA Letter to Base Regarding Comments on Draft RPM Meeting Minutes, 27 Jun 91	Work, Michael EPA Region IX	477 CD 3
23 Jul 91	EPA Letter to Base Regarding Preliminary Comments on Draft Final ROD, OU-1	Work, Michael EPA Region IX	478 CD 3
29 Jul 91	EPA Letter to Base Transmitting Comments on Draft Final ROD, OU-1	Work, Michael EPA Region IX	479 CD 3
30 Jul 91	Base Environmental Update	93 BMW/PA	480 CD 3
Aug 91	Final Technical Document to Support NFA	CDM Federal Programs Corp.	482 CD 3
Aug 91	Draft Soil Management Plan for Waste in Drums, RI Derived Waste Originating From VOC Probes	CDM Federal Programs Corp.	483 CD 3
01 Aug 91	News Article, "Castle AFB OU-1"	The Merced Sun Star	485 CD 3
07 Aug 91	ROD, Interim OU-1	IT Corp.	486 CD 3
07 Aug 91	EPA Letter to Base Regarding Extension, 30 Day Review Period for ROD, OU-1	Work, Michael EPA Region IX	487 CD 3

Date	*Title*	*Author*	*File/CD Number*
08 Aug 91	Base Letter Transmitting Final RPM Meeting Minutes, 27 Jun 91	Baker, Thomas R, LtCol 93 CSG/DEV	488 CD 3
14 Aug 91	News Article, "Notice of Public Availability, Castle AFB, DA-4 RA"	The Atwater Signal	489 CD 3
15 Aug 91	News Article, "Public Hearing and Notice of Application for Waste Discharge Requirements for Dept of AF, Castle AFB, Merced County"	Pearson, J Lawrence The Merced Sun Star	490 CD 3
20 Aug 91	Base Letter to EPA Transmitting Draft RPM Meeting Minutes, 01 Aug 91	Baker, Thomas R, LtCol 93 CSG/DEV	491 CD 3
20 Aug 91	RD, Work Plan, OU-1	PRC Environmental Management, Inc.	492 CD 3
23 Aug 91	CDTSC Letter to Base Regarding Completion of Review of Final FSP and QAPP, Preliminary SI	Wang, David California Department of Toxic Substances Control	428 CD 3
26 Aug 91	Base Letter to CDHS Transmitting Summary Sheet of Monthly TCE Results	Baker, Thomas R, LtCol 93 CSG/DEV	430 CD 3
26 Aug 91	Base Letter to EPA Transmitting Sampling Results From Groundwater Reclamation Treatment Facility, Jul 91, DA-4	Baker, Thomas R, LtCol 93 CSG/DEV	493 CD 3
Sep 91	News Article, "Castle Contamination a Concern, Inspection and Studies Precede Base Cleanup"	Hartsoe, Steve The Lesher News Service	77 CD 2
Sep 91	RI/FS, Draft Report, OU-2	Metcalf and Eddy, Inc.	495 CD 3
04 Sep 91	News Article, "Castle Cleanup Creates Concern; Toxic Plume Might Make Land Unusable When Base Closes"	The Merced Sun Star	496 CD 3
04 Sep 91	Base Letter to EPA and CDHS Transmitting Proposed Schedule for Completion of RD/RA Work Plan for Interim OU-1	Cole, John R, LtCol 93 CSG/DE	497 CD 3
04 Sep 91	EPA Comments on Draft RPM Meeting Minutes, 01 Aug 91	Work, Michael EPA Region IX	498 CD 3
11 Sep 91	Base Memorandum to EPA Transmitting Comments on RD/RA Schedule, OU-1	Chan, Arthur D 93 CSG/DEV	499 CD 3
11 Sep 91	CDHS Letter to Base Regarding Review of Draft Soil Management Plan, Wastes in Drums and RI Derived Waste Originating From VOC Probes, Aug 91	Wang, David California Department of Health Services	1021 CD 4
16 Sep 91	Base Letter to EPA Transmitting Final RPM Meeting Minutes, 01 Apr 91	Baker, Thomas R, LtCol 93 CSG/DEV	500 CD 3
16 Sep 91	Base Letter to TRC Members Regarding TRC Charter Meeting	Vician, Todd M B, Lt 93 BMW/PA	501 CD 3
17 Sep 91	EPA Letter to Base Transmitting Preliminary Comments on Draft RI/FS, OU-2	Work, Michael EPA Region IX	502 CD 3
19 Sep 91	EPA Letter to Base Concerning Comments on Draft Schedule for RD/RA, OU-1	Work, Michael EPA Region IX	503 CD 3
25 Sep 91	Base Letter to EPA Transmitting Draft RPM Meeting Minutes, 17 Sep 91	Baker, Thomas R, LtCol 93 CSG/DEV	505 CD 3
Oct 91	Draft Work Plan, Technical and Scoping Memorandum, OU-2	Metcalf and Eddy, Inc.	506 CD 3
Oct 91	EPA Aerial Photographic Analysis of Base	EPA Region IX	987 CD 4
01 Oct 91	EPA Letter to Base Transmitting EPA Comments on Draft RPM Meeting Minutes, 17 Sep 91	Work, Michael EPA Region IX	507 CD 3
04 Oct 91	Base Letter to EPA Transmitting Revised Schedule, Design and RA, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	509 CD 3

Date	*Title*	*Author*	*File/CD Number*
09 Oct 91	Base Letter to CDM Transmitting Comments on RPM Meeting Minutes, 17 Sep 91	Baker, Thomas R, LtCol 93 CSG/DEV	510 CD 3
09 Oct 91	PRC Letter to Navy Transmitting Meeting Minutes for Interim RA Design Schedule, OU-1, 03 Oct 91	Scruggs, Mary PRC Environmental Management, Inc.	511 CD 3
10 Oct 91	Castle Joint Powers Authority Agenda	Atwater City Council Chambers	512 CD 3
91	Storage Tank Statistics and Information Report on Contaminants Detected During 1991 Tank Pull	Camp Dresser & McKee, Inc.	513 CD 3
10 Oct 91	Castle Joint Powers Authority Meeting Minutes, 10 Oct 91	Barrett, Frances M 93 CSG/DEVR	514 CD 3
11 Oct 91	EPA Letter to Base and HQ SAC Regarding RD/RA Proposed Schedule, OU-1	Strauss, Alexis EPA Region IX	515 CD 3
15 Oct 91	CDTSC Letter to Base Regarding Completion of Review of Draft RI/FS, OU-2	Wang, David California Department of Toxic Substances Control	516 CD 3
15 Oct 91	EPA Letter to Base Regarding Comments on Draft RI/FS, OU-2	Work, Michael EPA Region IX	517 CD 3
17 Oct 91	EPA Letter to Base Regarding Additional Groundwater RA Within Boundaries of Interim OU-1, Bldg 84	Work, Michael EPA Region IX	518 CD 3
17 Oct 91	Base Letter to EPA Regarding Receipt of Letter Expressing Concern with Proposed Schedule, RD/RA, OU-1	Kehoe, Michael J, Col 93 BMW/CV	519 CD 3
21 Oct 91	TRC Meeting Minutes, 21 Oct 90	Vician, Todd M B, Lt 93 BMW/PA	520 CD 3
21 Oct 91	CDTSC Letter to Base Regarding Revised Comments for Draft RI/FS, OU-2	Wang, David California Department of Toxic Substances Control	521 CD 3
21 Oct 91	CRWQCB Letter to Base Regarding Review of Draft Final RI/FS, OU-2	Mosbacher, Michael H California Regional Water Quality Control Board	522 CD 3
24 Oct 91	News Article, “Castle AFB Announces ROD Signed”	The Merced Sun Star	523 CD 3
25 Oct 91	EPA Letter to Base Regarding Completeness of RI/FS, OU-2	Work, Michael EPA Region IX	524 CD 3
28 Oct 91	EPA Letter to Base Concerning Request for Documentation, RD/RA Schedule Conclusions, OU-1	Strauss, Alexis EPA Region IX	526 CD 3
31 Oct 91	Summary of Conference Call Between Representatives to Discuss Critical Issues From EPA Comments on Draft RI/FS Report, OU-2	Wilder, William L Oak Ridge National Laboratory	529 CD 3
Nov 91	Draft Basewide Waste Management Plan	CDM Federal Programs Corp.	1022 CD 4
04 Nov 91	Base Letter to EPA Regarding Proposed Schedule Meeting Objectives of ROD, OU-1	Kehoe, Michael J, Col 93 CSG/CV	530 CD 3
04 Nov 91	EPA Letter to HQ SAC, CDTSC, and EPA Regarding Notice of Dispute Resolution for Interim RD/RA Schedule, OU-1	Work, Michael EPA Region IX	531 CD 3
07 Nov 91	Castle Joint Powers Authority, Adjourned Meeting Minutes, 07 Nov 91	Barrett, Frances M 93 CSG/DEVR	532 CD 3
16 Nov 91	RD/RA, Action Schedule Dispute Resolution Issue	O’Kane, John A, Jr California Department of Toxic Substances Control	534 CD 3

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Date	*Title*	*Author*	*File/CD Number*
19 Nov 91	Base Letter to EPA Transmitting Draft RPM Meeting Minutes, 22 Oct 91	Baker, Thomas R, LtCol 93 CSG/DEV	535 CD 3
20 Nov 91	EPA Letter to Base Regarding Review and Comment of Action Plan for Additional Domestic Well Sampling Southwest of Base	Work, Michael EPA Region IX	537 CD 3
21 Nov 91	Castle Joint Powers Authority, Adjourned Meeting Minutes, 21 Nov 91	Barrett, Frances M 93 CSG/DEVR	538 CD 3
21 Nov 91	PRC Letter to Base Transmitting Position Paper on Interim RA Design Schedule, OU-1	Scruggs, Mary PRC Environmental Management, Inc.	539 CD 3
22 Nov 91	EPA Letter to HQ SAC Transmitting Outline of Design Assumptions Acceptable to EPA in Design Report, Interim, OU-1	Work, Michael EPA Region IX	541 CD 3
22 Nov 91	Scoping Meeting Minutes on OU-2 Work Plan, 22 Nov 91	Baker, Thomas R, LtCol 93 CSG/DEV	542 CD 3
26 Nov 91	Draft Preliminary RD Work Plan, Interim RA for OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	481 CD 3
26 Nov 91	RD, Draft Preliminary Work Plan, Interim RA, HSP, OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	543 CD 3
Dec 91	RI/FS, Draft Final BRA, Vol I of II, OU-2	Metcalf and Eddy, Inc.	545 CD 3
Dec 91	RI/FS, Draft Final BRA, Vol II of II, OU-2	Metcalf and Eddy, Inc.	546 CD 3
03 Dec 91	EPA Letter to Base Transmitting Comments on Draft Work Plan, Technical and Scoping Memorandum, OU-2	Work, Michael EPA Region IX	547 CD 3
03 Dec 91	Draft SAP Addendum for JP-4 Contaminated Soils Along West Flightline Sector	PRC Environmental Management, Inc. James M Montgomery, Inc.	548 CD 3
05 Dec 91	RA for JP-4 Contaminated Soils Along Western Flightline Sector, HSP	PRC Environmental Management, Inc. James M Montgomery, Inc.	549 CD 3
06 Dec 91	CDTSC Letter to Base Regarding Review of EPA Comments Concerning Work Plan and Technical Memorandum, OU-2	O'Kane, John A, Jr California Department of Toxic Substances Control	550 CD 3
06 Dec 91	PRC Letter to Base Transmitting Revised Proposed Interim RA Design Schedule, OU-1	Scruggs, Mary PRC Environmental Management, Inc.	551 CD 3
09 Dec 91	News Article, "War, Peace, and Cleanup - It's the Morning After for the Counsel Who are Helping with Military Downsizing"	Pfaff, Dennis The San Francisco Daily Journal	552 CD 3
10 Dec 91	Data Validation Summary Report for Rounds 6 and 7	Ethridge, Vickie IT Corp.	553 CD 3
12 Dec 91	Meeting Minutes, Joint Powers Authority, 12 Dec 91	Barrett, Frances M 93 CSG/DEVR	554 CD 3
16 Dec 91	EPA Letter to Base Regarding Review of Draft Final RI/FS, OU-2	Work, Michael EPA Region IX	555 CD 3
16 Dec 91	Base Letter to EPA Transmitting Final RPM Meeting Minutes, 22 Oct 91	Baker, Thomas R, LtCol 93 CSG/DEV	556 CD 3
18 Dec 91	EPA Letter to Base Regarding Review of Draft Proposed Plan, OU-2	Work, Michael EPA Region IX	557 CD 3

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Date	*Title*	*Author*	*File/CD Number*
18 Dec 91	TRC Meeting Minutes, 13 Nov 91	Kehoe, Michael J, Col 93 BMW/CV	558 CD 3
20 Dec 91	CDTSC Letter to Base Requesting 30 Day Extension to Comment and Response Period, Draft Final RI/FS and Proposed Plan, OU-2	Wang, David California Department of Toxic Substances Control	559 CD 3
20 Dec 91	EPA Letter to Base Transmitting Aerial Photographic Analysis From EPA Environmental Monitoring Systems Laboratory	Work, Michael EPA Region IX	560 CD 3
20 Dec 91	CDTSC Letter to EPA Requesting 30 Day Extension to Comment and Response Period, Draft Final RI/FS and Proposed Plan, OU-2	Wang, David California Department of Toxic Substances Control	561 CD 3
Jan 92	RI/FS, Draft Final BRA, Vol I of II, OU-2	Metcalf and Eddy, Inc.	564 CD 3
Jan 92	RI/FS, Draft Final BRA, Vol II of II, OU-2	Metcalf and Eddy, Inc.	565 CD 3
07 Jan 92	CDTSC Letter to Base Regarding Comments on Draft Final RI/FS and Proposed Plan, OU-2	Mosbacher, Michael H O'Kane, John A, Jr California Department of Toxic Substances	566 CD 4
09 Jan 92	EPA Letter to Base Requesting Delivery of Revised RI/FS by 21 Jan 92 and Draft Final Proposed Plan by 15 Feb 92	Work, Michael EPA Region IX	567 CD 4
09 Jan 92	Castle Joint Powers Authority Meeting Minutes, 09 Jan 92	93 CSG/DEV	568 CD 4
14 Jan 92	Draft Interim Design Report, OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	598 CD 3
16 Jan 92	EPA Comments on Draft Work Plan for Groundwater Plume Characterization, Scoping Memorandum, Dec 91	EPA Region IX	544 CD 3
21 Jan 92	EPA Letter to Base Transmitting Review and Comment on Draft RPM Meeting Minutes, 17 Dec 91	Work, Michael EPA Region IX	569 CD 4
21 Jan 92	Base Letter to Navy Concerning Comments on Preliminary Draft RD Work Plan, Interim RA, OU-1	Chan, Arthur D 93 BMW/CVE	570 CD 4
22 Jan 92	Base Letter to Residents Regarding TCE Sampling to Monitor Quality of Drinking Water	Baker, Thomas R, LtCol 93 CSG/DEV	571 CD 4
22 Jan 92	Base Letter to Resident Regarding Monthly TCE Samples Taken to Monitor Quality of Drinking Water	Baker, Thomas R, LtCol 93 CSG/DEV	572 CD 4
22 Jan 92	Base Letter to CDHS Transmitting Monthly TCE Test Results, Oct, Nov, and Dec 91	Baker, Thomas R, LtCol 93 CSG/DEV	573 CD 4
22 Jan 92	Base Letter to CDTSC Transmitting Summary Sheet of Monthly TCE Results	Baker, Thomas R, LtCol 93 CSG/DEV	574 CD 4
22 Jan 92	Base Letter to Resident Transmitting TCE Samples Taken to Monitor Drinking Water Quality	Baker, Thomas R, LtCol 93 CSG/DEV	576 CD 4
22 Jan 92	Base Letter to EPA Transmitting Summary Sheet of Monthly TCE Results	Baker, Thomas R, LtCol 93 CSG/DEV	577 CD 4
22 Jan 92	Base Letter to EPA Regarding Amendments to Draft Final RI/FS, OU-2	Baker, Thomas R, LtCol 93 CSG/DEV	578 CD 4
23 Jan 92	Castle Joint Powers Authority Meeting Minutes, 23 Jan 92	Barrett, Frances M 93 CSG/DEVR	580 CD 4
27 Jan 92	EPA Letter to Base Transmitting Comments Revisions to Draft Final RI/FS, OU-2, 22 Jan 92	Work, Michael EPA Region IX	582 CD 4
29 Jan 92	Castle Vista Round 3 Data Validation Summary Report	Martinez, Pablo A IT Corp.	583 CD 4

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Date	*Title*	*Author*	*File/CD Number*
29 Jan 92	Base Letter to EPA Transmitting Draft Work Plan	Cole, John R, LtCol 93 CSG/DE	584 CD 4
29 Jan 92	CDTSC Letter to Base Regarding Review of Draft Final RI/FS and Proposed Plan, OU-2, Jan 92	O'Kane, John A, Jr California Department of Toxic Substances Control	585 CD 4
30 Jan 92	CRWQCB Letter to Base Regarding Review of Draft Final RI/FS, Jan 92 and Proposed Plan, 27 Nov 92, OU-2	Vorster, Antonia K J California Regional Water Quality Control Board	586 CD 4
30 Jan 92	CDTSC Letter to Base Requesting Extension of IAG Schedule, 29 Jan 92	Wang, David California Department of Toxic Substances Control	587 CD 4
31 Jan 92	Base Letter to EPA Transmitting Scoping Meeting Minutes, 08 Jan 92	Baker, Thomas R, LtCol 93 CSG/DEV	588 CD 4
Feb 92	VOC Probe Results	IT Corp.	589 CD 4
Feb 92	TV Sewer Line Survey	IT Corp.	592 CD 3
Feb 92	Draft HSP, Groundwater Plume Characterization	CDM Federal Programs Corp. Woodward-Clyde Consultants	593 CD 3
Feb 92	Draft QAPP	CDM Federal Programs Corp. Woodward-Clyde Consultants	594 CD 3
03 Feb 92	Draft Work Plan and FSP, Vol I of III	CDM Federal Programs Corp. Woodward-Clyde Consultants	590 CD 4
03 Feb 92	Draft Work Plan and FSP, Vol II of III	CDM Federal Programs Corp. Woodward-Clyde Consultants	591 CD 3
06 Feb 92	EPA Letter to Base Regarding Receipt of Letter Requesting Extensions to FFA Schedules for Draft Final RI/FS, Draft Work Plan, and Draft Final Proposed Plan	Work, Michael EPA Region IX	595 CD 3
10 Feb 92	Base Letter to EPA Regarding Invoking of Force Majeure Due to Lack of Funding of DERA Projects	Kehoe, Michael J, Col 93 CSG/CV	596 CD 3
10 Feb 92	CDTSC Letter to Base Concerning Request for Identification of Applicable, Relevant, and Appropriate Requirements for Remediation of Groundwater Contamination, OU-2	O'Kane, John A, Jr California Department of Toxic Substances Control	597 CD 3
10 Feb 92	Interim Design Report, OU-1	PRC Environmental Management, Inc.	599 CD 3
11 Feb 92	CDPW Letter to CDHS Regarding ARARs for Remediation of Groundwater Contamination, OU-2	Fillebrown, Paul A California Department of Public Works	600 CD 3
12 Feb 92	Base Letter to EPA Regarding Working Session and RPM Meeting Minutes, 04 Feb 92	Baker, Thomas R, LtCol 93 CSG/DEV	601 CD 3
12 Feb 92	News Article, "Carbon Filters Help Castle with Groundwater Cleanup"	The Atwater Signal	602 CD 3
13 Feb 92	EPA Letter to Base Regarding Request to Rescind FFA Schedule	Work, Michael EPA Region IX	603 CD 3

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13 Feb 92	Draft Meeting Minutes, Joint Powers Authority, 13 Feb 92	Barrett, Frances M 93 CSG/DEVR	604 CD 3
13 Feb 92	News Article, "Castle Clean-up Steps Forward"	The Winton Times	605 CD 3
14 Feb 92	Merced Irrigation District Letter to Base Regarding Water Quality Results, DA-4 and Wallace Road	Selb, E C Ted, III Merced Irrigation District	606 CD 3
14 Feb 92	Base Letter to EPA Regarding Proposed Plan, OU-2	Baker, Thomas R, LtCol 93 CSG/DEV	607 CD 3
21 Feb 92	EPA Letter to Base Regarding Delinquent Draft Final Proposed Plan for OU-2	Work, Michael EPA Region IX	608 CD 3
24 Feb 92	Base Letter to EPA Regarding EPA's Letter Concerning Decision of IAG Schedule, 13 Feb 92	Kehoe, Michael J, Col 93 BMW/CV	609 CD 3
24 Feb 92	Base Letter to EPA Transmitting Final RPM Meeting Minutes, 17 Dec 91	Baker, Thomas R, LtCol 93 CSG/DEV	610 CD 3
25 Feb 92	CDTSC Letter to Base Regarding Force Majeure of IAG	Wang, David California Department of Toxic Substances Control	611 CD 3
25 Feb 92	EPA Letter to Base Regarding Draft Minutes of RPM Meeting, 04 Feb 92	Work, Michael EPA Region IX	612 CD 3
27 Feb 92	Meeting Minutes, Joint Powers Authority, 27 Feb 92	Barrett, Frances M 93 CSG/DEVR	613 CD 3
02 Mar 92	EPA Letter to Base Regarding RD, OU-2	Work, Michael EPA Region IX	614 CD 3
04 Mar 92	CRWQCB Letter to Base Regarding Draft Work Plan and FSP, Groundwater Plume Characterization	Izzo, Victor J California Regional Water Quality Control Board	615 CD 3
04 Mar 92	APCD Letter to CDTSC Concerning ARARs for Remediation of Groundwater Contamination, OU-2	Brooks, Roland D San Joaquin Valley Air Pollution Control District	1761 CD 9
04 Mar 92	HQ SAC Letter to EPA Concerning Draft Final Proposed Plan, OU-2	Baker, Thomas R, LtCol HQ SAC/DEV	1762 CD 9
05 Mar 92	CDTSC Comments to Base Regarding Interim Design Report, OU-1	O'Kane, John A, Jr California Department of Toxic Substances Control	616 CD 3
05 Mar 92	News Article, "Castle Cleans Groundwater"	The Atwater New Times	617 CD 3
06 Mar 92	EPA Letter to Base Regarding Comments on Draft Work Plan and FSP, Feb 92	Work, Michael EPA Regional IX	618 CD 3
08 Mar 92	CRWQCB Letter to Base Regarding Proposed FFA	Pearson, J Lawrence California Regional Water Quality Control Board	619 CD 3
09 Mar 92	CRWQCB Letter to Base Regarding Interim Design Report, OU-1	Izzo, Victor J California Regional Water Quality Control Board	620 CD 3
10 Mar 92	CRWQCB Letter to CDTSC Regarding ARARs, OU-2	Izzo, Victor J California Regional Water Quality Control Board	621 CD 3
11 Mar 92	EPA Letter to Base Transmitting Comments on Draft Final Proposed Plan, OU-2	Work, Michael EPA Region IX	622 CD 3
11 Mar 92	EPA Letter to Base Transmitting Comments on Interim Design Report, OU-1	Work, Michael EPA Region IX	623 CD 3
11 Mar 92	EPA Letter to HQ SAC Regarding Missed Deadlines	Anderson, Julie EPA Region IX	624 CD 3
15 Mar 92	Base Environmental Update	93 BMW/PA	626 CD 3

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17 Mar 92	EPA Letter to Base Regarding Letters on RI/FS, OU-2	Work, Michael EPA Region IX	627 CD 3
20 Mar 92	Base Letter to EPA Regarding Interim Design Report, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	628 CD 3
23 Mar 92	CDTSC Comments to Base Regarding Draft Final Proposed Plan, OU-2	O'Kane, John A, Jr California Department of Toxic Substances Control	629 CD 3
24 Mar 92	CRWQCB Letter to Base Regarding Draft Final Proposed Plan, OU-2	Izzo, Victor J California Regional Water Quality Control Board	630 CD 3
26 Mar 92	Meeting Minutes, Joint Powers Authority, 26 Mar 92	Barrett, Frances M 93 CSG/DEVR	631 CD 3
28 Mar 92	News Article, "Castle Backers Scrounge for Money"	Hansen, Don The Turlock Journal	632 CD 3
30 Mar 92	EPA Letter to Base Regarding Public Comment Period, OU-2	Work, Michael EPA Region IX	633 CD 3
30 Mar 92	CRWQCB Letter to Base Regarding Data Needs for ROD, OU-2	Izzo, Victor J California Regional Water Quality Control Board	634 CD 3
31 Mar 92	CRWQCB Letter to AFRCW Regarding Proposed Modifications to IAGs to Include CRWQCB as Signatory Party	Vorster, Antonia K J California Regional Water Quality Control Board	635 CD 3
31 Mar 92	News Article, "Castle Cleanup Funding Rejected"	The Merced Sun Star	636 CD 3
31 Mar 92	News Article, Castle Lease Could Discourage Organizations"	The Modesto Bee	637 CD 3
Apr 92	Proposed Plan for Remediation of Groundwater Contamination, Wallace Road and DA-4	93 CSG/DEVR	638 CD 3
01 Apr 92	News Article, "Joint Power Authority Hears Anti-Prison Protest, Groundwater Cleanup Stalled"	Sanders, Tammy S The Atwater Signal	639 CD 3
01 Apr 92	EPA Letter to Base Regarding Proposed Plan, OU-2	Work, Michael EPA Region IX	640 CD 3
02 Apr 92	News Article, "Lack of Money for Water Clean-up"	The Winton Times	641 CD 3
03 Apr 92	EPA Letter to Base Regarding Assessment of Stipulated Penalties	Work, Michael EPA Region IX	642 CD 3
04 Apr 92	News Article, "Lack of Funding Could Stall Castle Cleanup"	Rocha, Elisa The Modesto Bee	643 CD 3
07 Apr 92	News Article, "Lack of Funds No Problem"	The Merced Sun Star	644 CD 3
08 Apr 92	News Article, "Castle Cleanup Funding Through April"	Sanders, Tammy S The Atwater Signal	645 CD 3
08 Apr 92	EPA Letter to Base Regarding EPA Review of Aerial Photo Analysis and Draft CSA Report	Work, Michael EPA Region IX	646 CD 3
13 Apr 92	Base Letter to EPA Regarding Development and Pump Test Water Disposition, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	647 CD 3
16 Apr 92	EPA Letter to Base Concerning Clarification of EPA Positions, OU-2	Anderson, Julie EPA Region IX	648 CD 3
17 Apr 92	EPA Letter to Base Regarding Draft Proposed Plan Fact Sheet, Public Comment Period and ROD, OU-2	Work, Michael EPA Region IX	649 CD 3
20 Apr 92	Base Letter to CDTSC Regarding Dispute Resolution Pursuant to FFA	Baker, Thomas R, LtCol 93 CSG/DEV	650 CD 3
22 Apr 92	News Article, "No Clean-up Unacceptable"	Fontella, Joe The Atwater Signal	651 CD 3

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29 Apr 92	News Article, "Castle AFB Announces Public Meeting, Comment Period Announcement on Proposed Cleanup"	The Atwater Signal	652 CD 3
29 Apr 92	News Article, "Base Facilities to Tie Into Atwater Waste Water Treatment Plant"	Sanders, Tammy S The Atwater Signal	653 CD 3
01 May 92	Base Letter to PRC Environmental Regarding CRWQCB Approval of Discharging Water Generated During Aquifer Test, OU-1	Baker, Thomas R, LtCol 93 CSG/DEV	657 CD 3
01 May 92	PRC and JMM Responses to Comments of Interim Design Report, OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	658 CD 3
04 May 92	EPA Letter to Base Regarding Assessment of Stipulated Penalties for Late Submittal of Draft Final Work Plan	Work, Michael EPA Region IX	659 CD 3
07 May 92	Base Letter to CRWQCB Regarding Samples for 72-Hour Pump Test	Baker, Thomas R, LtCol 93 CSG/DEV	660 CD 3
07 May 92	Base Letter to EPA Regarding Draft RPM Meeting Minutes, 08 Apr 92	Baker, Thomas R, LtCol 93 CSG/DEV	661 CD 3
07 May 92	EPA Letter to Base Regarding Development of "0-Day" Schedule	Work, Michael EPA Region IX	662 CD 3
08 May 92	News Article, "Cleanup Plan Urged"	The Modesto Bee	663 CD 3
11 May 92	News Article, "Cleanup Bill Still Making Rounds"	Chan, Cecilia The Merced Sun Star	664 CD 3
12 May 92	News Article, "Public Meeting Planned"	The Merced Sun Star	665 CD 3
13 May 92	Base letter to EPA Regarding RPM Meeting, 14 May 92	Baker, Thomas R, LtCol 93 CSG/DE	666 CD 3
14 May 92	News Article, "Castle's Proposed Water Clean-up Plan"	The Atwater New Times	667 CD 3
15 May 92	Base Letter to CDTSC Regarding Dispute Resolution Pursuant to FFA	Baker, Thomas R, LtCol 93 CSG/DE	669 CD 3
15 May 92	Base Letter to EPA Regarding Dispute Resolution Pursuant to FFA	Baker, Thomas R, LtCol 93 CSG/DEV	670 CD 3
21 May 92	CDTSC Letter to Base Regarding Dispute Resolution	Landis, Anthony J California Department of Toxic Substances Control	671 CD 3
21 May 92	EPA Letter to Base Regarding Results of 91 EPA Field Audit, Data Validation Reports and Split Sample Analyses	Work, Michael EPA Region IX	672 CD 3
22 May 92	AFCEE Letter to Base Transmitting SOW for RI/FS, 20 May 92	Bowholtz, Daniel, Maj AFCEE/ESRB	673 CD 3
22 May 92	EPA Letter to HQ SAC and CDTSC Concerning Dispute Resolution	EPA Region IX	674 CD 3
29 May 92	HQ SAC Letter to SAF/MIQ and EPA Regarding IAG Dispute Resolution Committee	Mack, Robert D HQ SAC/CEV	675 CD 3
29 May 92	EPA Letter to Base Regarding Draft ROD and Requested Extension, OU-2	Anderson, Julie EPA Region IX	676 CD 3
29 May 92	RA, Draft Basis of Design Report, OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	678 CD 3
29 May 92	RA, Draft Work Plan, OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	679 CD 3
30 May 92	News Article, "Base Cleanup Considered"	The Merced Sun Star	680 CD 3
Jun 92	Draft ROD, OU-2	EPA Region IX	681 CD 3

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03 Jun 92	CDTSC Comments to Base on Proposed Plan, OU-2	Austreng, James C California Department of Toxic Substances Control	682 CD 3
03 Jun 92	CRWQCB Comments to Base Concerning Proposed Plan, OU-2	Izzo, Victor J California Regional Water Quality Control Board	683 CD 3
09 Jun 92	Base Letter to EPA Transmitting Summary of RPM Meeting Minutes, 02 Jun 92	Hicks, Brad 93 CSG/CEVR	684 CD 3
15 Jun 92	Base Letter to CDTSC Regarding Draft Work Plan and FSP	Baker, Thomas R, LtCol 93 CSG/DEV	685 CD 3
19 Jun 92	SAF Letter to EPA and CDTSC Regarding Dispute Resolution and Seven Day Extension	Vest, Gary D Deputy Assistant Secretary of the Air Force	686 CD 3
14 Jul 92	CRWQCB Memorandum to Water Quality Attorneys Concerning ARARs	McChesney, Frances Marshack, Jon California Regional Water Quality Control	1189 CD 6
15 Jul 92	CRWQCB Letter to Base Regarding Draft 100% Design Documents, Draft RA Work Plan, OU-1	Izzo, Victor J California Regional Water Quality Control Board	687 CD 3
16 Jul 92	SAF Letter to EPA and CDTSC Regarding Dispute Resolution	Vest, Gary D Deputy Assistant Secretary of the Air Force	688 CD 3
17 Jul 92	News Article, “State Issues Stern Warning on Cleanup”	The Merced Sun Star	689 CD 3
18 Jul 92	News Article, “Castle Cleanup Boosted, Funding Vote Set Thursday”	The Merced Sun Star	690 CD 3
18 Jul 92	News Article, “State EPA Issues Warning on Some Merced Water, US Assailed for Failure in Cleanup Efforts”	Schwartz, Stephen The San Francisco Chronicle	691 CD 3
18 Jul 92	News Article, “Cash to Cleanup Castle, Congress to Boost Efforts to Remove Contamination at Bases”	Doyle, Michael The Modesto Bee	692 CD 3
18 Jul 92	News Article, “State Orders Castle Cleanup to Continue”	The Turlock Journal	693 CD 3
20 Jul 92	SAF Letter to EPA Discussing and Transmitting IAG and FFA	Vest, Gary D Deputy Assistant Secretary of the Air Force	694 CD 3
21 Jul 92	CDPH Letter to Base Regarding Base Landfills	Palsgaard, Jeff H California Department of Public Health	695 CD 3
22 Jul 92	EPA Letter to SAF/MIQ and CDTSC Regarding Dispute Resolution	McGovern, Daniel W EPA Region IX	696 CD 3
22 Jul 92	CRWRCB Letter to AFRCW Concerning Proposed Modifications to IAGs to Include CRWQCB as Signatory Parties	McChesney, Frances California Regional Water Quality Control Board	697 CD 3
28 Jul 92	EPA Letter to Base Regarding Zero-Day Based Schedule, 20 Jul 92	Work, Michael EPA Region IX	699 CD 3
29 Jul 92	Joint Power Authority Letter to Base Regarding Latest TRC Meeting	Martin, Richard D Joint Powers Authority	698 CD 3
29 Jul 92	News Article, “Atwater in Line for Big Federal Grant, $1.5 Million Would Pay to Connect Castle AFB Sewer Lines to Treatment Plant”	De La Cruz, Mike The Merced Sun Star	700 CD 3

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31 Jul 92	CDTSC Letter to Base Regarding Closure of PCB Storage Area and Corrosion Control Paint Booth Water Tank	Pappas, James M California Department of Toxic Substances Control	701 CD 3
05 Aug 92	EPA Letter to Base, CRWQCB, and CDTSC Regarding Review of Draft ROD, OU-2	Work, Michael EPA Region IX	702 CD 3
07 Aug 92	Base Letter to EPA Transmitting ROD Responsiveness Summary, OU-2	Parker, Scarlette P, TSgt 93 BMW/CVE	703 CD 3
10 Aug 92	Draft Final Basis of Design Report, OU-1	PRC Environmental Management, Inc. James M Montgomery, Inc.	704 CD 3
10 Aug 92	Draft Final Basis of Design Report, OU-1, Appendix C	PRC Environmental Management, Inc. James M Montgomery, Inc.	705 CD 3
11 Aug 92	EPA Letter to Base Regarding Revised FFA Schedule, 14 Aug 92	Work, Michael EPA Region IX	706 CD 3
11 Aug 92	CRWQCB Letter to EPA Regarding Review Comments Due Date for Draft ROD, OU-2	Izzo, Victor J California Regional Water Quality Control Board	707 CD 3
11 Aug 92	CDTSC Letter to EPA Regarding Comments on Draft ROD, OU-2	Austreng, James C California Department of Toxic Substances Control	708 CD 3
11 Aug 92	PRC Letter to Base Transmitting Response to EPA Comments on Draft 100% Design Documents and Draft RA Work Plan, OU-1	Scruggs, Mary PRC Environmental Management, Inc.	709 CD 3
12 Aug 92	EPA Letter to Base Regarding Review of Draft Meeting Minutes, 29 Jul 92	Work, Michael EPA Region IX	710 CD 3
13 Aug 92	Base Letter to EPA Concerning Comments on Draft ROD, OU-2	Hicks, Brad 93 CSG/DEVR	712 CD 3
13 Aug 92	EPA Letter to Base Concerning Draft RA Memorandum, SS-61	Work, Michael EPA Region IX	1193 CD 6
14 Aug 92	CRWQCB Letter to Base Transmitting Comments on Draft ROD, OU-2	Izzo, Victor J California Regional Water Quality Control Board	713 CD 3
18 Aug 92	PRC Letter to Base Transmitting Conference Call Meeting Minutes, 30 Jul 92	Scruggs, Mary PRC Environmental Management, Inc.	714 CD 3
18 Aug 92	EPA Letter to Base CDTSC and CRWQCB Requesting Review of Draft Responsiveness Summary, OU-2, 09 Sep 92	Work, Michael EPA Region IX	715 CD 3
20 Aug 92	EPA Letter to Base Regarding Draft OU-1 100% Design Report and Contractor Response to EPA Comments	Work, Michael EPA Region IX	716 CD 3
28 Aug 92	RA, Draft Final Work Plan, OU-1	PRC Environmental Management, Inc.	717 CD 3
28 Aug 92	RA, Draft Final Basis of Design Report, Vol I of II, OU-1	PRC Environmental Management, Inc.	718 CD 3
28 Aug 92	RA, Draft Final Basis of Design Report, Vol II of II, Appendix C, OU-1	PRC Environmental Management, Inc.	719 CD 3
Sep 92	Base Comments Regarding OU-1 Design	Hicks, Brad 93 CES/DEVR	720 CD 3

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03 Sep 92	CRWQCB Letter to Base Transmitting Comments on Draft Responsiveness Summary, OU-2	Izzo, Victor J California Regional Water Quality Control Board	721 CD 3
04 Sep 92	SOW, RI/FS, Installation Wide	93 CES/CEVR	958 CD 3
08 Sep 92	CRWQCB Letter to Base Regarding Free Floating Product at Monitoring Well #120, Affect on Treatment Systems, Bldg 84, OU-1	Izzo, Victor J California Regional Water Quality Control Board	722 CD 3
10 Sep 92	HQ EPA Letter to SAF/MIQ and CDTSC Regarding Base Dispute Resolution	McCall, Thomas L, Jr HQ USEPA	723 CD 3
11 Sep 92	CRWQCB Letter to Base Regarding Review of RA Memorandum, Bldg 84	Izzo, Victor J California Regional Water Quality Control Board	724 CD 3
14 Sep 92	Base Letter to EPA, CDTSC, and CRWQCB Regarding Installation Wide Work Plan	Cole, John R, LtCol 93 BMW/CVE	40 CD 2
16 Sep 92	EPA Letter to Base, CDTSC, and CRWQCB Transmitting Draft Final ROD, OU-2	Work, Michael EPA Region IX	726 CD 3
21 Sep 92	EPA Letter to Base Regarding Draft Final 100% Design Report, OU-1	Work, Michael EPA Region IX	727 CD 3
21 Sep 92	EPA Letter to Base Regarding Draft Final ROD on Diskette, OU-2	Work, Michael EPA Region IX	728 CD 3
22 Sep 92	CRWQCB Draft Memorandum Regarding Effluent Discharge Standards, OU-1	Izzo, Victor J California Regional Water Quality Control Board	729 CD 3
24 Sep 92	Base Letter to EPA, CDTSC, and CRWQCB Regarding Retraction of Draft Final ROD, OU-2	Cole, John R, LtCol 93 BMW/CVE,	730 CD 3
24 Sep 92	EPA Letter to Base Regarding Conference Call on Draft Final 100% Design Report, OU-1, 23 Sep 92	Work, Michael EPA Region IX	731 CD 3
25 Sep 92	EPA Letter to Base Regarding Base Cleanup Information	Takata, Keith EPA Region IX	732 CD 3
28 Sep 92	Base Letter to EPA, CDTSC, and CRWQCB Regarding Proposed FFA Schedule	Cole, John R, LtCol 93 BMW/CVE	733 CD 3
29 Sep 92	CDTSC Letter to Base and EPA Regarding Dispute Resolution	Wang, David California Department of Toxic Substances Control	734 CD 3
29 Sep 92	RA, Final Basis of Design Report, Vol II of II, Appendix C, OU-1	PRC Environmental Management, Inc.	735 CD 3
30 Sep 92	Base Letter to EPA and CDTSC Concerning Issues of Dispute Resolution committee	Cole, John R, LtCol 93 BMW/CVE	736 CD 3
30 Sep 92	CDTSC Letter to HQ/ACC Regarding Dipute Resolution	Wang, David California Department of Toxic Substances Control	737 CD 3
Oct 92	Draft Final ROD, OU-2	93 CES/CEV	739 CD 3
02 Oct 92	Base Letter to EPA, CDTSC, and CRWQCB Regarding Transmission of Draft Final ROD, OU-2	Cole, John R, LtCol 93 BMW/CVE	197 CD 2
06 Oct 92	CRWQCB Letter to Base, EPA, and CDTSC Regarding Pre-Meeting on Dispute of RD Report and RA Work Plan, OU-1	Izzo, Victor J California Regional Water Quality Control Board	740 CD 3
09 Oct 92	EPA Letter to Base Transmitting Comments on Draft Meeting Minutes, 16 Sep 92	Work, Michael EPA Region IX	742 CD 3
13 Oct 92	EPA Letter to Base Regarding Draft Proposed FFA Schedule	Work, Michael EPA Region IX	743 CD 3

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14 Oct 92	HQ ACC Letter to CDTSC and EPA Regarding Dispute, OU-1	HQ ACC/CEV	744 CD 3
15 Oct 92	News Article, "Bill Would Free Up Clean Parts of Castle, Legislation Now on President's Desk"	The Merced Sun Star	745 CD 3
20 Oct 92	EPA Letter to HQ ACC and CDTSC Regarding Dispute Resolution for RD, OU-1	Takata, Keith EPA Region IX	747 CD 3
21 Oct 92	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Proposed Agenda for RPM Meeting, 04 Nov 92	Cole, John R, LtCol 93 BMW/CVE	748 CD 3
23 Oct 92	Base Letter to EPA, CDTSC, and CRWQCB Transmitting RPM Meeting Minutes, 16 Sep 92	Cole, John R, LtCol 93 BMW/CVE	749 CD 3
26 Oct 92	Base Letter to EPA, CDTSC, and CRWQCB Regarding Proposed FFA Schedule	Baker, Thomas R, LtCol 93 BMW/CVE	750 CD 3
29 Oct 92	News Article, "Base Cleanup Efforts Accelerated, Air Force Wants Polluted Facility Suitable for New Occupants by 95"	De La Cruz, Mike The Merced Sun Star	751 CD 3
29 Oct 92	EPA Letter to Base Regarding Draft Final ROD, OU-2	Work, Michael EPA Region IX	752 CD 3
Nov 92	Working Copy, QAPP, SCOU	Jacobs Engineering Group, Inc.	753 CD 5
Nov 92	Stage V, Draft SCOU HSP	Jacobs Engineering Group, Inc.	754 CD 5
Nov 92	Installation Wide Contaminant Source Assessment Report, Vol I of II	Jacobs Engineering Group, Inc.	755 CD 5
Nov 92	Installation Wide Contaminant Source Assessment Report, Vol II of II	Jacobs Engineering Group, Inc.	756 CD 5
Nov 92	SAP, SCOU	Jacobs Engineering Group, Inc.	757 CD 5
02 Nov 92	Base Letter to EPA, CDTSC, and CRWQCB Regarding EPA's Comments on Draft Final ROD, 29 Oct 92, OU-2	Baker, Thomas R, LtCol 93 CES/CEVR	759 CD 3
03 Nov 92	CRWQCB Letter to HQ ACC, EPA, and CDTSC Regarding Dispute Resolution, OU-1	Pearson, J Lawrence California Regional Water Quality Control Board	760 CD 3
04 Nov 92	RPM Meeting Minutes, 04 Nov 92	Reith, Charles Jacobs Engineering Group, Inc.	761 CD 3
04 Nov 92	HQ/EPA Letter to SAF/MIQ and CDTSC Regarding Dispute Resolution	McCall, Thomas L, Jr HQ USEPA	762 CD 3
04 Nov 92	EPA Letter to HQ ACC and CDTSC Regarding Dispute Resolution of Interim OU-1 100% Draft Final RD Report and RA Work Plan	Takata, Keith EPA Region IX	763 CD 3
05 Nov 92	CDTSC Letter to EPA and HQ ACC Regarding Dispute Resolution	Ward, Daniel T California Department of Toxic Substances Control	767 CD 4
05 Nov 92	CRWQCB Letter to Base Regarding Approval of RA, Bldg 84	Izzo, Victor J California Regional Water Quality Control Board	768 CD 4
09 Nov 92	EPA Letter to Base Regarding Comments on Draft Final FFA Schedule	Work, Michael EPA Region IX	770 CD 4
09 Nov 92	Base Environmental Update	93 BW/PA	784 CD 3

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11 Nov 92	Draft Working Copy, QAPP, SCOU	Jacobs Engineering Group, Inc.	771 CD 4
20 Nov 92	EPA Letter to Base Regarding Draft Preliminary Accelerated RD/RA Schedule, OU-2	Work, Michael EPA Region IX	772 CD 3
23 Nov 92	HQ ACC Letter to CDTSC, EPA, and CRWQCB Regarding, Unanimous Opinion of Dispute Resolution Committee, OU-1	Moore, Robert M HQ ACC/CEVR	773 CD 3
25 Nov 92	EPA Letter to HQ ACC, CDTSC, and CRWQCB Regarding Dispute Resolution, ROD, OU-2	Takata, Keith EPA Region IX	774 CD 3
27 Nov 92	News Article, "Public Notice, Intent to Operate Liquid Granular Activated Carbon Filter"	The Merced Sun Star	775 CD 3
27 Nov 92	Base Letter to Navy Concerning Modification of Design Documents, 29 Sep 92, OU-1	Baker, Thomas R, LtCol 93 CES/CEV	776 CD 3
Dec 92	Draft QAPP, SCOU	Jacobs Engineering Group, Inc.	781 CD 3
02 Dec 92	News Article, "Public Notice on the Intent to Operate Liquid Granular Activated Carbon Filter at CAFB"	The Atwater Signal	777 CD 3
03 Dec 92	CDTSC Letter to Base Regarding NOD for Draft PCB Closure Plan	Hong, Eric California Department of Toxic Substances Control	787 CD 3
04 Dec 92	News Article, "Funds for Base Cleanup"	The Merced Sun Star	778 CD 3
10 Dec 92	News Article, "Castle AFB Receives $21 Million for Cleanup"	The Winton Times	779 CD 3
10 Dec 92	RA, Final Basis of Design Report, Vol I of II, OU-1	PRC Environmental Management, Inc.	782 CD 3
10 Dec 92	RA, Final Work Plan, OU-1	PRC Environmental Management, Inc.	783 CD 3
14 Dec 92	SOW, Title I Services for Groundwater Treatment, OU-2 and Title II Services for Groundwater Treatment, OU-1	Jacobs Engineering Group, Inc.	946 CD 3
15 Dec 92	CRWQCB Letter to Base Regarding Draft Update of Monitoring and Reporting Program of Board Order Number	Izzo, Victor J California Regional Water Quality Control Board	785 CD 3
16 Dec 92	News Article, "Castle Gets Cleanup Funding"	Parker, Scarlette P, TSgt The Atwater Signal	786 CD 3
24 Dec 92	Behavior of Eight Inches Diameter Monitoring Well, DA4-1	Martinez, Pablo A 93 CES/CEV	795 CD 3
05 Jan 93	TRC Meeting Minutes, 18 Nov 92	Bishop, Raymond C, Col 93 BW/CV	788 CD 3
06 Jan 93	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Proposed Agenda for RPM Meeting, 20 Jan 93	Cole, John R, LtCol 93 BW/CVE	789 CD 3
11 Jan 93	EPA Letter to Base Regarding Draft QAPP, Nov 92	Work, Michael EPA Region IX	790 CD 3
12 Jan 93	EPA Letter to HQ ACC, CDTSC, and CRWQCB Regarding Dispute Resolution, ROD, OU-2	Takata, Keith EPA Region IX	791 CD 3
14 Jan 93	CDTSC Letter to EPA Regarding Dispute Resolution, ROD, OU-2	Wang, David California Department of Toxic Substances Control	792 CD 3
20 Jan 93	Regulatory Consensus Statement Regarding Major Deficiencies of SCOU Work Plan	Work, Michael Austreng, James C Izzo, Victor J	793 CD 3

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20 Jan 93	Draft RPM Meeting Minutes, 20 Jan 93	93 CES/CEV	794 CD 3
20 Jan 93	Base Letter to CRWQCB Regarding GAC Unit Taken Off Line, Bldg 84	Cole, John R, LtCol 93 BW/CVE	942 CD 3
Feb 93	RI, Advance Draft Comprehensive Basewide Groundwater, QAPP, Vol I of II	Jacobs Engineering Group, Inc.	796 CD 3
Feb 93	RI, Advance Draft Comprehensive Basewide Groundwater, SAP, Vol II of II	Jacobs Engineering Group, Inc.	797 CD 3
Feb 93	RD, Draft Work Plan, OU-2	Jacobs Engineering Group, Inc.	798 CD 3
Feb 93	Draft Conceptual Design Support Document Technical Memorandum, OU-2	Jacobs Engineering Group, Inc.	799 CD 3
Feb 93	Base Letter to CDTSC Regarding Response to NOD on Draft Closure Plan, PCB Storage Facility	Cole, John R, LtCol 93 BW/CVE	812 CD 3
Feb 93	RI, Comprehensive Basewide Groundwater, HSP	Jacobs Engineering Group, Inc.	959 CD 4
03 Feb 93	Base Letters to Residents Regarding Sampling Results	Baker, Thomas R, LtCol 93 CES/CEV	801 CD 3
04 Feb 93	EPA Letter to Base Concerning Comments on Draft Meeting Minutes, 04 Feb 93	Work, Michael EPA Region IX	802 CD 3
08 Feb 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding Draft Final RD/RA Schedule for OU-2	Cole, John R, LtCol 93 BW/CVE	803 CD 3
08 Feb 93	Final RPM Minutes Minutes, 04 Nov 92	Baker, Thomas R, LtCol 93 CES/CEV	804 CD 3
09 Feb 93	EPA Letter to Base Regarding Draft Meeting Minutes, 20 Jan 93	Work, Michael EPA Region IX	805 CD 3
09 Feb 93	MDPH Letter to EPA Regarding Base Cleanup Levels	Palsgaard, Jeff H Merced County Department of Public Health	806 CD 3
12 Feb 93	RI/FS, Draft Amendments to Comprehensive Work Plan	James M Montgomery, Inc.	807 CD 3
15 Feb 93	CDTSC Letter to Base Regarding Review Comments on SCOU Work Plan	Austreng, James C California Department of Toxic Substances Control	808 CD 3
16 Feb 93	CRWQCB Memorandum Regarding SCOU Work Plan	Izzo, Victor J California Regional Water Quality Control Board	809 CD 3
16 Feb 93	EPA Letter to Base Regarding Draft SCOU Work Plan	Work, Michael EPA Region IX	810 CD 3
16 Feb 93	CRWQCB Letter to Base Regarding Draft SCOU Work Plan	Izzo, Victor J California Regional Water Quality Control Board	811 CD 3
19 Feb 93	CDTSC Letter to EPA Regarding Extension of Review Period, OU-2	Wang, David California Department of Toxic Substances Control	813 CD 3
22 Feb 93	EPA Letter to Base Regarding SCOU Work Plan and Universe of Potential Sources	Work, Michael EPA Region IX	814 CD 3
22 Feb 93	EPA Letter to Base Regarding Need for Chromium Groundwater Sampling	Work, Michael EPA Region IX	815 CD 3
23 Feb 93	Base Letter to EPA, CDTSC, and CRWQCB Documenting Phone Conversation on Approval of Contaminated Groundwater Disposal	Baker, Thomas R, LtCol 93 CES/CEV	816 CD 3

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23 Feb 93	EPA Letter to Base Regarding SCOU Work Plan Example FSP Package, 09 Feb 93	Work, Michael EPA Region IX	817 CD 3
Mar 93	Stage 5, Draft SCOU HSP	Jacobs Engineering Group, Inc.	818 CD 5
Mar 93	RI, Draft Comprehensive Basewide Groundwater, SAP, Vol I of II	Jacobs Engineering Group, Inc.	819 CD 3
Mar 93	RI, Draft Comprehensive Basewide Groundwater, SAP, Vol II of II	Jacobs Engineering Group, Inc.	820 CD 3
Mar 93	RI/FS, SCOU Work Plan/SAP Table of Contents	Jacobs Engineering Group, Inc.	845 CD 3
01 Mar 93	MDPH Letter to Resident Responding to Comments	Palsgaard, Jeff H Merced County Department of Public Health	821 CD 3
03 Mar 93	CRWQCB Letter to Base Regarding Comments on Example FSP, Disposal Area 3	Izzo, Victor J California Regional Water Quality Control Board	822 CD 3
04 Mar 93	EPA Letter to Base Regarding SCOU Work Plan	Work, Michael EPA Region IX	823 CD 3
08 Mar 93	EPA Letter to MDPH Regarding Letters, 09 and 11 Feb 93	Work, Michael EPA Region IX	825 CD 3
08 Mar 93	EPA Letter to Base Transmitting Region IX Draft Preliminary Remediation Goals Table Update	Work, Michael EPA Region IX	826 CD 3
09 Mar 93	CDTSC Letter to Base Regarding Review Comments on Conceptual Site Model and Site Specific FSP	Austreng, James C California Department of Toxic Substances Control	827 CD 3
09 Mar 93	EPA Letter to Base Regarding Late Delivery and Incomplete Submission of Draft Basewide RI/FS Work Plan	Work, Michael EPA Region IX	828 CD 3
11 Mar 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding Draft Comprehensive Basewide RI/FS Work Plan	Cole, John R, LtCol 93 BW/CVE	829 CD 3
11 Mar 93	EPA Letter to Base Regarding Draft SCOU Work Plan With Responses to EPA Comments	Work, Michael EPA Region IX	830 CD 3
15 Mar 93	EPA Letter to Base Regarding Draft RPM Meeting Minutes, 18 Feb 93	Work, Michael EPA Region IX	832 CD 3
17 Mar 93	CIWMB Letter to Base Regarding Landfill Areas 1-5	Johnson, Albert M California Integrated Waste Management Board	833 CD 3
19 Mar 93	Base Environmental Update	93 BW/PA	834 CD 3
22 Mar 93	EPA Letter to HQ ACC, CDTSC, and CRWQCB Regarding Dispute Resolution, ROD, OU-2	Takata, Keith EPA Region IX	835 CD 3
22 Mar 93	Base Letter to Residents Transmitting Results From Well Water Sampling	Baker, Thomas R, LtCol 93 CES/CEV	836 CD 3
23 Mar 93	News Article, “Cleanup Efforts at Castle Continue”	Lindsay, Alvie The Modesto Bee	838 CD 3
24 Mar 93	CDTSC Letter to EPA Regarding Extension of Review Period, OU-2	Wang, David California Department of Toxic Substances Control	839 CD 3
31 Mar 93	Bechtel Letter to EPA Transmitting TRC Comments on Draft FSP, SCOU	Haskins, Greg Bechtel Environmental, Inc.	844 CD 3
Apr 93	RI/FS, Draft Final QAPP, Vol I of II	Jacobs Engineering Group, Inc.	840 CD 3

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Apr 93	RI/FS, Draft Final QAPP, Vol II of II	Jacobs Engineering Group, Inc.	841 CD 3
Apr 93	Site Construction Quality Plan	EA Engineering, Science, and Technology, Inc.	960 CD 4
Apr 93	RI/FS, Draft Final Work Plan, Sampling Analysis Plan, SCOU	Jacobs Engineering Group, Inc.	961 CD 5
01 Apr 93	Base Letter to Residents Transmitting Monthly TCE Samples	Baker, Thomas R, LtCol 93 CES/CEV	843 CD 3
06 Apr 93	EPA Letter to Base Regarding Universe of Sites, SCOU	Work, Michael EPA Region IX	846 CD 3
07 Apr 93	HQ ACC Letter to EPA Region IX on Dispute Resolution, ROD for Regarding EPA Letter, 22 Mar 93, OU-2	Mogge, John W, Col HQ ACC/CEV	847 CD 3
09 Apr 93	CRWQCB Letter to Base Regarding ARARs, SCOU	Izzo, Victor J California Regional Water Quality Control Board	848 CD 3
12 Apr 93	EPA Letter to Base Regarding FSP, North and East Base Sectors	Work, Michael EPA Region IX	850 CD 3
14 Apr 93	EPA Letter to Base Regarding Conceptual Design Support Technical Memorandum, OU-2	Work, Michael EPA Region IX	851 CD 3
15 Apr 93	Base Letter to CDTSC Regarding Draft Closure Plan, Former PCB Storage Facility	Baker, Thomas R, LtCol 93 CES/CEV	852 CD 3
19 Apr 93	EPA Letter to Base Regarding Draft Minutes of Project Manager Meeting, 25 Mar 93	Work, Michael EPA Region IX	853 CD 3
23 Apr 93	EPA Letter to Resident Regarding Resident's Letter to Merced County Department of Public Health	Work, Michael EPA Region IX	854 CD 3
26 Apr 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding FFA Schedule	Cole, John R, LtCol 93 BW/CVE	855 CD 3
29 Apr 93	Base Letter to Resident Regarding Well Sampling	Baker, Thomas R, LtCol 93 CES/CEV	856 CD 3
30 Apr 93	CRWQCB Letter to Base Regarding Draft Final SCOU Work Plan Comments on FSP, North and East Base Sectors	Izzo, Victor J California Regional Water Quality Control Board	857 CD 3
May 93	Draft Final Conceptual Design Support Document Technical Memorandum, OU-2	Jacobs Engineering Group, Inc.	858 CD 3
01 May 93	TRC Meeting Minutes, 24 Mar 93	93 BW/PA	859 CD 3
03 May 93	CRWQCB Letter to Base Regarding Draft Comprehensive Basewide Groundwater RI Work Plan, Mar 93	Izzo, Victor J California Regional Water Quality Control Board	860 CD 3
03 May 93	EPA Letter to Base Regarding Comprehensive Basewide Work Plan	Work, Michael EPA Region IX	861 CD 3
03 May 93	CDTSC Letter to Base Transmitting Review Comments on Comprehensive Basewide Groundwater RI SAP	Austreng, James C California Department of Toxic Substances Control	862 CD 3
04 May 93	Base Letter to CDTSC Regarding Plans and Specifications for Project Titled Upgrade and Closure Plan, Oil Water Separator	Baker, Thomas R, LtCol 93 CES/CEV	863 CD 3
07 May 93	EPA Letter to Base Regarding Review and Finalization of SCOU Work Plan	Work, Michael EPA Region IX	864 CD 3
07 May 93	MDPH Letter to Base Regarding Comprehensive Basewide Groundwater RI SAP, Mar 93	Palsgaard, Jeff H Merced County Department of Public Health	865 CD 3

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10 May 93	Draft RPM Meeting Minutes, 29 Apr 93	Watkin, Geoff W Jacobs Engineering Group, Inc.	866 CD 3
11 May 93	EPA Letter to Base Requesting Agreement to Extend Period for Finalization of Draft Final SCOU Work Plan	Work, Michael EPA Region IX	867 CD 3
12 May 93	EPA Letter to Base Regarding EPA Comments on Draft Final Work Plan	Work, Michael EPA Region IX	868 CD 3
13 May 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding Agreement to Extend Period for Finalization of Draft Final SCOU Work Plan	Cole, John R, LtCol 93 BW/CVE	869 CD 3
13 May 93	EPA Letter to Base Regarding Need for Delineation of Wetlands	Work, Michael EPA Region IX	870 CD 3
13 May 93	HQ ACC Letter to EPA Regarding Dispute Resolution, ROD, OU-2	Mogge, John W, Col HQ ACC/CEV	871 CD 3
13 May 93	CDTSC Letter to Base Regarding Permitting and Site Mitigation Activities	Pappas, James M California Department of Toxic Substances Control	1023 CD 4
14 May 93	Base Letter to CRWQCB Regarding Waste Soil Disposal, OU-2	Cole, John R, LtCol 93 BW/CVE	872 CD 3
17 May 93	CDTSC Letter to Base Regarding Review Comments on SCOU Draft Final Work Plan, SAP, Apr 93	Austreng, James C California Department of Toxic Substances Control	873 CD 3
18 May 93	CRWQCB Letter to Base Regarding Draft Final SCOU Work Plan	Izzo, Victor J California Regional Water Quality Control Board	874 CD 3
18 May 93	Base Letter to CRWQCB Regarding Waste Water Disposal, OU-2	Cole, John R, LtCol 93 BW/CVE	875 CD 3
18 May 93	Technical Memorandum, Air Stripper Pilot Study, OU-1	PRC Environmental Management, Inc.	876 CD 3
18 May 93	Technical Memorandum, Aquifer Pumping Test for OU-1	PRC Environmental Management, Inc.	877 CD 3
19 May 93	News Articles Concerning State Legislators and Base Closure	The Modesto Bee The Atwater Signal	109 CD 2
20 May 93	News Article, “Locals Testify Before Senate Base Closure Committee”	Hartsoe, Steve The Winton Times	137 CD 2
20 May 93	News Article, “Joint Power Authority Proposes a Mixed Bag of Activities”	Hartsoe, Steve The Winton Times	194 CD 2
20 May 93	News Article, “A View from the Inside”	Cardoza, Dennis The Winton Times	212 CD 2
21 May 93	EPA Letter to Base Regarding Revised Conceptual Design Support Technical Memorandum, May 93, OU-2	Work, Michael EPA Region IX	878 CD 3
24 May 93	EPA Letter to Base Regarding Draft RPM Meeting Minutes, 29 Apr 93	Work, Michael EPA Region IX	879 CD 3
26 May 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding FFA Schedule	Cole, John R, LtCol 93 BW/CVE	880 CD 3
26 May 93	HQ ACC Letter to EPA Regarding Dispute Resolution, ROD, Cost to Comply Summary, OU-2	Mogge, John W, Col HQ ACC/CEV	881 CD 3
27 May 93	EPA Letter to Base Regarding Work Plan, Revised Appendix B, SCOU	Work, Michael EPA Region IX	882 CD 3

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28 May 93	CRWQCB Letter to EPA Concerning ROD Dispute Resolution, OU-2	Pearson, J Lawrence California Regional Water Quality Control Board	1764 CD 9
Jun 93	RI/FS, Draft Final Comprehensive Basewide Work Plan, SAP, Vol II of II, Appendix B-1	Jacobs Engineering Group, Inc.	885 CD 5
Jun 93	RI/FS, Draft Final QAPP, Vol I of II	Jacobs Engineering Group, Inc.	886 CD 3
Jun 93	RI/FS, Draft Final SCOU Work Plan, SAP	Jacobs Engineering Group, Inc.	887 CD 5
Jun 93	LTM Sampling Plan	Jacobs Engineering Group, Inc.	888 CD 5
Jun 93	Site Safety and Health Plan, Groundwater Remediation System Installation, OU-1	EA Engineering, Science, and Technology, Inc.	965 CD 4
01 Jun 93	EPA Letter to Base Regarding Protection of Wetlands During RI	Work, Michael EPA Region IX	889 CD 5
02 Jun 93	Final Closure Plan, Former PCB Storage Facility	Jonas & Associates, Inc.	1058 CD 4
03 Jun 93	Base Letter to Jacobs Regarding Disposition of Waste Generated, OU-2	Baker, Thomas R, LtCol 93 BW/CVE	890 CD 5
04 Jun 93	PRC Letter to Base Transmitting Work Plan Amendment, EE/CA for JP-4 Contaminated Soils, Western Flightline Sector, FS-1, FS-2	Scruggs, Mary PRC Environmental Management, Inc.	891 CD 5
09 Jun 93	EPA Letter to Base, CDTSC, and CRWQCB Regarding Finalization of Draft Final SCOU Work Plan	Work, Michael EPA Region IX	893 CD 5
Multiple Dates	7 Audio Tapes, 1 VHS Tape Regarding TRC Meetings	93 BW/PA	894 CD 5
09 Jun 93	RA for JP-4 Contaminated Soils Along Western Flightline Sector,, Addendum to HSP, FS-1, FS-2	PRC Environmental Management, Inc.	895 CD 3
11 Jun 93	HQ ACC Letter to EPA Regarding Dispute Resolution, ROD for OU-2	Burnet, Gilbert N HQ ACC/CEV	04 CD 2
15 Jun 93	HQ ACC Letter to EPA Regarding Dispute Resolution, ROD for OU-2, Cost to Comply Summary	Mogge, John W, Col HQ ACC/CEV	30 CD 2
16 Jun 93	Base Letter to EPA Regarding EPA Letter on Finalization of Draft Final SCOU Work Plan, 09 Jun 93	Cole, John R, LtCol 93 BW/CVE	42 CD 2
17 Jun 93	Base Community Update, Basewide Cleanup	Parker, Scarlette P, TSgt 93 BW/PA	67 CD 2
17 Jun 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding Proposed RPM Meeting Agenda, 29 Jun 93	Cole, John R, LtCol 93 BW/CVE	69 CD 2
21 Jun 93	EPA Letter to Base Regarding Revised Draft Final SCOU Work Plan, 14 Jun 93	Work, Michael EPA Region IX	214 CD 2
22 Jun 93	EPA Letter to HQ ACC, CDTSC, and CRWQCB Regarding Dispute Resolution, ROD, OU-2	Takata, Keith EPA Region IX	218 CD 2
22 Jun 93	Base Letter to CRWQCB Regarding Temporary Shut Down, DA-4	Baker, Thomas R, LtCol 93 CES/CEV	219 CD 2
23 Jun 93	EPA Letter to Base Regarding Sampling of GAC Groundwater Treatment Unit, DA-4	Dean, Steve M EPA Region IX	943 CD 3
28 Jun 93	Base Letter to CDTSC, CRWQCB, and EPA Transmitting RPM Meeting Minutes, 20 May 93	Baker, Thomas R, LtCol 93 CES/CEV	224 CD 2

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29 Jun 93	CDTSC and CRWQCB Letter to Base Regarding Submittal of Individual Site FSP for SCOU	Izzo, Victor J Austreng, James C California Regional Water Quality Control	249 CD 2
29 Jun 93	CDTSC Letter to EPA Regarding Extension of Review Period, OU-2	Wang, David California Department of Toxic Substances Control	258 CD 2
Jul 93	Draft Site Construction Quality Control Program, Pump and Treat System	EA Engineering, Science, and Technology, Inc.	966 CD 4
01 Jul 93	TRC Meeting Minutes, 09 Jun 93	Bishop, Raymond C, Col 93 BW/CVE	311 CD 2
12 Jul 93	EPA Letter to Base Transmitting Technical Memoranda for Risk Assessment	Work, Michael EPA Region IX	341 CD 2
12 Jul 93	Right of Entry Agreement With Resident to Inspect Property for the Release of Hazardous Substances	Kotyk, Jack W AFBDA/OL-1	342 CD 2
12 Jul 93	HQ ACC Letter to EPA Regarding Dispute Resolution, ROD, Cost to Comply Summary, OU-2	Mogge, John W, Col HQ ACC/CEV	346 CD 2
13 Jul 93	Base Letter to CRWQCB Regarding Summary Sheet of All Monthly TCE Results	Baker, Thomas R, LtCol 93 CES/CEV	380 CD 3
16 Jul 93	Base Letter to Resident Regarding Their Culligan Water Filter	Baker, Thomas R, LtCol 93 CES/CEV	400 CD 3
18 Jul 93	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Proposed Agenda for RPM Meeting Minutes, 22 Jul 93	Cole, John R, LtCol 93 BW/CVE	413 CD 3
21 Jul 93	CRWQCB Letter to Base Regarding SCOU FSP Review Submitted, 08 Jul 93	Izzo, Victor J California Regional Water Quality Control Board	451 CD 3
30 Jul 93	Agreement With Resident for Right of Entry, Environmental Testing and Monitoring	93 CES/CEVR	457 CD 3
30 Jul 93	CDTSC Letter to Base Regarding Review Comments on Draft Final Comprehensive Basewide Groundwater RI SAP	Austreng, James C California Department of Toxic Substances Control	463 CD 3
Aug 93	RI/FS, Draft Final Comprehensive Basewide Work Plan, SAP, Vol I of II	Jacobs Engineering Group, Inc.	962 CD 5
Aug 93	RI/FS, Draft Final Comprehensive Basewide Work Plan, SAP, Vol II of II	Jacobs Engineering Group, Inc.	963 CD 5
03 Aug 93	RPM Meeting Minutes, 22 Jul 93	Watkin, Geoff W Jacobs Engineering Group, Inc.	474 CD 3
06 Aug 93	CRWQCB Letter to HQ ACC Regarding Dispute Remaining Issues, OU-2	Pearson, J Lawrence California Regional Water Quality Control Board	484 CD 3
09 Aug 93	Base Letter to Resident Transmitting Water Sample Results	Fraher, Jeffrey T, Maj 93 CES/CEV	494 CD 3
09 Aug 93	EPA Letter to CRWQCB Regarding ROD Dispute Issues, OU-2	Anderson, Julie EPA Region IX	504 CD 3
09 Aug 93	CRWQCB Letter to Regulators and Base Concerning Phase II Groundwater Reinjection Standards, OT-29	Pearson, J Lawrence California Regional Water Quality Control Board	1199 CD 6
12 Aug 93	Base Letter to CRWQCB, CDTSC, and EPA Regarding Waste Water Disposal	Baker, Thomas R, LtCol 93 CES/CEV	508 CD 3

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12 Aug 93	CRWQCB Letter to Base Transmitting Comments on SCOU FSP, 29 Jul 93	Izzo, Victor J California Regional Water Quality Control Board	525 CD 3
13 Aug 93	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Proposed Agenda of RPM Meeting, 19 Aug 93	Baker, Thomas R, LtCol 93 CES/CEV	527 CD 3
16 Aug 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding Waste Management Plan and Non-Source Waste Areas	Baker, Thomas R, LtCol 93 CES/CEV	528 CD 3
16 Aug 93	EPA Letter to Base Regarding Updated LTM Sampling Plan	Work, Michael EPA Region IX	533 CD 3
16 Aug 93	Bechtel Memorandum to Jacobs Regarding FSP Review	Haskins, Greg Bechtel Environmental, Inc.	536 CD 3
19 Aug 93	CRWQCB Draft Memorandum Regarding Dispute Resolution Meeting Minutes, 10 Aug 93, OU-2	Vorster, Antonia K J California Regional Water Quality Control Board	540 CD 3
23 Aug 93	CRWQCB Letter to Base Regarding FSP Addendum, 17 Aug 93	Izzo, Victor J California Regional Water Quality Control Board	563 CD 3
23 Aug 93	SOW, RI/FS, SCOU and CBOU	AFCEE/ESB	945 CD 3
24 Aug 93	CRWQCB Letter to Base Regarding Comments on SCOU FSP Received 09 Aug 93	Izzo, Victor J California Regional Water Quality Control Board	575 CD 4
25 Aug 93	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Proposed Agenda for RPM Meeting, 08 Sep 93	Fraher, Jeffrey T, Maj 93 BW/CVE	579 CD 4
25 Aug 93	EPA Letter to CRWQCB Regarding Draft Minutes of Meeting, 10 Aug 93, OU-2	Work, Michael EPA Region IX	581 CD 4
27 Aug 93	Merced Water Supply Plan TAC Meeting Announcement	Bain, Diane CH2M Hill	625 CD 3
27 Aug 93	CRWQCB Letter to HQ ACC, CDHS, and EPA Regarding Resolution of Dispute, OU-2	Pearson, J Lawrence California Regional Water Quality Control Board	654 CD 3
31 Aug 93	Draft RPM Meeting Minutes, 19 Aug 93	Watkin, Geoff W Jacobs Engineering Group, Inc.	655 CD 3
Sep 93	Superfund Technical Assistance Grants	HQ USEPA	238 CD 2
Sep 93	Advance Draft Hydrogeological Technical Memorandum, OU-2	Jacobs Engineering Group, Inc.	668 CD 3
01 Sep 93	Base Letter to TRC Members Transmitting TRC Meeting Agenda, 08 Sep 93	Parker, Scarlette P, TSgt 93 BW/PA	711 CD 3
01 Sep 93	EPA Letter to CRWQCB Regarding EPA Comments on Draft Minutes of Meeting, 10 Aug 93, and Draft Waste Discharge Requirement, 19 Aug 93, OU-2	Work, Michael EPA Region IX	738 CD 3
02 Sep 93	CRWQCB Letter to Base Regarding FSP Addendum Submitted, 31 Aug 93	Izzo, Victor J California Regional Water Quality Control Board	132 CD 2
02 Sep 93	CRWQCB Letter to Base Regarding Comments on SCOU FSP, 23 Aug 93	Izzo, Victor J California Regional Water Quality Control Board	800 CD 3

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02 Sep 93	CRWQCB Memorandum to Base Regarding Comments on SCOU FSP Received, 23 Aug 93	Izzo, Victor J California Regional Water Quality Control Board	837 CD 3
02 Sep 93	EPA Letter to HQ ACC, CDTSC, and CRWQCB Regarding Dispute Resolution, ROD, OU-2	Takata, Keith EPA Region IX	849 CD 3
03 Sep 93	HQ ACC Letter to CDTSC and CRWQCB Regarding Dispute Resolution, ROD, OU-2	Burnet, Gilbert N HQ ACC/CEV	183 CD 2
08 Sep 93	Base Letter to EPA, CDTSC, and CRWQCB Transmitting RPM Meeting Minutes, 19 Aug 93	Fraher, Jeffrey T, Maj 93 BW/CVE	233 CD 2
14 Sep 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding Rinsing of Groundskeeper Equipment on Soil	Chan, Arthur D 93 BW/CVE	298 CD 2
14 Sep 93	Situs Investments Letter to Base Regarding Permission to Enter for Testing Parcels to Land	Smith, Frederick W, Jr Situs Investments, Inc.	333 CD 2
15 Sep 93	Base Letter to Resident Regarding Well Sampling Information	Morris, Brett, Capt 93 BW/CVE	758 CD 3
16 Sep 93	CRWQCB Letter to Base Regarding LTM Sampling Plan, Jun 93	Izzo, Victor J California Regional Water Quality Control Board	741 CD 3
17 Sep 93	Base Letter to EPA, CDTSC, and CRWQCB Regarding Proposed Agenda for RPM Meeting, 14 Oct 93	Cole, John R, LtCol 93 BW/CVE	824 CD 3
20 Sep 93	EPA Letter to Base Regarding Revised Draft Final ROD, OU-2	Work, Michael EPA Region IX	831 CD 3
22 Sep 93	EPA Letter to Base Regarding Delayed Draft Preliminary Conceptual Design Document, OU-2	Work, Michael EPA Region IX	725 CD 3
22 Sep 93	CRWQCB Letter to Base Concerning Finalizing Waste Management Plan	Izzo, Victor J California Regional Water Quality Control Board	766 CD 4
22 Sep 93	HQ ACC Letter to Base Regarding Revised Draft Final ROD, OU-2	Battaglia, Michael R HQ ACC/CEVR	780 CD 3
22 Sep 93	EA Letter to HSC Transmitting Requested Modeling of Groundwater Flow and Contaminant Dispersion, OU-1	Bugica, David M EA Engineering, Science, and Technology, Inc.	953 CD 3
24 Sep 93	HQ ACC Letter to EPA, CDTSC, and CRWQCB Regarding Dispute Resolution, Draft Final ROD Submission, OU-2	Burnet, Gilbert N HQ ACC/CEV	677 CD 3
12 Oct 93	Base Letter to EPA, CDTSC and CRWQCB Transmitting RPM Meeting Minutes, 08 Sep 93	Chan, Arthur D 93 BW/CVE	220 CD 2
15 Oct 93	CDTSC Letter to Base Regarding Interfacing of RCRA Units With CERCLA Activities	Pappas, James M California Department of Toxic Substances Control	229 CD 2
19 Oct 93	Management Action Plan	Earth Technology Corp.	237 CD 2
22 Oct 93	EPA Letter to Base Regarding Draft Test Study for Millipurge Method for 4th Quarter Groundwater Sampling	Work, Michael EPA Region IX	262 CD 2
22 Oct 93	EPA Letter to Base Regarding Revised Draft Final ROD, OU-2	Work, Michael EPA Region IX	271 CD 2
22 Oct 93	CDTSC Letter to Base Requesting Assistance in Planning for Implementation of RAB	Wang, David California Department of Toxic Substances Control	956 CD 3

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27 Oct 93	CDTSC Letter to Base Regarding Review Comments on Revised Draft Final ROD, OU-2, Oct 93	Ward, Daniel T California Department of Toxic Substances Control	562 CD 3
27 Oct 93	EPA Letter to Base Regarding Ecological Risk Assessment Outline	Work, Michael EPA Region IX	883 CD 3
28 Oct 93	EPA Letter to Base Regarding Draft, Characterization Technical Memorandum Vol I, Fuel Spill No. 1 and 2	Work, Michael EPA Region IX	892 CD 5
Nov 93	Final ROD, OU-2	93 CES/CEVR	206 CD 2
Nov 93	Hydrogeological Technical Memorandum, Raw Field Data, OU-2	Jacobs Engineering Group, Inc.	968 CD 4
03 Nov 93	Base Letter to EPA Regarding Request for Extension on Start Up Date, OU-1	Baker, Thomas R, LtCol 93 BW/CVE	746 CD 3
04 Nov 93	EPA Letter to Base Regarding Comparison of SCOU Sites List and FSP Received for EPA Review	Work, Michael EPA Region IX	291 CD 2
08 Nov 93	EPA Letter to Base Regarding Revised Draft Final ROD, OU-2, Nov 93	Work, Michael EPA Region IX	181 CD 2
10 Nov 93	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Requested Amended Pages of Final ROD, OU-2	Cole, John R, LtCol 93 BW/CVE	184 CD 2
12 Nov 93	CDTSC Letter to Base Regarding Review Comments on Hydrogeologic Technical Memorandum, Oct 93, OU-2	Ward, Daniel T California Department of Toxic Substances Control	185 CD 2
15 Nov 93	EPA Letter to Base Regarding Draft Hydrogeological Technical Memorandum, OU-2	Work, Michael EPA Region IX	99 CD 2
15 Nov 93	Finalized Boring Logs, Revised Appendix A, OU-2	Jacobs Engineering Group, Inc.	969 CD 4
18 Nov 93	Base Letter to CDTSC Transmitting Action Memorandums for Closure of Former PCB Storage Facility and Recoverable JP-4 Tanks	Baker, Thomas R, LtCol 93 BW/CVE	100 CD 2
19 Nov 93	Addendum to Site Characterization Technical Memorandum, Performance of Bench Scale Treatability Study, JP-4 Contaminated Soils	PRC Environmental Management, Inc.	80 CD 2
19 Nov 93	EPA Letter to Base Regarding Draft Preliminary Conceptual Design, OU-2	Work, Michael EPA Region IX	101 CD 2
22 Nov 93	SOW, RI/FS, SCOU, Comprehensive Basewide Program, and LTM Program	93 CES/CEVR	970 CD 4
26 Nov 93	SOW, RI/FS, SCOU, Comprehensive Basewide Program, and LTM Program	93 CES/CEVR	972 CD 4
Dec 93	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Proposed RPM Meeting Agenda, 02 Dec 93	Cole, John R, LtCol 93 BW/CVE	79 CD 2
Dec 93	SOW, ATSDR Ecological Risk Assessment	AFCEE/ESB	921 CD 3
08 Dec 93	Basewide EBS, OU-1, OU-2, SCOU	The Earth Technology Corp.	1765 CD 9
13 Dec 93	AFBCA Letter to EPA Submitting Request for Concurrence of On-Base Uncontaminated Property Determination	Olsen, Alan K AFBCA/DR	925 CD 3
14 Dec 93	Base Letter to CDHS, CRWQCB, and Jacobs Transmitting Monthly TCE Results	Chan, Arthur D 93 BW/CV	1024 CD 4
16 Dec 93	EPA Letter to Base Transmitting Comments on Draft Basewide Management Plan	Roberts, David E EPA Region IX	919 CD 3
Jan 94	Final Hydrogeological Technical Memorandum, Vol I of II, OT-30, SD-12	Jacobs Engineering Group, Inc.	764 CD 3

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Jan 94	Final Hydrogeological Technical Memorandum, Vol II of II, OT-30, SD-12	Jacobs Engineering Group, Inc.	765 CD 4
Jan 94	Basewide Ecological Risk Assessment, Preliminary Draft Work Plan	Jacobs Engineering Group, Inc.	944 CD 3
Jan 94	LTM Sampling Plan Update	Jacobs Engineering Group, Inc.	974 CD 5
05 Jan 94	Jacobs Conversation with CRWQCB Regarding Upper Subshallow HSZ Data Gaps, OU-2	Heller, Noah R Jacobs Engineering Group, Inc.	932 CD 3
05 Jan 94	RPM Meeting Minutes, 09 Dec 94	Watkin, Geoff W Jacobs Engineering Group, Inc.	951 CD 3
06 Jan 94	Base Letter to CRWQCB Regarding RA, Breaking Through Second GAC Unit, DA-4	Fraher, Jeffrey T, Maj 93 CES/CC	941 CD 3
12 Jan 94	TRC Meeting Minutes, 08 Dec 93	93 BW/CV	1025 CD 4
21 Jan 94	Base Letter to EPA, CDTSC, and CRWQCB Transmitting RPM Meeting Agenda, 27 Jan 94 and Meeting Minutes, Dec 93	Cole, John R, LtCol 93 BW/CVE	1026 CD 4
04 Feb 94	EPA letter to HQ USEPA Concerning Accuracy of Some Information Presented by Defense Environmental Response Task Force	Kemmerer, John R EPA Region IX	915 CD 3
08 Feb 94	RPM Meeting Minutes, 27 Jan 94	Watkin, Geoff W Jacobs Engineering Group, Inc.	950 CD 3
11 Feb 94	Site Characterization, Technical Memorandum, FS-1	PRC Environmental Management, Inc.	976 CD 4
11 Feb 94	Site Characterization, Technical Memorandum, FS-2	PRC Environmental Management, Inc.	977 CD 4
18 Feb 94	MDPH Letter to Base Concerning Review of Basewide EBS	Palsgaard, Jeff H Merced County Department of Public Health	1507 CD 6
28 Feb 94	Base Letter to EPA, CDTSC, and CRWQCB Transmitting RPM Meeting Agenda, 02 Mar 94	Salgado, Rogelio R 93 CES/CEV	1027 CD 4
Mar 94	Internal Base Memorandum Transmitting Proposed Agenda and Draft Charter for RAB for Review and Comment	Bishop, Raymond C, Col 93 BW/CV	957 CD 3
Mar 94	Phase II, Draft Risk Assessment Technical Memorandum, SCOU	Jacobs Engineering Group, Inc.	978 CD 4
02 Mar 94	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Final RPM Meeting Minutes, 27 Jan 94	Salgado, Rogelio R 93 BW/CVE	926 CD 3
07 Mar 94	Base Environmental Update	93 BW/PA	984 CD 4
09 Mar 94	News Article, “Advisory Board Meets”	The Merced Sun Star	985 CD 4
14 Mar 94	EPA Letter to Base Concerning LTM Sampling Plan	Roberts, David E EPA Region IX	1201 CD 6
16 Mar 94	CRWQCB Letter to CDTSC Regarding RPM Meeting Notes, 02 Mar 94	Izzo, Victor J California Regional Water Quality Control Board	1028 CD 4
21 Mar 94	Base Letter to EPA, CDTSC, and CRWQCB Transmitting Final RPM Meeting Minutes, 02 Mar 94 and Meeting Agenda, 22 Mar 94	Cole, John R, LtCol 93 BW/CVE	1029 CD 4

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22 Mar 94	SOW, Title I Services for Groundwater Treatment, OU-2 and Title II Services for Groundwater Treatment, OU-1	Jacobs Engineering Group, Inc.	947 CD 3
25 Mar 94	Investigative Derived Waste Disposition Data	93 CES/CEVR	1030 CD 4
29 Mar 94	EPA Letter to Base Concerning Millipurge Test Study	Roberts, David E EPA Region IX	1202 CD 6
30 Mar 94	EPA Letter to Jacobs Transmitting Comments on Ecological Risk Assessment Samples	Roberts, David E EPA Region IX	1031 CD 4
Apr 94	BRAC Cleanup Plan	The Earth Technology Corp.	981 CD 4
Apr 94	Draft Final EE/CA, JP-4 Removal from Vadose Zone, FS-1, FS-2	PRC Environmental Management, Inc.	982 CD 4
01 Apr 94	RAB Meeting Minutes, 09 Mar 94	Bishop, Raymond C, Col 93 BW/CV	1032 CD 4
06 Apr 94	RPM Meeting Minutes, 24 Mar 94	Jacobs Engineering Group, Inc.	949 CD 3
15 Apr 94	AFBCA Memorandum Regarding Invitation to DoD RAB Workshop	Olsen, Alan K AFBCA/DR	922 CD 3
18 Apr 94	Modification to Comprehensive Basewide Mud Rotary Drilling Program	Watkin, Geoff W Jacobs Engineering Group, Inc.	933 CD 3
18 Apr 94	CDTSC Letter to EPA Regarding Review of Base EBS, Dec 93	Wang, David California Department of Toxic Substances Control	952 CD 3
19 Apr 94	Base Letter to Regulators Concerning RPM Meeting Minutes, 24 Mar 94	Cole, John R, LtCol 93 BW/CVE	954 CD 3
19 Apr 94	Base Memorandum Transmitting Draft EPA News Release	Chan, Arthur D 93 BMW/CVE	973 CD 4
20 Apr 94	Base Memorandum to RAB Members Transmitting Revised RAB Charter	Bishop, Raymond C, Col 93 BW/CV	1033 CD 4
26 Apr 94	Base Letter to CRWQCB Concerning Notification of RA Taken Off Line, OT-30	Chan, Arthur D 93 CES/CE	1203 CD 6
28 Apr 94	AFBCA Letter to EPA Transmitting ROD Signature Page, OU-2	Carr, John P AFBCA/NW	929 CD 3
28 Apr 94	RI, Action Items, SCOU	Watkin, Geoff W Jacobs Engineering Group, Inc.	939 CD 3
28 Apr 94	RAB Executive Meeting Minutes, 22 Apr 94	Bishop, Raymond C, Col 93 BW/CV	1034 CD 4
28 Apr 94	EPA Letter to Base Regarding Interim RA, Extraction Well SE-7, 95% Design Review, OU-2	Roberts, David E EPA Region IX	1035 CD 4
28 Apr 94	EPA Letter to Base Concerning Request for Extension of FFA Schedule, RI/FS, SCOU	Roberts, David E EPA Region IX	1210 CD 6
29 Apr 94	Conceptual Design Report, Vol I of II, OU-2	Jacobs Engineering Group, Inc.	979 CD 4
29 Apr 94	Conceptual Design Report, Outline Specification, Vol II of II, OU-2	Jacobs Engineering Group, Inc.	980 CD 4
02 May 94	EPA Letter to Base Regarding Draft Final Basewide Waste Management Plan	Roberts, David E EPA Region IX	918 CD 3
05 May 94	Background Data and Information, SCOU	Toh, Yoon Jacobs Engineering Group, Inc.	924 CD 3

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06 May 94	CDTSC Letter to Base Regarding Approval to Proceed With Dismantling of Surface Features, Two RCRA Sites	Austreng, James C California Department of Toxic Substances Control	1036 CD 4
06 May 94	CDTSC Letter to Base Transmitting Comments on LTM Sampling Plan, Draft Final Waste Management Plan, Draft VLEACH Benzene Results, and Construction of TCE Extraction Well	Austreng, James C California Department of Toxic Substances Control	1037 CD 4
09 May 94	Jacobs Response to EPA Comments on Draft Conceptual Design Report, Groundwater Treatment, OU-2	Leach, James D Jacobs Engineering Group, Inc.	928 CD 3
10 May 94	Draft RPM Meeting Minutes, 28 Apr 94	Watkin, Geoff W Jacobs Engineering Group, Inc.	927 CD 3
11 May 94	EPA Letter to AFBCA Regarding Review of Proposal to Lease Bldgs 1862 and 1863	Roberts, David E EPA Region IX	917 CD 3
13 May 94	Final Basewide Waste Management Plan	IT Corp.	912 CD 3
17 May 94	CRWQCB Letter to CDTSC Concerning Review of Draft Operations, Monitoring, and Maintenance Manual, OU-1	Izzo, Victor J California Regional Water Quality Control Board	920 CD 3
17 May 94	Final EE/CA Report, FS-1, FS-2	PRC Environmental Management, Inc.	988 CD 4
17 May 94	Final Site Characterization Technical Memorandum, FS-1	PRC Environmental Management, Inc.	989 CD 4
17 May 94	Final Site Characterization Technical Memorandum, FS-2	PRC Environmental Management, Inc.	990 CD 4
20 May 94	Final RPM Meeting Minutes, 28 Apr 94 and Meeting Agenda, 26 May 94	Cole, John R, LtCol 93 BW/CVE	1038 CD 4
23 May 94	News Article, “Public Notice/ Notice of Availability Notice of Public Comment Period on Projected Construction of a TCE Extraction Well Behind Bldg 1200”	The Merced Sun Star	1039 CD 4
23 May 94	News Article, “Public Notice/Notice of Availability Notice of Public Comment Period on the EE/CA Report on Jet Fuel (JP-4) Removal From Fuel Spill Sites 1 and 2”	The Merced Sun Star	1040 CD 4
26 May 94	Base Letter to EPA, CDTSC, and CRWQCB Regarding Documentation of Meetings With Local Property Owners Impacted by Environmental Cleanup Efforts	Gaddy, Armon T, Jr, TSgt 93 BW/PA	923 CD 3
26 May 94	Final RPM Meeting Minutes and Agenda, 26 May 94	93 CES/CEVR	1215 CD 6
Jun 94	Phase II, Risk Assessment, Technical Memorandum, CBOU	Jacobs Engineering Group, Inc.	931 CD 3
Jun 94	LTM Sampling Program, Draft Summary of Groundwater Monitoring, Quarter 2, 94	Jacobs Engineering Group, Inc.	991 CD 4
Jun 94	Jacobs Response to EPA and CRWQCB Comments on Draft Final Conceptual Design Report, OU-2	Jacobs Engineering Group, Inc.	1041 CD 4
01 Jun 94	Base Environmental Update	93 BW/PA	971 CD 4
09 Jun 94	CRWQCB Letter to CDTSC Regarding Inadequacy of Preliminary Draft RI/FS, SCOU	Izzo, Victor J California Regional Water Quality Control Board	934 CD 3

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09 Jun 94	Draft RPM Meeting Minutes, 26 May 94	Watkin, Geoff W Jacobs Engineering Group, Inc.	948 CD 3
13 Jun 94	Meeting Minutes From AFBCA and ATSDR Health Consultations and Data Gap Reviews	Stokes, Mark H, Col AFBCA-AL/OEM	1042 CD 4
14 Jun 94	Jacobs Letter to AFCEE With Response to EPA and CRWQCB Comments of LTM Sampling Plan	Watkin, Geoff W Jacobs Engineering Group, Inc.	896 CD 3
14 Jun 94	RAB Meeting Minutes, 14 Jun 94	Mollison, John C Jr, Col 93 CES/CC	1217 CD 6
15 Jun 94	RA, Work Plan, OU-2	Jacobs Engineering Group, Inc.	897 CD 3
16 Jun 94	EPA Letter to Base Regarding Inadequacy of Documents Concerning Draft RI/FS Report, SCOU	Roberts, David E EPA Region IX	916 CD 3
17 Jun 94	EPA Letter to Base Concerning Selection of Service Center to Administer RD/RA Contract, OU-2	Roberts, David E EPA Region IX	930 CD 3
17 Jun 94	Internal Draft CDTSC Memorandum Regarding Initial Review of Draft SCOU RI/FS	Scruggs, Mary California Department of Toxic Substances Control	938 CD 3
18 Jun 94	Jacobs Letter to AFCEE Regarding Quality of Draft RI/FS Report, SCOU	Jacobs Engineering Group, Inc.	913 CD 3
23 Jun 94	Jacobs Response to Data Quality Regarding RI/FS Report, SCOU	Jacobs Engineering Group, Inc.	940 CD 3
23 Jun 94	SOW, Full Scale Treatability Study, Fuel Spill Sites I and II	AFCEE/ESB	1043 CD 4
27 Jun 94	Action Items for Technical Working Group Meeting, 23 Jun 94	Watkin, Geoff W Jacobs Engineering Group, Inc.	936 CD 3
28 Jun 94	SCOU Maps and Figures	93 CES/CEVR	914 CD 3
30 Jun 94	Technical Working Group Meeting Information	Watkin, Geoff W Jacobs Engineering Group, Inc.	937 CD 3
07 Jul 94	Dioxin/Furan Analyses, Landfill 1	Watkin, Geoff W Jacobs Engineering Group, Inc.	955 CD 3
20 Jul 94	Base Letter to CDTSC and EPA Concerning Request for Extension on FFA Schedule	Cole, John R, LtCol 93 BW/CVE	1216 CD 6
20 Jul 94	Final Specification for Petroleum Storage Tank Removal	HQ ACC/CES	1293 CD 6
29 Jul 94	Groundwater Pump and Treat System Operational Data, OU-1	EA Engineering, Science, and Technology, Inc.	992 CD 4
03 Aug 94	HQ ACC Letter to EPA Regarding Assessment of Stipulated Penalties, OU-1	Scarborough, Ramsey T HQ ACC/CEVR	993 CD 4
03 Aug 94	EPA Letter to AFCEE Regarding Basic Concerns With SOWs	Roberts, David E EPA Region IX	1045 CD 4
10 Aug 94	EPA Letter to Base Regarding Violation of FFA and Monitoring and Reporting Requirements, OU-1	Anderson, Julie EPA Region IX	994 CD 4
16 Aug 94	HQ ACC Letter to EPA Concerning Violation of FFA, Monitoring and Reporting Requirements, OT-29	Madrid, Marcos J, Col HQ ACC/CEV	1218 CD 6
19 Aug 94	Technical Memorandum, TCE Biodegradation Bench Scale Study	Montgomery Watson	995 CD 4

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19 Aug 94	TCE Biodegradation Bench Scale Study, Final Report, Appendix A, Evaluation of Bioremediation for TCE Contaminated Soils	Montgomery Watson	996 CD 4
25 Aug 94	Summary of Modeling Recommendations and Anticipated Actions	Utah State University	997 CD 4
Sep 94	Report of First Month Operation, Groundwater Pump and Treat, OU-1	EA Engineering, Science, and Technology, Inc.	998 CD 4
Sep 94	Base Newsletter, "Draft SCOU Report Finds 40 Out of 250 Areas Require Cleanup"	93 BW/PA	999 CD 4
Sep 94	Enviro Progress Newsletter, Edition 1	Kumanchik, Cynthia Gutierrrez-Palmenberg, Inc.	1066 CD 4
29 Sep 94	CDTSC Letter to Base Regarding Review of Draft RI/FS Report, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1001 CD 4
30 Sep 94	EPA Letter to Base Regarding Review of Draft RI/FS Report, SCOU, Jul 94	Roberts, David E EPA Region IX	1002 CD 4
04 Oct 94	Peer Review Meeting Summary	Sayger, Susan Resources Applications, Inc.	1004 CD 4
06 Oct 94	Technical Working Group Meeting Minutes, SCOU	Jacobs Engineering Group, Inc.	1005 CD 4
06 Oct 94	Final RPM Meeting Minutes, 22 Sep 94 and Meeting Agenda, 02 Nov 94	Hicks, Brad 93 CES/CEVR	1006 CD 4
17 Oct 94	EPA Letter to Base Regarding Additional Comments Concerning Radioactive Contamination, Draft RI/FS Report, SCOU	Roberts, David E EPA Region IX	1008 CD 4
21 Oct 94	CDTSC Letter to Base Regarding Comments on CRP	Schumacher, Nathan California Department of Toxic Substances Control	1009 CD 4
21 Oct 94	Public Health Assessment Data Gap Report	Stokes, Mark H., Col AL/OEM	1432 CD 6
25 Oct 94	EPA Letter to Base Regarding Review of Preliminary Draft Explanation of Significance Difference for ROD, OU-2	Roberts, David E EPA Region IX	1010 CD 4
27 Oct 94	RAB Meeting Minutes, 13 Sep 94	Mollison, John C, Jr, Col 93 SPTG/CC	1011 CD 4
28 Oct 94	SOW, Operations, Maintenance and Monitoring, OU-1	93 CES/CEVR	1046 CD 4
28 Oct 94	Final Dioxin/Furan Report and Data Summary, Vol I of VII	Quanterra Environmental Services, Inc.	1078 CD 4
28 Oct 94	Final Dioxin/Furan Report, Isomer Specific Initial Calibration Data, Vol II of VII	Quanterra Environmental Services, Inc.	1079 CD 4
28 Oct 94	Final Dioxin/Furan Report, Isomer Specific Continuing Calibration Data, Vol III of VII	Quanterra Environmental Services, Inc.	1080 CD 4
28 Oct 94	Final Dioxin/Furan Report, Total Dioxin/Furan Initial Calibration Data, Vol IV of VII	Quanterra Environmental Services, Inc.	1081 CD 4
28 Oct 94	Final Dioxin/Furan Report, Total Dioxin/Furan Continuing Calibration Data, Vol V of VII	Quanterra Environmental Services, Inc.	1082 CD 4
28 Oct 94	Final Dioxin/Furan Report, Isomer Specific Data, Vol VI of VII	Quanterra Environmental Services, Inc.	1083 CD 4
28 Oct 94	Final Dioxin/Furan Report, Total Dioxin/Furan Data, Vol VIIA of VII	Quanterra Environmental Services, Inc.	1084 CD 4
28 Oct 94	Final Dioxin/Furan Report, Total Dioxin/Furan Data, Vol VIIB of VII	Quanterra Environmental Services, Inc.	1085 CD 4

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31 Oct 94	SOW, LTM Program and Millipurge Study	AFCEE/ESB	1044 CD 4
Nov 94	Base Newsletter, "Air Force and Regulators Change OU-2 Cleanup Plan"	93 BW/PA	1013 CD 4
Nov 94	Final Report First Quarter of Operation, Groundwater Pump and Treat, OU-1	EA Engineering, Science, and Technology, Inc.	1060 CD 4
Nov 94	Enviro Progress Newsletter, Edition 2	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1067 CD 4
01 Nov 94	CRWQCB Letter to Base Concerning Violation of Waste Discharge Requirements	Vorster, Antonia K J California Regional Water Quality Control Board	1209 CD 6
10 Nov 94	Jacobs Response to Comments Concerning Revised Draft RI/FS, SCOU	Watkin, Geoff W Jacobs Engineering Group, Inc.	1228 CD 6
11 Nov 94	LTM Sampling Program, Summary of Groundwater Monitoring, Quarter 3, 94	Jacobs Engineering Group, Inc.	1012 CD 4
28 Nov 94	Final RPM Meeting Minutes, 02 Nov 94 and Meeting Agenda, 07 Dec 94	Pohlmeier, Mark A, Capt 93 BW/CEV	1014 CD 4
28 Nov 94	CDTSC Letter to Base Concerning Review of Draft Treatability Study, SS-17, SS-18	Ghazi, Rizgar A California Department of Toxic Substances Control	1230 CD 6
29 Nov 94	CDTSC Letter to AFCEE Concerning Draft SOW, LTM Sampling Program, OT-29	Ghazi, Rizgar A California Department of Toxic Substances Control	1231 CD 6
Dec 94	Community Relations Plan	Gutierrez - Palmenberg, Inc.	1015 CD 4
Dec 94	Environmental Remediation QPP	Jacobs Engineering Group, Inc.	1174 CD 6
02 Dec 94	EPA Letter to Base Concerning Response to Comments on Draft RI/FS, SCOU	Roberts, David E EPA Region IX	1232 CD 6
05 Dec 94	AFCEE Letter to Jacobs Concerning Comments on Draft CB RI/FS	Hobbins, Christopher D AFCEE/ERB	1212 CD 6
07 Dec 94	Final Draft Explanation of Significant Difference, RI/FS and ROD, OU-2	Mollison, John C. Jr., Col Roberts, David E Ghazi, Rizgar A	1063 CD 4
14 Dec 94	GEMS Letter to Brown and Root Concerning Closure of Former PCB Storage Facility, Bldg 1203	Camacho, Richard Ogamba, Briggs General Environmental Management	1057 CD 4
15 Dec 94	EPA Letter to Base Regarding Review of Draft Comprehensive Basewide RI/FS, Aug 94	Roberts, David E EPA Region IX	1016 CD 4
15 Dec 94	CDTSC Letter to Base Regarding Review of Draft Comprehensive Basewide RI/FS Report	Ghazi, Rizgar A California Department of Toxic Substances Control	1017 CD 4
Jan 95	LTM Sampling Plan	Jacobs Engineering Group, Inc.	1124 CD 5
Jan 95	News Article, "Groundwater Cleanup to Cost $12 Million"	Hartsoe, Steve The Atwater Signal	1233 CD 6
10 Jan 95	News Article, "Announcement of ESD for Change to Granular Activated Carbon for Treatment of Contaminated Groundwater", SD-12, OT-30	The Merced Sun Star	1235 CD 6

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10 Jan 95	EPA and CDTSC Letter to Base Concerning FFA Violation of Failure to Perform Required Monitoring and Reporting, OT-29	Ghazi, Rizgar A Roberts, David E California Department of Toxic Substances	1236 CD 6
12 Jan 95	EPA Letter to Base Concerning Responses to Comments on the Draft RI/FS, SCOU	Roberts, David E EPA Region IX	1238 CD 6
17 Jan 95	News Article, "TCE Cleanup Long and Costly Process"	Hartsoe, Steve The Merced Sun Star	1240 CD 6
24 Jan 95	Conceptual Site Model Figures	Metcalf and Eddy, Inc.	1373 CD 6
27 Jan 95	EPA Letter to Base Concerning Comments on RI/FS Prototype Site, SS-82	Roberts, David E EPA Region IX	1241 CD 6
Feb 95	Phase I, Installation Test Letter Report, SS-17, SS-18	Jacobs Engineering Group, Inc.	1107 CD 5
07 Feb 95	CDTSC Letter to Base Concerning Proposed Screening Process for Vadose Zone Source Area, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1242 CD 6
14 Feb 95	Base Response to Comments Concerning Millipurge Test Study, and Decontamination of Pneumatic Pumps, 1994	McLeod, Campbell Jacobs Engineering Group, Inc.	1251 CD 6
17 Feb 95	RAB Meeting Minutes, 10 Jan 95	Mollison, John C Jr, Col AFBCA/OL-I	1254 CD 6
22 Feb 95	Draft Sampling and Analysis Report for Chlorinated Dibenz Dioxins in Wastewater and Sediments	LABAT-ANDERSON INCORPORATED	1093 CD 4
Mar 95	Enviro Progress Newsletter, Edition 4	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1089 CD 4
Mar 95	Final Report of Second Quarter of Operation, OU-1	EA Engineering, Science, and Technology, Inc.	1096 CD 4
Mar 95	Enviro Fact Sheet, Mar 95	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1256 CD 6
02 Mar 95	Site Characterization Report, Airport Surveillance Radar Facility	Research Management Consultants, Inc.	1349 CD 6
03 Mar 95	Initial Air Monitoring and Risk Assessment Report, Airport Surveillance Radar Facility	Research Management Consultants, Inc.	1095 CD 4
08 Mar 95	EPA and CDTSC Letter to Base Concerning Request for Removal of Vapor Phase Carbon and Steam Regeneration Features, OU-1	Roberts, David E Ghazi, Rizgar A EPA Region IX	1092 CD 4
09 Mar 95	EPA and CDTSC Letter to Base Concerning Draft Final RI/FS Report, SCOU	Ghazi, Rizgar A Roberts, David E California Department of Toxic Substances	1263 CD 6
14 Mar 95	RAB Meeting Minutes, 14 Mar 95	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1091 CD 4
15 Mar 95	RPM Meeting Minutes, 15 Mar 95	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1090 CD 4
17 Mar 95	AFCEE Letter to Base Concerning Responses to Agency Comments for Comprehensive Basewide RI/FS	Hobbins, Christopher D AFCEE/ERB	1094 CD 4
27 Mar 95	CDTSC Memorandum Concerning Low Purge Rate Monitoring Well Sampling	Vest, Mark California Department of Toxic Substances Control	1266 CD 6
28 Mar 95	CRWQCB Letter to CDTSC Concerning CERCLA Petroleum Exclusion, SCOU	Izzo, Victor J California Regional Water Quality Control Board	1270 CD 6

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30 Mar 95	Armstrong Lab Letter to Base Concerning Survey Summary, Weapons Storage Area	Montgomery, James D, Jr, LtCol Armstrong Laboratory	1088 CD 4
31 Mar 95	Ecological Risk Assessment, Site Recommendations for No Further Ecological Investigation	Jacobs Engineering Group, Inc.	1086 CD 4
31 Mar 95	CDTSC Letter to Base Concerning Review of LTM Sampling Plan Draft Millipurge Test Study Work Plan	Ghazi, Rizgar A California Department of Toxic Substances Control	1273 CD 6
Apr 95	Summary of Groundwater Monitoring, Quarter I, OT-29, OT-30	Jacobs Engineering Group, Inc.	1125 CD 5
03 Apr 95	EPA Letter to Base Concerning Millipurge Test Study	Roberts, David E EPA Region IX	1274 CD 6
11 Apr 95	LTM Program, Summary of Domestic Well Sampling Results, Feb 95	McLeod, Campbell Jacobs Engineering Group, Inc.	1102 CD 5
11 Apr 95	Summary of Domestic Well Sampling Results, Mar 95	McLeod, Campbell Jacobs Engineering Group, Inc.	1103 CD 5
11 Apr 95	Base Letter to CDTSC and EPA Concerning Completion Plan for RI/FS, SCOU	Mollison, John C Jr, Col AFBCA/OL-I	1277 CD 6
14 Apr 95	EPA Letter to Base Concerning Rejection of Draft Final SCOU RI/FS	Roberts, David E EPA Region IX	1100 CD 5
19 Apr 95	Base Memorandum to Distribution Concerning Response to EPA Comments on Millipurge Study Work Plan	Hobbins, Christopher D AFCEE/ERB	1278 CD 6
26 Apr 95	TWG Meeting Minutes, 24-26 Apr 95	AFBCA/OL-I	1099 CD 5
28 Apr 95	Base Letter to EPA and CDTSC Concerning RPM Agreement on Resolving Issues, SCOU, RI/FS	Mollison, John C, Jr, Col AFBCA/OL-I	1097 CD 4
May 95	Technical Memorandum Performance Evaluation Pump and Treat System, OU-1	EA Engineering, Science, and Technology, Inc.	1068 CD 4
May 95	EBS, Twenty-Five Parcels of Land	Geo-Marine, Inc.	1069 CD 4
May 95	Enviro Progress Newsletter, Edition 5	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1077 CD 4
May 95	Final QPP, Groundwater Treatment System, Vol I of II, OU-2	Jacobs Engineering Group, Inc.	1156 CD 5
May 95	Final QPP, Groundwater Treatment System, Vol II of II, OU-2	Jacobs Engineering Group, Inc.	1160 CD 5
May 95	Final Environmental Cleanup Plan, Groundwater Treatment System, OU-2	Jacobs Engineering Group, Inc.	1162 CD 5
10 May 95	CDHS Letter to CDTSC Concerning Base Landfills, RI/FS, SCOU	Palsgaard, Jeff H California Department of Health Services	1279 CD 6
11 May 95	EPA Letter to AFCEE Concerning SOW for Remedial Actions, FT-01, SS-21, DP-115, SD-12	Roberts, David E EPA Region IX	1292 CD 6
12 May 95	HQ ACC Letter to Base Concerning Landfill-1 Issue	Battaglia, Michael R. HQ ACC CES/ESV	1070 CD 4
17 May 95	EPA and CDTSC Letter to Base Concerning Comments on Draft Final SCOU RI/FS	Baker, Greg Ward, Daniel T EPA Region IX	1101 CD 5
24 May 95	Agreement From Technical Working Group Session Further Delineating Contents of RI/FS, 24 May 95, CB, SCOU	Hicks, Brad Roberts, David E Ghazi, Rizgar A	1073 CD 4

Date	*Title*	*Author*	*File/CD Number*
Jun 95	Enviro Fact Sheet, Edition 2	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1104 CD 5
Jun 95	Enviro Fact Sheet, Edition 3	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1105 CD 5
Jun 95	Draft Report Third Quarter of Operation, Groundwater Pump and Treat, OU-1	Jacobs Engineering Group, Inc.	1110 CD 5
01 Jun 95	CDTSC letter to Base Concerning Comments on Ecological Risk Assessment, Phase I Technical Memorandum	Ghazi, Rizgar A California Department of Toxic Substances Control	1075 CD 4
16 Jun 95	Action Plan Concerning Additional Work to Address Agency Concerns on Draft Final RI/FS, SCOU	Hobbins, Christopher D AFCEE/ERB	1076 CD 4
20 Jun 95	LTM Program, Preliminary Findings of Millipurge Study	Jacobs Engineering Group, Inc.	1295 CD 6
29 Jun 95	EPA Letter to Base Concerning Plan for RI/FS, SCOU	Roberts, David E EPA Region IX	1298 CD 6
Jul 95	CDTSC Letter to Base Concerning Talking Paper NFA Decision, Fuel Spill Site-2	Ghazi, Rizgar A California Department of Toxic Substances Control	1116 CD 5
Jul 95	Summary of Groundwater Monitoring, Quarter II	Jacobs Engineering Group, Inc.	1137 CD 5
07 Jul 95	Domestic Well Sampling Results, Jun 95	McLeod, Campbell Jacobs Engineering Group, Inc.	1108 CD 5
07 Jul 95	Low Flow Rate Purge Study Report	Jacobs Engineering Group, Inc.	1109 CD 5
12 Jul 95	CRWQCB Letter to CDTSC Concerning Deleting the RA, Fuel Spill-2	Izzo, Victor J California Regional Water Quality Control Board	1111 CD 4
12 Jul 95	Base Letter to Distribution Concerning Proposed Well Abandonment Work Plan, Well Sampling Results and LTM Sampling Plan	Matthews, Robert R AFBCA/OL-I	1306 CD 6
14 Jul 95	CRWQCB Letter to Base Concerning Closure Plan, Fuel Hydrant System	Izzo, Victor J California Regional Water Quality Control Board	1307 CD 6
18 Jul 95	RPM Meeting Minutes, 18 Jul 95	AFBCA/OL-I	1112 CD 4
18 Jul 95	Draft RPM and TWG Sessions Meeting Minutes, Jul 95	AFBCA/OL-I	1114 CD 5
26 Jul 95	EPA Letter to Base Concerning Talking Paper Justification for NFA, Fuel Spill Site-2	Roberts, David E EPA Region IX	1115 CD 5
27 Jul 95	EPA Letter to Base Concerning Comments on LTM Sampling Plan, Low Flow Rate Purge Study Reports	Roberts, David E EPA Region IX	1117 CD 5
27 Jul 95	CRWQCB Letter to CDTSC Concerning Work Plan for Proposed Well Abandonment	Izzo, Victor J California Regional Water Quality Control Board	1308 CD 6
01 Aug 95	EPA Letter to Base Concerning Final Approved Position, LTM Sampling Plan, Low-Flow Rate Purge Study Report	Roberts, David E EPA Region IX	1129 CD 5
11 Aug 95	Base Letter to CDTSC and EPA Concerning Request for Extension of the FFA Schedule, Revised Design Basis Report, OU-1	Matthews, Robert R AFBCA/OL-I	1126 CD 5

Date	*Title*	*Author*	*File/CD Number*
16 Aug 95	EPA and CDTSC Letter to Base Concerning Response and Conditions to Granting FFA Extension, Revised Design Basis Report, OU-1	Roberts, David E Ghazi, Rizgar A EPA Region IX	1127 CD 5
17 Aug 95	CDTSC Letter Concerning LTM Program Work Plan	Scruggs, Mary California Department of Toxic Substances Control	1313 CD 6
23 Aug 95	FSP, SVE Optimization, Fuel Spill-1	Jacobs Engineering Group, Inc.	1128 CD 5
24 Aug 95	CRWQCB Letter to CDTSC Concerning Report of Third Quarter Groundwater Pump and Treat	Izzo, Victor J California Regional Water Quality Control Board	1326 CD 6
28 Aug 95	Summary of Domestic Well Monitoring Data, LTM Program, May-Jul 95	McLeod, Campbell Jacobs Engineering Group, Inc.	1120 CD 5
28 Aug 95	FSP, SVE Optimization, Fuel Spill-1	Jacobs Engineering Group, Inc.	1121 CD 5
30 Aug 95	Base Letter to EPA and CDTSC Concerning Request for Extension of FFA Schedule for CB and SCOU Draft Final RI/FS	Matthews, Robert R AFBCA/OL-I	1122 CD 5
30 Aug 95	CDTSC Letter to Resident Concerning RAB Meeting, 05 Sep 95	Owens, Ron California Department of Toxic Substances Control	1329 CD 6
Sep 95	Enviro Progress Newsletter, Edition 6	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1141 CD 5
01 Sep 95	Final Operation and Maintenance Plan	Laguna Construction Company Inc	1926 CD 10
07 Sep 95	Final Action Memorandum Concerning RA, FTA-1, DA-4, DBF, and Bldg 871	Matthews, Robert R AFBCA/OL-I	1139 CD 5
11 Sep 95	CRWQCB Letter to Base Concerning Proposal for Background Compared to On-Base Dioxins	Izzo, Victor J California Regional Water Quality Control Board	1132 CD 5
11 Sep 95	Jacobs Letter to AFCEE Concerning Response to EPA and CRWQCB Comments on Work Plan, Proposed Well Abandonment	McLeod, Campbell Jacobs Engineering Group, Inc.	1136 CD 5
11 Sep 95	CRWQCB Letter to CDTSC Concerning Request for Landfill Remediation	Izzo, Victor J California Regional Water Quality Control Board	1138 CD 5
12 Sep 95	RAB Meeting Minutes, 12 Sep 95	AFBCA/OL-I	1135 CD 5
12 Sep 95	RPM Meeting Minutes, 12 Sep 95	AFBCA/OL-I	1145 CD 5
14 Sep 95	Summary of Domestic Well Monitoring, LTM Program, Aug 95	McLeod, Campbell Jacobs Engineering Group, Inc.	1134 CD 5
14 Sep 95	Final Air Force Action Plan for Additional Work to Address Regulatory Comments on the RI/FS, SCOU	Hobbins, Christopher D AFCEE/ERB	1418 CD 6
15 Sep 95	Final Management Plan	Laguna Construction Company Inc	1925 CD 10
20 Sep 95	EPA Letter to Base Concerning Review Comments, Ecological Risk Assessment, Phase I Technical Memorandum	Roberts, David E EPA Region IX	1131 CD 5
21 Sep 95	CDTSC Letter to Base Concerning Draft Report of Third Quarter Groundwater Pump and Treat, OT-29	Ghazi, Rizgar A California Department of Toxic Substances Control	1331 CD 6

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
28 Sep 95	Project Note, Basewide Modeling Assumptions TWGS, OU-1	Jacobs Engineering Group, Inc.	1133 CD 5
28 Sep 95	Base Letter to CRWQCB Concerning On-Base Dioxin Precipitates are Natural and Identical to Concentrations Off-Base	Matthews, Robert R AFBCA/OL-I	1140 CD 5
Oct 95	Summary of Groundwater Monitoring, Quarter III	Jacobs Engineering Group, Inc.	1165 CD 6
Oct 95	Final Construction Quality Plan Addendum	Laguna Construction Company Inc	1927 CD 10
03 Oct 95	TWG Meeting Minutes, 03-05 Oct 95	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1146 CD 5
03 Oct 95	CRWQCB Letter to CDTSC Concerning Soil Gas Data Quality Analysis	Izzo, Victor J California Regional Water Quality Control Board	1355 CD 6
17 Oct 95	Final Addendum to the Work Plan for Proposed Well Abandonment	Jacobs Engineering Group, Inc.	1130 CD 5
17 Oct 95	CDTSC Letter to Base Concerning Soil Gas Data Quality	Ghazi, Rizgar A California Department of Toxic Substances Control	1143 CD 5
18 Oct 95	Draft RPM Meeting Minutes, 18 Oct 95	AFBCA/OL-I	1144 CD 5
25 Oct 95	CDTSC Letter to Base Concerning NOD, RCRA Closure Plan, Hazardous Waste Drum Storage Facility	O'Neal, Douglas P California Department of Toxic Substances Control	1422 CD 6
26 Oct 95	CDTSC Letter to RAB Members Concerning Community Member Caucus	Owens, Ron California Department of Toxic Substances Control	1374 CD 6
27 Oct 95	Establishing Threshold Background Values Study for Inorganic Constituents in Soils	Grubb-Hewlett, Donna Mitre Corp.	1421 CD 6
Nov 95	Enviro Fact Sheet, Edition 4	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1142 CD 5
Nov 95	Enviro Progress Newsletter, Edition 7	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1147 CD 5
01 Nov 95	SOW, Draft RA	Matthews, Robert R AFBCA/OL-I	1427 CD 6
01 Nov 95	Removal Actions, DBF, FTA-1, DA-4, Bldg 871	Guyer, Keith Jacobs Engineering Group, Inc.	1428 CD 6
02 Nov 95	Final Quality Program Plan, Part 1 and Part 3	Guyer, Keith Jacobs Engineering Group, Inc.	1928 CD 10
08 Nov 95	MDPH Letter to CDTSC Concerning Comments on Basewide EBS, FOST and FOSL	Palsgaard, Jeff H Merced County Department of Public Health	09 CD 2
08 Nov 95	Jacobs Letter to AFCEE Concerning FSP Review, Bldg 551 and Aircraft Maintenance Hanger F-4	Lange, Peter Jacobs Engineering Group, Inc.	1415 CD 6
13 Nov 95	MDPH Letter to Base Concerning Landfills	Palsgaard, Jeff H Merced County Department of Public Health	1506 CD 6
15 Nov 95	Jacobs Letter to AFCEE Concerning Draft SCOU Unit Work Plan and FSP Update, Proposed Sampling Figure	Lange, Peter Jacobs Engineering Group, Inc.	1200 CD 6

Date	*Title*	*Author*	*File/CD Number*
21 Nov 95	RAB Meeting Minutes, 21 Nov 95	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1151 CD 5
27 Nov 95	Office of Historic Preservation Letter to AFCEE Concerning Archeological Investigation	Widell, Cherilyn Historic Preservation, Department of Parks and Recreation	1148 CD 5
28 Nov 95	EPA Letter to Base Concerning Superfund Boundaries	Roberts, David E EPA Region IX	1766 CD 9
29 Nov 95	Jacobs Letter to AFCEE Concerning FSP, Bldg 1205, Structure 1201, Sewer Segment 6 and DA-2	Lange, Peter Jacobs Engineering Group, Inc.	1416 CD 6
Dec 95	Treatability Study and SVE Demonstration Project Report, Fuel Spill-1, Fuel Spill-2	Jacobs Engineering Group, Inc.	1150 CD 5
Dec 95	RI, Draft Final SCOU Addenda to Section 7, Not Requiring Additional RI Field Work, 42 Sites	Jacobs Engineering Group, Inc.	1152 CD 5
Dec 95	Final HSP Addendum	Laguna Construction Company Inc	1929 CD 10
Dec 95	Comprehensive Basewide Scoping and Phase I Ecological Risk Assessment	Jacobs Engineering Group, Inc.	1930 CD 10
06 Dec 95	CRWQCB Letter to Base Concerning SAP for Removal Actions, FT-01, SD-12, SS-70	Izzo, Victor J California Regional Water Quality Control Board	1375 CD 6
06 Dec 95	EPA Letter to Base Concerning Comments on Environmental SAP	Roberts, David E EPA Region IX	1377 CD 6
12 Dec 95	RPM Meeting Minutes, 12 Dec 95	Matthews, Robert R AFBCA/OL-I	1190 CD 6
18 Dec 95	Jacobs Letter to AFCEE Concerning FSP Review, QAPP Addendum	Lange, Peter Jacobs Engineering Group, Inc.	1417 CD 6
Jan 96	LTM Sampling Plan, OT-29, OT-30, SD-12	Jacobs Engineering Group, Inc.	1170 CD 6
Jan 96	Enviro Progress Newsletter, Edition 8	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1180 CD 6
11 Jan 96	Regulators Letter to Base Concerning NOV of ROD and FFA, OT-29	Roberts, David E Ghazi, Rizgar A Izzo, Victor J	1381 CD 6
16 Jan 96	Comprehensive Environmental Response Compensation and Liability Act, 42 USC Chapter 103	HQ USEPA	1528 CD 6
20 Jan 96	Jacobs Letter to AFCEE Concerning Comprehensive Basewide RI/FS Part 2, Appendix A and RA Errata Sheets	Lange, Peter Jacobs Engineering Group, Inc.	1768 CD 9
22 Jan 96	Jacobs Response to Comments to Draft SAP for Removal Actions, Bldg 871, FTA-1, DA-4	Guyer, Keith Jacobs Engineering Group, Inc.	1179 CD 6
23 Jan 96	RAB Meeting Minutes, 23 Jan 96	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1149 CD 5
23 Jan 96	Final RPM Meeting Minutes, 23 Jan 96	AFBCA/OL-I	1175 CD 6
23 Jan 96	CDTSC Letter to MDPH Concerning Landfills	Ward, Daniel T California Department of Toxic Substances Control	1211 CD 6

Date	Title	Author	File/CD Number
23 Jan 96	CDTSC Letter to MCDPH Concerning Comments on Base Landfills	Ward, Daniel T California Department of Toxic Substances Control	1931 CD 10
25 Jan 96	Base Letter to Regulators Concerning Septic Tank Reuse Proposal	Matthews, Robert R AFBCA/OL-I	1183 CD 6
30 Jan 96	EPA Internal Memorandum Concerning QAPP Addendum, SCOU	Hanusiak, Lisa EPA Region IX	1208 CD 6
30 Jan 96	EPA Letter to Base Concerning SVE Demonstration Project Report, SS-18	Roberts, David E EPA Region IX	1382 CD 6
30 Jan 96	Base Letter to Regulators Concerning NOV, ROD and FFA, OT-29	Matthews, Robert R AFBCA/OL-I	1386 CD 6
30 Jan 96	EPA Letter to Resident Concerning Participation at Current RAB Meeting	Roberts, David E EPA Region IX	1767 CD 9
Feb 96	Enviro Fact Sheet, Edition 5	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1154 CD 5
Feb 96	RA, Final QPP, Part 2, Detonation and Burn Facility, FT-01, DA-4, Bldg 871	Jacobs Engineering Group, Inc.	1155 CD 5
01 Feb 96	Regulators Letter to Base Concerning Base Response to NOV of the ROD and FFA, OU-1	Roberts, David E Ghazi, Rizgar A Izzo, Victor J	1178 CD 6
05 Feb 96	EPA Letter to Base Concerning Reuse of Septic Systems, SS-116	Roberts, David E EPA Region IX	1387 CD 6
06 Feb 96	CDTSC Letter to Base Concerning Request for Extension, Review of Draft Final Comprehensive Basewide Part I Groundwater RI/FS	Ghazi, Rizgar A California Department of Toxic Substances Control	1177 CD 6
08 Feb 96	TWG Meeting Minutes, 08 Feb 96	Matthews, Robert R AFBCA/OL-I	1196 CD 6
08 Feb 96	Draft Update Field Work Status Report, SCOU	Lange, Peter Jacobs Engineering Group, Inc.	1413 CD 6
08 Feb 96	Draft Position Paper on Inorganic Background for Revised Draft Final RI, SCOU	Lange, Peter Jacobs Engineering Group, Inc.	1414 CD 6
12 Feb 96	Base Letter to Regulators Concerning Reuse of Septic System, SS-116	Matthews, Robert R AFBCA/OL-I	1390 CD 6
15 Feb 96	RI, Draft Final SCOU Addenda to Section 7, Sites Not Requiring Additional RI Field Work	Jacobs Engineering Group, Inc.	1153 CD 5
15 Feb 96	EPA Letter to Base Concerning Comments on the Draft Final CB RI/FS Part I	Roberts, David E EPA Region IX	1214 CD 6
16 Feb 96	Revised TWG Meeting Minutes and Conversion Confirmer, 08 Feb 96	Matthews, Robert R AFBCA/OL-I	1173 CD 6
16 Feb 96	Base Memorandum Concerning Draft FFA Schedule	Matthews, Robert R AFBCA/OL-I	1195 CD 6
21 Feb 96	Draft RPM Meeting Minutes, 21 Feb 96	Kumanchik, Cynthia Gutierrez-Palmenberg, Inc.	1171 CD 6
26 Feb 96	TWG Meeting Minutes, 26 Feb 96	Phillips, Larry Jacobs Engineering Group, Inc.	1192 CD 6
29 Feb 96	CRWQCB Letter to CDTSC Concerning Comments on Draft Final Comprehensive Basewide RI/FS, Part I	Izzo, Victor J California Regional Water Quality Control Board	1169 CD 6

Date	Title	Author	File/CD Number
Mar 96	Enviro Progress Newsletter, Edition 9	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1319 CD 6
Mar 96	Treatability Study and Technical Report, SS-17, SS-18	Jacobs Engineering Group, Inc.	1391 CD 6
01 Mar 96	Preliminary SCOU Data Figures	Phillips, Larry Jacobs Engineering Group, Inc.	1309 CD 6
06 Mar 96	MDPH Letter to EPA Concerning NFA Required, LF-34	Palsgaard, Jeff H Merced County Department of Public Health	1168 CD 6
06 Mar 96	Draft BCT/TWG Meeting Minutes, 05 Mar 96	Matthews, Robert R AFBCA/OL-I	1194 CD 6
12 Mar 96	CDTSC Memorandum Concerning Review of Draft Revised Basis of Design Report	Scruggs, Mary California Department of Toxic Substances Control	1167 CD 6
14 Mar 96	CDTSC Letter to Base Concerning Review of Draft Revised Basis of Design Report	Ghazi, Rizgar A California Department of Toxic Substances Control	1166 CD 6
14 Mar 96	Base Letter to Regulators Concerning Revised Basis of Design Report Issues From BCT Meeting	Matthews, Robert R AFBCA/OL-I	1184 CD 6
15 Mar 96	EPA Letter to Base Concerning Comments on the Draft Revised Basis of Design Report	Roberts, David E EPA Region IX	1185 CD 6
18 Mar 96	Jacobs Letter to AFCEE Transmitting Draft SCOU FS Response to Agency Comments	Jacobs Engineering Group, Inc.	1198 CD 6
19 Mar 96	Step-Out and Metals Sampling Locations and Analyses, SCOU	Jacobs Engineering Group, Inc.	1164 CD 5
22 Mar 96	Jacobs Letter to AFCEE Concerning Draft Response to Agency Comments on CB RI/FS	Phillips, Larry Jacobs Engineering Group, Inc.	1297 CD 6
25 Mar 96	EPA Letter to Base Concerning Comments on the Preliminary Draft CB Part I, Groundwater Proposed Plan	Roberts, David E EPA Region IX	1206 CD 6
26 Mar 96	CDTSC Letter to EPA Concerning Denial for NFA, Castle Vista Landfill A	Ghazi, Rizgar A California Department of Toxic Substances Control	1163 CD 5
26 Mar 96	Draft RAB Meeting Minutes, 26 Mar 96	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1181 CD 6
26 Mar 96	Draft RPM Meeting Minutes, 26 Mar 96	Matthews, Robert R AFBCA/OL-I	1191 CD 6
26 Mar 96	RPM Meeting Minutes, 26 Mar 96	Matthews, Robert R AFBCA/OL-I	1223 CD 6
26 Mar 96	CDTSC Letter to EPA Concerning NFA Decision, Castle Vista Landfill A	Ward, Daniel T California Department of Toxic Substances Control	1234 CD 6
27 Mar 96	Base Letter to EPA and Bechtel Concerning Final FSP for RA, Bldg 871, Detonation and Burn Facility, FT-01, and DA-4	Matthews, Robert R AFBCA/OL-I	1186 CD 6
Apr 96	RA, Proposed Plan, Draft Final Groundwater, Comprehensive Basewide Program, Part I	Jacobs Engineering Group, Inc.	1229 CD 6
Apr 96	Enviro Fact Sheet, Edition 6	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1314 CD 6

Date	*Title*	*Author*	*File/CD Number*
02 Apr 96	Base Letter to EPA and CDTSC Concerning Request for Extension of the Comprehensive Basewide Part I, Draft Final RI/FS	Matthews, Robert R AFBCA/OL-I	1161 CD 5
03 Apr 96	Jacobs Letter to AFCEE Transmitting Conference Call Minutes, SCOU Risk Management Decision Flow Chart	Allen, Elizabeth Jacobs Engineering Group, Inc.	1197 CD 6
03 Apr 96	CDTSC Comments on Preliminary Draft Comprehensive Basewide Part I Groundwater Proposed Plan	California Department of Toxic Substances Control	1296 CD 6
05 Apr 96	AFBCA Letter Concerning Extension to Deadlines for RI/FS at Base Realignment and Closure Installations on NPL	Olsen, Alan K AFBCA/DR	1159 CD 5
05 Apr 96	CDTSC Letter to Base Concerning Review of SVE Demonstration Project Report, Fuel Spill 2	Ghazi, Rizgar A California Department of Toxic Substances Control	1294 CD 6
08 Apr 96	EPA Letter to Base Concerning Response to EPA Comments on Draft Final RI/FS Risk Assessment, SCOU	Roberts, David E EPA Region IX	1158 CD 5
08 Apr 96	Joint Power Authority Letter to Base Concerning Production Well Closure	Martin, Richard D Joint Powers Authority	1205 CD 6
09 Apr 96	EPA and CDTSC Letter to Base Concerning Approval of Request for Extension, FFA for the Comprehensive Basewide Part I Draft Final RI/FS	Roberts, David E Ghazi, Rizgar A EPA Region IX	1157 CD 5
10 Apr 96	EPA Letter to Base Concerning Base Responses to EPA Comments on Draft Final SCOU RI/FS	Roberts, David E EPA Region IX	1303 CD 6
11 Apr 96	CRWQCB Letter to CDTSC Concerning Review of RI/FS Response to General Comments, Response to Agency Specific Comments, and Addenda to Section 7, Group 1, SCOU	Izzo, Victor J California Regional Water Quality Control Board	1204 CD 6
11 Apr 96	TWG Meeting Minutes, 11 Apr 96	Phillips, Larry Jacobs Engineering Group, Inc.	1224 CD 6
18 Apr 96	MDPH Letter to Joint Power Authority Concerning Draft Resolution on Landfill Closures	Palsgaard, Jeff H Merced County Department of Public Health	1504 CD 6
18 Apr 96	MDPH Letter to Base Concerning RAB Meeting Discussion of Landfill Issues	Palsgaard, Jeff H Merced County Department of Public Health	1505 CD 6
22 Apr 96	EPA Letter to Base Concerning Restart Sampling Plan Revision, OT-29	Roberts, David E EPA Region IX	1396 CD 6
23 Apr 96	Base Letter to San Joaquin Valley Concerning ERC Background Information	Matthews, Robert R AFBCA/OL-I	1227 CD 6
24 Apr 96	CRWQCB Letter to CDTSC Concerning Response to General Comments, Response to Agency Specific Comments, and Addenda to Section 7, Group 1, RI/FS, SCOU	Izzo, Victor J California Regional Water Quality Control Board	1220 CD 6
24 Apr 96	RPM Meeting Minutes, 24 Apr 96	Matthews, Robert R AFBCA/OL-I	1221 CD 6
24 Apr 96	CDTSC Letter to Base Concerning RI Response to Agency Comments, and Addenda to Section 7, Draft Final RI, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1225 CD 6

Date	*Title*	*Author*	*File/CD Number*
24 Apr 96	Draft RPM Meeting Minutes, 24 Apr 96	Matthews, Robert R AFBCA/OL-I	1226 CD 6
24 Apr 96	CRWQCB Letter to Base Concerning Update of Order No. 92-181	Izzo, Victor J California Regional Water Quality Control Board	1302 CD 6
May 96	Enviro Progress Newsletter, Edition 10	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1320 CD 6
May 96	RAB Meeting Minutes, May 96	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1342 CD 6
01 May 96	Draft ROD Comprehensive Basewide, Part I Groundwater	Hicks, Brad AFBCA/OL-I	1187 CD 6
08 May 96	EPA Letter to Base Concerning Annual Report, O&M and Monitoring, Groundwater Pump and Treat, OU-1	Roberts, David E EPA Region IX	1305 CD 6
09 May 96	Jacobs Letter Transmitting Response to Comments, CB RI/FS Part I	Phillips, Larry Jacobs Engineering Group, Inc.	1213 CD 6
09 May 96	RPM/TWG Meeting Minutes, 09 May 96	Matthews, Robert R AFBCA/OL-I	1222 CD 6
16 May 96	EPA Letter to Base Concerning Comments on the Draft Final Comprehensive Basewide Part I, Groundwater Proposed Plan	Roberts, David E EPA Region IX	1304 CD 6
20 May 96	CRWQCB Letter to Base Concerning Review of Annual Report of O&M and Monitoring, OT-29	Izzo, Victor J California Regional Water Quality Control Board	1397 CD 6
21 May 96	Base Letter to USACE Concerning Notification of Proposed Action, ETC-10	Matthews, Robert R AFBCA/OL-I	1237 CD 6
30 May 96	News Article, “RAB Announcement, The Next Castle RAB Meeting Will be Held on Thursday, May 30, 1996”	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1219 CD 6
31 May 96	FAA Letter to Base Concerning FAA and Base MOA	Wilkerson, Robin F Federal Aviation Administration	1379 CD 6
Jun 96	RI/FS, Final Comprehensive Basewide Groundwater Report, Part I, Vol I of III, Appendix B, Vol II of III	Jacobs Engineering Group, Inc.	1059 CD 4
Jun 96	RI/FS, Final Comprehensive Basewide Groundwater Report, Part I, Vol I of III, Appendix F	Jacobs Engineering Group, Inc.	1061 CD 4
Jun 96	RI/FS, Final Comprehensive Basewide Groundwater Report, Part I, Vol I of III, Appendices C, D and E	Jacobs Engineering Group, Inc.	1071 CD 5
Jun 96	RI, Final Comprehensive Basewide Groundwater Report, Part I, Vol I of III, Appendices G, H, I, J, K, L and M	Jacobs Engineering Group, Inc.	1072 CD 5
Jun 96	RI, Final Comprehensive Basewide Groundwater Report, Part I, Vol I of III, Appendix B, Vol III of III	Jacobs Engineering Group, Inc.	1074 CD 4
Jun 96	RI, Final Comprehensive Basewide Groundwater Report, Part I, Vol I of III, Appendix A	Jacobs Engineering Group, Inc.	1098 CD 5
Jun 96	RI, Final Comprehensive Basewide, Groundwater Report, Part I, Vol I of III, Appendix B, Vol I of III	Jacobs Engineering Group, Inc.	1106 CD 5
Jun 96	Draft Final Comprehensive Basewide Part I, Proposed Plan	Matthews, Robert R AFBCA/OL-I	1182 CD 6
Jun 96	RA, Draft Technical Report, SS-70	Jacobs Engineering Group, Inc.	1283 CD 6

Date	*Title*	*Author*	*File/CD Number*
Jun 96	Enviro Fact Sheet, Edition 7	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1315 CD 6
Jun 96	News Article, "Leftover Landfills Raise Castle Reuse Questions"	Carlson, Ken The Merced Sun Star	1336 CD 6
Jun 96	RA, Final Proposed Plan for Groundwater, Comprehensive Basewide Program, Part 1	Jacobs Engineering Group, Inc.	1771 CD 9
12 Jun 96	FS, Final Comprehensive Basewide Groundwater Report, Part I, Vol III of III	Jacobs Engineering Group, Inc.	1062 CD 4
12 Jun 96	RI/FS, Final, Comprehensive Basewide Groundwater Report, Part I, Baseline Human Health Risk Assessment, Vol II of III	Jacobs Engineering Group, Inc.	1065 CD 4
19 Jun 96	Base Letter to EPA, CDTSC, and CRWQCB Concerning Revised Figure 2 for Air Monitoring, OU-1	Matthews, Robert R AFBCA/OL-I	1769 CD 9
24 Jun 96	CDTSC Letter to Base Concerning ARARs, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1378 CD 6
24 Jun 96	Base Letter to Regulators Concerning Final Removal Actions Update, OT-30, SD-12, SS-61	Matthews, Robert R AFBCA/OL-I	1399 CD 6
24 Jun 96	Base Letter to AFCEE Concerning Submittal of Final Comprehensive Basewide Groundwater Proposed Plan, Part I	Matthews, Robert R AFBCA/OL-I	1770 CD 9
25 Jun 96	Draft Technical Report, Detonation Burn Facility	Jacobs Engineering Group, Inc.	1284 CD 6
25 Jun 96	RAB Base Tour Summary	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1343 CD 6
27 Jun 96	RPM Meeting Minutes, 27 Jun 96	Matthews, Robert R AFBCA/OL-I	1286 CD 6
Jul 96	LTM Sampling Plan, Semi Annual Report, OT-29, OT-30, SD-12	Jacobs Engineering Group, Inc.	1172 CD 6
Jul 96	Design Letter Report for RA, DA-4	Jacobs Engineering Group, Inc.	1239 CD 6
Jul 96	Draft QAPP	Jacobs Engineering Group, Inc.	1287 CD 6
Jul 96	Enviro Progress Newsletter, Edition 11	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1321 CD 6
Jul 96	RA, Repair Enhancement and Future Expansion, Well Installation Report, OU-1	McLeod, Campbell Jacobs Engineering Group, Inc.	1360 CD 6
01 Jul 96	EPA Letter to Base Concerning Review of Addendum to Work Plan, OU-1	Lowe, Debbie EPA Region IX	1775 CD 9
09 Jul 96	CDTSC Letter to Base Concerning Action Memoranda, SCOU, DA-8, PCB-9, and ETC-10	Ghazi, Rizgar A California Department of Toxic Substances Control	1404 CD 6
15 Jul 96	CRWQCB Letter to Base Concerning Proposed Cleanup Level Evaluation, UST and OWS Removal Program	Izzo, Victor J California Regional Water Quality Control Board	1401 CD 6
23 Jul 96	Base, EPA, and CDTSC Letter to Bureau of Prisons Concerning Detonation Burn Facility	Matthews, Robert R Lowe, Debbie Ghazi, Rizgar A	1280 CD 6
23 Jul 96	Public Meeting, Comprehensive Basewide Part I Proposed Plan	Maciel, Teresa Certified Shorthand Reporter	1341 CD 6

Date	*Title*	*Author*	*File/CD Number*
24 Jul 96	RPM Meeting Minutes, 24 Jul 96	Matthews, Robert R AFBCA/OL-I	1310 CD 6
24 Jul 96	Base Letter to EPA, CDTSC, and CRWQCB Concerning Comments on Addendum to Field Sampling Plan, OU-1	Matthews, Robert R AFBCA/OL-I	1772 CD 9
25 Jul 96	Fact Sheet, Proposed Range Rule	AFBCA/OL-I	1299 CD 6
Aug 96	Final Technical Report, Detonation Burn Facility	Jacobs Engineering Group, Inc.	1285 CD 6
Aug 96	Journal Article, "A Needle in a Haystack"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1363 CD 6
02 Aug 96	Base Letter to Distribution Concerning Response to Comments on Basewide Cleanup Level Evaluation, UST and OWS Removal Program	Matthews, Robert R AFBCA/OL-I	1402 CD 6
06 Aug 96	Base Letter to EPA, CDTSC and CRWQCB Transmitting Comments on Final Revised Basis of Design Report	Matthews, Robert R AFBCA/OL-I	1359 CD 6
07 Aug 96	News Article, "Groundwater Contamination Moving West"	Kayser, Jim The Atwater Signal	1340 CD 6
07 Aug 96	MDPH Letter to Base Concerning Comments on RA, Proposed Plan for Groundwater	Palsgaard, Jeff H Merced County Department of Public Health	1774 CD 9
09 Aug 96	Base Letter to AFCEE Concerning Draft Final Explanation of Significant Difference, OU-1	Matthews, Robert R AFBCA/OL-I	1773 CD 9
14 Aug 96	News Article, "Groundwater Plume Worries Leslie Drive Residents"	Kayser, Jim The Atwater Signal	1339 CD 6
14 Aug 96	CIWMB Letter to CDTSC Concerning Closure Requirements, Castle Vista Landfill A	Zielinski, Tamara S California Integrated Waste Management Board	1400 CD 6
24 Aug 96	News Article, "Public Notice, What is Happening at Castle Airport? Meet Castle's RAB"	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1330 CD 6
26 Aug 96	CDTSC Letter to Base Concerning Comments on Draft Technical Report for RA, Bldg 871	Ghazi, Rizgar A California Department of Toxic Substances Control	1243 CD 6
26 Aug 96	CDTSC Letter to Base Concerning NFA Decision, Detonation Burn Facility	Landis, Anthony J California Department of Toxic Substances Control	1244 CD 6
27 Aug 96	Base Letter to Regulators Transmitting Draft QPP and Work Plan Addendum	Matthews, Robert R AFBCA/OL-I	1290 CD 6
27 Aug 96	RAB Meeting Minutes, 27 Aug 96	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1361 CD 6
27 Aug 96	PFFA Meeting Slides Concerning EPA Risk Execution Strategy for Clean-up	Lee, Charles E EPA Region IX	1383 CD 6
28 Aug 96	RPM/TWG Meeting Minutes, 28 Aug 96	Matthews, Robert R AFBCA/OL-I	1362 CD 6
28 Aug 96	Air Emissions From Primary Air Stripper at Treatment Plant	AFBCA/OL-I	1371 CD 6
28 Aug 96	Explanation of Significant Difference for Discontinuation of Vapor Phase Treatment of Air Stripper Off Gas and Non-Implementation of Biological Enhancement, OU-1	Jacobs Engineering Group, Inc.	1380 CD 6
29 Aug 96	Base Letter to EPA Concerning Distributed Items From RPM Meeting, 28 Aug 96	Matthews, Robert R AFBCA/OL-I	1394 CD 6

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Sep 96	Design Letter Report for RA, FT-01	LaFreniere, Steven AFBCA/OL-I	1246 CD 6
Sep 96	Enviro Progress Newsletter, Edition 12	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1322 CD 6
Sep 96	Community Relations Plan	Gutierrez-Palmenberg, Inc.	1325 CD 6
Sep 96	RAB Meeting Minutes, Sep 96	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1344 CD 6
04 Sep 96	AFLSA Memorandum to Base Concerning Comments on ARAR Table in Draft ROD, CBOU	Bee, Arlen Eric AFLSA/JACE-WR	1389 CD 6
19 Sep 96	CDTSC Letter to Base Concerning Review of the Preliminary Draft Final RI Addenda for Action Plan Sites, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1395 CD 6
20 Sep 96	Results of Jacobs Checkout of System Repair and Expansion, OU-1	McLeod, Campbell Jacobs Engineering Group, Inc.	1384 CD 6
20 Sep 96	Resident Letter to Mayor of Atwater Concerning City of Atwater Water System	Resident	1388 CD 6
23 Sep 96	EPA Letter to Program Managers Concerning Potential Impacts of the Eureka Laboratory Fraud Case on Federal Facilities Cleanup	Opalski, Daniel D EPA Region IX	1398 CD 6
Oct 96	SVE Startup Letter Report for RA, DA-4	LaFreniere, Steven AFBCA/OL-I	1248 CD 6
Oct 96	Draft SVE-Bioventing Transition Letter Report, Fuel Spill 1	Jacobs Engineering Group, Inc.	1252 CD 6
Oct 96	RAB Meeting Minutes, Oct 96	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1345 CD 6
Oct 96	Final Technical Report, RA, SS-70	Jacobs Engineering Group, Inc.	1419 CD 6
Oct 96	SVE Startup Letter Report, DA-4	Jacobs Engineering Group, Inc.	1440 CD 6
01 Oct 96	Base Letter to EPA and CRWQCB Concerning Final RCRA Closure Plan, Hazardous Waste Drum Storage Area	Matthews, Robert R AFBCA/OL-I	1288 CD 6
02 Oct 96	RA, Action Memorandum, DA-8	Hicks, Brad AFBCA/OL-I	1403 CD 6
07 Oct 96	News Article, "Public Notice, The USAF Announces Finalization of the Explanation of Significant Difference Document for the Discontinuation of Vapor Phase Treatment of Air Stripper Off Gas and Non-Implementation of Biological Enhancement"	The Merced Sun Star	1332 CD 6
08 Oct 96	Action Memorandum for RA, ETC-10	Matthews, Robert R AFBCA/OL-I	1247 CD 6
16 Oct 96	Base Letter to Regulators Concerning Final Technical Report for RA, Bldg 871	Matthews, Robert R AFBCA/OL-I	1249 CD 6
16 Oct 96	Base Letter to Regulators Concerning Response to Comments on Demonstration Project Report, Fuel Spill 2	Matthews, Robert R AFBCA/OL-I	1250 CD 6
17 Oct 96	Base Letter to Regulators Concerning Disclaimer Included in Base Reports	Matthews, Robert R AFBCA/OL-I	1289 CD 6
21 Oct 96	CDTSC Letter to Base Concerning Review of Action Memorandum for RA, DA-8	Ghazi, Rizgar A California Department of Toxic Substances Control	1253 CD 6

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23 Oct 96	RPM Meeting Minutes, 23 Oct 96	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1311 CD 6
24 Oct 96	MDPH Letter to Base Concerning RAB	Palsgaard, Jeff H Merced County Department of Public Health	1393 CD 6
30 Oct 96	News Article, "Castle Vista Landfills To Be Removed"	Kayser, Jim The Atwater Signal	1337 CD 6
Nov 96	Enviro Fact Sheet, Edition 8	Woolfolk, Lisa Gutierrez-Palmenberg, Inc.	1316 CD 6
Nov 96	RAB Meeting Minutes, Nov 96	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1346 CD 6
04 Nov 96	Jacobs Letter to CDTSC Concerning Comprehensive Basewide Part II SCOU, Site Risk on Isopleth Maps	Watkin, Geoff W Jacobs Engineering Group, Inc.	1372 CD 6
13 Nov 96	EPA Letter to Base Concerning Comments on Draft QAPP	Hanusiak, Lisa EPA Region IX	1776 CD 9
20 Nov 96	News Article, "Public Notice, The United States Air Force Announces the Intent to Operate a SVE System at Castle Air Force Base"	The Merced Sun Star	1255 CD 6
20 Nov 96	EPA and CDTSC Letter to Base Concerning FAA Schedule Extension for Comprehensive Basewide ROD, Part I	Hanusiak, Lisa Ghazi, Rizgar A EPA Region IX	1392 CD 6
21 Nov 96	Base Letter to EPA, CDTSC, and CRWQCB Concerning Public Notice for RA, DA-8	Matthews, Robert R AFBCA/OL-I	1777 CD 9
23 Nov 96	News Article, "Come and See Our Progress at Castle Airport"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1328 CD 6
23 Nov 96	News Article, "Castle Cleanup Begins"	White, Bob The Merced Sun Star	1334 CD 6
26 Nov 96	News Article, "New Process Cleans Water"	Groves, Randy The Merced Sun Star	1333 CD 6
29 Nov 96	EPA Letter to Base Concerning Draft Final RI/FS Report, SCOU	Hanusiak, Lisa EPA Region IX	1629 CD 8
Dec 96	Enviro Progress Newsletter, Edition 13	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1323 CD 6
02 Dec 96	EPA Letter to Base Concerning Final Aviation and Development Center CRP	Hanusiak, Lisa EPA Region IX	1376 CD 6
02 Dec 96	CDTSC Letter to Base Concerning Review Comments on the Draft Final RI/FS Report, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1631 CD 8
03 Dec 96	EPA Letter to Base Concerning SVE Startup Letter Report for RA, DA-4	Hanusiak, Lisa EPA Region IX	1257 CD 6
03 Dec 96	EPA Letter to Base Concerning Draft SVE-Bioventing Transition Letter Report, Fuel Spill 1	Hanusiak, Lisa EPA Region IX	1258 CD 6
03 Dec 96	City of Atwater Water System Evaluation Scenarios	Boyle Engineering Corp.	1301 CD 6
04 Dec 96	News Article, "OU-2, Castle Groundwater Treatment Plant Dedicated"	Kayser, Jim The Atwater Signal	1335 CD 6
11 Dec 96	CDTSC Letter to Base Concerning Review of the Draft QAPP	Ghazi, Rizgar A California Department of Toxic Substances Control	1259 CD 6
11 Dec 96	CDTSC Internal Memorandum Concerning Review of Part II, Draft SAP for Removal Actions, DA-8, PCB-9, ETC-10	Scruggs, Mary California Department of Toxic Substances Control	1260 CD 6

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12 Dec 96	CDTSC Letter to Base Concerning Review of Final Technical Report for the RA, Bldg 871	Ghazi, Rizgar A California Department of Toxic Substances Control	1261 CD 6
12 Dec 96	EPA Letter to Base Concerning FFA Schedule Extension for Draft Comprehensive Basewide Report, Part 2	Hanusiak, Lisa Ghazi, Rizgar A EPA Region IX	1778 CD 9
18 Dec 96	RPM Meeting Minutes, 18 Dec 96	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1312 CD 6
18 Dec 96	Meeting Notes Concerning Evaluation of Alternative Pumping Rates for City Wells	McLeod, Campbell Jacobs Engineering Group, Inc.	1356 CD 6
20 Dec 96	Base Letter to EPA Concerning Analytical Laboratories	Matthews, Robert R AFBCA/OL-I	1300 CD 6
31 Dec 96	EPA Letter to Base Concerning Design Letter Report for RA, FT-01	Hanusiak, Lisa EPA Region IX	1262 CD 6
Jan 97	LTM Sampling Plan, OT-29, OT-30	Jacobs Engineering Group, Inc.	1056 CD 5
Jan 97	Final QPP, Part I HSP, Part II SAP, Part III CQP	Jacobs Engineering Group, Inc.	1267 CD 6
Jan 97	Enviro Fact Sheet, Edition 9	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1317 CD 6
Jan 97	RAB Meeting Minutes, Jan 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1347 CD 6
Jan 97	Final Functional Acceptance Testing Report, OT-30, SD-12	Booz-Allen and Hamilton, Inc.	1420 CD 6
10 Jan 97	CDTSC Letter to Base Concerning Review of Part II Draft SAP for Removal Actions, DA-8, PCB-9, ETC-10	Ghazi, Rizgar A California Department of Toxic Substances Control	1264 CD 6
10 Jan 97	CRWQCB Letter to Base Concerning Demonstration Project Report, Fuel Spill 2	Izzo, Victor J California Regional Water Quality Control Board	1265 CD 6
10 Jan 97	CRWQCB Letter to Base Concerning Draft SVE-Bioventing Transition Letter Report, Fuel Spill 1	Izzo, Victor J California Regional Water Quality Control Board	1268 CD 6
10 Jan 97	CRWQCB Letter to Base Concerning Petroleum Only Contaminated Sites	Izzo, Victor J California Regional Water Quality Control Board	1569 CD 8
13 Jan 97	CDTSC Letter to Base Concerning Review of Final ROD, Comprehensive Basewide Groundwater Report, Part I	Ghazi, Rizgar A California Department of Toxic Substances Control	1781 CD 9
15 Jan 97	CDTSC Letter to Base Concerning Review of the Preliminary Draft Proposed Plan, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1628 CD 8
16 Jan 97	RPM Meeting Minutes, 16 Jan 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1364 CD 6
21 Jan 97	EPA Letter to Base Concerning Action Memorandum for RA, ETC-10	Hanusiak, Lisa EPA Region IX	1269 CD 6
25 Jan 97	News Article, “Public Notice, Concerned About Your Communities Future? Attend the Castle RAB Meeting”	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1327 CD 6
29 Jan 97	CDTSC Letter to Base Concerning RA, SVE Startup Letter Report, DA-4	Ghazi, Rizgar A California Department of Toxic Substances Control	1619 CD 8

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30 Jan 97	EPA Letter to Base Concerning Comments on Phase II Groundwater Treatment System Design Specifications	Hanusiak, Lisa EPA Region IX	1354 CD 6
30 Jan 97	Site Review Meeting Minutes, 30 Jan 97	Marx, Richard Louis Berger & Associates	1577 CD 8
30 Jan 97	Base Letter to CRWQCB Concerning POL Sites	Matthews, Robert R AFBCA/OL-I	1600 CD 8
31 Jan 97	CRWQCB Letter to CDTSC Concerning Performance Based Criteria for Termination of SVE Projects	Izzo, Victor J California Regional Water Quality Control Board	1271 CD 6
31 Jan 97	Final ROD, Comprehensive Basewide, Part I Groundwater	AFBCA/OL-I	1586 CD 8
31 Jan 97	Base Letter to AFCEE Concerning ROD Revisions, SCOU	Matthews, Robert R AFBCA/DB Castle	1779 CD 9
Feb 97	Enviro Progress Newsletter, Edition 14	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1324 CD 6
Feb 97	RAB Meeting Minutes, Feb 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1348 CD 6
03 Feb 97	Base Letter to San Jaoquin Valley Transmitting Monitoring Results for Remediation Systems	Matthews, Robert R AFBCA/OL-I	1272 CD 6
03 Feb 97	Base Letter to USFWS and USACE Concerning Invitation to RAB Meeting	Matthews, Robert R AFBCA/OL-I	1275 CD 6
03 Feb 97	CIWMB Letter to CDTSC Concerning Review of Response to Comments on FS, SCOU	Zielinski, Tamara S California Integrated Waste Management Board	1783 CD 9
03 Feb 97	EPA Letter to AFLSA/JACE-WR Concerning Changes to Comprehensive Basewide Final ROD, Part 1	Estrada, Thelma EPA Region IX	1785 CD 9
04 Feb 97	CRWQCB Letter to CDTSC Concerning Response to Agency Comments on RI/FS, SCOU	Izzo, Victor J California Regional Water Quality Control Board	1630 CD 8
04 Feb 97	CRWQCB Letter to CDTSC Concerning Response to Comments on RI/FS, SCOU	Izzo, Victor J California Regional Water Quality Control Board	1784 CD 9
05 Feb 97	Base Letter to RAB Members Concerning Responsiveness Summary to Comprehensive Basewide ROD, Part 1	Matthews, Robert R AFBCA/DB Castle	1786 CD 9
05 Feb 97	EPA Letter to Base Concerning Response to Comments on RI/FS Draft Final Report, SCOU	Hanusiak, Lisa EPA Region IX	1787 CD 9
05 Feb 97	CDTSC Letter to Base Concerning Response to Comments on RI/FS Draft Final Report, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1788 CD 9
06 Feb 97	Base Letter to Atwater School District Concerning Video Survey, School Irrigation Well	Matthews, Robert R AFBCA/OL-I	1353 CD 6
13 Feb 97	EPA and CDTSC Letter to Base Concerning Review of ROD, SCOU	Hanusiak, Lisa Ghazi, Rizgar A EPA Region IX	1626 CD 8
13 Feb 97	CDTSC Letter to Base Concerning Performance Based Criteria for Termination of SVE Projects	Ghazi, Rizgar A California Department of Toxic Substances Control	1789 CD 9
19 Feb 97	Summary of Network Model for City of Atwater Water System	Boyle Engineering Corp.	1350 CD 6

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24 Feb 97	CDTSC Letter to Base Concerning Review of the Draft Phase II RA Environmental Cleanup Plan, QPP Addenda	Ghazi, Rizgar A California Department of Toxic Substances Control	1358 CD 6
24 Feb 97	CRWQCB Letter to Base Concerning Request for Extension on Submittal of Work Plan	Izzo, Victor J California Regional Water Quality Control Board	1725 CD 6
25 Feb 97	RPM Meeting Minutes, 25 Feb 97	Matthews, Robert R AFBCA/OL-I	1365 CD 6
27 Feb 97	EPA Letter to Base Concerning Comments on Proposed Sampling Locations, Castle Vista Plume	Hanusiak, Lisa EPA Region IX	1351 CD 6
27 Feb 97	EPA Letter to Base Concerning Comments on Alternative RA Pilot Study, Density-Driven Convection Pilot Study Plan, Castle Vista Landfill B	Hanusiak, Lisa EPA Region IX	1352 CD 6
Mar 97	Enviro Fact Sheet, Edition 10	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1318 CD 6
Mar 97	Slides Concerning Discussion of Site Closure, DA-4	AFBCA/OL-I	1423 CD 6
Mar 97	Final Design Letter Report, DA-8	Jacobs Engineering Group, Inc.	1437 CD 6
06 Mar 97	Base Letter to FAA Concerning FTA-1	Matthews, Robert R AFBCA/OL-I	1276 CD 6
10 Mar 97	CDTSC Internal Letter Concerning Human Health Risk Assessments for Comprehensive Basewide RI/FS, Part 2	Chernoff, Gerald F California Department of Toxic Substances Control	1790 CD 9
11 Mar 97	EPA Letter to Base Concerning Comments on Draft RPM Meeting Minutes, 25 Feb 97	Hanusiak, Lisa EPA Region IX	1791 CD 9
17 Mar 97	Jacobs Project Note Concerning Quarterly Monitoring Program, FS-1	Jacobs Engineering Group, Inc.	1291 CD 6
18 Mar 97	Base Letter Concerning FFA Schedule, Request for Extension, SCOU	Matthews, Robert R AFBCA/OL-I	1595 CD 8
19 Mar 97	Base Letter to Regulators Concerning Response to Comments on Design Letter Report for RA, Fire Training Area 1	Matthews, Robert R AFBCA/OL-I	1281 CD 6
19 Mar 97	Base Letter to Regulators Concerning Response to Comments on Draft SVE-Bioventing Transition Letter Report, Fuel Spill 1	Matthews, Robert R AFBCA/OL-I	1282 CD 6
21 Mar 97	EPA Letter to Base Concerning Comments on Draft Phase II RA Environmental Cleanup Plan, QPP Addenda	Hanusiak, Lisa EPA Region IX	1357 CD 6
21 Mar 97	EPA and CDTSC Letter to Base Concerning FFA Schedule Extension for the Draft Final Proposed Plan, SCOU	Hanusiak, Lisa Ghazi, Rizgar A EPA Region IX	1638 CD 8
24 Mar 97	CDTSC Letter to Base Concerning Review of the Draft Comprehensive Basewide RI/FS, Part II	Ghazi, Rizgar A California Department of Toxic Substances Control	1622 CD 8
24 Mar 97	EPA Letter to Base Concerning RI/FS, Draft Comprehensive Basewide, Part II	Hanusiak, Lisa EPA Region IX	1639 CD 8
24 Mar 97	EPA Letter to Base Concerning Comprehensive Basewide Phase II Ecological Risk Assessment	Hanusiak, Lisa EPA Region IX	1640 CD 8
26 Mar 97	EPA Letter to Base Concerning Proposal to Reduce Sampling Frequency at Groundwater Treatment Plant, OU-1	Hanusiak, Lisa EPA Region IX	1608 CD 8

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27 Mar 97	News Article, "These Grasses Are Not Meant For Mowing"	McNally, Pat The Merced Sun Star	1338 CD 6
31 Mar 97	EPA Letter to Base Concerning Draft LTM Sampling Plan, 1997 Update	Hanusiak, Lisa EPA Region IX	1614 CD 8
Apr 97	Enviro Progress Newsletter, Edition 15	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1424 CD 6
08 Apr 97	CRWQCB Letter to CDTSC Concerning Response to Comments on RI/FS, SCOU	Izzo, Victor J California Regional Water Quality Control Board	1573 CD 8
08 Apr 97	EPA Letter to Base Concerning RA, Draft Final Proposed Plan, SCOU	Hanusiak, Lisa EPA Region IX	1627 CD 8
08 Apr 97	CDTSC Letter to Base Concerning Response to Comments, RI/FS, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1632 CD 8
09 Apr 97	RPM Meeting Minutes, 09 Apr 97	Matthews, Robert R AFBCA/OL-I	1366 CD 6
14 Apr 97	CRWQCB Letter to CDTSC Concerning Draft Final Proposed Plan, SCOU	Izzo, Victor J California Regional Water Quality Control Board	1634 CD 8
18 Apr 97	Base Letter to CRWQCB Concerning RA, Design Letter Report, Fire Training Area 1	Matthews, Robert R AFBCA/OL-I	1454 CD 6
18 Apr 97	CDTSC Letter to Base Concerning Review of the Draft Final Proposed Plan, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1558 CD 8
21 Apr 97	EPA Letter to Base Concerning Evaluation of Response to Comments on Draft Final RI/FS Report, SCOU	Hanusiak, Lisa EPA Region IX	1633 CD 8
22 Apr 97	RPM/TWG Meeting Minutes, 22 Apr 97	Matthews, Robert R AFBCA/OL-I	1367 CD 6
22 Apr 97	RAB Meeting Minutes, 22 Apr 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1368 CD 6
29 Apr 97	EPA Letter to Base Concerning Response to Comments on RA, Design Letter Report, Fire Training Area 1	Hanusiak, Lisa EPA Region IX	1453 CD 6
May 97	Draft Final Basic Contract QPP	Jacobs Engineering Group, Inc.	967 CD 4
May 97	Phase II, Risk Assessment, Final Environmental Cleanup Plan, QPP Addenda	Jacobs Engineering Group, Inc.	1123 CD 8
May 97	Enviro Fact Sheet, Edition 11	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1425 CD 6
May 97	Final Start-Up Letter Report, Fire Training Area 1	Jacobs Engineering Group, Inc.	1442 CD 6
May 97	RI/FS, Final SCOU Report, Part I, Vol I of IX	Jacobs Engineering Group, Inc.	1730 CD 6
May 97	RI/FS, Final SCOU Report, Part I, Vol II of IX	Jacobs Engineering Group, Inc.	1731 CD 8
May 97	RI/FS, Final SCOU Report, Part I, Vol III of IX	Jacobs Engineering Group, Inc.	1732 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Vol IV of IX	Jacobs Engineering Group, Inc.	1733 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Vol V of IX	Jacobs Engineering Group, Inc.	1734 CD 7

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May 97	RI/FS, Final SCOU Report, Part I, Vol VI of IX	Jacobs Engineering Group, Inc.	1735 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Vol VII of IX	Jacobs Engineering Group, Inc.	1736 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Vol VIII of IX	Jacobs Engineering Group, Inc.	1737 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Vol IX of IX	Jacobs Engineering Group, Inc.	1738 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Appendices, Vol I of III	Jacobs Engineering Group, Inc.	1739 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Appendices, Vol II of III	Jacobs Engineering Group, Inc.	1740 CD 7
May 97	RI/FS, Final SCOU Report, Part I, Supplemental Appendices, Vol III of III	Jacobs Engineering Group, Inc.	1741 CD 7
May 97	RI/FS, Final SCOU Report, Part II, Baseline Human Health Risk Assessment	Jacobs Engineering Group, Inc.	1742 CD 7
May 97	RI/FS, Final SCOU Report, Part II, Baseline Human Health Risk Assessment, Appendices B and C	Jacobs Engineering Group, Inc.	1743 CD 8
May 97	RI/FS, Final SCOU Report, Part III	Jacobs Engineering Group, Inc.	1744 CD 7
May 97	RI/FS, Final SCOU Report, Response to Agency Comments	Jacobs Engineering Group, Inc.	1745 CD 7
05 May 97	EPA Letter to Base Concerning Review Comments on Draft Final Phase II Environmental Cleanup Plan	Hanusiak, Lisa EPA Region IX	1426 CD 6
06 May 97	EPA Letter to Base Concerning Public Comment Period for RA, Further Action Data Gap Sites and Requiring Technical and Economic Evaluations, SCOU	Hanusiak, Lisa EPA Region IX	1637 CD 8
06 May 97	Base Letter to AFCEE Concerning Response to Comments and Preface for Final RI/FS, SCOU	Matthews, Robert R AFBCA/DB Castle	1792 CD 9
07 May 97	Base Letter to Regulators Concerning Draft Final QAPP	Matthews, Robert R AFBCA/OL-I	1499 CD 6
08 May 97	RPM/TWG Meeting Minutes, 08 May 97	Matthews, Robert R AFBCA/OL-I	1369 CD 6
08 May 97	Remediation Public Meeting Minutes, 08 May 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1370 CD 6
08 May 97	Public Meeting Summary, Castle Vista Groundwater Remediation, 08 May 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1527 CD 6
14 May 97	Base Letter to Distribution Concerning Base Responses to Comments on Draft Comprehensive Basewide Phase II Ecological Risk Assessment	Matthews, Robert R AFBCA/OL-I	1623 CD 8
16 May 97	Base Memorandum Concerning AM6 and AM17 Sampling Results	Lanning, Todd AFBCA/OL-I	1601 CD 8
16 May 97	CRWQCB Letter to CDTSC Concerning Review Comments on Draft Predesign Characterization Report for Groundwater RA, Castle Vista Landfill B	Russell, John California Regional Water Quality Control Board	1618 CD 8
19 May 97	CDTSC Memorandum Concerning Review of Draft Predesign Characterization Report, Environmental Cleanup Plan, and FSP Addendum for Groundwater RA, Castle Vista Landfill B	Scruggs, Mary California Department of Toxic Substances Control	1617 CD 8
21 May 97	EPA Letter to Base Concerning Draft Closure Certification Report, Vol III, UST and OWS Remediation Program	Hanusiak, Lisa EPA Region IX	1554 CD 8

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21 May 97	EPA Letter to Base Concerning Final ROD Comprehensive Basewide, Part I, Groundwater	Opalski, Daniel D. EPA Region IX	1719 CD 6
24 May 97	News Article, "Public Notice, Base Environmental Tour and RAB Meeting"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1407 CD 6
28 May 97	RAB Meeting Minutes, 28 May 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1405 CD 6
28 May 97	RPM Meeting Minutes, 28 May 97	Matthews, Robert R AFBCA/OL-I	1406 CD 6
28 May 97	Proposed Plan, SCOU	Matthews, Robert R AFBCA/OL-I	1435 CD 6
28 May 97	RA, Field Monitoring and Static Rebound	LaFreniere, Steven AFBCA/OL-I	1579 CD 8
29 May 97	EPA Letter to Base Concerning Extension of FFA on Review of Draft Final Basic Contract QPP	Hanusiak, Lisa EPA Region IX	1429 CD 6
Jun 97	Enviro Fact Sheet, Edition 12	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1430 CD 6
Jun 97	Enviro Progress Newsletter, Edition 16	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1431 CD 6
Jun 97	Final Start-Up Letter Report, DA-8	Jacobs Engineering Group, Inc.	1438 CD 6
Jun 97	In Situ Respiration Test Report, FS-1	Jacobs Engineering Group, Inc.	1441 CD 6
Jun 97	Draft Report to Lawrence Livermore National Laboratory, Risk-Based Remediation of Petroleum, Oils, and Lubricants, Fuel Farm Area	Parsons Engineering Science, Inc.	1443 CD 6
Jun 97	PFFA Intrinsic Remediation Sampling Report	Jacobs Engineering Group, Inc.	1575 CD 8
03 Jun 97	RA, Action Memorandum, Castle Vista Landfills A, B, Landfills 2 and 4	Jacobs Engineering Group, Inc.	1576 CD 8
05 Jun 97	Base Letter to Regulators Concerning Use, Capping as Final Remedy for Metal and Dioxin Contaminated Soil, FTA-1	Matthews, Robert R AFBCA/OL-I	1459 CD 6
05 Jun 97	EPA Letter to Base Concerning Work Plan Addendum, Proposed Destruction of 20 Monitoring Wells	Hanusiak, Lisa EPA Region IX	1553 CD 8
09 Jun 97	Base Letter to AFCEE Concerning Final ROD, Comprehensive Basewide Part I, Groundwater	Matthews, Robert R AFBCA/OL-I	1718 CD 6
11 Jun 97	Base Letter to Regulators Concerning Response to Comments on Design Letter Report for RA, Fire Training Area 1	Matthews, Robert R AFBCA/OL-I	1452 CD 6
12 Jun 97	Base Letter to Regulators Concerning Response to Comments on Demonstration Project Report, Fuel Spill 2	Matthews, Robert R AFBCA/OL-I	1448 CD 6
12 Jun 97	EPA Letter to Base Concerning Review Comments on Phase II RA Environmental Cleanup Plan, QPP Addenda	Hanusiak, Lisa EPA Region IX	1578 CD 8
16 Jun 97	EPA Letter to Base Concerning Comprehensive Basewide Phase II Ecological Risk Assessment	Hanusiak, Lisa EPA Region IX	1549 CD 8
17 Jun 97	Base Letter to EPA Concerning State Request for Additional 30 Days to Review Castle Landfill Work Plan	Matthews, Robert R AFBCA/OL-I	1574 CD 8

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19 Jun 97	EPA Letter to Base Concerning Response to Comments on Draft SVE-Bioventing Transition Letter Report, Oct 96, Fuel Spill 1	Hanusiak, Lisa EPA Region IX	1552 CD 8
24 Jun 97	RAB Meeting Minutes, 24 Jun 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1408 CD 6
Jul 97	LTM Sampling Plan, LF-34, OT-29, OT-30	Jacobs Engineering Group, Inc.	1054 CD 4
Jul 97	Community Relations Plan, Aviation and Development Center	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1409 CD 6
Jul 97	Enviro Progress Newsletter, Edition 17	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1446 CD 6
02 Jul 97	CRWQCB Letter to CDTSC Concerning Review Comments on Draft RA Project Activities Work Plan and QPP Addenda, Vol I, SCOU	Russell, John California Regional Water Quality Control Board	1673 CD 8
02 Jul 97	EPA Letter to Base Concerning RA, Draft Action Memorandum, Castle Vista Landfills A and B, Landfills 2 and 4	Hanusiak, Lisa EPA Region IX	1680 CD 8
03 Jul 97	EPA Letter to Base Concerning Predesign Characterization Report and Environmental Cleanup Plan, QPP Addenda for Groundwater RA, Castle Vista Landfill B	Hanusiak, Lisa EPA Region IX	1548 CD 8
03 Jul 97	CRWQCB Letter to CDTSC and Base Concerning Comments on RA Project Activities Work Plan and QPP Addenda Vol I, SCOU	Russell, John California Regional Water Quality Control Board	1551 CD 8
07 Jul 97	CDTSC Letter to Base Concerning Comments on RA Project Activities Work Plan and QPP Addenda, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1550 CD 8
11 Jul 97	EPA Letter to Base Concerning RA, Draft Final Proposed Plan RA, SCOU	Hanusiak, Lisa EPA Region IX	1545 CD 8
11 Jul 97	CDTSC Letter to Base Concerning Review of Draft Final Comprehensive Basewide Phase II, Ecological Risk Assessment	Ghazi, Rizgar A California Department of Toxic Substances Control	1716 CD 6
14 Jul 97	EPA Letter to Base Concerning Rationale and Justification, Capping as Final Remedy for Metals and Dioxin Contaminated Soils, FTA-1	Hanusiak, Lisa EPA Region IX	1451 CD 6
14 Jul 97	EPA Letter to Base Concerning Preliminary Draft ROD, SCOU	Hanusiak, Lisa EPA Region IX	1546 CD 8
14 Jul 97	EPA Letter to Base Concerning Final Response to Comments on Phase II RA, Environmental Cleanup Plan, QPP Addenda	Hanusiak, Lisa EPA Region IX	1559 CD 8
14 Jul 97	EPA Letter to Base Concerning Draft Closure Report, DA-4	Hanusiak, Lisa EPA Region IX	1560 CD 8
15 Jul 97	CRWQCB Letter to CDTSC Concerning Action Memorandum for RA, Castle Vista A and B, Landfills 2 and 4	Russell, John California Regional Water Quality Control Board	1655 CD 8
15 Jul 97	CDTSC Letter to Base Concerning RA, Action Memorandum, Castle Vista B, Landfills 2 and 4	Ghazi, Rizgar A California Department of Toxic Substances Control	1681 CD 8
17 Jul 97	RPM Meeting Minutes, 25 Jun 97	Matthews, Robert R AFBCA/OL-I	1410 CD 6

Date	Title	Author	File/CD Number
17 Jul 97	CRWQCB Letter to CDTSC Concerning Review of Closure Report, DA-4	Izzo, Victor J California Regional Water Quality Control Board	1793 CD 9
19 Jul 97	News Article, "Public Notice, USAF Announces the Intent to Perform an Excavation at Castle Air Force Base, ETC-10"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1411 CD 6
22 Jul 97	RAB Meeting Minutes, 22 Jul 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1475 CD 6
22 Jul 97	USFWS Letter to Base Concerning Formal Consultation on the Former Skeet Range Remediation Project	White, Wayne S US Fish and Wildlife Service	1636 CD 8
22 Jul 97	Jacobs Response to EPA Comments on Draft Final RI/FS, SCOU	Jacobs Engineering Group, Inc.	1713 CD 6
22 Jul 97	CDTSC Letter to Base Concerning Comments on Closure Report, DA-4	Ghazi, Rizgar A California Department of Toxic Substances Control	1794 CD 9
23 Jul 97	RPM Meeting Minutes, 23 Jul 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1474 CD 6
24 Jul 97	EPA Letter to Base Concerning Draft Final Basic Contract QPP	Hanusiak, Lisa EPA Region IX	1501 CD 6
30 Jul 97	CDTSC Review of Draft Closure and Post-Closure Maintenance Plan, Landfills	Scruggs, Mary California Department of Toxic Substances Control	1555 CD 8
30 Jul 97	EPA Letter to Base Concerning Draft Closure and Post-Closure Maintenance Plan, Landfills 2 and 4, Castle Vista Landfills A and B	Hanusiak, Lisa EPA Region IX	1678 CD 8
Aug 97	Phase II, Final Comprehensive Basewide, Ecological Risk Assessment	Jacobs Engineering Group, Inc.	1436 CD 6
Aug 97	Draft FSP, DA-8	Jacobs Engineering Group, Inc.	1439 CD 6
Aug 97	Enviro Fact Sheet, Edition 13	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1455 CD 6
02 Aug 97	News Article, "Public Notice, USAF Announces a Public Meeting on the CAFB Landfill RA"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1412 CD 6
04 Aug 97	EPA Letter to Base Concerning Addendum QPP, Plant Closures and Storm Drain System Cleanup	Hanusiak, Lisa EPA Region IX	1557 CD 8
06 Aug 97	Jacobs Response to EPA Comments on RA Project Activities Work Plan and QPP Addenda, Vol I, SCOU	Jacobs Engineering Group, Inc.	1714 CD 6
07 Aug 97	CDTSC Letter to Base Concerning Review of Draft Closure and Post-Closure Maintenance Plan, Landfills	Ghazi, Rizgar A California Department of Toxic Substances Control	1675 CD 8
08 Aug 97	Base Letter to Regulators Concerning Response to Comments on SVE-Bioventing Transition Letter Report, Fuel Spill 1	Matthews, Robert R AFBCA/OL-I	1447 CD 6
08 Aug 97	EPA Letter to Base Concerning RA, Public Notice Landfill	Hanusiak, Lisa EPA Region IX	1690 CD 8
08 Aug 97	CDTSC Letter to Base Concerning Review of Justification Letter, Cap as Final Remedy for Metal and Dioxin Contaminated Soil, FTA-1	Ghazi, Rizgar A California Department of Toxic Substances Control	1729 CD 6
09 Aug 97	News Article, "Public Notice, USAF Announces a Public Meeting and Comment Period on the CAFB SCOU Proposed Plan"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1433 CD 6

Date	*Title*	*Author*	*File/CD Number*
12 Aug 97	News Article, "Public Notice, USAF Announces a Public Meeting on the Castle AFB Landfill RA"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1434 CD 6
13 Aug 97	News Article, "Base Cleanup Plan Outlined"	Jones, Gary L The Merced Sun Star	1487 CD 6
15 Aug 97	News Article, "Castle Joint Power Authority Challenges Air Force to Clean Mess"	Jones, Gary L The Merced Sun Star	1486 CD 6
15 Aug 97	Superfund Site, Proposed Plan, SCOU	Waste Policy Institute	1585 CD 7
16 Aug 97	News Article, "Time to Unearth Castle Cover-up"	The Merced Sun Star	1485 CD 6
19 Aug 97	News Article, "Castle Cleanup Plan Finished"	White, Bob The Modesto Bee	1484 CD 6
19 Aug 97	EPA Letter to Base Concerning Action Memorandum for RA, Castle Vista Landfills A and B, Landfills 2 and 4	Hanusiak, Lisa EPA Region IX	1679 CD 8
20 Aug 97	Base Letter Concerning FFA Schedule, CB Part II, SCOU	Matthews, Robert R AFBCA/OL-I	1612 CD 8
22 Aug 97	Base Letter to Regulators Concerning Response to Comments on Rational and Justification for Capping as Final Remedy for Metal and Dioxin Contaminated Soil, FTA-1	Matthews, Robert R AFBCA/OL-I	1450 CD 6
22 Aug 97	News Article, "Air Force to Move Landfill"	White, Bob The Modesto Bee	1480 CD 6
22 Aug 97	News Article, "Air Force Will Clean Up Castle Landfill"	Jones, Gary L The Merced Sun Star	1481 CD 6
22 Aug 97	CDTSC Letter to Base Concerning RA, Draft Final Action Memorandum, Castle Vista A and B, Landfills 2 and 4	Ghazi, Rizgar A California Department of Toxic Substances Control	1682 CD 8
25 Aug 97	News Article, "Castle Cleanup Topic of Hearing"	Jones, Gary L The Merced Sun Star	1476 CD 6
25 Aug 97	MDPH Letter to Base Concerning Comments on the Proposed Cleanup of Soil Contamination	Palsgaard, Jeff H Merced County Department of Public Health	1508 CD 6
26 Aug 97	RAB Meeting Minutes, 26 Aug 97	Gutierrez-Palmenberg, Inc.	1471 CD 6
26 Aug 97	Meeting Minutes Proposed Plan, Afternoon Session, SCOU	Barakatt, Sherrie L Barakatt Reporting Service	1523 CD 6
26 Aug 97	Meeting Minutes SCOU Proposed Plan, Evening Session	Barakatt, Sherrie L Barakatt Reporting Service	1524 CD 6
26 Aug 97	Meeting Minutes Landfill Removal Actions, Afternoon Session	Barakatt, Sherrie L Barakatt Reporting Service	1525 CD 6
26 Aug 97	Meeting Minutes Landfill Removal Actions, Evening Session	Barakatt, Sherrie L Barakatt Reporting Service	1526 CD 6
27 Aug 97	RPM Meeting Minutes, 27 Aug 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1470 CD 6
27 Aug 97	News Article, "Public Wants Complete Cleanup of Castle"	Jones, Gary L The Merced Sun Star	1477 CD 6
27 Aug 97	News Article, "Castle Cleanup Draws Protest"	White, Bob The Modesto Bee	1479 CD 6
28 Aug 97	EPA Letter to Base Concerning Public Notification and Distribution of Proposed Plan, SCOU	Hanusiak, Lisa Ghazi, Rizgar A EPA Region IX	1456 CD 6
28 Aug 97	News Article, "Light Shed on Landfill Questions"	Jones, Gary L The Merced Sun Star	1478 CD 6

Section VIII. Administrative Record (continued)

Date	*Title*	*Author*	*File/CD Number*
28 Aug 97	Base Letter Concerning Final Response to Comments on Draft Final Basic Contract QPP	Matthews, Robert R AFBCA/OL-I	1621 CD 8
Sep 97	Enviro Progress Newsletter, Edition 18	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1457 CD 6
02 Sep 97	EPA Letter to Base Concerning RA, Action Memorandum, PCB Site 9	Hanusiak, Lisa EPA Region IX	1720 CD 6
04 Sep 97	Base Letter to EPA, CDTSC, and CRWQCB Concerning Modifications of Landfill 4 Design, LF-007	Matthews, Robert R AFBCA/DB Castle	1795 CD 9
09 Sep 97	EPA Letter to Base Concerning Draft FSP, SCOU	Hanusiak, Lisa EPA Region IX	1562 CD 8
11 Sep 97	EPA Letter to Base Concerning SCOU Remedial Project Activities Draft Final Work Plan and QPP Addenda, Vol I	Hanusiak, Lisa EPA Region IX	1672 CD 8
11 Sep 97	EPA Letter to Base Concerning Draft Final Closure and Post-Closure Maintenance Plan, Landfills	Hanusiak, Lisa EPA Region IX	1677 CD 8
11 Sep 97	EPA Letter to Base Concerning Draft Final Closure and Post-Closure Maintenance Plan, Landfills 2 and 4, Castle Vista Landfills A and B	Hanusiak, Lisa EPA Region IX	1710 CD 6
12 Sep 97	News Article, “Joint Power Authority Tussles With EPA Over Cleanup”	Jones, Gary L The Merced Sun Star	1473 CD 6
15 Sep 97	Project Note 11, Monitoring Report, FS-1	Jacobs Engineering Group, Inc.	1449 CD 6
15 Sep 97	CRWQCB Letter to CDTSC Concerning Review Comments on Draft Final Landfill Work Plan and Closure, Post-Closure Maintenance Plan, SCOU	Russell, John California Regional Water Quality Control Board	1676 CD 8
17 Sep 97	Base Memorandum to Program Managers Concerning Responsibility for Additional Environmental Cleanup After Transfer of Real Property	Smith, John AFBCA/EVS	1594 CD 8
18 Sep 97	EPA E-mail to Jacobs Concerning Example DQO Table, Bldg 1325	Hanusiak, Lisa EPA Region IX	1580 CD 8
18 Sep 97	EPA Letter to Base Concerning Response to Comments on RA Design Letter Report, Fire Training Area 1	Hanusiak, Lisa EPA Region IX	1722 CD 6
19 Sep 97	EPA Letter to Base Concerning Response to Comments on Draft Final Predesign Characterization Report, Environmental Cleanup Plan, QPP Addenda, Groundwater RA, Castle Vista Landfill B	Hanusiak, Lisa EPA Region IX	1723 CD 6
20 Sep 97	News Article, “Public Notice, Castle RAB Meets Tuesday”	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1467 CD 6
20 Sep 97	News Article, “Public Notice, USAF Announces an Extension to the Public Comment Period for the SCOU Proposed Plan”	The Merced Sun Star	1643 CD 8
22 Sep 97	City of Atwater Letter to Base Concerning Proposed Plan, SCOU	DeVoe, Kenneth City of Atwater	1469 CD 6
22 Sep 97	CDTSC Letter to Base Concerning Review of Draft Final RA Project Activities Work Plan and QPP Addenda and Closure and Post-Closure Maintenance Plan, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1674 CD 8
23 Sep 97	RAB Meeting Minutes, 23 Sep 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1466 CD 6
23 Sep 97	Master Program Schedule, September Updates	Jacobs Engineering Group, Inc.	1609 CD 8
23 Sep 97	News Article, “Bill Seeks Better Base Conversions”	The Merced Sun Star	1652 CD 8

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23 Sep 97	Base Letter to AFCEE Concerning Response to Comments on Draft Comprehensive Basewide Part II, RI/FS	Matthews, Robert R AFBCA/OL-I	1715 CD 6
24 Sep 97	RPM Meeting Minutes, 24 Sep 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1464 CD 6
24 Sep 97	News Article, "Castle Cleanup 'Stinks'"	Jones, Gary L The Merced Sun Star	1472 CD 6
24 Sep 97	Draft Agenda for Hydrocarbon Cleanup Demonstration Program Expert Committee Site Visit	AFBCA/OL-I	1598 CD 8
24 Sep 97	Base Letter to AFCEE Concerning ROD Outline, SCOU	Matthews, Robert R AFBCA/OL-I	1703 CD 6
24 Sep 97	Base Letter to AFCEE Concerning Draft RA Objectives, SCOU	Matthews, Robert R AFBCA/OL-I	1704 CD 6
25 Sep 97	News Article, "Garbage Dump is Likely to Stay at Castle"	White, Bob The Modesto Bee	1653 CD 8
29 Sep 97	EPA Letter to Base Concerning Draft FSP, DA-8	Hanusiak, Lisa EPA Region IX	1502 CD 6
29 Sep 97	CDTSC Letter to Base Concerning RI/FS, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1712 CD 6
Oct 97	Final SCOU, FSP	Jacobs Engineering Group, Inc.	1053 CD 4
Oct 97	RA, Final Groundwater Predesign Characterization Report, Part I, Environmental Clean-Up Plan, Part II, LF-34	Jacobs Engineering Group, Inc.	1188 CD 6
Oct 97	Enviro Fact Sheet, Edition 14	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1458 CD 6
01 Oct 97	CDTSC Memorandum Concerning Review of Draft FSP, SCOU	Scruggs, Mary California Department of Toxic Substances Control	1625 CD 8
06 Oct 97	CRWQCB Letter to Base Concerning Final Draft Addendum Work Plan, Storm Drain	Russell, John California Regional Water Quality Control Board	1596 CD 8
15 Oct 97	Jacobs Response to EPA Comments Concerning Draft FSP, SCOU	Batra, Roger Jacobs Engineering Group, Inc.	1460 CD 6
15 Oct 97	Response to Agency Comments on the Draft FSP, SCOU	Batra, Roger Jacobs Engineering Group, Inc.	1539 CD 8
15 Oct 97	Recommendations for Disposition of ERA Sites	Sjaarda, Nick Jacobs Engineering Group, Inc.	1543 CD 8
17 Oct 97	Base Letter to Regulators Concerning Appendix to RA Project Activities Work Plan and QPP Addenda, Vol I, SCOU	Matthews, Robert R AFBCA/OL-I	1489 CD 6
20 Oct 97	EPA Letter to Base Concerning Ecorisk-Based RA, SCOU	Hanusiak, Lisa EPA Region IX	1582 CD 8
20 Oct 97	Jacobs Letter to AFCEE Concerning Submittal of Table 8-8 for Draft Final Closure and Post Closure Maintenance Plan for Landfills	Loftin, Dean Jacobs Engineering Group, Inc.	1796 CD 9

Date	*Title*	*Author*	*File/CD Number*
20 Oct 97	Base Letter to EPA, CDTSC, and CRWQCB Concerning Data Gap Sampling Results for Landfills 1, 3, 4, and 5	Matthews, Robert R AFBCA/DB Castle	1797 CD 9
25 Oct 97	News Article, "Public Notice, Castle RAB Meets Tuesday"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1468 CD 6
28 Oct 97	RAB Meeting Minutes, 28 Oct 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1445 CD 6
29 Oct 97	RPM Meeting Minutes, 29 Oct 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1461 CD 6
29 Oct 97	Base Letter to Distribution Concerning FFA Schedule	Matthews, Robert R AFBCA/OL-I	1611 CD 8
30 Oct 97	News Article, "Board Critical of Air Force, EPA Efforts"	Jones, Gary L The Merced Sun Star	1465 CD 6
30 Oct 97	EPA Letter to Base Concerning Response to Comments on Draft Final Basic Contract QPP	Hanusiak, Lisa EPA Region IX	1563 CD 8
Nov 97	Enviro Progress Newsletter, Edition 19	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1482 CD 6
04 Nov 97	USFWS Letter to Bureau of Prisons Concerning Formal Consultation on Penitentiary and Landfill Remediation Project	White, Wayne US Fish and Wildlife Service	1544 CD 8
05 Nov 97	Base Letter to Regulators Concerning Soil Gas Data, DA-8	Matthews, Robert R AFBCA/OL-I	1498 CD 6
06 Nov 97	Community Relations Meeting Notes, 06 Nov 97	Geissinger, Linda AFBCA/DM	1592 CD 8
10 Nov 97	EPA Letter to Base Concerning Final Groundwater Treatment System O&M Plan, OU-2	Hanusiak, Lisa EPA Region IX	1613 CD 8
12 Nov 97	Bureau of Prisons Letter to Base Concerning Environmental Mitigation, Parcel B	Dorworth, David J Federal Bureau of Prisons	1512 CD 6
12 Nov 97	EPA Letter to Base Concerning O&M Plan, Draft Final, Castle Vista Landfill	Hanusiak, Lisa EPA Region IX	1616 CD 8
12 Nov 97	EPA Letter to Base Concerning RA, Elements of Initial Five-Year Review, OU-1	Hanusiak, Lisa EPA Region IX	1620 CD 8
12 Nov 97	EPA Letter to Base Concerning Draft Final Phase II RA, O&M Plan	Hanusiak, Lisa EPA Region IX	1624 CD 8
13 Nov 97	News Article, "Air Force Continues Clean-up at Castle Vista"	Paulson, Michelle The Atwater New Times	1463 CD 6
13 Nov 97	Base Letter to CRWQCB Concerning Foundation Material, Landfill 4	Matthews, Robert R AFBCA/OL-I	1513 CD 6
13 Nov 97	Agency Review Minutes, On-Site Mitigation Proposal, 13 Nov 97	Louis Berger & Associates, Inc.	1606 CD 8
14 Nov 97	LLNL Letter to Base Concerning Draft Final Assessment, Adequacy of Available Site Characterization Data, of Risk-Based Corrective Action, POL Fuel Farm Area	Rice, David W Lawrence Livermore National Laboratory	1702 CD 6
18 Nov 97	RPM Meeting Minutes, 18 Nov 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1521 CD 6
19 Nov 97	News Article, "Castle Clean-up a Puzzle"	White, Bob The Modesto Bee	1462 CD 6
19 Nov 97	Data Gap Spreadsheet, Revised Draft Final RI/FS, SCOU	Batra, Roger Jacobs Engineering Group, Inc.	1515 CD 6

Date	*Title*	*Author*	*File/CD Number*
20 Nov 97	EPA Letter to Base Concerning Changes to ROD, Comprehensive Basewide Part I, Groundwater	Hanusiak, Lisa EPA Region IX	1605 CD 8
22 Nov 97	News Article, "Citizens of Atwater, Winton, Merced: The Castle RAB Meets Tuesday"	The Merced Sun Star	1644 CD 8
25 Nov 97	RAB Meeting Minutes, 25 Nov 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1522 CD 6
26 Nov 97	News Article, "Castle RAB Meets"	The Atwater Signal	1444 CD 6
Dec 97	Enviro Fact Sheet, Edition 15	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1483 CD 6
Dec 97	Draft Closure Report, FS-2	Jacobs Engineering Group, Inc.	1516 CD 6
Dec 97	Draft Closure Report, FS-1	Jacobs Engineering Group, Inc.	1517 CD 6
Dec 97	Final Bioventing Pilot Test Work Plan, PFFA	Parsons Engineering Science, Inc.	1518 CD 6
Dec 97	Final Basic Contract QPP	Jacobs Engineering Group, Inc.	1534 CD 6
Dec 97	News Article, "Revised Public Notice, Castle AFB Superfund Site Technical Assistance Grant"	The Merced Sun Star	1645 CD 8
01 Dec 97	EPA Letter to US Representative Concerning RAB Issues on Community Involvement	Marcus, Felicia EPA Region IX	1492 CD 6
01 Dec 97	EPA Letter to Base Concerning Draft Groundwater RA Work Plan Addendum, Castle Vista Landfill B	Hanusiak, Lisa EPA Region IX	1615 CD 8
02 Dec 97	Base Letter to Regulators Concerning Bioventing Pilot Test Work Plan Petroleum, Oils, and Lubricants, Fuel Farm Area	Matthews, Robert R AFBCA/OL-I	1514 CD 6
03 Dec 97	EPA Letter to Base Concerning Project Note No. 017, Elimination of Redundant Monitoring Wells	Hanusiak, Lisa EPA Region IX	1610 CD 8
05 Dec 97	EPA Letter to Base Concerning Field Oversight Sampling Report for Landfill B	Hanusiak, Lisa EPA Region IX	1798 CD 9
05 Dec 97	EPA Letter to Base Concerning Recommendation for Ecological Risk Management and Removal Action Completion, ETC-10, SCOU	Hanusiak, Lisa EPA Region IX	1800 CD 9
08 Dec 97	Base Letter to Regulators Concerning SVE Well Destruction, DA-4	Matthews, Robert R AFBCA/OL-I	1493 CD 6
08 Dec 97	Jacobs Letter to AFCEE Concerning Response to Comments on Draft RA Objectives, SCOU	Watkin, Geoff W Jacobs Engineering Group, Inc.	1726 CD 6
09 Dec 97	Final Site Characterization Letter Report	Jacobs Engineering Group, Inc.	1520 CD 6
09 Dec 97	RPM Meeting Minutes, 09 Dec 97	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1530 CD 6
10 Dec 97	Base Letter to EPA, CDTSC, and CRWQCB Concerning Final Basic Contract Quality Program Plan	Matthews, Robert R AFBCA/DD Castle	1801 CD 9
11 Dec 97	Base Letter to Regulators Concerning Draft Final Appendix to RA Project Activities Work Plan and QPP Addenda, Vol I, SCOU	Matthews, Robert R AFBCA/OL-I	1490 CD 6
22 Dec 97	Final Field Sampling Oversight Report, Landfill B	Bechtel Environmental, Inc.	1799 CD 9
Jan 98	Enviro Progress Newsletter, Edition 20	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1496 CD 6
Jan 98	Final BRAC Cleanup Plan	AFBCA/DD Castle	1536 CD 6

Date	*Title*	*Author*	*File/CD Number*
Jan 98	LTM Sampling Program Annual Report, 1997	Jacobs Engineering Group, Inc.	1537 CD 6
05 Jan 98	CDTSC Letter to Base Concerning Draft ROD, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1500 CD 6
05 Jan 98	USEPA Letter to EPA Region IX Concerning Role of Baseline Risk Assessment in Superfund Remedy Selection Decisions	Clay, Donald R USEPA	1802 CD 9
09 Jan 98	CDTSC Letter to Base Concerning Requirements for Risk Standards, SCOU	Ward, Daniel T California Department of Toxic Substances Control	1780 CD 9
09 Jan 98	Base Letter to CRWQCB Concerning Closure Report, DA-4	Matthews, Robert R AFBCA/DD Castle	1782 CD 9
09 Jan 98	RA, Mid-Term Assessment, FT-001	Jacobs Engineering Group, Inc.	1932 CD 10
12 Jan 98	EPA Letter to Base Concerning Comments on LTM Sampling QAPP	Hanusiak, Lisa EPA Region IX	1503 CD 6
21 Jan 98	EPA Letter to Base Concerning Action Memorandum, RA for PCBs	Hanusiak, Lisa EPA Region IX	1491 CD 6
23 Jan 98	CDTSC Letter to Base Concerning Review of Draft Groundwater RA Work Plan Addendum, LF-34	Ghazi, Rizgar A California Department of Toxic Substances Control	1509 CD 6
23 Jan 98	EPA Letter to Base Concerning Draft ROD, SCOU	Hanusiak, Lisa EPA Region IX	1727 CD 6
24 Jan 98	News Article, “Public Notice, RAB Meeting”	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1531 CD 6
26 Jan 98	EPA Letter to Base Concerning Comments on Final Basic Contract QPP	Hanusiak, Lisa EPA Region IX	1510 CD 6
27 Jan 98	RAB Meeting Minutes, 27 Jan 98	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1533 CD 6
28 Jan 98	News Article, “Public Notice, RA at PCB-9”	Gutierrez-Palmenberg, Inc.	1519 CD 6
28 Jan 98	RPM Meeting Minutes, 28 Jan 98	Gutierrez-Palmenberg, Inc.	1532 CD 6
Feb 98	Draft Closure Report, Final Remedy for Non-VOC Contamination, Vol I, FTA-1	Jacobs Engineering Group, Inc.	1535 CD 6
Feb 98	Enviro Fact Sheet, Edition 16	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1540 CD 8
Feb 98	Draft Final Closure Report, DA-4	Jacobs Engineering Group, Inc.	1758 CD 9
02 Feb 98	EPA Letter to Base Concerning Draft Closure Report, Fuel Spill 2	Hanusiak, Lisa EPA Region IX	1494 CD 6
02 Feb 98	EPA Letter to Base Concerning Draft Closure Report, Fuel Spill 1	Hanusiak, Lisa EPA Region IX	1495 CD 6
04 Feb 98	Base Letter to CRWQCB Concerning Replacement Pages for Draft Final Closure Report, DA-4	Matthews, Robert R AFBCA/DD Castle	1511 CD 6
05 Feb 98	CDTSC Letter to Base Concerning Review of Draft ROD, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1728 CD 6
06 Feb 98	Action Memorandum, Removal Action for PCBs, Site 9	Jacobs Engineering Group, Inc.	1803 CD 9
10 Feb 98	Base Letter to Regulators Concerning Basic Contract QPP	Matthews, Robert R AFBCA/DD Castle	1488 CD 6

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12 Feb 98	Base Letter to Distribution Concerning Response to Comments on Draft ROD, SCOU	Mathews, Robert R AFBCA/DD Castle	1541 CD 8
17 Feb 98	EPA Letter to Base Concerning Phase III, Part I, Planned Groundwater Model Update	Hanusiak, Lisa EPA Region IX	1542 CD 8
17 Feb 98	Base Letter to EPA Concerning Landfill Corrective Action Plan	Mathews, Robert R AFBCA/DD Castle	1804 CD 9
20 Feb 98	CRWQCB Letter to Base Concerning Review Comments on Closure Report, FS-1	Russell, John California Regional Water Quality Control Board	1529 CD 6
21 Feb 98	News Article, "RAB Meeting Public Notice"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1497 CD 6
24 Feb 98	RAB Meeting Minutes, 24 Feb 98	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1564 CD 8
25 Feb 98	RPM Meeting Minutes, 25 Feb 98	Gutierrez-Palmenberg, Inc.	1538 CD 8
Mar 98	Enviro Progress Newsletter, Edition 21	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1556 CD 8
09 Mar 98	Regulators Letter to Base Concerning Response to Request for a Second Draft ROD, SCOU	Hanusiak, Lisa Ghazi, Rizgar A Russell, John	1709 CD 6
10 Mar 98	CDTSC Letter to Base Concerning Comments on Draft Final Closure Report, DA-4	Ghazi, Rizgar A California Department of Toxic Substances Control	1717 CD 6
10 Mar 98	CRWQCB Letter to CDTSC Concerning Review Comments on Draft Final Closure Report, DA-4	Russell, John California Regional Water Quality Control Board	1805 CD 9
21 Mar 98	News Article, "Public Notice, Castle RAB Meets"	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1567 CD 8
24 Mar 98	News Article, "Castle RAB Meets"	The Merced Sun Star	1566 CD 8
24 Mar 98	RAB Meeting Minutes, 24 Mar 98	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1591 CD 8
25 Mar 98	RPM Meeting Minutes, 25 Mar 98	Gutierrez-Palmenberg, Inc.	1588 CD 8
27 Mar 98	News Article, "Storms Delay Castle Cleanup"	Jones, Gary L The Merced Sun Star	1565 CD 8
30 Mar 98	EPA Letter to Base Concerning Comments on Draft Final LTM Sampling QAPP Addendum	Hanusiak, Lisa EPA Region IX	1561 CD 8
Apr 98	Final LTM Sampling Program, QAPP Addendum	Jacobs Engineering Group, Inc.	1119 CD 5
Apr 98	Enviro Fact Sheet, Edition 17	Stowe, Russell A Gutierrez-Palmenberg, Inc	1568 CD 8
Apr 98	CDTSC Comments on Draft Data Gap Investigation Report, SCOU	California Department of Toxic Substances Control	1760 CD 9
01 Apr 98	News Article, "RAB Calls for Wastewater Structure Removal"	The Atwater Signal	1590 CD 8
06 Apr 98	Base Letter to CDTSC and CRWQCB Concerning Closure Report, SD-12	Matthews, Robert R AFBCA/DD Castle	1570 CD 8
10 Apr 98	EPA Letter to Base Concerning Comments on Draft Data Gap Investigation Report, SCOU	Hanusiak, Lisa EPA Region IX	1571 CD 8
10 Apr 98	EPA Letter to Base Concerning Comments Draft FS Closure Report, Vol I, Fire Training Area 1	Hanusiak, Lisa EPA Region IX	1721 CD 6
10 Apr 98	CDTSC Letter to Base Concerning Review of Focused FS/Closure Report, FT-001	Ghazi, Rizgar A California Department of Toxic Substances Control	1806 CD 9

Date	Title	Author	File/CD Number
13 Apr 98	CRWQCB Letter to CDTSC Concerning Review Comments on Draft Data Gap Investigation Report, SCOU	Russell, John California Regional Water Quality Control Board	1572 CD 8
14 Apr 98	Base Letter to Regulators Concerning Reschedule of Draft Final ROD, SCOU	Mathews, Robert R AFBCA/DD Castle	1686 CD 8
22 Apr 98	EPA Letter to Base Concerning Landfill Corrective Action Plan, Field Oversight Sampling Report, Castle Vista Landfill B	Hanusiak, Lisa EPA Region IX	1711 CD 6
23 Apr 98	EPA Letter to Base Concerning Draft CRP	Hanusiak, Lisa EPA Region IX	1724 CD 6
25 Apr 98	News Article, "Citizens of Merced County: The Castle RAB Meets Tuesday"	The Merced Sun Star	1646 CD 8
27 Apr 98	News Article, "Castle Cleanup Group Meets"	The Merced Sun Star	1589 CD 8
28 Apr 98	RAB Meeting Minutes, 28 Apr 98	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1587 CD 8
May 98	Enviro Progress Newsletter, Edition 22	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1583 CD 8
May 98	EPA Response to Comments Concerning Draft Data Gap Investigation Report, SCOU	Jacobs Engineering Group, Inc.	1687 CD 8
16 May 98	News Article, "Public Meeting the USAF Invites You to Review and Comment on the Remedies for the Cleanup of Contaminated Soil at the Former Castle AFB"	The Merced Sun Star	1647 CD 8
18 May 98	EPA Letter to Base Concerning LTM Sampling, QAPP Addendum	Hanusiak, Lisa EPA Region IX	1593 CD 8
18 May 98	EPA Letter to Base Concerning Documentation of RA Completion, OT-30, SD-12	Hanusiak, Lisa EPA Region IX	1597 CD 8
19 May 98	Jacobs Letter to EPA Concerning Comments on Draft ROD, SCOU	Matin, Amir Jacobs Engineering Group, Inc.	1581 CD 8
20 May 98	ROD Public Meeting Minutes, 20 May 98, SCOU	Gutierrez-Palmenberg, Inc.	1669 CD 8
21 May 98	RPM Meeting Minutes, 21 May 98	Gutierrez-Palmenberg, Inc.	1668 CD 8
Jun 98	ROD, SCOU, Version III	Waste Policy Institute	1113 CD 4
Jun 98	Enviro Fact Sheet, Edition 18	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1599 CD 8
Jun 98	EPA Review Comments Concerning ROD, Version III, SCOU	EPA Region IX	1602 CD 8
97	Supplement to the Basewide EBS, Parcel A	AFBCA/OL-I	1603 CD 8
Jun 98	Final Data Gap Investigation Report, DA-8, SCOU	Jacobs Engineering Group, Inc.	1700 CD 8
01 Jun 98	EPA Letter to Base Concerning Comments on Draft Final Groundwater RA Work Plan Addendum, LF-34	Hanusiak, Lisa EPA Region IX	1604 CD 8
12 Jun 98	EPA Letter to Base Concerning Comments on LTM Sampling, Annual and Semi-Annual Reports	Hanusiak, Lisa EPA Region IX	1607 CD 8
13 Jun 98	News Article, "Castle Environmental Cleanup Tour, The AFBCA Invites the Public to Take a Tour of the Environmental Sites Being Restored"	The Merced Sun Star	1648 CD 8
15 Jun 98	News Article, "Agency Holds Cleanup Tour"	The Merced Sun Star	1584 CD 8
16 Jun 98	RAB Meeting Minutes, 16 Jun 98	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1670 CD 8

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22 Jun 98	CDTSC and CRWQCB Letter to Base Concerning Closure Status, SD-12	Ward, Daniel T Vorster, Antonia K J California Department of Toxic Substances	1635 CD 8
30 Jun 98	RPM Meeting Minutes, 30 Jun 98	Gutierrez-Palmenberg, Inc.	1667 CD 8
Jul 98	LTM Sampling Program, Semiannual Report, 1998	Jacobs Engineering Group, Inc.	1671 CD 8
Jul 98	SVE Design Report, Castle Vista Landfill B	Jacobs Engineering Group, Inc.	1693 CD 8
Jul 98	Enviro Progress Newsletter, Edition 23	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1694 CD 8
Jul 98	RA, Data Gap Investigation Draft Final Report, Vol II of II, SCOU	Jacobs Engineering Group, Inc.	1924 CD 9
Jul 98	RA, Data Gap Investigation Draft Final Report, Vol II of II, SCOU	Jacobs Engineering Group, Inc.	1924 CD 9
08 Jul 98	News Article, “Base Hit: Castle Prospers in Post-Air Force Days”	Barnes, Brooks The Wall Street Journal	1657 CD 8
09 Jul 98	TWG Meeting Minutes, 07 Jul 98	Hoge, John Jacobs Engineering Group Inc	1933 CD 10
10 Jul 98	EPA Letter to Base Concerning Remedial Decisions, SCOU, PCB Sites	Hanusiak, Lisa EPA Region IX	1705 CD 6
15 Jul 98	EPA Comments to Base Concerning ROD, Version III, SCOU	Hanusiak, Lisa EPA Region IX	1701 CD 8
21 Jul 98	EPA Comments to Base Concerning ROD, Version III, SCOU	Hanusiak, Lisa EPA Region IX	1706 CD 6
23 Jul 98	EPA Comments to Base Concerning ROD, Version III, SCOU	Hanusiak, Lisa EPA Region IX	1707 CD 6
24 Jul 98	EPA Comments to Base Concerning ROD, Version III, Second Set, SCOU	EPA Region IX	1746 CD 7
25 Jul 98	News Article, “Attention: The Castle RAB Meets Tuesday”	The Merced Sun Star	1649 CD 8
27 Jul 98	EPA Comments to Base Concerning ROD, Version III, SCOU	Hanusiak, Lisa EPA Region IX	1708 CD 6
28 Jul 98	RPM/TWG Meeting Minutes, 28 Jul 98	Gutierrez-Palmenberg, Inc.	1664 CD 8
28 Jul 98	RAB Meeting Minutes, 28 Jul 98	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1666 CD 8
29 Jul 98	RPM Meeting Minutes, 29 Jul 98	Gutierrez-Palmenberg, Inc.	1665 CD 8
Aug 98	Draft Final SCOU Data Gap Investigation Report, Vol I of II	Jacobs Engineering Group, Inc.	1047 CD 5
Aug 98	Draft Final SCOU Data Gap Investigation Report, Vol II of II	Jacobs Engineering Group, Inc.	1048 CD 8
Aug 98	Enviro Fact Sheet, Edition 19	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1747 CD 7
06 Aug 98	EPA Letter to Base Concerning ROD Version III, Jun 98, SCOU	Hanusiak, Lisa EPA Region IX	1748 CD 7
06 Aug 98	Base Letter to Regulators Concerning ROD, Version III, SCOU	Matthews, Robert R AFBCA/DD Castle	1749 CD 7
07 Aug 98	EPA Letter to Base Concerning RA, Draft Five Year Review, OU-1, OU-2	Hanusiak, Lisa EPA Region IX	1809 CD 9
11 Aug 98	News Article, “Castle Cleanup Concerns Taken to Colorado”	Jones, Gary L the Merced Sun Star	1658 CD 8

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17 Aug 98	News Article, "Clean Water Still Major Concern"	The Merced Sun Star	1661 CD 8
17 Aug 98	CRWQCB Letter to CDTSC Concerning Review of Version 3 ROD, SCOU	Russell, John California Regional Water Quality Control Board	1808 CD 9
19 Aug 98	EPA Letter to Base Concerning Comments on PCB Draft Closure Report, Site 9	Hanusiak, Lisa EPA Region IX	1807 CD 9
20 Aug 98	Kleinfelder Letter to MDPH Concerning Preliminary Review Comments on ROD, SCOU	Cook, Dave Kleinfelder, Inc.	1811 CD 9
21 Aug 98	EPA Letter to Base Concerning Obligation for Off-Site Response Actions, Castle Vista Landfill A	Hanusiak, Lisa EPA Region IX	1683 CD 8
22 Aug 98	News Article, "The Castle RAB Meets Tuesday"	The Merced Sun Star	1650 CD 8
25 Aug 98	RAB Meeting Minutes, 25 Aug 98	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1663 CD 8
26 Aug 98	News Article, "Air Force Delays Cleanup Document"	Jones, Gary L The Merced Sun Star	1659 CD 8
26 Aug 98	RPM Meeting Minutes, 25-26 Aug 98	Gutierrez-Palmenberg, Inc	1662 CD 8
28 Aug 98	CDTSC Letter to Base Concerning Review of LTM Sampling Program Annual Report, 97	Ghazi, Rizgar A California Department of Toxic Substances Control	1750 CD 7
31 Aug 98	News Article, "Politicos Conspicuously Absent from Meeting"	Stepp, Lloyd The Merced Sun Star	1660 CD 8
31 Aug 98	CDTSC Letter to Base Concerning Review of PCB-9 Draft Closure Report, SS-048	Ghazi, Rizgar A California Department of Toxic Substances Control	1810 CD 9
Sep 98	Enviro Progress Newsletter, Edition 24	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1751 CD 7
Sep 98	Base Comments to EPA Concerning Data Gap Spreadsheet, Draft Final RI/FS, SCOU	AFBCA/DD Castle	1753 CD 7
03 Sep 98	EPA Letter to Base Concerning Draft Action Memorandum, LF-04, LF-06	Hanusiak, Lisa EPA Region IX	1752 CD 7
03 Sep 98	EPA Letter to Base Concerning Review of Draft Action Memorandum for Landfill 1 and Landfill 3	Hanusiak, Lisa EPA Region IX	1814 CD 9
04 Sep 98	Base Letter to EPA, CDTSC, and CRWQCB Concerning Landfill Public Notice	Matthews, Robert R AFBCA/DD Castle	1815 CD 9
09 Sep 98	CRWQCB Letter to CDTSC Concerning Final RA Work Plan, LF-34	Russell, John California Regional Water Quality Control Board	1754 CD 7
09 Sep 98	CRWQCB Letter to CDTSC Concerning Review of Landfill Closure Documents	Russell, John California Regional Water Quality Control Board	1819 CD 9
15 Sep 98	Base Letter to EPA Concerning FFA Schedule Modification Request	Jackson, Dale O AFBCA/DD Castle	1812 CD 9
17 Sep 98	CDTSC Letter to Base Concerning Comments on Version 3 ROD, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1813 CD 9
18 Sep 98	CRWQCB Letter to CDTSC Concerning Review of Draft Closure and Post Closure Maintenance Plan, LF-004, LF-006, LF-008	Russell, John California Regional Water Quality Control Board	1820 CD 9
18 Sep 98	EPA Letter to Base Concerning Review of Technical Documents Associated With Removal Actions, LF-004, LF-006, LF-008	Hanusiak, Lisa EPA Region IX	1821 CD 9
23 Sep 98	RPM Meeting Minutes, 22-23 Sep 98	Gutierrez-Palmenberg, Inc.	1641 CD 8

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24 Sep 98	CDTSC Letter to Base Concerning Review of Final Groundwater RA Work Plan Addendum, LF-34	Ghazi, Rizgar A California Department of Toxic Substances Control	1755 CD 7
29 Sep 98	EPA Letter to Base Concerning Request for FFA Schedule Modification and Extension, SCOU	Smith, Barbara M EPA Region IX	1816 CD 9
29 Sep 98	CDTSC Letter to Base Concerning Review of Draft Action Memorandum, LF-004, LF-006	Ghazi, Rizgar A California Department of Toxic Substances Control	1822 CD 9
Oct 98	Enviro Fact Sheet, Edition 20	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1756 CD 7
Oct 98	RA, Risk Based Draft Plan, Fuel Farm Area, ST-33	Parsons Engineering Science, Inc.	1759 CD 9
03 Oct 98	News Article, "Public Notice, The USAF Announces the Intent to Perform Excavations and On-Site Disposal at Castle AFB"	The Merced Sun Star	1651 CD 8
05 Oct 98	CDTSC Letter to Base Concerning Request for FFA Schedule Modification and Extension, SCOU	Ward, Daniel T Vorster, Antonia K J California Department of Toxic Substances	1818 CD 9
05 Oct 98	Base Letter to EPA, CDTSC, and CRWQCB Concerning Public Notice for Removal Action at Landfills, 26 Sep 98, LF-004, LF-006, LF-008	Matthews, Robert R AFBCA/DD Castle	1823 CD 9
05 Oct 98	CDTSC Letter to Base Concerning Review of Landfill Closure Documents, LF-004, LF-006	Ghazi, Rizgar A California Department of Toxic Substances Control	1824 CD 9
06 Oct 98	Base Letter to Regulators Concerning Extension for Submission of Draft Final CRP	Matthews, Robert R AFBCA/DD Castle	1642 CD 8
16 Oct 98	CRWQCB Letter to EPA Concerning Bechtel Report, Evaluation of Groundwater Remedy, LF-34	Russell, John California Regional Water Quality Control Board	1757 CD 7
19 Oct 98	ATSDR Letter to Base Concerning Public Comments on Public Health Assessment	Howie, Max M, Jr Agency for Toxic Substances and Disease Registry	1825 CD 9
22 Oct 98	CRWQCB Letter to CDTSC Concerning Draft Final Data Gap Investigation Report, SCOU	Russell, John California Regional Water Quality Control Board	1087 CD 4
26 Oct 98	Base Letter to CRWQCB Concerning Foundation Material, Landfill 5	Matthews, Robert R AFBCA/DD Castle	1684 CD 8
26 Oct 98	CDTSC Letter to Base Concerning Review of the Draft Final Data Gap Investigation Report, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1688 CD 8
27 Oct 98	EPA Letter to Base Concerning Draft Final Gap Investigation Report, SCOU	Hanusiak, Lisa EPA Region IX	1689 CD 8
27 Oct 98	RAB Meeting Minutes, 27 Oct 98	Gutierrez-Palmenberg, Inc.	1698 CD 8
27 Oct 98	CDTSC Letter to Base Concerning Review of Draft Final PCB Closure Report and NFA Proposal, SS-048	Landis, Anthony J California Department of Toxic Substances Control	1817 CD 9
29 Oct 98	EPA Letter to Base Concerning Comments on Draft Final Action Memorandum, LF-004, LF-006, LF-008	Hanusiak, Lisa EPA Region IX	1826 CD 9
Nov 98	Enviro Progress Newsletter, Edition 25	Stowe, Russell A Gutierrez-Palmenberg, Inc.	170 CD 2

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Nov 98	Final Closure Report, PCB-9	Jacobs Engineering Group, Inc.	1691 CD 8
Nov 98	Draft Closure Report, ETC-10	Jacobs Engineering Group, Inc.	1692 CD 8
Nov 98	RA, Final Five Year Review	Jacobs Engineering Group, Inc.	1827 CD 9
02 Nov 98	EPA Letter to Base Concerning Review of PCB-9 Draft Final Closure Report, SS-048	Hanusiak, Lisa EPA Region IX	1828 CD 9
04 Nov 98	CRWQCB Letter to CDTSC Concerning Draft Final Action Memorandum, LF-04, LF-06, LF-08	Russell, John California Regional Water Quality Control Board	1064 CD 4
04 Nov 98	News Article, "Merced Wins Grants"	The Modesto Bee	1654 CD 8
05 Nov 98	CDTSC Letter to Base Concerning Review of Draft Final Action Memorandum, LF-04, LF-06	Ghazi, Rizgar A California Department of Toxic Substances Control	131 CD 2
12 Nov 98	Final Action Memorandum, Landfills, 1, 3 and 5	AFBCA/DD Castle	1685 CD 8
16 Nov 98	RPM Meeting Minutes, 27-28 Oct 98	Gutierrez-Palmenberg, Inc.	1697 CD 8
17 Nov 98	EPA Letter to Base Concerning Groundwater Remediation and Municipal Well, LF-34	Hanusiak, Lisa EPA Region IX	769 CD 4
18 Nov 98	RPM Meeting Minutes, 18 Nov 98	Gutierrez-Palmenberg, Inc.	1696 CD 8
20 Nov 98	Surface Cap Maintenance, FT-001	Hoge, John Jacobs Engineering Group Inc	1934 CD 10
23 Nov 98	EPA Letter to Base Concerning Comments on Revised Technical Documents for Removal Action, LF-004, LF-006, LF-008	Hanusiak, Lisa EPA Region IX	1829 CD 9
24 Nov 98	EPA Letter to ATSDR Concerning Review of Public Health Assessment	Hanusiak, Lisa EPA Region IX	1830 CD 9
24 Nov 98	RA, Dioxin Sampling, FT-001	Sajadi, Mike Jacobs Engineering Group Inc	1935 CD 10
29 Nov 98	Public Health Assessment Report	Agency for Toxic Substances and Disease Registry	1656 CD 8
30 Nov 98	CRWQCB Letter to CDTSC Concerning Draft SCOU ROD, Part I	Russell, John California Regional Water Quality Control Board	935 CD 3
30 Nov 98	CRWQCB Letter to Base Concerning Transmittal of Order Rescinding Requirements	Vorster, Antonia K J California Regional Water Quality Control Board	1831 CD 9
Dec 98	Enviro Fact Sheet, Edition 21	Stowe, Russell A Gutierrez-Palmenberg, Inc.	986 CD 4
Dec 98	Replacement Pages for QPP for Removal Action, Part 1 Final HSP, Part 2 Draft SAP, Part 3 Final CQP	Jacobs Engineering Group, Inc.	1832 CD 9
03 Dec 98	EPA Letter to Base Concerning Draft SCOU ROD, Part I	Hanusiak, Lisa EPA Region IX	465 CD 3
08 Dec 98	RPM Meeting Minutes, 08 Dec 98	Gutierrez-Palmenberg, Inc.	1695 CD 8
21 Dec 98	CRWQCB Letter to Base Concerning Draft Technical and Economic Evaluation Report	Russell, John California Regional Water Quality Control Board	1833 CD 9
23 Dec 98	EPA Letter to Base Concerning Draft Technical and Economic Evaluation Report	Hanusiak, Lisa EPA Region IX	1834 CD 9

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Jan 99	Enviro Progress Newsletter, Edition 26	Stowe, Russell A Gutierrez-Palmenberg, Inc.	884 CD 3
Jan 99	LTM Sampling Program, Annual Report 98	Jacobs Engineering Group, Inc.	1699 CD 7
04 Jan 99	EPA Letter to AFBCA/DR Concerning Comments on RA, Draft Final Five Year Review	Opalski, Daniel D EPA Region IX	1835 CD 9
05 Jan 99	Base Letter to Regulators Concerning Request for Extension on ROD, Part I, SCOU	Matthews, Robert R AFBCA/DD Castle	964 CD 4
06 Jan 99	EPA Letter to Base Concerning Review of Draft Final CRP	Hanusiak, Lisa EPA Region IX	1836 CD 9
23 Jan 99	News Article, "RAB Meeting, 26 Jan 99"	The Merced Sun Star	1870 CD 9
26 Jan 99	RAB Meeting Minutes, 26 Jan 99	Gutierrez-Palmenberg, Inc.	1000 CD 4
26 Jan 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning SVE Optimization Efforts for Castle Vista Landfill B, LF-034	Matthews, Robert R AFBCA/DD Castle	1839 CD 9
Feb 99	Enviro Fact Sheet, Edition 22	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1176 CD 6
05 Feb 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Excavating Trenches, LF-008	Matthews, Robert R AFBCA/DD Castle	1838 CD 9
11 Feb 99	EPA Letter to Base Concerning Review of Draft QPP, Part 2	Hanusiak, Lisa EPA Region IX	1837 CD 9
19 Feb 99	Tier I/ Tier II Meeting Minutes, 27-28 Jan 99	Gutierrez-Palmenberg, Inc.	1207 CD 6
23 Feb 99	CRWQCB Letter to CDTSC Concerning Excavated Soils From OWS, SS-64, LF-07, LF-08	Russell, John California Regional Water Quality Control Board	1385 CD 6
23 Feb 99	EPA Letter to Base Concerning Draft ETC-10 Closure Report, SS-189	Hanusiak, Lisa EPA Region IX	1840 CD 9
Mar 99	Enviro Progress Newsletter, Edition 27	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1547 CD 8
Mar 99	Castle Vista Landfill B SVE Start-up Report, LF-034	Jacobs Engineering Group, Inc.	1841 CD 9
04 Mar 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Excavation of Landfill 5 Trenches, LF-008	Matthews, Robert R AFBCA/DD Castle	1842 CD 9
08 Mar 99	Draft Final ROD, Part I, SCOU	Waste Policy Institute	1118 CD 5
08 Mar 99	CDTSC Letter to Base Concerning Review of Draft ETC-10 Closure Report, SS-189	Ghazi, Rizgar A California Department of Toxic Substances Control	1843 CD 9
20 Mar 99	News Article, "RAB Meeting, 23 Mar 99"	The Merced Sun Star	1871 CD 9
22 Mar 99	CRWQCB Letter to Base Concerning Review Comments on Fuel Spill-1 Closure Report, SS-017	Russell, John California Regional Water Quality Control Board	1844 CD 9
22 Mar 99	CRWQCB Letter to CDTSC Concerning Comments on VOC Cleanup Project Report	Russell, John California Regional Water Quality Control Board	1847 CD 9
23 Mar 99	RAB Meeting Minutes, 23 Mar 99	Gutierrez-Palmenberg, Inc.	1845 CD 9
23 Mar 99	CDTSC Letter to Base Concerning Review of Soil Tank Removal and Site Restoration Excavation for Bioremediation of Soils	Ghazi, Rizgar A California Department of Toxic Substances Control	1846 CD 9
29 Mar 99	Final Public Health Assessment Report	Agency for Toxic Substances and Disease Registry	842 CD 3
Apr 99	Enviro Fact Sheet, Edition 23	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1848 CD 9

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Apr 99	Responses to Agency Comments on Draft Final Data Gap Investigation Report, SCOU	Jacobs Engineering Group, Inc.	1852 CD 9
Apr 99	Final QPP for Removal Action, Part 2	Jacobs Engineering Group, Inc.	1865 CD 9
06 Apr 99	CDTSC Letter to Base Concerning Review Comments on Excavated Soils, SS-64	Ghazi, Rizgar A California Department of Toxic Substances Control	975 CD 5
08 Apr 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Replacement Pages for Draft QPP	Matthews, Robert R AFBCA/DD Castle	1849 CD 9
12 Apr 99	EPA Letter to Base Concerning Castle Vista Landfill A and Landfill 2 Draft Closure Report	Hanusiak, Lisa EPA Region IX	1853 CD 9
12 Apr 99	CDTSC Letter to Base Concerning Review of Closure Report for Removal Action at Bldg 785	Landis, Anthony J California Department of Toxic Substances Control	1854 CD 9
20 Apr 99	EPA Letter to Base Concerning Review of Changes to CRP	Hanusiak, Lisa EPA Region IX	1855 CD 9
21 Apr 99	CDTSC Letter to Base Concerning Comments on Fuel Spill 1 and VOC Cleanup Project	Ghazi, Rizgar A California Department of Toxic Substances Control	1850 CD 9
21 Apr 99	RPM Meeting Minutes, 24 Mar 99	Gutierrez-Palmenberg, Inc.	1851 CD 9
May 99	Enviro Progress Newsletter, Edition 28	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1856 CD 9
May 99	Final Closure Report, Castle Vista Landfill A and Landfill 2, LF-005, LF-034	Jacobs Engineering Group, Inc.	1866 CD 9
04 May 99	EPA Letter to Base Concerning Comments on Draft Final ROD, Part 1, SCOU	Hanusiak, Lisa EPA Region IX	1857 CD 9
06 May 99	CRWQCB Letter to CDTSC Concerning Review of Draft Final ROD, Part 1, SCOU	Russell, John California Regional Water Quality Control Board	1859 CD 9
10 May 99	CDTSC Letter to Base Concerning Review of Closure Report for Castle Vista Landfill A and Landfill 2	Landis, Anthony J California Department of Toxic Substances Control	1864 CD 9
11 May 99	Base Letter to HQ AFBCA/DD Concerning Information on Environmental Clean-up Actions for Landfill A, LF-034	Floyd, Alice M AFBCA/DD Castle	1867 CD 9
20 May 99	RPM Meeting Minutes, 27 Apr 99	Gutierrez-Palmenberg, Inc.	1858 CD 9
22 May 99	News Article, “RAB Meeting, 25 May 99”	The Merced Sun Star	1872 CD 9
24 May 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Replacement Pages for ETC-10 Removal Action Completion Report, SS-189	Matthews, Robert R AFBCA/DD Castle	1860 CD 9
25 May 99	RAB Meeting Minutes, 25 May 99	Gutierrez-Palmenberg, Inc.	1861 CD 9
Jun 99	Enviro Fact Sheet, Edition 24	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1868 CD 9
01 Jun 99	CDTSC Letter to Base concerning Review of ROD, Part 1, SCOU	Ghazi, Rizgar A California Department of Toxic Substances Control	1869 CD 9
04 Jun 99	Jacobs Letter to AFCEE Concerning Two Replacement Pages for Draft Final ETC-10 Closure Report, SS-189	Matin, Amir Jacobs Engineering Group, Inc.	1862 CD 9
10 Jun 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Response to Comments on Risk-Based RA Plan for POL Fuel Farm Area	Matthews, Robert R AFBCA/DD Castle	1907 CD 9

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23 Jun 99	EPA Letter to Base Concerning Comments on Draft Final ETC-10 Removal Action Completion Report, SS-189	Hanusiak, Lisa EPA Region IX	1873 CD 9
25 Jun 99	EPA Letter to Base Concerning Comments of Castle Vista Landfill A and Landfill 2 Draft Closure Report	Hanusiak, Lisa EPA Region IX	1863 CD 9
28 Jun 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Draft Action Memorandum for Firing Range, SS-104	Matthews, Robert R AFBCA/DD Castle	1874 CD 9
Jul 99	Enviro Progress Newsletter, Edition 29	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1875 CD 9
Jul 99	Long-Term Groundwater Sampling Program, 99 Semi-Annual Report	Jacobs Engineering Group, Inc.	1876 CD 9
Jul 99	Removal Action Completion Final Report, ETC-10	Jacobs Engineering Group, Inc.	1883 CD 9
Jul 99	RA, Data Gap Investigation Final Report, Vol I of II, SCOU	Jacobs Engineering Group, Inc.	1923 CD 9
Jul 99	RA, Data Gap Investigation Final Report, Vol I of II, SCOU	Jacobs Engineering Group, Inc.	1923 CD 9
19 Jul 99	EPA Letter to Base Concerning Acceptance of Final Closure Report for Castle Vista Landfill A and Landfill 2, LF-005, LF-034	Hanusiak, Lisa EPA Region IX	1879 CD 9
22 Jul 99	EPA Letter to Base Concerning Response to QA Program Concern on Draft Final ETC-10 Removal Action Completion Report, SS-189	Hanusiak, Lisa EPA Region IX	1877 CD 9
23 Jul 99	RPM Meeting Minutes, 29 Jun 99	Gutierrez-Palmenberg, Inc.	1878 CD 9
24 Jul 99	News Article, “Public Notice, Air Force Announces Intent to Perform an Excavation and On-Site Disposal”	The Merced Sun Star	1880 CD 9
24 Jul 99	News Article, “AFBCA Invites Public to Tour Active Environmental Cleanup Sites”	The Merced Sun Star	1881 CD 9
27 Jul 99	RAB Meeting Minutes, 27 Jul 99	Gutierrez-Palmenberg, Inc.	1882 CD 9
Aug 99	Enviro Fact Sheet, Edition 25	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1884 CD 9
Aug 99	Final Closure Report, Fuel Spill 2, SS-018	Jacobs Engineering Group, Inc.	1889 CD 9
02 Aug 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Replacement Pages for Removal Action Completion Report for ETC-10, SS-189	Matthews, Robert R AFBCA/DD Castle	1893 CD 9
04 Aug 99	CDTSC Letter to Base Concerning Review of Draft Action Memorandum and Project Activities Work Plan, SS-104	Ghazi, Rizgar A California Department of Toxic Substances Control	1899 CD 9
20 Aug 99	RPM Meeting Minutes, 27-28 Jul 99	Gutierrez-Palmenberg, Inc.	1885 CD 9
23 Aug 99	CRWQCB Letter to Base Concerning Review of Final Closure Report for Fuel Spill 2, SS-018	Russell, John California Regional Water Quality Control Board	1886 CD 9
23 Aug 99	Base Letter to EPA, CDTSC, and CRWQCB Concerning Draft Final Action Memorandum for Firing Range, SS-104	Matthews, Robert R AFBCA/DD Castle	1887 CD 9
24 Aug 99	CDTSC Letter to Base Concerning Review of ETC-10 Removal Action Completion Draft Final Report, SS-189	Landis, Anthony J California Department of Toxic Substances Control	1888 CD 9
27 Aug 99	Base Letter to CRWQCB Concerning Foundation Material from Other Remediation Sites, LF-008	Matthews, Robert R AFBCA/DD Castle	1890 CD 9

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Sep 99	Enviro Progress Newsletter, Edition 30	Stowe, Russell A Gutierrez-Palmenberg, Inc.	1891 CD 9
Sep 99	RA, Project Activities Work Plan, QPP Addenda, Change 2 to Final, SCOU	Jacobs Engineering Group, Inc.	1896 CD 9
07 Sep 99	EPA Letter to Base Concerning Review of Draft Final Action Memorandum, SS-104	Hanusiak, Lisa EPA Region IX	1900 CD 9
13 Sep 99	EPA Letter to Base Concerning Closure of Fuel Spill 2, SS-018	Hanusiak, Lisa EPA Region IX	1892 CD 9
24 Sep 99	CDTSC Letter to Base Concerning Implementation of California Health and Safety Code Section 25157.8, LF-008	Ghazi, Rizgar A California Department of Toxic Substances Control	1898 CD 9
25 Sep 99	News Article, “RAB Meeting, 28 Sep 99"	The Merced Sun Star	1894 CD 9
27 Sep 99	RPM Meeting Minutes, 25 Aug 99	Gutierrez-Palmenberg, Inc.	1897 CD 9
28 Sep 99	RAB Meeting Minutes, 28 Sep 99	Gutierrez-Palmenberg, Inc.	1901 CD 9
Oct 99	Phase III, RA, Environmental Cleanup Final Plan, Project Activities Work Plan and QPP Addenda	Jacobs Engineering Group, Inc.	1902 CD 9
14 Oct 99	CDTSC Letter to Base Concerning Review of Draft Final Action Memorandum and Project Activities Work Plan, SS-104	Ghazi, Rizgar A California Department of Toxic Substances Control	1903 CD 9
14 Oct 99	CDTSC Letter to Base Concerning Comments on Draft Final Action Memorandum and Project Activities Work Plan, SS-104	Ghazi, Rizgar A California Department of Toxic Substances Control	1936 CD 10
15 Oct 99	EPA Letter to Base Concerning Comments on SCOU RA Work Plan, Sep 99	Hanusiak, Lisa EPA Region IX	1937 CD 10
18 Oct 99	RPM Meeting Minutes, 29 Sep 99	Gutierrez-Palmenberg, Inc.	1904 CD 9
23 Nov 99	RPM Meeting Minutes, 23 Nov 99	Gutierrez-Palmenberg, Inc.	1905 CD 9
23 Nov 99	RAB Meeting Minutes, 23 Nov 99	Gutierrez-Palmenberg, Inc.	1906 CD 9
30 Nov 99	CRWQCB Letter to Base Concerning Draft Closure and Post-Closure Maintenance Plan Update, LF-007, LF-008	Trommer, Robert California Regional Water Quality Control Board	1895 CD 9
Dec 99	Enviro Fact Sheet, Edition 26	Hunt, Julie Gutierrez-Palmenberg, Inc.	1908 CD 9
01 Dec 99	EPA Letter to Base Concerning Comments on Draft Closure and Post-Closure Maintenance Plan Update, LF-007, LF-008	Hanusiak, Lisa EPA Region IX	1910 CD 9
13 Dec 99	EPA Letter to Base Concerning Comments on Operations and Emissions Monitoring of Catalytic Oxidation Units, FT-001	Hanusiak, Lisa EPA Region IX	1938 CD 10
14 Dec 99	RPM Meeting Minutes, 14 Dec 99	Gutierrez-Palmenberg, Inc.	1909 CD 9
Jan 00	RPM Meeting Minutes, 26 Jan 00	Gutierrez-Palmenberg, Inc.	1911 CD 9
Jan 00	Long-Term Groundwater Sampling Program, 99 Annual Report	Jacobs Engineering Group, Inc.	1912 CD 9
04 Jan 00	CDTSC Letter to Base Concerning Comments on Draft Proposed Plan, SCOU 2	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1939 CD 10
12 Jan 00	CDTSC Letter to Base Concerning Comments on Draft Action Memorandum, SS-051	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1940 CD 10
26 Jan 00	Concensus Statement Concerning Building 54 Metals Data Gap Resolution	Base Closure Team	1941 CD 10
26 Jan 00	RPM Meeting Minutes, 26 Jan 00	Gutierrez-Palmenberg, Inc.	1942 CD 10
26 Jan 00	SVE Turn-On Criteria, SCOU	RPM Members	1943 CD 10

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Feb 00	Enviro Progress Newsletter, Edition 31	Hunt, Julie Gutierrez-Palmenberg, Inc.	1916 CD 9
18 Feb 00	EPA Letter to Base Concerning Review of Draft Closure Report, LF-004, LF-006, SS-104	Seid, Raymond EPA Region IX	1913 CD 9
22 Feb 00	RAB Meeting Minutes, 22 Feb 00	Gutierrez-Palmenberg, Inc.	1914 CD 9
23 Feb 00	RPM Meeting Minutes, 23 Feb 00	Gutierrez-Palmenberg, Inc.	1945 CD 10
Mar 00	Enviro Fact Sheet, Edition 27	Hunt, Julie Gutierrez-Palmenberg, Inc.	1915 CD 9
06 Mar 00	EPA Letter to Base Concerning Comments on SVE Decision Study Work Plan, SCOU	Seid, Raymond EPA Region IX	1946 CD 10
09 Mar 00	CRWQCB Letter to Base Concerning Response to Comments on Closure Plan Update, LF-007, LF-008	Russell, John California Regional Water Quality Control Board	1917 CD 9
13 Mar 00	CRWQCB Letter to Base Concerning Review of Closure Report, LF-004, LF-006, SS-104	Russell, John California Regional Water Quality Control Board	1918 CD 9
14 Mar 00	CRWQCB Letter to Base Concerning Review of Draft Action Memorandum for Removal Action, Bldg 54 Group	Russell, John California Regional Water Quality Control Board	1919 CD 9
15 Mar 00	CDTSC Letter to Base Concerning Results of Confirmation Samples at Bldg 1521	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1920 CD 9
28 Mar 00	RPM Meeting Minutes, 28 Mar 00	Gutierrez-Palmenberg, Inc	1947 CD 10
03 Apr 00	EPA Letter to Base Concerning Review of Draft Action Memorandum for Removal Action, Bldg 54 Group	Seid, Raymond EPA Region IX	1921 CD 9
05 Apr 00	CRWQCB Letter to Base Concerning Review of Excavation Site Draft Documents	Russell, John California Regional Water Quality Control Board	1922 CD 9
19 Apr 00	CDTSC Letter to Base Concerning Comments on Draft Action Memorandum for Excavation Sites and SCOU RA Project Activities Work Plan	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1949 CD 10
20 Apr 00	CRWQCB Letter to Base Concerning Comments on Draft SVE Decision Study Work Plan	Russell, John California Regional Water Quality Control Board	1950 CD 10
25 Apr 00	EPA Letter to Base Concerning Comments on the Draft Action Memorandum	Seid, Raymond EPA Region IX	1951 CD 10
28 Apr 00	CRWQCB Letter to Base Concerning Comments on Action Memorandum	Russell, John California Regional Water Quality Control Board	1952 CD 10
May 00	Final Action Memorandum	Montgomery Watson Americas, Inc	1953 CD 10
01 May 00	EPA Letter to Base Concerning Comments on RA Project Activities Work Plan and Quality Program Plan Addenda, SCOU	Seid, Raymond EPA Region IX	1954 CD 10
05 May 00	CDTSC Letter to Base Concerning Comments on Draft SVE Decision Study Work Plan	California Department of Toxic Substances Control	1955 CD 10
08 May 00	EPA Letter to Base Concerning Comments on Work Plan and Quality Program Plan	Seid, Raymond EPA Region IX	1956 CD 10
22 May 00	CDTSC Letter to Base Concerning Comments on Draft Final Action Memorandum	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1957 CD 10

Date	*Title*	*Author*	*File/CD Number*
22 May 00	CDTSC Letter to Base Concerning Comments on Draft Work Plan and Quality Program Plan	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1958 CD 10
22 May 00	RPM Meeting Minutes, 22 May 00	Gutierrez-Palmenberg, Inc.	1959 CD 10
23 May 00	RAB Meeting Minutes, 23 May 00	Gutierrez-Palmenberg, Inc.	1962 CD 10
24 May 00	EPA Letter to Base Concerning Comments on Action Memorandum	Seid, Raymond EPA Region IX	1963 CD 10
12 Jun 00	EPA Letter to Base Concerning Comments on Action Memorandum for Excavation of Contaminated Soils at Four Sites	Meer, Daniel A EPA Region IX	1964 CD 10
15 Jun 00	EPA Letter to Base Concerning Comments on Closure Report, LF-034	Seid, Raymond EPA Region IX	1965 CD 10
21 Jun 00	RPM Meeting Minutes, 21 Jun 00	Gutierrez-Palmenberg, Inc.	1966 CD 10
22 Jun 00	EPA Letter to Base Concerning Comments on RA Project Activities Work Plan, SCOU and Quality Program Plan Addenda, Vol 1, Change 3 to Final	Seid, Raymond EPA Region IX	1967 CD 10
28 Jun 00	EPA Letter to Base Concerning Comments on Removal Action Completion Report, LF-004, LF-006, SS-104	Seid, Raymond EPA Region IX	1968 CD 10
29 Jun 00	EPA Letter to Base Concerning Comments on Work Plan and Quality Program Plan for Removal Actions for Six Sites	Seid, Raymond EPA Region IX	1969 CD 10
30 Jun 00	CDTSC Letter to Base Concerning Comments on Removal Action, FT-001	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1970 CD 10
Jul 00	RA, Final SCOU Project Activities Work Plan for Petroleum Hydrocarbon Contaminated Sites	Jacobs Engineering Group, Inc.	1960 CD 10
Jul 00	Final Action Memorandum for CERCLA Excavation Sites	Jacobs Engineering Group, Inc.	1961 CD 10
Jul 00	Final Data Evaluation Report, FT-001	Praxis Environmental Technologies, Inc	1971 CD 10
Jul 00	Final Data Evaluation Report SD-012	Praxis Environmental Technologies, Inc	1972 CD 10
Jul 00	Long Term Groundwater Sampling Program 2000 Semiannual Report	Versar, Inc.	1973 CD 10
Jul 00	Closure and Post Closure Maintenance Plan Update, LF-007, LF-008	Jacobs Engineering Group, Inc.	1974 CD 10
Jul 00	Final Closure Report, LF-034	Jacobs Engineering Group, Inc.	1986 CD 10
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Draft Final Excavation Documents	Russell, John California Regional Water Quality Control Board	1975 CD 10
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Draft Final Closure and Post Closure Maintenance Plan Update, LF-007, LF-008	Russell, John California Regional Water Quality Control Board	1976 CD 10
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Draft Final Removal Action Completion Report, LF-004, LF-006, SS-104	Russell, John California Regional Water Quality Control Board	1977 CD 10
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Draft Closure Report, LF-034	Russell, John California Regional Water Quality Control Board	1978 CD 10

Date	*Title*	***Author***	***File/CD Number***
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Final Action Memorandum and Draft Final Work Plan and Quality Program Plan	Russell, John California Regional Water Quality Control Board	1979 CD 10
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Draft Final Closure Report, SS-017	Russell, John California Regional Water Quality Control Board	1980 CD 10
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Intrinsic Remediation Documents	Russell, John California Regional Water Quality Control Board	1981 CD 10
11 Jul 00	CRWQCB Letter to Base Concerning Comments on Draft Final SVE Decision Study Work Plan	Russell, John California Regional Water Quality Control Board	1982 CD 10
18 Jul 00	RPM Meeting Minutes, 18 Jul 00	Gutierrez-Palmenberg, Inc.	1983 CD 10
24 Jul 00	CDTSC Letter to Base Concerning Comments on Draft Memorandums for Excavation Sites	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1984 CD 10
24 Jul 00	CDTSC Letter to Base Concerning Comments on Draft Closure Report, LF-034	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1985 CD 10
Aug 00	Fact Sheet, Enviro Progress Newsletter, Edition 34	AFBCA/DD Castle	1987 CD 10
Aug 00	Final Work Plan and Quality Program Plan for Building 54 Group Removal Action Project	Montgomery Watson Americas, Inc	1988 CD 10
Aug 00	Removal Action Completion Report, LF-004, LF-006, SS-104	Jacobs Engineering Group, Inc.	1989 CD 10
02 Aug 00	CDTSC Letter to Base Concerning Comments on Draft Removal Action Completion Report, LF-004, LF-006, SS-104	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1990 CD 10
02 Aug 00	CDTSC Letter to Base Concerning Comments on Draft Final Closure and Post Closure Maintenance Plan Update, LF-007, LF-008	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1991 CD 10
02 Aug 00	CV Work Plan Addendum - Draft Final	Jacobs Engineering Group, Inc.	Not yet archived.
03 Aug 00	Base Letter to Regulators Concerning Comments on BCT Meeting Minutes, 17 Jul 00	Lanning, Todd AFBCA/DD Castle	1992 CD 10
09 Aug 00	CRWQCB Letter to Base Concerning Comments on Draft Closure Report, SD-016, WP-041	Russell, John California Regional Water Quality Control Board	1993 CD 10
18 Aug 00	EPA Letter to Base Concerning Comments on Draft Final SVE Decision Study Work Plan, SCOU	Seid, Raymond EPA Region IX	1994 CD 10
23 Aug 00	RPM Meeting Minutes, 23 Aug 00	Gutierrez-Palmenberg, Inc.	1996 CD 10
24 Aug 00	EPA Letter to Base Concerning Comments on Final Closure Report, LF-034	Seid, Raymond EPA Region IX	1995 CD 10
28 Aug 00	CDTSC Letter to Base Concerning Comments on Draft Final SVE Decision Study Work Plan	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1997 CD 10
31 Aug 00	CDTSC Letter to Base Concerning Comments on Draft Final Work Plan and Quality Program Plan, SS-054	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	1998 CD 10
Sep 00	Final SVE Decision Study Work Plan, SCOU	Earth Tech, Inc	1999 CD 10
Sep 00	Final Closure Report, LF-0034	Jacobs Engineering Group, Inc.	2000 CD 10

Date	*Title*	***Author***	***File/CD Number***
06 Sep 00	CDTSC Letter to Base Concerning Comments on Final Closure Report, LF-034	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2001 CD 10
06 Sep 00	CDTSC Letter to Base Concerning Comments on CERCLA Closure Report for VOC Contamination, SD-016, WP-041	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2002 CD 10
26 Sep 00	CRWQCB Letter to Base Concerning Comments on CERCLA Closure Report for VOC Contamination, SD-016, WP-041	Austin, Duncan California Regional Water Quality Control Board	2003 CD 10
Oct 00	Fact Sheet, Enviro Progress Newsletter, Edition 35	AFBCA/DD Castle	2004 CD 10
Oct 00	Earth Tech Inc Response to CRWQCB Comments on Draft Revised Proposed Plan, SCOU	Earth Tech, Inc	2005 CD 10
Oct 00	Earth Tech Inc Response to CDTSC Comments on Draft Revised Proposed Plan, SCOU	Earth Tech, Inc	2006 CD 10
Oct 00	Earth Tech Inc Response to EPA Comments on Draft Revised Proposed Plan, SCOU	Earth Tech, Inc	2007 CD 10
10 Oct 00	CRWQCB Letter to Base Concerning Comments on Work Plan for Collecting Additional Soil Samples, SD-199, SD-200, SD-206	Austin, Duncan California Regional Water Quality Control Board	2008 CD 10
11 Oct 00	Pulsing Assessment Report, FT-001	Jacobs Engineering Group, Inc.	2009 CD 10
17 Oct 00	CDTSC Letter to San Joaquin Valley APCD Concerning Comments on Request for ARAR's, SCOU	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2010 CD 10
23 Oct 00	CRWQCB Letter to Base Concerning Comments on Request for Authorization to Close Excavation, FT-003	Austin, Duncan California Regional Water Quality Control Board	2011 CD 10
25 Oct 00	CIWMB Letter to CDTSC Concerning Comments on Request for ARAR's, SCOU	Graber, Jacques California Integrated Waste Management Board	2012 CD 10
25 Oct 00	CDTSC Letter to Base Concerning Comments on Draft Closure Report for CERCLA and Petroleum Hydrocarbon-Contaminated Excavation/Disposal Sites	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2013 CD 10
30 Oct 00	CRWQCB Letter to Base Concerning Comments on Draft Closure Report for CERCLA and Petroleum Hydrocarbon-Contaminated Excavation/Disposal Sites	Austin, Duncan California Regional Water Quality Control Board	2014 CD 10
30 Oct 00	CRWQCB Letter to CDTSC Concerning Comments on Request for ARAR for SCOU Sites	Austin, Duncan California Regional Water Quality Control Board	2015 CD 10
Nov 00	SVE Decision Study for SCOU Data Report	Earth Tech, Inc	2016 CD 10
01 Nov 00	Base Letter to Regulators Concerning Comments on Technical Working Group Meeting Minutes, 26 Sep 00	Lanning, Todd AFBCA/DD Castle	2017 CD 10
07 Nov 00	EPA Letter to Base Concerning Comments on Draft Closure Report for CERCLA and Petroleum Hydrocarbon-Contaminated Excavation/Disposal Sites	Seid, Raymond EPA Region IX	2018 CD 10
07 Nov 00	Base Letter to CDBEO Concerning Comments on SCOU Site Selected Alternative Map	Lanning, Todd AFBCA/DD Castle	2021 CD 10
08 Nov 00	PN 048# Carbon Change Out Optimization	Jacobs Engineering Group, Inc	Not yet archived.

Date	*Title*	***Author***	***File/CD Number***
09 Nov 00	San Joaquin Valley APCD Letter to CDTSC Concerning Comments on Air Quality Requirements for RA	Sadredin, Seyed San Joaquin Valley Air Pollution Control District	2019 CD 10
09 Nov 00	Interim Remedial Action Report	Jacobs Engineering Group, Inc.	Not yet archived.
13 Nov 00	EPA Letter to Base Concerning Comments on Draft Technical Memorandum for Re-evaluation of Risk Assessment, SD-045	Seid, Raymond EPA Region IX	2020 CD 10
14 Nov 00	EPA Letter to Base Concerning Comments on SVE, SS-064	Seid, Raymond EPA Region IX	2022 CD 10
20 Nov 00	EPA Letter to Base Concerning Comments on CERCLA Closure Report for VOC Contamination, SD-016, WP-041	Seid, Raymond EPA Region IX Gutierrez-Palmenberg, Inc.	2023 CD 10
20 Nov 00	Requisition and Invoice/Shipping Document	AFBCA/DD Castle	2024 CD 10
27 Nov 00	CDTSC Letter to Base Concerning Comments on Draft Final CERCLA Closure Report for VOC Contamination, SD-016, WP-041	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2025 CD 10
28 Nov 00	RAB Meeting Minutes, 28 Nov 00	Gutierrez-Palmenberg, Inc.	2026 CD 10
29 Nov 00	RPM Meeting Minutes, 29 Nov 00	Gutierrez-Palmenberg, Inc.	2027 CD 10
Dec 00	Final Closure Report for CERCLA and Petroleum Hydrocarbon-Contaminated Excavation Sites	Jacobs Engineering Group, Inc.	1944 CD 10
Dec 00	Final Closure Report, SS-017	Jacobs Engineering Group, Inc.	2028 CD 10
Dec 00	Final CERCLA Closure Report for VOC Contamination, SD-016, WP-041	Jacobs Engineering Group, Inc.	2029 CD 10
05 Dec 00	Base Letter to Regulators Concerning Comments on Technical Memorandum for Re-Evaluation of Risk Assessment, SD-045	Lanning, Todd AFBCA/DD Castle	2030 CD 10
05 Dec 00	Storm Drain System NFA Assess. (Revised)	Jacobs Engineering Group, Inc.	Not yet archived.
05 Dec 00	DA-8 Closure Report - Final	Jacobs Engineering Group, Inc.	Not yet archived.
08 Dec 00	SCOU ROD Part 1 - *Draft Final*	Waste Policy Institute	Not yet archived.
11 Dec 00	CRWQCB Letter to Base Concerning Comments on Draft Revised Proposed Plan, SCOU	Austin, Duncan California Regional Water Quality Control Board	2031 CD 10
12 Dec 00	EPA Letter to Base Concerning Comments on Draft Proposed Plan, SCOU	Seid, Raymond EPA Region IX	2032 CD 10
19 Dec 00	Excavation Closure Report - Final	Jacobs Engineering Group, Inc.	Not yet archived.
22 Dec 00	CRWQCB Letter to Base Concerning Comments on SVE, SS-064	Austin, Duncan California Regional Water Quality Control Board	2033 CD 10
08 Jan 01	CRWQCB Letter to Base Concerning Comments on Draft Action Memorandum	Austin, Duncan California Regional Water Quality Control Board	2034 CD 10
10 Jan 01	RPM Meeting Minutes, 10 Jan 01	Gutierrez-Palmenberg, Inc.	2035 CD 10
22 Jan 01	CDTSC Letter to Base Concerning Comments on Request for Time Extension for Draft Final SCOU ROD Part 1	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2036 CD 10
22 Jan 01	EPA Letter to Base and CDTSC Concerning Comments on SCOU ROD Part 1	Seid, Raymond EPA Region IX	2037 CD 10

Date	*Title*	***Author***	***File/CD Number***
24 Jan 01	TWG Meeting Minutes, 09 Jan 01	Jacobs Engineering Group, Inc.	2044 CD 10
29 Jan 01	CDTSC Letter to Base Concerning Comments on Draft Interim RA Report Phase II/Phase III	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2038 CD 10
Feb 01	Fact Sheet, Enviro Fact Sheet, Edition 29	AFBCA/DD Castle	2039 CD 10
Feb 01	Long Term Groundwater Sampling Program 2000 Annual Report	Versar, Inc.	2040 CD 10
05 Feb 01	EPA Letter to Base Concerning Comments on Draft Action Memorandum	Seid, Raymond EPA Region IX	2041 CD 10
05 Feb 01	Ecological Work Plan	Earth Tech, Inc.	Not yet archived.
06 Feb 01	Base Letter to Regulators Concerning Comments on Revised Proposed Plan, SCOU	Lanning, Todd AFBCA/DD Castle	2042 CD 10
06 Feb 01	EPA Letter to Base Concerning Comments on Draft Action Memorandum, SS-086, SD-013	Seid, Raymond EPA Region IX	2043 CD 10
06 Feb 01	Base Letter to Regulators Concerning Comments on Disposition of ERA Sites	Lanning, Todd AFBCA/DD Castle	2045 CD 10
06 Feb 01	SCOU Revised Proposed Plan -Final	Earth Tech, Inc.	Not yet archived.
12 Feb 01	EPA Letter to Base Concerning Comments on SCOU ROD Part 1	Seid, Raymond EPA Region IX	2046 CD 10
13 Feb 01	CRWQCB Letter to Base Concerning Comments on Draft Final SCOU ROD Part 1	Austin, Duncan California Regional Water Quality Control Board	2047 CD 10
13 Feb 01	CDTSC Letter to Base Concerning Comments on SCOU ROD Part 1	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2048 CD 10
23 Feb 01	LTGSP Annual Report 2000	Jacobs Engineering Group, Inc.	Not yet archived.
05 Mar 01	EPA Letter to Base Concerning Comments on Ecological Work Plan	Seid, Raymond EPA Region IX	2049 CD 10
07 Mar 01	USFWS Letter to Base Concerning Comments on Amendment to Biological Opinion, Remediation Project, SS-189	Goude, Cay C US Fish and Wildlife Service	2050 CD 10
13 Mar 01	CRWQCB Letter to Base Concerning Comments on Draft Action Memorandum, SD-013, SS-086	Austin, Duncan California Regional Water Quality Control Board	2051 CD 10
13 Mar 01	CRWQCB Letter to Base Concerning Comments on Draft Revised Letter Work Plan, SS-112, Final Draft Revised Letter Work Plan, SS-089 and Letter Excavation Work Plan, SS-069	Austin, Duncan California Regional Water Quality Control Board	2052 CD 10
13 Mar 01	Regulators Letter to Base Concerning Comments on State's Position on Proposed Remedy, LF-034	Tatoian Cain, Carolyn V Austin, Ducan California Department of Toxic	2053 CD 10
13 Mar 01	UFL-2 Work Plan	Montgomery Watson	Not yet archived.
14 Mar 01	CDTSC Letter to Base Concerning Comments on Final Revised Proposed Plan, SCOU 2	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2054 CD 10
15 Mar 01	CDTSC Letter to Base Concerning Comments on Draft Ecological Work Plan	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2055 CD 10

Date	*Title*	***Author***	***File/CD Number***
20 Mar 01	Mitretek Systems Letter to Base Concerning Comments on TWG and BCT Meeting Minutes, 27 Feb 01	Casagrande, Daniel J Mitretek Systems	2056 CD 10
27 Mar 01	CDTSC Letter to Base Concerning Comments on Draft Action Memorandum, SD-013, SS-086	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2057 CD 10
30 Mar 01	Work Plan and Design Basis Report B1762, B1350 and DA-5 Removal Action - Draft	Montgomery Watson	Not yet archived.
Apr 01	Evaluation of Changes Affecting the SCOU Baseline Human Health Risk Assessments, Selected Remedies and RA Objectives	Jacobs Engineering Group, Inc.	2072 CD 10
03 Apr 01	CDTSC Letter to Base Concerning Comments on Draft Final Action Memorandum	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2058 CD 10
03 Apr 01	Ecological Work Plan	Jacobs Engineering Group, Inc.	2059 CD 10
06 Apr 01	B1350, B1762, DA-5 Action Memorandum - Final	Montgomery Watson	Not yet archived.
09 Apr 01	CRWQCB Letter to Base Concerning Comments on Draft Final Action Memorandum	Austin, Duncan California Regional Water Quality Control Board	2060 CD 10
16 Apr 01	Base Letter to Regulators Concerning Comments on SCOU ROD Part 1	Lanning, Todd AFBCA/DD Castle	2061 CD 10
17 Apr 01	EPA Letter to Base Concerning Comments on Draft Work Plan and Design Basis Report	Seid, Raymond EPA Region IX	2062 CD 10
18 Apr 01	EPA Letter to Base Concerning Comments on Interim RA Report for Phase II/Phase III Groundwater Extraction and Treatment Systems	Seid, Raymond EPA Region IX	2063 CD 10
24 Apr 01	Base Letter to CRWQCB Concerning Comments on Conversion of SVE System to Bioventing, SS-187	Lanning, Todd AFBCA/DD Castle	2064 CD 10
24 Apr 01	Base Letter to Regulators Concerning Comments on Work Plan for Soil Vapor Monitoring/Extraction Well Installation, JP-7	Lanning, Todd AFBCA/DD Castle	2065 CD 10
24 Apr 01	FTA-1 Focused Feasibility Study, Volume 1: Final Remedy for Non-VOC Contamination, Draft	Jacobs Engineering Group, Inc.	Not yet archived.
24 Apr 01	Letter Work Plan for SVE Monitoring/Extraction Well Installation at JP-7	Montgomery Watson	Not yet archived.
26 Apr 01	EPA Letter to Base Concerning Comments on Draft Final Action Memorandum for Removal Action Project	Meer, Daniel A EPA Region IX	2066 CD 10
30 Apr 01	CDTSC Letter to Base Concerning Comments on Revised Draft Final Action Memorandum	Tatoian Cain, Carolyn V California Department of Toxic Substances Control	2067 CD 10
May 01	Final Action Memorandum	Montgomery Watson Americas, Inc	2068 CD 10
01 May 01	CDTSC Letter to Base Concerning Comments on SEBS and FOSL	Phillippe, Stanley R California Department of Toxic Substances Control	2069 CD 10
03 May 01	EPA Letter to Base Concerning Comments on Draft Final Action Memorandum, SD-013, SS-086	Seid, Raymond EPA Region IX	2070 CD 10
04 May 01	CRWQCB Letter to Base Concerning Comments on Draft Work Plan and Design Basis Report	Austin, Duncan California Regional Water Quality Control Board	2071 CD 10
09 May 01	Base Letter to San Joaquin Valley APCD Concerning Comments on SVE	Lanning, Todd AFBCA/DD Castle	2073 CD 10

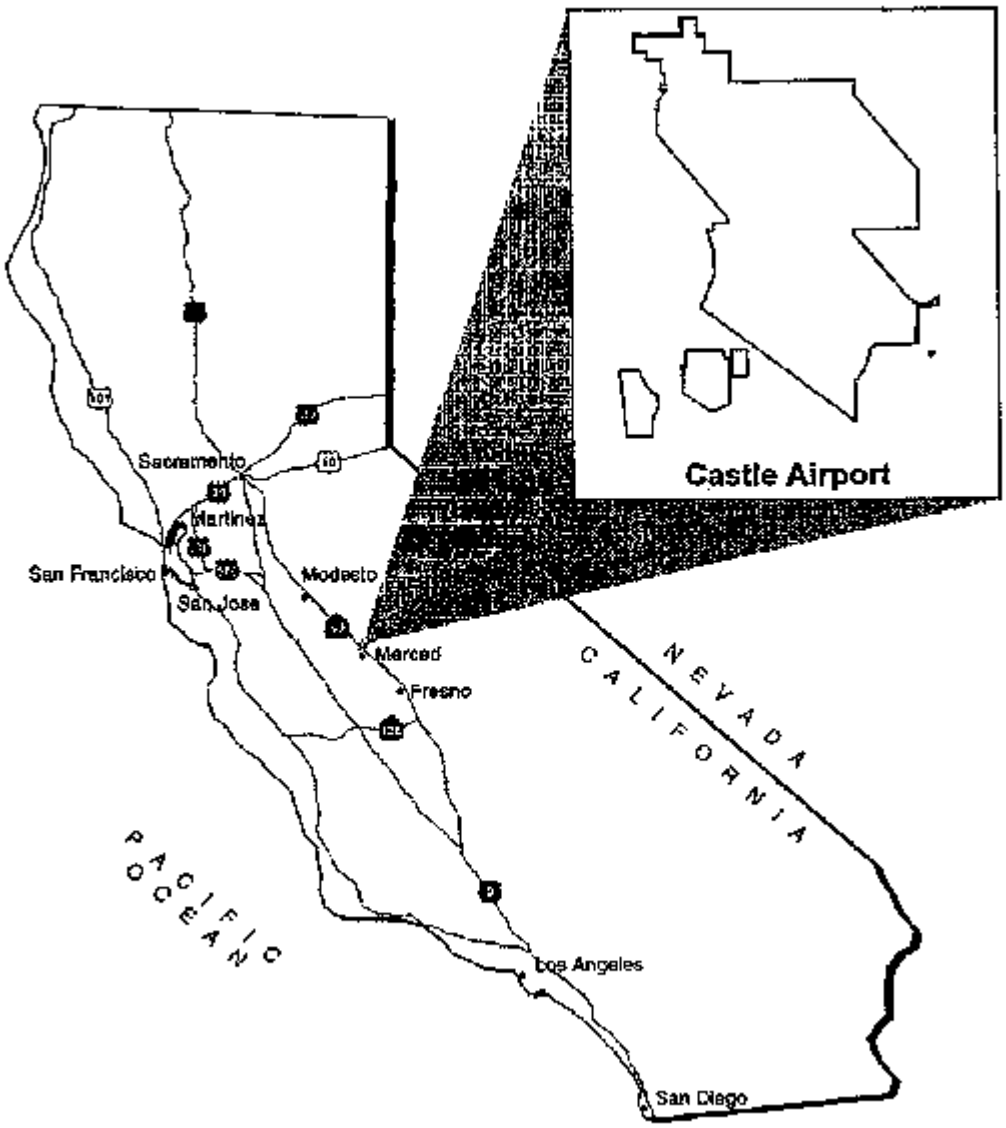
Section VIII. Administrative Record (continued)

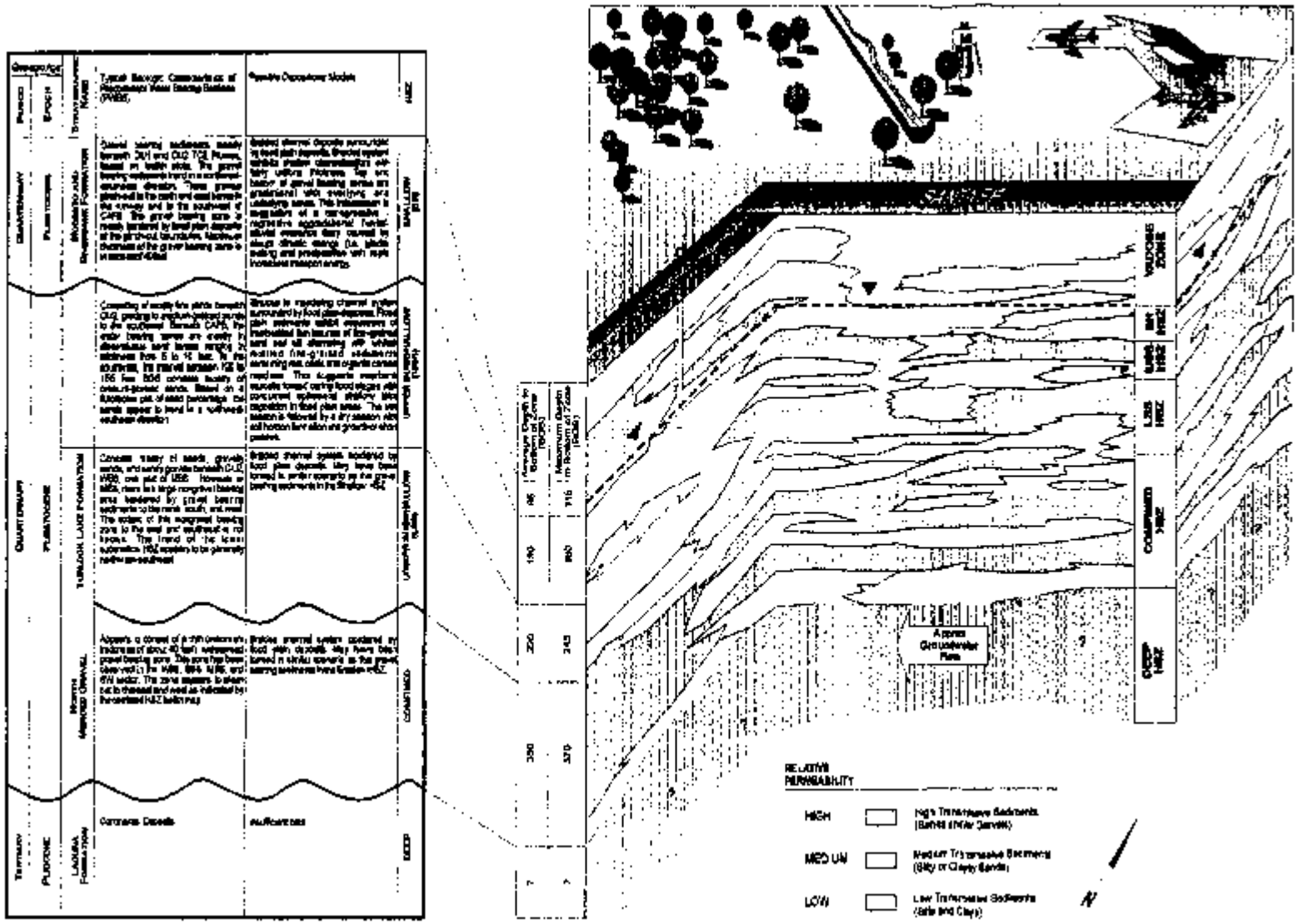
Date	*Title*	***Author***	***File/CD Number***
09 May 01	EPA Letter to Base Concerning Comments on Draft Work Plan and Design Basis Report, SD-013, SS-086	Seid, Raymond EPA Region IX	2074 CD 10
10 May 01	B51 Action Memorandum - Final	Montgomery Watson	Not yet archived.
14 May 01	San Joaquin Valley APCD Letter to Base Concerning Comments on Air Quality Requirements for Remedial Actions	Swaney, Jim San Joaquin Valley Air Pollution Control District	2075 CD 10
14 May 01	CRWQCB Letter to Base Concerning Comments on Draft Final Action Memorandum, SD-013, SS-086	Austin, Duncan California Regional Water Quality Control Board	2076 CD 10
15 May 01	EPA Letter to Base Concerning Comments on Draft Final Action Memorandum, SD-013, SS-086	Meer, Daniel A EPA Region IX	2077 CD 10
16 May 01	Landfill 4 and Landfill 5 Closure Report - Draft	Jacobs Engineering Group, Inc.	Not yet archived.
21 May 01	Base Letter to Regulators Concerning Comments on SCOU ROD Part 1, Request for Schedule Extension	Lanning, Todd AFBCA/DD Castle	2078 CD 10
25 May 01	Base Letter to Regulators Concerning Comments on SCOU Revised Proposed Plan Responsiveness Summary	Lanning, Todd AFBCA/DD Castle	2079 CD 10
30 May 01	Base Letter to Regulators Concerning Comments on Final Wetlands Work Plan	Lanning, Todd AFBCA/DD Castle	2080 CD 10
31 May 01	CRWQCB Letter to Base Concerning Comments on Draft Work Plan and Design Basis Report, SD-013, SS-086	Austin, Duncan California Regional Water Quality Control Board	1948 CD 10
08 Jun 01	SCOU ROD 1 Meeting Minutes, 28 Mar 01	WPI	Not yet archived.
15 Jun 01	Interim Remedial Action Rpt. Draft Final	Jacobs Engineering Group, Inc.	Not yet archived.
03 July 01	PN#003, SCOU BHHRA Evaluation	Jacobs Engineering Group, Inc.	Not yet archived.
04 Jul 01	Work Plan and Design Basis Report B51 Group and B54 Group Removal Action - Draft Final	Montgomery Watson	Not yet archived.
13 Jul 01	Administrative Record File Index	LABAT-ANDERSON INCORPORATED	01 CD 1

Section IX

Appendix A

Plate 1-1
Vicinity Map





GENERALIZED BASEWIDE GEOLOGIC MODEL
Castle Airport
PLATE 1-2

Appendix B

Plate 4-1
Operable Unit Site Location Map

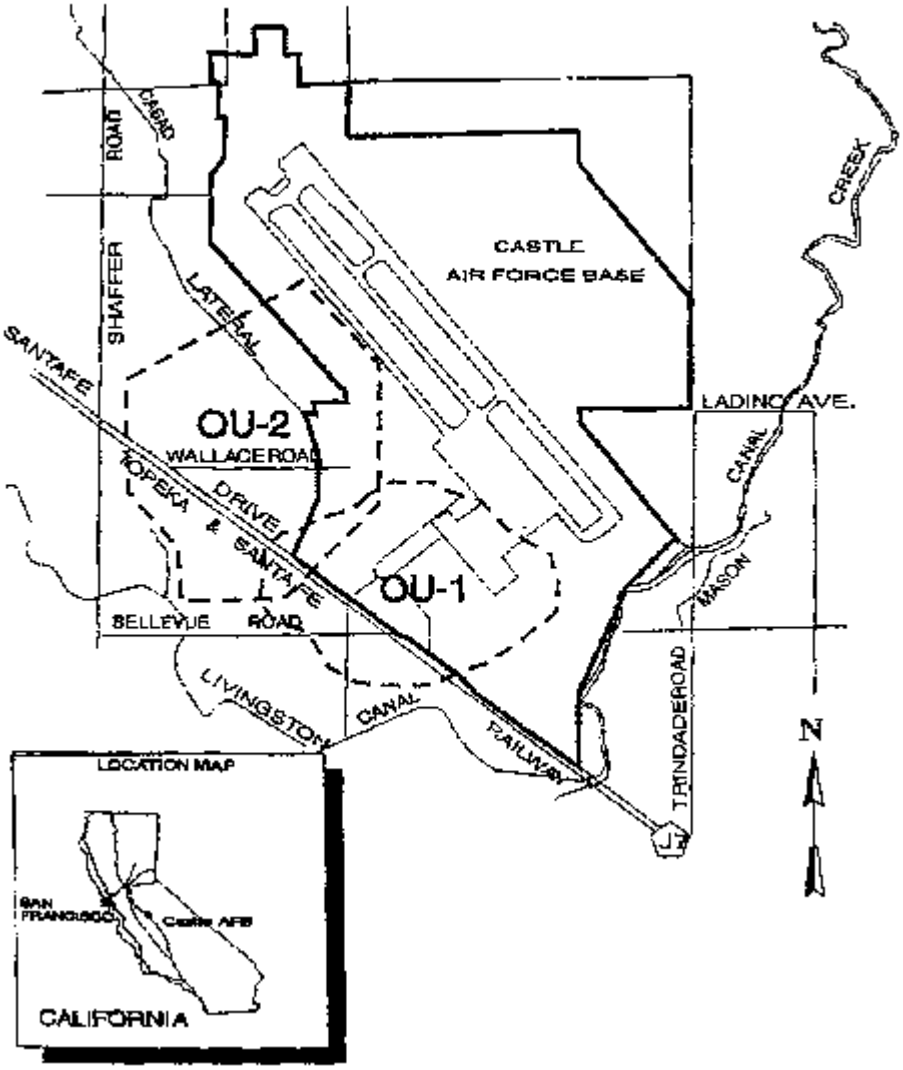
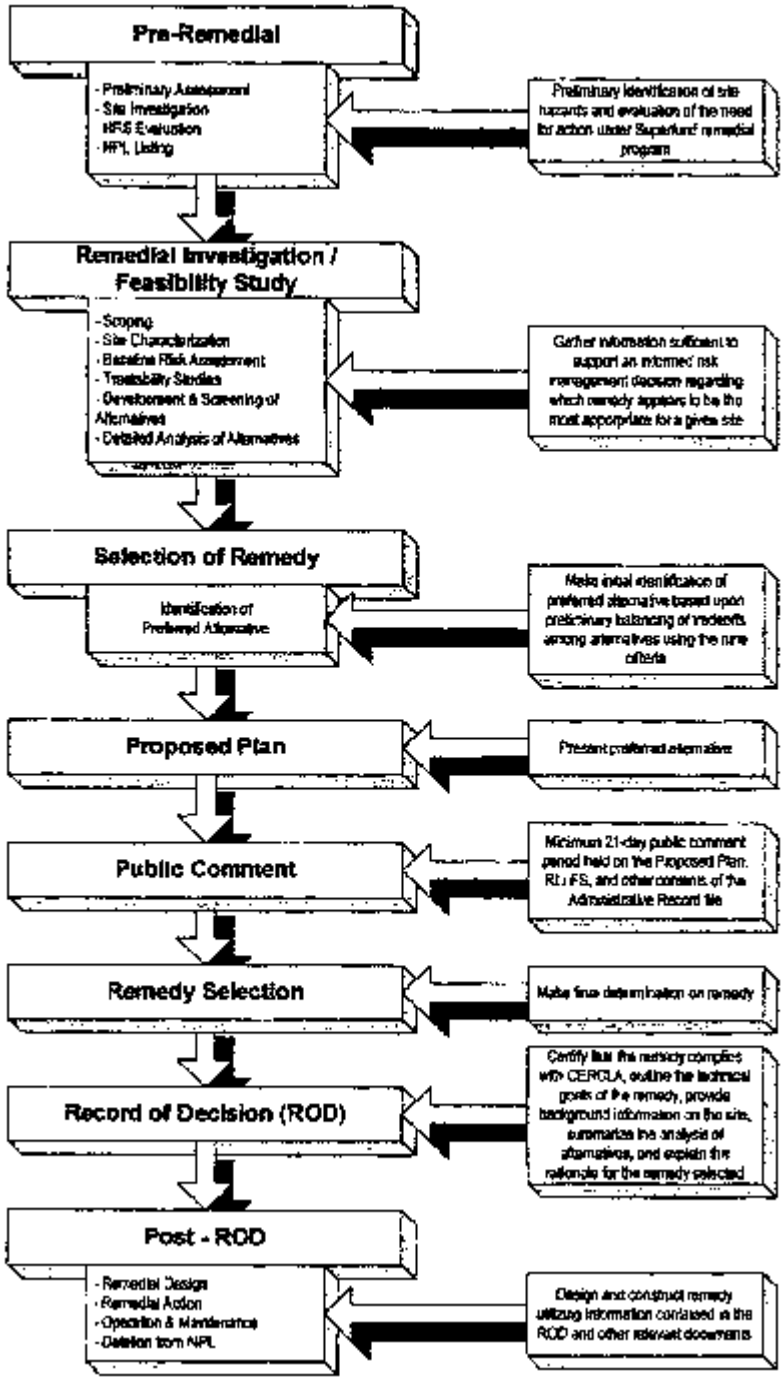


Plate 4-2
The CERCLA Remedial Process



From: Guidance for Preparing Superfund Decision Documents: Interim Final, 7/1989

Plate 4-3
Source Control Operable Unit (SCOU) Site Disposition Flow Chart

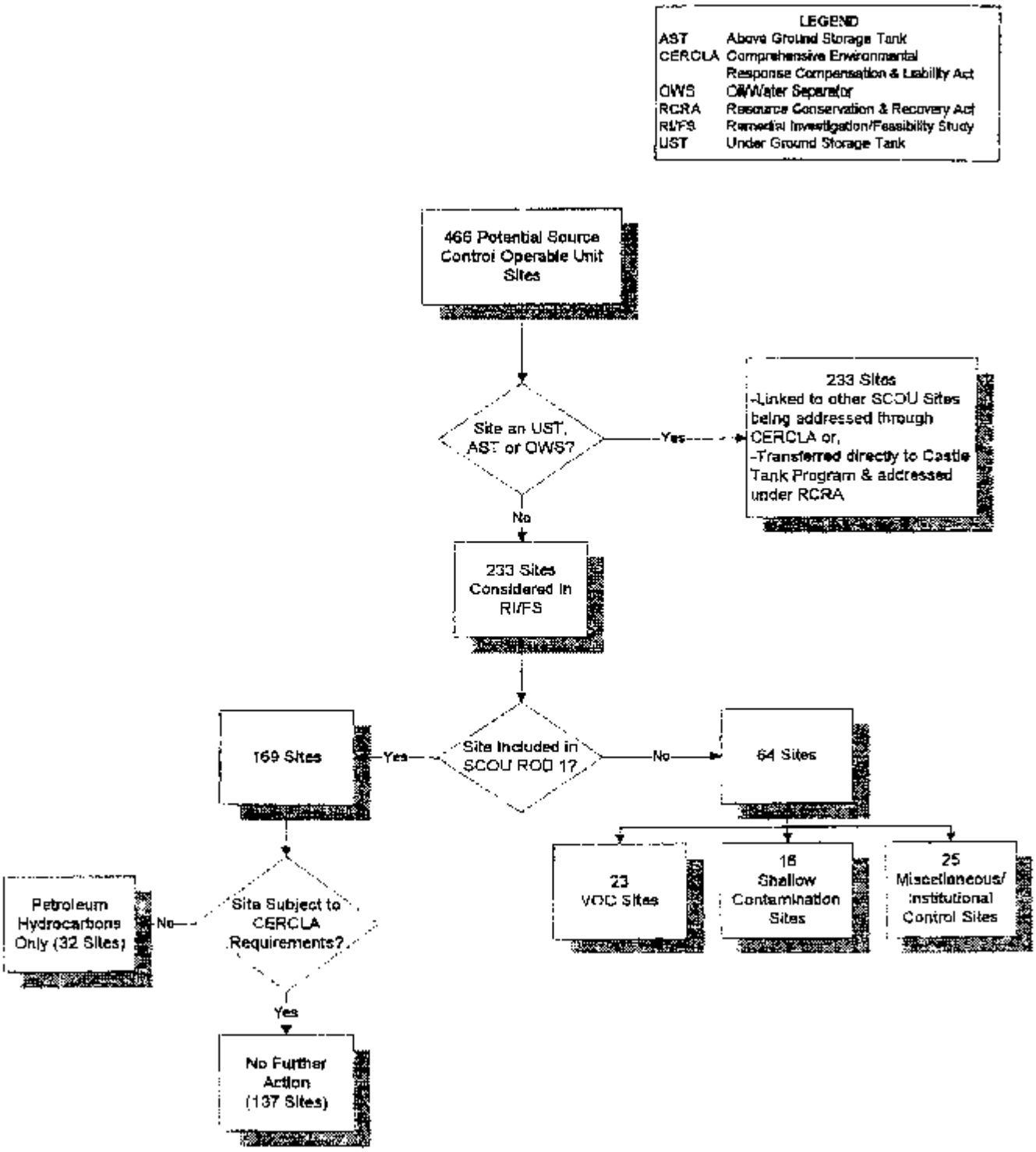


Plate 4-4
Threshold Background Values - Totals

Analyte	Shallow (less than 30 ft bgs)		Deep (greater than 30 ft bgs)		Threshold Background Value Range	
	Silts	Sands	Silts	Sands	Minimum	Maximum
	ppm	ppm	ppm	ppm	ppm	ppm
aluminum	16200	9520	18000	7750	7750	18000
antimony	6.7	4.8	11.5	3.5	3.5	11.5
arsenic	9.9	9.74	12.2	4.4	4.4	12.2
barium	319	109	240	107.65	107.65	319
beryllium	0.89	0.39	0.85	0.26	0.26	0.89
boron **	20.0	20.0	20.0	20.0	20.0	20.0
cadmium **	0.5	0.5	0.91	0.5	0.5	0.91
calcium	6590	2520	8740	2069.84	2069.84	8740
chromium, total	29.4	19.1	27.7	7.3	7.3	29.4
chromium VI and compounds **	0.05	0.05	0.05	0.05	0.05	0.05
cobalt	12.8	7.0	13.3	5.4	5.4	13.3
copper	53.62	17.1	27.8	8.3	8.3	53.62
iron	25900	20400	46100	14300	14300	46100
lead	7.4	6.7	6.4	3.2	3.2	7.4
magnesium	8160	5040	10400	4615.38	4615.38	10400
manganese	1100	228	765	266	228	1100
mercury **	0.10	0.10	0.10	0.10	0.10	0.10
molybdenum	0.59	2.0	0.71	2.0	0.59	2.0
nickel	29.6	22.5	24.8	4.5	4.5	29.6
potassium	3430	2890	3460	3080	2890	3460
selenium **	0.5	0.5	0.5	0.5	0.5	0.5
silica	2630	1620	948	2327.18	948	2630
silver	0.30	0.45	0.61	0.30	0.30	0.61
sodium	315	116	208	89.3	89.3	315
thallium **	40.0	40.0	40.0	40.0	40.0	40.0
vanadium	70.2	58.06	109	28.8	28.8	109
zinc	70.2	46.9	101	32.8	32.8	101
gross alpha	34 pCi/g	48 pCi/g	72 pCi/g	44 pCi/g	34 pCi/g	72 pCi/g
gross beta	43 pCi/g	52 pCi/g	74 pCi/g	53.2 pCi/g	43 pCi/g	74 pCi/g

Note: alpha & beta units are pico Curie per gram (pCi/g); all other units are milligrams per kilogram (mg/kg) or parts per million (ppm).
**ND=Not detected at Method Detection Limit
*MAX=maximum value of the population
For each group:
If less than 50%ND, replaced ND with one-half MDL before calculating mean and standard deviation
If greater than 50%ND, used maximum
If nonparametric, used maximum
If mean plus two standard deviations greater than maximum, used maximum
The last column in each group contains the threshold background values for that group
The threshold background value range takes the minimum and maximum of the group TBVs

Plate 4-5
Soluble Threshold Background Values (WET)

	Shallow Background (mg/L)		Deep Background (mg/L)		Threshold Background Value Range (mg/L)		Threshold Background Value Range (µg/L)	
Analyte	Silt	Sand	Silt	Sand	Minimum	Maximum	Minimum	Maximum
aluminum	2.2	0.99	0.68	1.7	0.68	2.2	680	2200
antimony	NA	NA	NA	NA	NA	NA	NA	NA
arsenic	ND	ND	ND	ND	ND	ND	ND	ND
barium	0.022	0.0073	0.0054	0.013	0.0054	0.022	5.400	22.0
beryllium	0.00050	0.00050	ND	0.00060	0.0005	0.0006	0.5000	0.6000
boron	NA	NA	NA	NA	NA	NA	NA	NA
cadmium	ND	ND	ND	ND	ND	ND	ND	ND
calcium	6.3	1.1	1.2	1.7	1.1	6.3	1100	6300
chromium, total	ND	0.0067	ND	0.0069	0.0067	0.0069	6.700	6.900
hexavalent chromium	ND	ND	ND	ND	ND	ND	ND	ND
cobalt	ND	ND	ND	ND	ND	ND	ND	ND
copper	ND	ND	ND	ND	ND	ND	ND	ND
iron	1.6	0.80	0.63	1.7	0.63	1.7	630	1700
lead	0.017	0.023	0.015	0.015	0.015	0.023	15	23
magnesium	2.1	0.20	0.28	0.38	0.20	2.1	200	2100
manganese	0.030	0.010	0.0082	0.092	0.0082	0.092	8.20	92.0
mercury	ND	ND	0.00063	0.00057	0.00057	0.00063	0.57000	0.63000
molybdenum	0.0047	ND	0.0049	0.0040	0.004	0.0049	4.00	4.900
nickel	0.0110	0.019	0.02	0.0200	0.011	0.02	11.00	20.0
potassium	0.65	0.96	0.42	0.56	0.42	0.96	420	960
selenium	ND	ND	ND	ND	ND	ND	ND	ND
silica	NA	NA	NA	NA	NA	NA	NA	NA
silver	ND	ND	ND	ND	ND	ND	ND	ND
sodium	13	6.2	8.0	5.0	5.0	13	5000	13000
thallium	ND	ND	ND	ND	ND	ND	ND	ND
vanadium	0.043	0.028	0.024	0.022	0.022	0.043	22.0	43.0
zinc	0.027	0.020	0.015	0.026	0.015	0.027	15.0	27.0

NA=Not available -- WET results are not available for antimony, boron, or silica.
ND=Not detected at Method Detection Limit

Plate 4-6
Contaminants of Potential Concern in Soil: Castle Airport

COPCs from HHRA	COPC for Vadose zone screening	COPCs from HHRA	COPC for Vadose zone screening
Inorganic Compounds			
Arsenic	x	Mercury	
Barium		Molybdenum	x
Beryllium	x	Nickel	x
Cadmium	x	Selenium	x
Chromium	x	Silver	x
Cobalt	x	Thallium	
Lead	x		
Organic Compounds			
Acenaphthene		1,3-Dichlorobenzene	
Acenaphthylene		1,4-Dichlorobenzene	x
Anthracene	x	1,2-Dichloroethane	
Benzene	x	cis-1,2-Dichloroethene	x
Benzo(a)anthracene	x	Dieldrin	
Benzo(a)pyrene	x	Diethyl phthalate	
Benzo(b)fluoranthene	x	2,4 Dimethylphenol	
Benzo(ghi)perylene		2,4-Dinitrotoluene	
Benzo(k)fluoranthene		Endrin	
Bis(2-ethylhexyl) phthalate		Ethylbenzene	x
2-Butanone		Fluoranthene	x
Butyl benzyl phthalate		Fluorene	
n-Butylbenzene		Heptachlor epoxide	
sec-Butylbenzene		Hexachlorobutadiene	
t-Butylbenzene		Indeno(1,2,3-cd)pyrene	
Carbon tetrachloride	x	Methylene chloride	
α-Chlordane		2-Methylnaphthalene	
γ-Chlordane		2-Methylphenol	
4-Chloroaniline		4-Methylphenol	
Chlorobenzene		Naphthalene	x
Chloroform	x	PCBs	
4-Chlorotoluene		Pentachlorophenol	
Chrysene	x	Phenanthrene	x
Isopropylbenzene (Cumene)		Phenol	
Isopropyltoluene (*p*-Cymene)		n-Propylbenzene	
DDD		Pyrene	
DDE		Styrene	
DDT		Tetrachloroethene	x
Heptachlorodibenzo-*p*-dioxins		Toluene	x
Heptachlorodibenzofurans		1,2,3-Trichlorobenzene	
Hexachlorodibenzo-*p*-dioxins		1,2,4-Trichlorobenzene	
Octachlorodibenzo-*p*-dioxin		1,1,1-Trichloroethane	
Pentachlorodibenzofurans		Trichloroethene	x
Tetrachlorodibenzo-*p*-dioxins		Dichlorodifluoromethane (FC12)	x
Tetrachlorodibenzofurans		Trichlorofluoromethane (FC11)	x
Di-*n*-butyl phthalate		2,4,5-Trichlorophenol	
Di-*n*-octylphthalate		1,2,3-Trichloropropane	
Dibenz(a,h)anthracene		1,2,4-Trimethylbenzene	x
Dibenzofuran		1,3,5-Trimethylbenzene	
1,2-Dibromo-3-chloropropane		Xylenes	x
1,2-Dichlorobenzene	x	Vinyl Chloride	x

Plate 4-7a
Preliminary Remedial Objectives for Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil], µg/L [soil gas])						BHHRA RAOs (Residential Scenario)	BHHRA RAOs (Industrial Scenario)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
Volatile Organics									
benzene (soil)	VLEACH1	88,567.0	19,594.0	5,658.0	1,698.9	501.1	86.2	360	610
	VLEACH2	291.5	68.4	20.8	3.0	1.4	0.0		
benzene (soil gas)	VLEACH1	85,763.0	18,974.0	5,479.0	1,645.2	485.2	83.5		
	VLEACH2	282.2	66.3	20.1	5.9	1.4	0.1		
carbon tetrachloride (soil)	VLEACH1	2,700.0	1,000.0	500.0	300.0	200.0	100.0	650	1,100
	VLEACH2	47.8	18.3	10.2	6.6	4.6	1.7		
carbon tetrachloride (soil gas)	VLEACH1	2,846.8	1,040.1	559.1	352.7	235.0	102.4		
	VLEACH2	49.6	19.0	10.6	6.9	4.8	1.8		
chloroform (soil)	VLEACH1	8,900.0	2,000.0	5,700.0	1,700.0	500.0	100.0	460	770
	VLEACH2	291.5	68.4	20.8	3.0	1.4	0.0		
chloroform (soil gas)	VLEACH1	85,763.0	18,974.0	5,479.0	1,645.2	485.2	83.5		
	VLEACH2	282.2	66.3	20.1	5.9	1.4	0.1		
dichlorobenzene, 1,2-(soil)	VLEACH1	293,400.0	102,200.0	28,500.0	8,600.0	2,500.0	500.0	700,000	700,000
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
dichlorobenzene, 1,2-(soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.2	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.8	4.8		
dichlorobenzene, 1,4-(soil)	VLEACH1	293,400.0	102,200.0	28,500.0	8,600.0	2,500.0	500.0	3,500	5,800
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
dichlorobenzene, 1,4-(soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.2	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.3	4.8		
dichlorodiflouoromethane (FC12)- (soil)	VLEACH1	85.0	25.0	12.0	6.0	3.0	1.0	N/A	N/A
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
dichlorodiflouoromethane (FC12)- (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	62.6	286.5	156.8	85.4	14.2		
dichloroethane,1,2- (soil)	VLEACH1	84.9	25.0	11.5	6.3	3.4	1.3	430	720
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
dichloroethane,1,2- (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		
dichloroethene, cis-,1,2- (soil)	VLEACH1	1,212.7	454.7	249.5	160.7	110.0	50.8	140,000	190,000
	VLEACH2	21.5	8.4	4.8	3.2	2.3	1.0		
dichloroethene, cis-,1,2- (soil gas)	VLEACH1	2,294.0	860.1	472.0	304.0	208.1	96.0		
	VLEACH2	40.7	16.0	9.1	6.1	4.4	1.8		
dichloropropane,1,2- (soil)	VLEACH1	——	——	——	——	——	——	N/A	N/A
	VLEACH2	——	——	——	——	——	——		
dichloropropane,1,2- (soil gas)	VLEACH1	——	——	——	——	——	——		
	VLEACH2	——	——	——	——	——	——		

Plate 4-7a
Preliminary Remedial Objectives for Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil], µg/L [soil gas])						BHHRA RAOs (Residential Scenario)	BHHRA RAOs (Industrial Scenario)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
ethylbenzene (soil)	VLEACH1	220,400.0	88,804.0	24,747.0	7,435.9	2,226.0	442.4	230,000	230,000
	VLEACH2	220,340.0	220,340.0	78,540.0	22,619.0	4,383.4	42.1		
ethylbenzene (soil gas)	VLEACH1	48,799.0	19,662.0	5,479.3	1,646.3	492.1	97.9		
	VLEACH2	48,785.0	48,785.0	17,391.0	5,008.2	970.6	9.3		
methylene chloride (soil)	VLEACH1	84.9	25.0	11.5	6.3	3.4	1.3	2,300	3,900
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
methylene chloride (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		
naphthalene (soil)	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	240,000	8,500,000
	VLEACH2	82,896.0	82,896.0	82,896.0	82,896.0	68,348.0	74.9		
naphthalene (soil gas)	VLEACH1	1,599.9	1,599.9	1,599.9	1,599.9	424.0	33.0		
	VLEACH2	1,599.9	1,599.9	1,599.9	1,599.9	1,318.9	1.4		
tetrachloroethene (soil)	VLEACH1	2,700.0	1,000.0	500.0	300.0	200.0	100.0	3,800	6,300
	VLEACH2	47.8	18.3	10.2	6.6	4.6	1.7		
tetrachloroethene (soil gas)	VLEACH1	2,846.8	1,040.1	559.1	352.7	235.0	102.4		
	VLEACH2	49.6	19.0	10.6	6.9	4.8	1.8		
toluene (soil)	VLEACH1	215,810.0	44,728.0	12,463.0	3,744.0	1,128.0	207.6	3,400,000	4,700,000
	VLEACH2	315,150.0	75,409.0	21,600.0	6,148.9	1,201.8	25.7		
toluene (soil gas)	VLEACH1	94,872.0	19,662.0	5,479.0	1,645.9	489.2	91.3		
	VLEACH2	138,540.0	33,150.0	9,495.3	2,703.0	528.3	11.3		
TVPH-volatile (as gasoline in soil)	DLM	100,000.0	100,000.0	TBD[2]	TBD[2]	TBD[2]	TBD[2]	N/A	N/A
	DLM	—	—	—	—	—	—		
TEPH-extractable (as diesel; JP-4 in soil)	DLM	1,500,000.0	1,500,000.0	TBD[2]	TBD[2]	TBD[2]	TBD[2]	N/A	N/A
	DLM	—	—	—	—	—	—		
trichloroethene (soil)	VLEACH1	2,742.8	1,002.1	538.7	339.8	226.5	98.7	3,700	6,100
	VLEACH2	47.8	18.3	10.2	6.6	4.6	1.7		
trichloroethene (soil gas)	VLEACH1	2,846.8	1,040.1	559.1	352.7	235.0	102.4		
	VLEACH2	49.6	19.0	10.6	6.9	4.8	1.8		
trichlorofluoromethane (FC11)- (soil)	VLEACH1	85.0	25.0	12.0	6.0	3.0	1.0	1,200,000	1,700,000
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
trichlorofluoromethane (FC11)- (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		
trimethylbenzene, 1,2,4- (soil)	VLEACH1	293,350.0	102,200.0	28,480.0	8,555.9	2,547.9	485.9	N/A	N/A
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
trimethylbenzene, 1,2,4- (soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.2	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.8	4.8		
vinyl chloride (soil)	VLEACH1	84.9	25.0	11.5	6.3	3.4	1.3	N/A	N/A

Plate 4-7a
Preliminary Remedial Objectives for Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil], µg/L [soil gas])						BHHRA RAOs (Residential Scenario)	BHHRA RAOs (Industrial Scenario)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
vinyl chloride (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		
xylene (soil)	VLEACH1	293,350.0	102,200.0	28,480.0	8,555.9	2,547.9	485.9	320,000	320,000
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
xylene (soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.2	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.8	4.8		

Footnotes:
1 - Final RAOs for VOCs will be presented in SCOU ROD, Part 2 or CB ROD, Part 2.
2 - TEPH/TVPH RAOs based on:
-0 to 20 ft Water Board-Designated Level Methodology.
- Greater than 20 ft to meet State Acceptance Criteria.

Notes:
Shaded areas indicate soil gas RAOs
-VLEACH1= Vadose Zone model with 1 ft mixing zone.
-VLEACH2= Vadose model with no mixing zone.
-DLM= California Water Board, Designated Level Methodolgy.

Plate 4-7b
Remedial Action Objectives for Semi-Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil]						BHHRA RAOs (Residential Scenario)	BHHRA RAOs (Industrial Scenario)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
Semi-Volatile Organics									
anthracene								5,700	5,700
benzo(a)anthracene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	950	1,200
benzo(a)pyrene	VLEACH1	82,907.0	92,907.0	82,907.0	82,907.0	21,969.0	1,707.6	95	120
benzo(b)fluoranthene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	950	1,200
benzo(k)fluoranthene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	950	1,200
bis(2-ethylhexyl) phthalate	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	91,000	140,000
chrysene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	7,200	12,000
di-*n*-butyl phthalate	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	55,000,000	68,000,000
DDD	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	6,100	12,000
DDE	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	4,300	8,400
DDT	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	4,300	8,400
dibenz(a,h)anthracene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	160	200
dinitrotoluene,2,4-	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	4,100	6,200
fluoranthene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	20,000,000	20,000,000
g-chlordane	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	1,100	2,200
HPCDD, 1,2,3,4,6,7,8-	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
heptachlor epoxide	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	160	310
heptachlorodibenzo-*p*-dioxins	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
heptachlorodibenzofurans	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
hexachlorodibenzo-*p*-dioxins	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
indeno(1,2,3-cd)pyrene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	950	2,600
4-methylphenol	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	2,700,000	34,000,000
naphthalene (soil)[1]	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	240,000	8,500,000
octachlorodibenzo-*p*-dioxin	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	10	24
PCB	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	570	720
pentachlorodibenzofurans	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
phenanthrene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
pyrene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	100,000	100,000
tetrachlorodibenzo-*p*-dioxins	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
tetrachlorodibenzofurans	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A

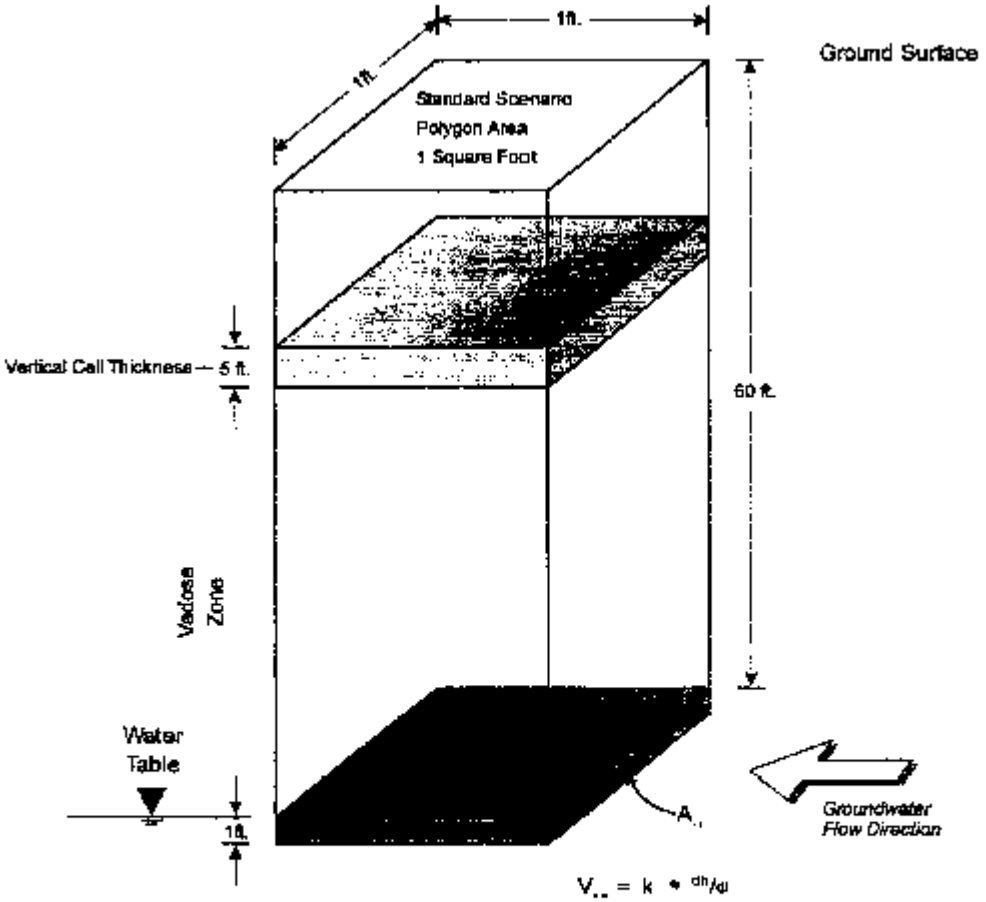
Notes
[1]Napthalene is also included in the Volatile Organic Compound RAO summary.

Plate 4-7c
Remedial Action Objectives for Metals/Other Inorganics

Contaminant	Water Quality Site Assesment Threshold for Metals[3] (µg/kg)	BHHRA RAOs (Residential Scenario) (µg/kg)	BHHRA RAOs (Industrial Scenario) (µg/kg)
Metals/Other Inorganics			
aluminum	71,103,000	N/A	N/A
antimony	11,500	280,000	680,000
arsenic	20,000	1,000	2,400
barium	2,775,000	48,000,000	100,000,000
beryllium	7,600	380	1,000
cadmium	43,700	730,000	2,000,000
chromium[3]	2,500,000	100,000,000	100,000,000
cobalt	349,000	42,000,000	100,000,000
copper	244,000	N/A	N/A
lead	855,000	400,000	1,000,000
manganese	228,000	N/A	N/A
molybdenum	95,000	3,500,000	8,500,000
mercury	100	210,000	510,000
nickel[1]	1,167,000	14,000,000	34,000,000
selenium	32,000	3,500,000	8,500,000
silver	N/A	3,500,000	8,500,000
thallium[2]	20,000	57,000	140,000
vanadium	629,000	N/A	N/A
zinc	319,000	N/A	N/A

Notes
[1]Nickel (Soluble Salts)
[2]Thallic Oxide
[3]WQSA values derived using California Water Board Designated Level Methodology; depth interval assumed–40 to 65 ft bgs.

Plate 4-8
VLEACH Mixing Illustration



$$C_{cl} = \frac{M}{V_{cl} * A_{cl}}$$

C_{cl} = Contaminant concentration in aquifer
M = Mass of containment in leachate (per yr.)
V_{cl} = Velocity of groundwater
A_{cl} = Cross sectional area of aquifer beneath column

$V_{cl} = k * {}^{dh}/_{dl}$
= 885 ft./day * 365 day/yr * 0.001 ft./ft.
= 323 ft./yr.
k = hydraulic conductivity
${}^{dh}/_{dl}$ = groundwater gradient

Not to Scale (horizontal exaggeration)

Plate 4-9
VLEACH Screening Criteria Development Process

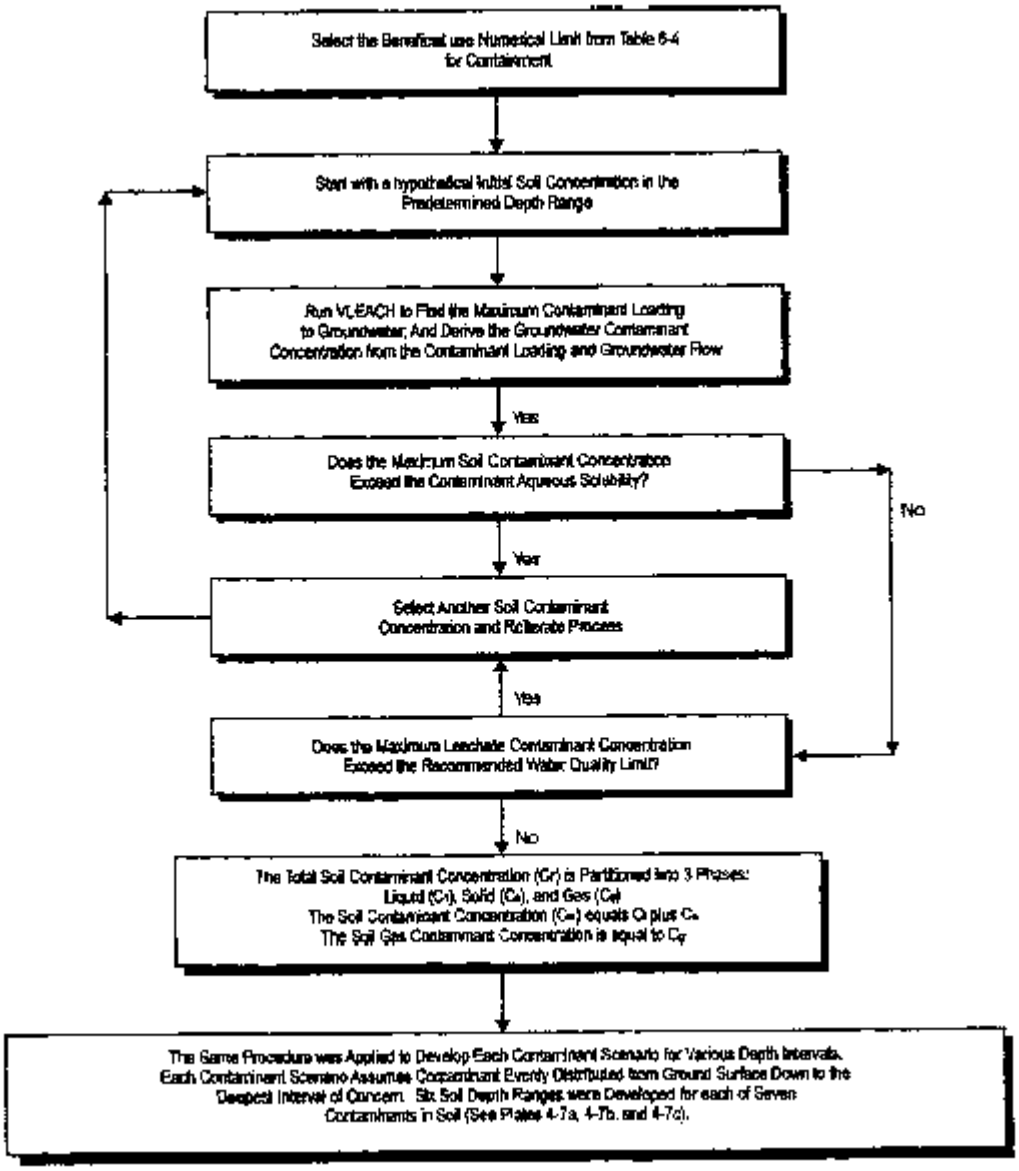


Plate 4-10
Conceptual Site Model

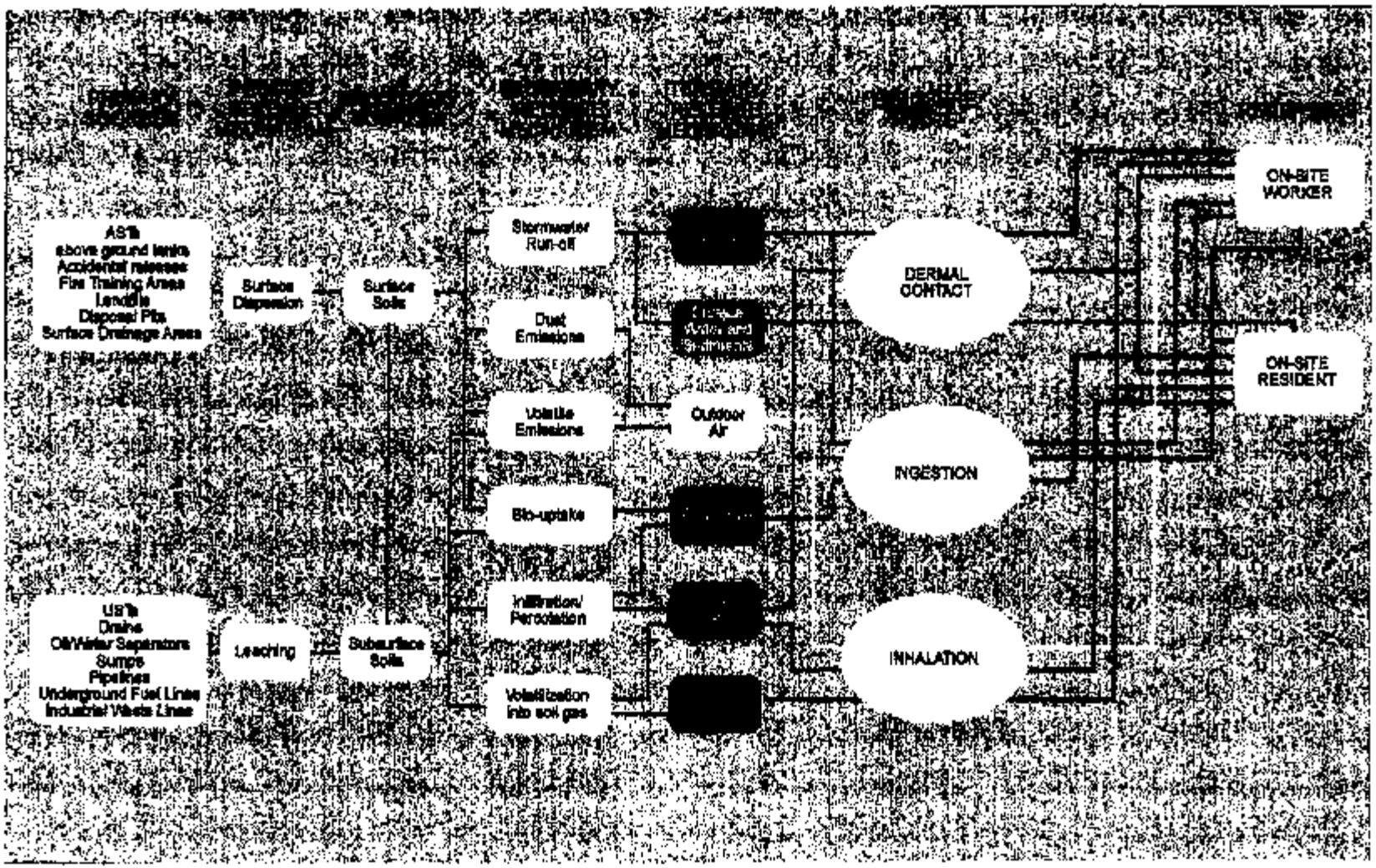


Plate 4-11
Summary of Carcinogenic Risks and Noncarcinogenic Hazard

	Adult Residential				Child Residential				Adult Occupational			
	Surface Soil		Subsurface Soil		Surface Soil		Subsurface Soil		Surface Soil		Subsurface Soil	
Site Name	Risk	Hazard	Risk	Hazard	Risk	Hazard	Risk	Hazard	Risk	Hazard	Risk	Hazard
Building 871	7.7×10^{-6}	0.1	1.2×10^{-7}	0.0001	7.5×10^{-5}	0.3	1.1×10^{-4}	0.005	3.6×10^{-7}	0.006	8.6×10^{-8}	0.00007
Building 1253	--	--	7.1×10^{-5}	0.0003	--	--	7.5×10^{-6}	0.002	--	--	1.0×10^{-6}	0.0002
Building 1260	--	--	8.1×10^{-4}	0.2	--	--	7.2×10^{-4}	0.8	--	--	5.9×10^{-5}	0.008
Building 1344	9.7×10^{-6}	0.2	--	--	1.0×10^{-5}	1.0	--	--	1.4×10^{-6}	0.001	--	--
Castle Vista Landfill B	6.2×10^{-6}	0.1	2.1×10^{-4}	0.004	6.4×10^{-4}	0.3	1.9×10^{-4}	0.02	7.7×10^{-7}	0.0003	1.3×10^{-7}	0.0002
Detonation and Burn Facility	7.5×10^{-4}	2.8	1.1×10^{-3}	0.002	7.0×10^{-4}	13.4	1.1×10^{-7}	0.008	1.2×10^{-4}	0.008	8.2×10^{-8}	0.0001
Discharge Area 3	--	--	--	--	--	--	--	--	--	--	--	--
Discharge Area 5	2.1×10^{-6}	0.3	8.4×10^{-6}	0.1	1.9×10^{-5}	1.4	6.4×10^{-4}	0.6	1.7×10^{-6}	0.007	7.2×10^{-7}	0.003
Earth Technology Corporation Site #10	1.2×10^{-2}	183	--	--	1.2×10^{-2}	981	--	--	5.7×10^{-4}	13.5	--	--
Earth Technology Corporation Site #11	--	--	1.8×10^{-5}	0.002	--	--	1.9×10^{-6}	0.01	--	--	9.9×10^{-7}	0.0001
Fire Training Area 1	5.2×10^{-6}	0.9	1.6×10^{-3}	41	5.3×10^{-6}	4.6	1.4×10^{-3}	177	2.8×10^{-7}	0.02	1.0×10^{-7}	4.3
Fire Training Area 2	1.2×10^{-5}	0.001	5.4×10^{-4}	0.0001	1.3×10^{-5}	0.01	4.7×10^{-8}	0.001	1.6×10^{-6}	0.0001	4.4×10^{-8}	0.000004
Fire Training Area 3	--	--	1.5×10^{-3}	0.04	--	--	1.3×10^{-6}	0.2	--	--	1.2×10^{-4}	0.001
Fuel Spill 1	--	--	2.6×10^{-5}	0.4	--	--	2.3×10^{-6}	1.7	--	--	1.8×10^{-4}	0.03
Fuel Spill 2	--	--	2.4×10^{-6}	0.2	--	--	2.1×10^{-5}	1.1	--	--	1.9×10^{-4}	0.01
Fuel Spill 3	--	--	2.7×10^{-4}	3.8	--	--	2.4×10^{-4}	16.8	--	--	1.9×10^{-3}	0.3
Landfill 1: Area 1	6.8×10^{-6}	0.7	3.1×10^{-5}	4.2	6.9×10^{-4}	3.5	2.8×10^{-7}	23.2	8.0×10^{-7}	0.03	1.5×10^{-4}	0.3
Landfill 1: Area 2	8.8×10^{-7}	0.1	9.0×10^{-5}	1.9	7.8×10^{-5}	0.5	7.8×10^{-4}	9.2	3.4×10^{-4}	0.001	7.4×10^{-6}	0.1
Landfill 1: Area 3	1.8×10^{-6}	0.4	--	--	1.8×10^{-4}	2.4	--	--	1.0×10^{-7}	0.03	--	--
Landfill 2: Area 1	9.9×10^{-6}	0.1	1.1×10^{-5}	0.01	8.1×10^{-4}	0.5	9.6×10^{-6}	0.1	7.7×10^{-8}	0.002	8.8×10^{-8}	0.001
Landfill 2: Area 2	5.1×10^{-4}	0.4	7.4×10^{-4}	0.02	5.4×10^{-4}	1.8	5.5×10^{-6}	0.1	7.1×10^{-8}	0.01	8.1×10^{-8}	0.002
Landfill 3: Area 1	2.1×10^{-5}	10.6	1.7×10^{-4}	0.01	2.2×10^{-4}	55.6	1.8×10^{-5}	0.04	9.9×10^{-8}	0.6	2.2×10^{-8}	0.0006
Landfill 3: Area 2	1.0×10^{-4}	0.1	--	--	1.1×10^{-4}	0.6	--	--	1.3×10^{-8}	0.01	--	--
Landfill 4: Area 1	6.1×10^{-6}	0.001	--	--	6.2×10^{-4}	0.004	--	--	7.4×10^{-7}	0.00004	--	--
Landfill 4: Area 2	8.1×10^{-7}	0.0003	--	--	7.3×10^{-5}	0.001	--	--	3.3×10^{-8}	0.00001	--	--
Landfill 5: Area 1	1.1×10^{-5}	0.1	1.8×10^{-4}	0.01	1.1×10^{-5}	0.4	1.7×10^{-4}	0.06	5.9×10^{-7}	0.001	8.9×10^{-7}	0.001
Landfill 5: Area 2	1.8×10^{-5}	0.3	7.5×10^{-4}	0.02	1.4×10^{-4}	0.6	6.8×10^{-4}	0.1	7.4×10^{-7}	0.001	4.6×10^{-8}	0.002
Landfill 5: OP-7	--	--	1.1×10^{-4}	0.05	--	--	1.2×10^{-4}	0.2	--	--	8.4×10^{-7}	0.0004
Landfill 5: OP-9	8.6×10^{-6}	0.1	1.0×10^{-5}	0.1	9.3×10^{-4}	0.6	1.1×10^{-5}	0.5	5.0×10^{-7}	0.0005	6.9×10^{-7}	0.001
PCB Site 9	1.1×10^{-4}	1.6	8.7×10^{-4}	0.2	1.1×10^{-3}	9.6	8.4×10^{-5}	0.8	1.3×10^{-4}	0.3	3.4×10^{-4}	0.01
POL Fuel Farm Area	--	--	1.3×10^{-4}	0.02	--	--	1.3×10^{-5}	0.1	--	--	1.7×10^{-5}	0.001
Sanitary Sewer Line 8	2.5×10^{-6}	0.0004	6.5×10^{-6}	0.002	2.7×10^{-6}	0.002	6.8×10^{-5}	0.007	1.9×10^{-7}	0.00004	8.8×10^{-8}	0.00008
Stain 41	2.6×10^{-4}	0.01	1.0×10^{-3}	0.0003	2.8×10^{-4}	0.03	8.1×10^{-5}	0.001	3.5×10^{-8}	0.0005	6.6×10^{-8}	0.00001
Storm Drain System Area 1	3.6×10^{-5}	7.3	--	--	4.0×10^{-5}	34.6	--	--	5.3×10^{-8}	0.05	--	--
Storm Drain System Area 2	1.4×10^{-7}	0.6	--	--	1.4×10^{-7}	2.7	--	--	9.0×10^{-8}	0.009	--	--
Structure T 61	--	--	9.6×10^{-4}	0.1	--	--	1.0×10^{-3}	0.7	--	--	1.3×10^{-4}	0.01
Underground Fuel Leak 3	--	--	1.4×10^{-4}	0.2			1.3×10^{-5}	0.9			9.9×10^{-7}	0.02

Plate from SCOU RI/F Baseline Human Health Risk Assessment (Jacobs, Sept., 1996)

Plate 4-12a
Table 6-10, Water Quality Site Assessments – Organics
(Extracted From Final SCOU RI/FS Part 1: Remedial Investigation, May 1997)

Analyte	Method Detection Limit (water) (:g/L)	Method for Water MDL	Method Detection Limit (soil) (:g/kg)	Method for Soil MDL	Beneficial Use Numerical limits (:g/L)	Source of Beneficial uses Numerical limit***	Higher of columns B & F (ug/L)	Attenuation value to protect bkgrnd water quality (:g/kg)	Attenuation value to protect beneficial uses (:g/kg)	Site soils leachate conc. to protect bkgrnd water quality (:g/kg)	Site soils leachate conc. to protect beneficial uses (:g/kg)
								10*B	10*H	MAX(D, I)	MAX(D,J)
acenaphthene	1.6	8270	34	8270	20	2	20	16	200	34	200
acenaphthylene	1.2	8270	22	8270	NA	NA	1.2	12	12	22	22
anthracene	0.64	8270	20	8270	NA	NA	0.64	6.4	6.4	20	20
bis(2-ethyhexyl)phthalate	1.8	8270	130	8270	4	6	4	18	40	130	130
bromobenzene	0.5	601	0.45	8260	NA	NA	0.5	5	5	5	5
bromochloromethane	0.5	601	0.74	8260	NA	NA	0.5	5	5	5	5
n-butylbenzene	0.5	601	0.77	8260	NA	NA	0.5	5	5	5	5
sec-butylbenzene	0.5	601	0.61	8260	NA	NA	0.5	5	5	5	5
t-butylbenzene	0.5	601	0.55	8260	NA	NA	0.5	5	5	5	5
benzene	0.5	601	0.38	8260	1	6	1	5	10	5	10
benzo(a)anthracene	1	8270	42	8270	0.1	7	1	10	10	42	42
benzo(a)pyrene	1.1	8270	39	8270	0.03	1	1.1	11	11	39	39
benzo(b)fluoranthene	1.8	8270	28	8270	0.2	7	1.8	18	18	28	28
benzo(g,h,i)perylene	0.78	8270	25	8270	NA	0	0.78	7.8	7.8	25	25
benzo(k)flouranthene	2.8	8270	29	8270	0.2	7	2.8	28	28	29	29
toluene	0.5	601	0.4	8260	42	4	42	5	420	5	420
chrysene	1.6	8270	44	8270	0.2	7	1.6	16	16	44	44
4-chloroaniline	1.4	8270	110	8270	NA	NA	1.4	14	14	110	110
chlorobenzene	0.5	601	0.36	8260	20	2	20	5	200	5	200
4-chlorotoluene	0.5	601	1	8260	NA	NA	0.5	5	5	5	5
chloromethane	0.5	601	0.64	8010	NA	NA	0.5	5	5	5	5
carbon tetrachloride	0.5	601	0.37	8260	0.5	6	0.5	5	5	5	5
p-cymene (p-isopropyltoluene)	0.5	601	0.38	8260	NA	NA	0.5	5	5	5	5
dibenz(a,h)anthracene	1.5	8270	34	8270	0.1	1	1.5	15	15	34	34
1,2-dibromo-3-chloropropane	0.5	601	1.5	8260	0.05	1	0.5	5	5	5	5
dibenzofuran	1.5	8270	38	8270	NA	NA	1.5	15	15	38	38
1,1-dichloroethane	0.5	601	0.45	8010	5	6	5	5	50	5	50
1,2-dichloroethane	0.5	601	0.53	8010	0.5	6	0.5	5	5	5	5
1,2-dichlorobenzene	0.5	601	0.5	8260	10	3	10	5	100	5	100
1,3-dichlorobenzene	0.5	601	0.51	8260	20	3	20	5	200	5	200

Plate 4-12a
Table 6-10, Water Quality Site Assessments – Organics
(Extracted From Final SCOU RI/FS Part 1: Remedial Investigation, May 1997)

Analyte	Method Detection Limit (water) (:g/L)	Method for Water MDL	Method Detection Limit (soil) (:g/kg)	Method for Soil MDL	Beneficial Use Numerical limits (:g/L)	Source of Beneficial uses Numerical limit***	Higher of columns B & F (ug/L)	Attenuation value to protect bkgrnd water quality (:g/kg)	Attenuation value to protect beneficial uses (:g/kg)	Site soils leachate conc. to protect bkgrnd water quality (:g/kg)	Site soils leachate conc. to protect beneficial uses (:g/kg)
								10*B	10*H	MAX(D, I)	MAX(D,J)
1,4-dichlorobenzene	0.5	601	0.35	8260	5	6	5	5	50	5	50
1,1-dichloroethene	0.5	601	0.69	8010	6	6	6	5	60	5	60
cis-1,2-dichloroethene	0.5	601	0.93	8260	6	6	6	5	60	5	60
P,pN-ddt*	0.041	8080	0.23	8080	1	1	1	0.41	10	0.41	10
diethyl phthalate	2.1	8270	23	8270	NA	NA	2.1	21	21	23	23
diesel components	78	LUFT	2300	LUFT	NA	NA	78	780	780	2300	2300
2,4-dimethylphenol	6.9	8270	35	8270	400	2,3	400	69	4000	69	4000
di-n-butyl phthalate	1.8	8270	240	8270	7	7	7	18	70	240	240
ethylbenzene	0.5	601	0.52	8020	29	4	29	5	290	5	290
trichlorofluoromethane	0.5	601	0.85	8010, 8260	150	6	150	5	1500	5	1500
dichlorodifluoromethane	0.5	601	1.2	8260	NA	NA	0.5	5	5	5	5
fluorene	1.7	8270	34	8270	NA	NA	1.7	17	17	34	34
fluoranthene	1.6	8270	35	8270	NA	NA	1.6	16	16	35	35
gasoline compononents	11	LUFT	680	LUFT	5	4	11	110	110	680	680
hexachlorobutadine	0.5	601	0.97	8260	NA	NA	0.5	5	5	5	5
heptachorinated dibenzo-p-dioxins, total)**	0.25	8280	0.35	8280	NA	NA	0.25	2.5	2.5	2.5	2.5
1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	0.25	8280	0.35	8280	NA	NA	0.25	2.5	2.5	2.5	2.5
indeno (1,2,3-c,d)pyrene	1.6	8270	30	8270	0.4	7	1.6	16	16	30	30
isopropylbenzene (cumene)	0.5	601	0.43	8270	NA	NA	0.5	5	5	5	5
jet fuel	78	LUFT	2300	LUFT	NA	NA	78	780	780	2300	2300
2-methylphenol (o-cresol)	3.2	8270	29	8270	NA	NA	3.2	32	32	32	32
4-methylphenol (p-cresol)	3.2	8270	41	8270	NA	NA	3.2	32	32	41	41
methylene chloride	1	601	1.1	8260	5	NA	5	10	50	10	50
2-methylnaphthalene	1	8270	32	8270	NA	NA	1	10	10	32	32
naphthalene	0.5	601	0.88	8260	NA	NA	0.5	5	5	5	5
octachlorodibenzo-p-dioxin	0.88	8280	0.66	8280	NA	NA	0.88	8.8	8.8	8.8	8.8
n-propylbenzene	0.5	601	0.52	8260	NA	NA	0.5	5	5	5	5
tetrachloroethylene	0.5	601	0.51	8260	5	6,7	5	5	50	5	50
pentachlorophenol	5.7	8270	190	8270	1	7	5.7	57	57	190	190

Plate 4-12a
Table 6-10, Water Quality Site Assessments – Organics
(Extracted From Final SCOU RI/FS Part 1: Remedial Investigation, May 1997)

Analyte	Method Detection Limit (water) (:g/L)	Method for Water MDL	Method Detection Limit (soil) (:g/kg)	Method for Soil MDL	Beneficial Use Numerical limits (:g/L)	Source of Beneficial uses Numerical limit***	Higher of columns B & F (ug/L)	Attenuation value to protect bkgrnd water quality (:g/kg)	Attenuation value to protect beneficial uses (:g/kg)	Site soils leachate conc. to protect bkgrnd water quality (:g/kg)	Site soils leachate conc. to protect beneficial uses (:g/kg)
								10*B	10*H	MAX(D, I)	MAX(D,J)
phenanthrene	1	8270	30	8270	NA	NA	1	10	10	30	30
phenol	2.5	8270	33	8270	5	3	5	25	50	33	50
pyrene	0.92	8270	26	8270	N	NA	0.92	9.2	9.2	26	26
styrene	0.5	601	0.22	8260	100	7	100	5	1000	5	1000
1,1,1-trichloroethane	0.5	601	0.46	8010	200	6,7	200	5	2000	5	2000
1,1,2-trichloroethane	0.5	601	0.64	8010	5	1,7	5	5	50	5	50
1,2,3-trichlorobenzene	0.5	601	0.56	8260	NA	NA	0.5	5	5	5	5
1,2,4-trichlorobenzene	0.5	601	0.72	8260	70	7	70	5	700	5	700
trichloroethylene	0.5	601	0.52	8260	5	6,7	5	5	50	5	50
chloroform	0.5	601	0.65	8010	10	1	10	5	100	5	100
2,4,5-trichlorophenol	2.5	8270	46	8270	1	2	2.5	25	25	46	46
1,2,3-trichloropropane	0.5	601	0.5	8010	NA	NA	0.5	5	5	5	5
1,2,4-trimethylbenzene	0.12	601	0.53	8260	NA	NA	0.12	1.2	1.2	1.2	1.2
1,3,5-trimethylbenzene	0.5	601	0.61	8260	NA	NA	0.5	5	5	5	5
vinyl chloride	1	601	0.64	8010	0.5	6	1	10	10	10	10
xylenes	0.5	601	1.83	8020	17	4	17	5	170	5	170
m,p-xylene (sum of isomers)	0.5	601	0.95	8260	17	4	17	5	170	5	170
o-xylene (1,2-	0.5	601	0.48	8260	17	4	17	5	170	5	170

Note:
NA – Not Available
Units for dioxions are NG/G or NG/L
* Prop 65 value listed for DDt44 is actually for DDT
** MDLs are HPCDD1234678 because no MDLs are available for HPCDD
*** Source of beneficial use numerical limits
1 = Proposition 65
2 = Taste & Odor Welfare (U.S. EPA National Ambient Water Quality Criteria Health and Welfare Protection)
3 = Taste & Odor (CA State Action Levels, Department of Health Services)
4 = Other Taste & Odor thresholds
5 = Agricultural Water Quality Goals
6 = CDHS primary MCL
7 = US EPA primary MCL
Reference for the above sources: A compilation of Water Quality Goals, Staff Report of the CRWQCB, Central Valley Region, May 1993

Plate 4-12b
Table 6-11, Preliminary Water Quality Site Assessments – Inorganics
(Extracted From Final SCOU RI/FS Part 1: Remedial Investigation, May 97)

Analyte	Soluble Threshold Background Value Range (:g/L		Soluble Shallow Background (:g/L)		Soluble Deep Background (:g/L)		Method Detection limit (water) (:g/L)	Method for MDL	Beneficial use numerical limits (:g/kg)	Source of beneficial use numerical limit	Higher of columns B&H (:g/L)	Higher of columns B, H&J (:g/kg)	Attenuation value to protect bkgrnd water quality (:g/kg)	Attenuation value to protect benef. uses (:g/kg)	Range of soils conc. to protect bkgrnd wq (:g/kg)		Range of soils conc. to protect benef. Uses (:g/kg)	
	Minimum	Maximum	Silt	Sand	Silt	Sand							10*L	10*M	Min (N)	MAX (10*C)	MIN (O)	MAX (O,Q)
aluminum	680	2200	2200	990	680	1700	19	6010	1000	6	680	1000	6800	10000	6800	22000	10000	22000
antimony	NA	NA	NA	NA	NA	NA	15	6010	6	7	15	15	150	150	150	NA	150	150
arsenic	ND	ND	ND	ND	ND	ND	1	7060	5	1	1	5	10	50	10	ND	50	50
barium	5.4	22	22	7.3	5.4	13	1	6010	1000	6	5.4	1000	54	10000	54	220	10000	10000
beryllium	0.5	0.6	0.5	0.5	ND	0.6	0.3	6010	4	7	0.5	4	5	40	5	6	40	40
boron	NA	NA	NA	NA	NA	NA	1.7	6010	750	5	1.7	750	17	7500	17	NA	7500	7500
cadmium	ND	ND	ND	ND	ND	ND	5	6010	5	7	5	5	50	50	50	ND	50	50
chromium, total	6.7	6.9	ND	6.7	ND	6.9	6.6	6010	50	6	6.7	50	67	500	67	69	500	500
hexavalent chromium	ND	ND	ND	ND	ND	ND	10	7196	100	5	10	100	100	1000	100	ND	1000	1000
cobalt	ND	ND	ND	ND	ND	ND	4.2	6010	50	5	4.2	50	42	500	42	ND	500	500
copper	ND	ND	ND	ND	ND	ND	5.3	6010	200	5	5.3	200	53	2000	53	ND	2000	2000
iron	630	1700	1600	800	630	1700	7.6	6010	300	2	630	630	6300	6300	6300	17000	6300	17000
lead	15	23	17	23	15	15	1	7421	0.25	1	15	15	150	150	150	230	150	230
manganese	8.2	92	30	10	8.2	92	1	6010	50	2	8.2	50	82	500	82	920	500	920
mercury	0.57	0.63	ND	ND	0.63	0.57	0.2	7470	2	6.7	0.57	2	5.7	20	5.7	6.3	20	20
molybdenum	4	4.9	4.7	ND	4.9	4	4.5	6010	10	5	4.5	10	45	100	45	49	100	100
nickel	11	20	11	19	20	20	5.1	6010	100	7	11	100	110	1000	110	200	1000	1000
selenium	ND	ND	ND	ND	ND	ND	1	7740	10	6	1	10	10	100	10	ND	100	100
silver	ND	ND	ND	ND	ND	ND	5.2	6010	50	6	5.2	50	52	500	52	ND	500	500
thallium	ND	ND	ND	ND	ND	ND	35	6010	2	7	35	35	350	350	350	ND	350	350
vanadium	22	43	43	28	24	22	3	6010	100	5	22	100	220	1000	220	430	1000	1000
zinc	20	15000	27	20	15000	26	1.2	6010	2000	5	20	2000	200	20000	200	150000	20000	150000

Note:
NA = Not Available
ND = Not Detected
*** Source of beneficial use numerical limits
1 = Proposition 65
2 = Taste & Odor Welfare (U.S. EPA National Ambient Water Quality Criteria Health and Welfare Protection)
3 = Taste & Odor (CA State Action Levels, Department of Health Services)
4 = Other Taste & Odor thresholds
5 = Agricultural Water Quality Goals
6 = CDHS primary MCL7 = US EPA primary MCL
7 = US EPA primary MCL

Appendix C

PARTIALLY SCANNED
OVERSIZE ITEM (S)

See Document # 128554
for partially scanned image(s).

For complete version of oversize document(s),
see paper copy.

Plate 5-1-1
Cleanup Objectives for LF1, LF2, LF3, LF4, LF5, CVLFA, CVLFB, and Acceptance Criteria for LF4 and LF5

1. PURPOSE

This document describes the general procedure for development of RAOs and Acceptance Criteria for consolidation Landfills LF4 and LF5. These criteria have also been presented in the Final Closure/Post-Closure Maintenance Plan (CPCMP) for Landfills 4 and 5 (Jacobs, 1997 & 1998).

1.1 General Procedure for RAO Development

In developing RAOs for the Castle Airport Landfill Remedial Action sites, contaminants of concern (COCs) were identified from the final Source Control Operable Unit (SCOU), Basewide Human Health Risk Assessment (BHHRA) and Final SCOU Water Quality Site Assessment (WQSA). RAOs for volatile organic compounds (VOCs) have been deferred pending resolution of the Castle VOC cleanup criteria. Final RAOs for VOCs will be documented in the CB Part 2 Record of Decision (ROD). Ecological COCs will be developed as part of the CB Part 2 ROD and are not included in this document. Because the ecological feasibility study (FS) is incomplete, remedies selected maybe augmented based on ecological FS findings. COCs were identified as follows:

- The Final SCOU BHHRA quantitative risk assessments for each site with carcinogenic risks greater than $1x10^{-6}$ or a hazard index (HI) of greater than 1 were reviewed to identify significant contributors to risk or hazard. Lead was considered a COC if the target blood lead level of 10 micrograms per deciliter (µg/dL) was exceeded, based on the California Environmental Protection Agency (Cal-EPA) lead exposure model. Significant contributors are considered to be contaminants that exceed the criteria. In the absence of contaminants that exceed the criteria, contaminants that must be removed to reduce risk below the criteria were identified.

- The Final SCOU Remedial Investigation (RI), Section 8, which includes the WQSA, was reviewed to identify contaminants with the potential to impact groundwater quality.

RAOs for each COC were determined using the following approach:

- The Castle-specific calculated preliminary remediation goals (PRGs) were used for the COCs derived from the SCOU BHHRA.

- In some cases, the calculated PRGs are less that the U. S. Environmental Protection Agency (EPA) Region IX PRGs due to the assumptions agreed upon by the risk assessment team during the SCOU BHHRA preparation.

- For each COC at each site, the applicable scenario and exposure pathway are identified in the basis column.

- Where the RAO for a metal COC is less than background, the background value is used for the RAO. For the occupational scenario, this only applies to arsenic.

- Where PAHs, including benzo(a)pyrene, are the only contaminants, an RAO was identified only for benzo(a)pyrene, because it is the most restrictive.

- The risk based lead RAO was back-calculated from the target blood lead level (10 µg/dL) using the Cal/EPA exposure model.

- Other than for the fifth bullet item above, no RAO value adjustments have been made to account for multiple site contaminants at LF3 (benzo(a)pyrene, lead, and arsenic).

- The groundwater protective values determined in the final SCOU RI, Section 8, were used as the WQSA RAOs for SVOCs and metals (see attached Plates 4-7b and 4-7c). The WQSA RAOs were used because they were developed as levels protective of groundwater beneficial uses, using the methodology described in Section 8 of the final SCOU RI

  Relative to VOCs, achievement of adequate cleanup levels (prior to final RAOs being developed) will be accomplished by comparing confirmation sample results to the vadose zone screening criteria (revised VLEACH values) presented in the attached Plate 4-7a. If levels are above the original VLEACH values additional action is necessary. If levels are between the original and revised VLEACH values the Air Force and Agencies will discuss the results to determine appropriate actions. If levels are below the revised VLEACH values, the BRAC Closure Team (BCT) agrees that no further action is necessary.

  Relative to VOC acceptance criteria for LF5, the presence of VOCs in wastes from LF4 and LF5 at concentrations exceeding the vadose zone screening criteria is not anticipated based on RI/FS results. If, through application of Standard Operating Procedure (SOP 44) during excavation, wastes are encountered that are suspected to contain concentrations of VOCs that could potentially cause them to be classified as hazardous or designated wastes, the material will be segregated and characterized. Characterization results will be compared to the vadose zone screening criteria presented in the attached Plate 4-7a. If levels are above the original VLEACH values, the waste in question is designated and will be disposed of at an appropriate off-site facility. If levels are between the original and revised VLEACH values, the Air Force and agencies will discuss the results to determine appropriate actions. If levels are below the revised VLEACH values, the BCT agrees that the material may be disposed at LF5.

1.2 Site-Specific Cleanup Objectives and Acceptance Criteria

After the COCs and potential RAOs were identified as described previously, site-specific SVOC and metal RAOs were determined for each of the remedial action landfill sites based on the following rationale. Applicable site-specific COCs and their related RAOs for each landfill site are provided in the narratives for each landfill site.

Plate 5-1-1
Cleanup Objectives for LF1, LF2, LF3, LF4, LF5, CVLFA, CVLFB, and Acceptance Criteria for LF4 and LF5

For excavated areas, confirmation samples will be taken prior to backfilling. If confirmation sample results exceed any of the non-VOC RAOs, additional excavation and confirmation sampling will be performed until concentrations below RAOs are achieved. For VOCs, additional excavation and/or soil vapor extraction (SVE) may be implemented to achieve RAOs, once established. If confirmation sampling results indicate that additional COCs or previously unknown contaminants are present, the SVOC and metal RAOs shown in Plates 4-10b and 4-10c will be used as RAOs/acceptance criteria for those contaminants. If confirmation sampling results indicate that VOC concentrations are below the revised VLEACH (VLEACH2) values, the BCT agrees no further action is required. If confirmation sampling results indicate that VOC concentrations are below the original VLEACH (VLEACH1), but above the revised VLEACH (VLEACH2), the Air Force and agencies will discuss the results to determine appropriate actions. The decision to perform additional excavation/sampling or backfill and conduct SVE and/or a technical and economic (T&E) evaluation will be based on judgment and location-specific factors such as concentration(s), depth, and apparent extent of contamination.

Landfill 4

- There are no applicable COCs or RAOs for LF4 based on BHHRA, assuming the occupational exposure scenario.

- An RAO for Freon 12 in soil gas has been established for LF4 based on WQSA. RAO for soil gas COCs are established as cleanup standards but do not apply as acceptance criteria since soil gas is not a material waste that would be excavated or consolidated.

- Several metals contribute to ecological risks to multiple receptors at LF4. Generally, cleanup to background levels would be necessary for protection of ecological receptors. However, since none of the receptors are protected species, no critical habitat has been identified at LF4, and surface soils at LF4 will be consolidated under the LF4 cap, RAOs to protect ecological receptors are not being proposed. The areas that contribute the most to ecological risk at LF4 are addressed by the planned action.

- Acceptance criteria for material received from LF2, LF3, CVLFA, and CVLFB are RAOs shown in the COC and RAO subsection of LF4 ROD text and on Plate 4-7a, Plate 4-7b, and Plate 4-7c.

Landfill 5

- There are no applicable COCs or RAOs for LF5 based on the BHHRA, assuming the occupational exposure scenario.

- TEPH to 20 feet bgs is an applicable soil COC for LF5 based on the WQSA. Soil RAOs will be used as cleanup standards at LF5 for consolidated trenching. On the basis of the WQSA,

soil or waste materials that exceed the RAO are designated wastes and are not to be consolidated under the LF5 cap. Xylenes and toluene to 20 feet bgs, and Freon 11 and Freon 12 to 50 feet bgs are soil gas COCs. Adequate cleanup levels, prior to developing RAOs for these COCs, will be accomplished by comparing confirmation sample results to the vadose zone screening criteria (revised VLEACH values) presented in Plate 4-7a. If levels are above the original VLEACH values, additional action is necessary. If levels are between the original and revised VLEACH values, the Air Force and agencies will discuss the results to determine appropriate actions. If levels are below the revised VLEACH values, the BCT agrees no further action is necessary. These levels do not apply as acceptance criteria since soil gas is not a material waste that would be excavated or consolidated.

- Acceptance criteria are the RAOs shown in Plates 4-7b and 4-7c for SVOCs and metals. For VOCs, the presence of VOCs in wastes from LF3 and LF5 at concentrations exceeding the vadose zone screening criteria is not anticipated based on RI/FS results. If, through application of SOP 44 during excavation, wastes are encountered that are suspected to contain concentrations of VOCs that could potentially cause them to be classified as hazardous or designated wastes, the material will be segregated and characterized. Characterization results will be compared to the vadose zone screening criteria presented in the attached Plate 4-7a. If levels are above the original VLEACH values, the waste in question is designated and will be disposed of at an appropriate offsite facility. If levels are between the original and revised VLEACH values, the Air Force and Agencies will discuss the results to determine appropriate actions. If levels are below the revised VLEACH values, the BCT agrees that the material may be disposed at LF5

  In addition (as explained in detail in SOP 44), bulk and noncontainerized liquid wastes cannot be placed at LF5. Containerized liquids must meet three restrictions: (1) the containers must be similar in size to that normally found in household waste, (2) the container is designed to hold liquids for other than storage, and (3) the waste is household waste.

Plate 5-1-2
Summary of Alternatives Considered for Landfill Sites and Disposal Pits

	Legend:					Cleanup Alternatives			
	■ - Alternative Considered ✧ - Preferred Alternative								
Site Count		Map Coordinates	No Action	Excavation / Off-site Disposal	Excavation / On-site Disposal	Class III Cap with Institutional Controls	Evapotranspiration Cap with Institutional Controls	Zoned Capping With Institutional Controls	Excavation and On-Site Disposal and Soil Vapor Extraction (SVE) for Trichloroethylene (TCE) Contamination
	Landfill Sites & Disposal Pits								
1	Castle Vista A[1]	W5	■	■	✧	■	■	■	
2	Castle Vista B[1]	T4, U4	■	■	■	■	■	■	✧
3	Disposal Pit 1 (LF1)	V13	■	■	✧	■	■	■	
4	Disposal Pit 2 (LF1)	U13	■	■	✧	■	■	■	
5	Disposal Pit 3 (LF1)	U13, U14	■	■	✧	■	■	■	
6	Disposal Pit 5 (LF4)1	H6	■	■	■	■	■	✧	
7	Disposal Pit 6 (LF4)1	H6	■	■	■	■	■	✧	
8	Disposal Pit 8 (LF5)	E11	■	■	■	■	■	✧	
9	Disposal Pit 8A (LF5)	E11	■	■	■	■	■	✧	
10	Disposal Pit 9 (LF5)	E12	■	■	■	■	■	✧	
11	Landfill 1	U13	■	■	✧	■	■	■	
12	Landfill 2[1]	T14, S14	■	■	✧	■	■	■	
13	Landfill 3	J16, K16, L16	■	■	✧	■	■	■	
14	Landfill 4[1]	G6, H6, J6	■	■	■	■	■	✧	
15	Landfill 5	E11, E12, F11, F12	■	■	■	■	■	✧	
16	Landfill 5 Trenches (LF5)	F11	■	■	■	■	■	✧	
	Landfill Site and Disposal Pit Totals	16	0	0	7	0	0	8	1

[1]Removal Action Site. Selected remedy enacted.

Plate 5-1-3
Alternatives for Landfill Sites

Site Name *(Associated Sites)*	**Class III & Institutional Controls (Entire Area of Concern)**	**Evapotranspiration Cap & Institutional Controls (Entire Area of Concern)**	**Zoned Cap & Institutional Controls**	**Excavation and On Site Disposal**	**Excavation and Off site Disposal**
Landfill 1	Landfill 1 would be divided into two zones. Installation of a Class III cap at LF 1 would include importing 97,624 cubic yards of foundation soil for Zone 1 and 2,496 cubic yards of foundation soil for Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML Cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (13.28 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Landfill 1 would be divided into two zones. Installation of an Evapotranspiration cap at LF 1 would include importing 97,624 cubic yards of foundation soil for Zone 1 and 2,496 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil, and a vegetative cover would be installed over the landfill surface (13.28 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, approximately 36,377 cubic yards of waste would be excavated from trenches A, B, D, G, I, K, and L at LF1 and consolidated into a smaller area. It is estimated that 367 cubic yards of the excavated waste will be classified as hazardous or regulated and will require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 32,687 cubic yards of foundation material at Zone 1 and 3,690 cubic yards of foundation material at Zone 2. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (4.65 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 118,637 cubic yards of waste will be excavated and classified. It is estimated that 1,186 cubic yards of waste will be classified as hazardous or regulated and require off site disposal. The remaining 117,451 cubic yards of waste will be taken to LF4 for consolidation and disposal. The LF1 excavation will then be backfilled with 118,637 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 118,637 cubic yards of waste will be excavated and classified. It is estimated that 1,186 cubic yards of the waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 117,451 cubic yards of waste will be taken to a municipal landfill for disposal. The LF1 excavation will then be backfilled with the 118,637 cubic yards of makeup backfill. O&M would semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.
Landfill 2	Initially, Landfill 2 would be divided into two zones. Installation of a Class III cap at LF 2 would include importing 1,563 cubic yards of foundation soil at Zone 1 and 42,852 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (5.88 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Initially, Landfill 2 would be divided into two zones. Installation of an Evapotranspiration cap at LF 2 would include importing 1,563 cubic yards of foundation soil for of Zone 1 and 42,852 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil, and a vegetative cover would be installed over the landfill surface (5.88 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, approximately 6,090 cubic yards of waste would be excavated from trenches A, B, E, and F at LF2 and consolidated into a smaller area. It is estimated that 61 cubic yards of the excavated waste will be classified as hazardous or regulated and will require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 6,139 cubic yards of foundation material at Zone 1, 748 cubic yards of foundation material at Zone 2, and 6,948 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (1.63 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 11,795 cubic yards of waste will be excavated and classified. It is estimated that 118 cubic yards of waste will be classified as hazardous or regulated and require off site disposal. The remaining 11,677 cubic yards of waste will be taken to the on-site consolidation landfill for disposal. The LF2 excavation will then be backfilled with 11,795 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 11,795 cubic yards of waste will be excavated and classified. It is estimated that 118 cubic yards of the waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 117,451 cubic yards of waste will be taken to a municipal landfill for disposal. The LF 2 excavation will then be backfilled with the 11,795 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.
Landfill 3	Initially, Landfill 3 would be divided into two zones. Installation of a Class III cap at LF 3 would include importing 103,111 cubic yards of foundation soil at Zone 1 and 2,719 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML Cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (14.36 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 1 new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Initially, Landfill 3 would be divided into two zones. Installation of an Evapotranspiration cap at LF 3 would include importing 103,111 cubic yards of foundation soil for Zone 1 and 2,719 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil, and a vegetative cover would be installed over the landfill surface (14.36 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of a new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 yrs, and annual sampling for 20 years.	Under the Zoned cap alternative, approximately 23,256 cubic yards of waste would be excavated from trenches A, B, C, D, E, F, G, and N at LF 3 and consolidated into a smaller area. It is estimated that 233 cubic yards of the excavated waste will be classified as hazardous or regulated and require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 18,449 cubic yards of foundation material at Zone 1, 4,574 cubic yards of foundation material at Zone 2, and 23,256 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (2.79 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 1 new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 yrs, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 39,870 cubic yards of waste will be excavated and classified. It is estimated that 399 cubic yards of waste will be classified as hazardous or regulated and require off site disposal. The remaining 39,472 cubic yards of waste will be taken to LF4 for consolidation and disposal. The LF 3 excavation will then be backfilled with 39,870 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 39,870 cubic yards of waste will be excavated and classified. It is estimated that 399 cubic yards of the waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 39,472 cubic yards of waste will be taken to a municipal landfill for disposal. The LF 3 excavation will then be backfilled with the 39,870 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.

Plate 5-1-4
Summary of Cost Analysis for Landfill Group (See Note 1)

SITE OR SITE GROUP	REMEDIATION COSTS					
	No Action	Alternative 1: Excavation/ Disposal @ Onsite Consolid. Landfill(Note 2)	Alternative 2: Excavation / Disposal @ Offsite Landfil (Note 3)	Alternative 3: Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	Alternative 4: Evapotrans-piration (ET) Cap & Institutional Controls	Alternative 5: Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional
LF-1						
Capital Costs	$46,002	$4,240,080	$10,389,739	$2,809,904	$5,570,175	$1,930,025
O&M Costs(Present Worth)	$133,022	$179,025	$279,025	$871,850	$871,850	$525,437
TOTAL (Present Worth)	**$179,024**	**$4,419,105**	**$10,668,764**	**$3,681,754**	**$6,442,025**	**$2,455,462**
LF-2						
Capital Costs	$46,002	$421,559	$1,032,973	$1,245,648	$2,468,510	$430,286
O&M Costs (Present Worth)	99,767	$145,769	$145,769	$838,594	$838,594	$492,182
TOTAL (Present Worth)	**$145,769**	**$567,328**	**$1,178,742**	**$2,084,242**	**$3,307,104**	**$922,468**
LF-3						
Capital Costs	$23,001	$1,730,325	$3,491,681	$3,005,781	$5,990,863	$1,204,713
O&M Costs (Present Worth)	$99,767	$815,593	$122,768	$815,593	$815,593	$469,181
TOTAL (Present Worth)	**$122,768**	**$2,545,918**	**$3,614,449**	**$3,821,374**	**$6,806,456**	**$1,673,894**
LF-4						
Capital Costs	$0	$3,332,551	$8,165,961	$3,598,859	$7,265,298	$2,022,192
O&M Costs (Present Worth)	$166,278	$166,278	$166,278	$859,104	$859,104	$512,691
TOTAL (Present Worth)	**$166,278**	**$3,498,829**	**$8,332,239**	**$4,457,963**	**$8,124,402**	**$2,534,883**
LF-5						
Capital Costs	$0	$3,560,863	$8,725,409	$4,636,726	$8,538,478	$2,706,903
O&M Costs (Present Worth)	$166,278	$199,534	$199,534	$892,360	$892,360	$545,947
SVE						
Capital Costs		$269,000	$269,000	$269,000	$269,000	$269,000
O&M Costs (Present Worth)		$296,000	$296,000	$296,000	$296,000	$296,000
TOTAL (Present Worth)	**$166,278**	**$4,325,397**	**$9,489,943**	**$6,094,086**	**$9,995,838**	**$3,817,850**
CVLF-A						
Capital Costs	$23,001	$15,594	$38,212	$150,150	$356,662	$155,833
O&M Costs (Present Worth)	$100,000	$122,768	$122,768	$815,593	$815,593	$469,181
TOTAL (Present Worth)	**$123,001**	**$138,362**	**$160,980**	**$965,743**	**$1,172,255**	**$625,014**
CVLF-B (Note 1)						
Containment						
Capital Costs	$46,002	$672,052	$1,646,771	$1,326,619	$2,733,304	$1,020,153
O&M Costs (Present Worth)	$133,000	$179,025	$179,025	$871,850	$871,850	$525,437
SVE						
Capital Costs		$269,000	$269,000	$269,000	$269,000	$269,000
O&M Costs (Present Worth)		$296,000	$296,000	$296,000	296,000	$296,000
TOTAL (Present Worth)	**$179,002**	**$1,416,077**	**$2,390,796**	**$2,763,469**	**$4,170,154**	**$2,110,590**
Total for Landfill Group						
Capital Costs	$184,008	$14,242,024	$33,759,746	$17,042,687	$33,192,290	$9,739,105
O&M Costs (Present Worth)	$898,112	$2,103,992	$1,511,167	$6,260,944	$6,260,944	$3,836,056
TOTAL (Present Worth)	**$1,082,120**	**$16,346,016**	**$35,270,913**	**$23,303,631**	**$39,453,234**	**$13,575,161**

General: Costs of selected alternative of each site are indicated with double-lined border.
Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997)
2. The costs for the final cover are included in cost estimates for LF-3. Costs are related to waste handling and foundation layer installation are included in cost estimates from the remaining LF-sites.
3. CVLF-B contains a large volume of DCE-contaminated soil at depths to 40 feet bgs. Cost for SVE treatment of DCE-contaminated soils is included in Alternative 3-B only because excavation does not reduce percolation through the deep DCE plume.

Plate 5-1-3
Alternatives for Landfill Sites

Site Name *(Associated Sites)*	**Class III Cap & Institutional Controls (Entire Area of Concern)**	**Evapotranspiration Cap & Institutional Controls (Entire Area of Concern)**	**Zoned Cap & Institutional Controls**	**Excavation and On Site Disposal**	**Excavation and Off site Disposal**
Landfill 1	Landfill 1 would be divided into two zones. Installation of a Class III cap at LF 1 would include importing 97,624 cubic yards of foundation soil for Zone 1 and 2,496 cubic yards of foundation soil for Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (13.28 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Landfill 1 would be divided into two zones. Installation of an Evapotranspiration cap at LF 1 would include importing 97,624 cubic yards of foundation soil for Zone 1 and 2,496 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil, and a vegetative cover would be installed over the landfill surface (13.28 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned Cap alternative, approximately 36,377 cubic yards of waste would be excavated from trenches A, B, D, G, I, K, and L at LF1 and consolidated into a smaller area. It is estimated that 367 cubic yards of the excavated waste will be classified as hazardous or regulated and will require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 32,687 cubic yards of foundation material at Zone 1 and 3,690 cubic yards of foundation material at Zone 2. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (4.65 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 118,637 cubic yards of waste will be excavated and classified. It is estimated that 1,186 cubic yards of the waste will be classified as hazardous or regulated and require off site disposal. The remaining 117,451 cubic yards of waste will be taken to LF4 for consolidation and disposal. The LF1 excavation will then be backfilled with 118,637 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 118,637 cubic yards of waste will be excavated and classified. It is estimated that 1,186 cubic yards of the waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 117,451 cubic yards of waste will be taken to a municipal landfill for disposal. The LF1 excavation will then be backfilled with 118,637 cubic yards of makeup backfill. O&M would semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.
Landfill 2	Initially, Landfill 2 would be divided into two zones. Installation of a Class III cap at LF 2 would include importing 1,563 cubic yards of foundation soil at Zone 1 and 42,852 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML Cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (5.88 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Initially, Landfill 2 would be divided into two zones. Installation of an Evapotranspirtation cap at LF 2 would include importing 1,563 cubic yards of foundation soil for of Zone 1 and 42,852 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage, 1 ft of low permeability soil, and a vegetative cover would be installed over the landfill surface (5.88 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned Cap alternative, approximately 6,090 cubic yards of waste would be excavated from trenches A, B, E and F at LF2 and consolidated into a smaller area. It is estimated that 61 cubic yards of the excavated waste will be classified as hazardous or regulated and require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 6,139 cubic yards of foundation material at Zone 1, 748 cubic yards of foundation material at Zone 2, and 6,948 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (1.63 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 11,795 cubic yards of waste will be excavated and classified. It is estimated that 118 cubic yards of waste will be classified as hazardous or regulated and require off site disposal. The remaining 11,677 cubic yards of waste will be taken to the on-site consolidation landfill for disposal. The LF2 excavation will then be backfilled with 11,795 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 11,795 cubic yards of waste will be excavated and classified. It is estimated that 118 cubic yards of the waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 117,451 cubic yards of waste will be taken to a municipal landfill for disposal. The LF 2 excavation will then be backfilled with 11,795 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.
Landfill 3	Initially, Landfill 3 would be divided into two zones. Installation of a Class III cap at LF 3 would include importing 103,111 cubic yards of foundation soil at Zone 1 and 2,719 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML Cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (14.36 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 1 new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Initially, Landfill 3 would be divided into two zones. Installation of an Evapotranspirtation cap at LF 3 would include importing 103,111 cubic yards of foundation soil for of Zone 1 and 2,719 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil, and a vegetative cover would be installed over the landfill surface (14.36 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of a new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 yrs, and annual sampling for 20 years.	Under the Zoned Cap alternative, approximately 23,256 cubic yards of waste would be excavated from trenches A, B, C, D, F, G, and N at LF3 and consolidated into a smaller area. It is estimated that 233 cubic yards of the excavated waste will be classified as hazardous or regulated and require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 18,449 cubic yards of foundation material at Zone 1, 4,574 cubic yards of foundation material at Zone 2, and 23,256 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (2.79 acres). Fencing and signage would be installed as part of access restriction. O&M would include the installation of 1 new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 yrs, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 39,870 cubic yards of waste will be excavated and classified. It is estimated that 399 cubic yards of waste will be classified as hazardous or regulated and require off site disposal. The remaining 39,472 cubic yards of waste will be taken to LF4 for consolidation and disposal. The LF 3 excavation will then be backfilled with 39,870 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 39,870 cubic yards of waste will be excavated and classified. It is estimated that 399 cubic yards of the waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 39,472 cubic yards of waste will be taken to a municipal landfill for disposal. The LF 3 excavation will then be backfilled with 39,870 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.

Plate 5-1-3 (continued)
Alternatives for Landfill Sites

Site Name *(Associated Sites)*	Class III Cap (Entire Area of Concern)	Evapotranspiration Cap (Entire Area of Concern)	Zoned Cap	Excavation and On Site Disposal	Excavation and Off site Disposal
Landfill 4	Initially, Landfill 4 would be divided into two zones. Installation of a Class III cap at LF 4 would include importing 119,778 cubic yards foundation soil at Zone 1 and 3,311 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML cap, a Geocomposite filter layer, and a vegetative cover would be installed over the landfill surface (17.63 acres). Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells (5 wells) for 10 years, and annual sampling for 20 years.	Initially, Landfill 4 would be divided into two zones. Installation of an Evapotranspiration cap at LF 4 would include importing 119,778 cubic yards of foundation soil for Zone 1 and 3,311 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil, and a vegetative cover would be installed over the landfill surface (17.63 acres). Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells (5 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, approximately 30,104 cubic yards of waste would be excavated from trenches E, F, G, I, J and L at LF 4 and consolidated into a smaller area. It is estimated that 301 cubic yards of the excavated waste will be classified as hazardous or regulated and require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 20,877 cubic yards of foundation material at Zone 1, 8,925 cubic yards of foundation material at Zone 2, and 30,104 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (7.82 acres). Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells (5 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 93,244 cubic yards of waste will be excavated and classified. It is estimated that 932 cubic yards of waste will be classified as hazardous or regulated and require off site disposal. The remaining 92,312 cubic yards of waste would be consolidated and capped in place with a Class III cap. Signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 93,244 cubic yards of waste will be excavated and classified. It is estimated that 932 cubic yards of waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 92,312 cubic yards of waste will be taken to a municipal landfill for disposal. The LF4 excavation will then be backfilled with 93,244 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.

Plate 5-1-3 (continued)
Alternatives for Landfill Sites

Site Name *(Associated Sites)*	Class III Cap (Entire Area of Concern)	Evapotranspiration Cap (Entire Area of Concern)	Zoned Cap	Excavation and On Site Disposal	Excavation and Off site Disposal
Landfill 5	Initially, Landfill 5 would be divided into two zones. Installation of a Class III cap at LF 5 would include importing 240,037 cubic yards foundation soil at Zone 1 and 2,693 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML cap, a Geocomposite filter layer, and a vegetative cover would be installed over the landfill surface (18.77 acres). Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells (6 wells) for 10 years, and annual sampling for 20 years.	Initially, Landfill 5 would be divided into two zones. Installation of an Evapotranspiration cap at LF 5 would include importing 240,037 cubic yards of foundation soil for Zone 1 and 2,693 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil, vegetative cover would be installed over the landfill surface (18.77 acres). Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells (6 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, approximately 55,597 cubic yards of waste would be excavated from trenches A, B, C, D, and L at LF 5 and consolidated into a smaller area. It is estimated that 556 cubic yards of the excavated waste will be classified as hazardous or regulated and require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 54,075 cubic yards of foundation material at Zone 1, 1,662 cubic yards of foundation material at Zone 2, and 56,293 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the landfill surface (7.53 acres). Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells (6 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 99,633 cubic yards of waste will be excavated and classified. It is estimated that 996 cubic yards of the waste will be classified as hazardous or regulated and require off site disposal. The remaining 98,636 cubic yards of waste would be taken to Landfill 3 for consolidation and disposal. The LF4 excavation will then be backfilled with 99,633 cubic yards of makeup backfill. Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 99,633 cubic yards of waste will be excavated and classified. It is estimated that 996 cubic yards of the waste will be classified as hazardous or regulated and be taken to a Class I or Class II landfill for disposal. The remaining 98,636 cubic yards of waste will be taken to a municipal landfill for disposal. The LF4 excavation will then be backfilled with 99,633 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.

Plate 5-1-3 (continued)
Alternatives for Landfill Sites

Site Name *(Associated Sites)*	Class III Cap (Entire Area of Concern)	Evapotranspiration Cap (Entire Area of Concern)	Zoned Cap	Excavation and On Site Disposal	Excavation and Off site Disposal	
Castle Vista Landfill A (CVLFA)	Initially, CVLFA would be divided into two zones. Installation of a Class III cap at CVLFA would include importing 678 cubic yards of foundation soil at Zone 1 and 2,358 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (0.99 acres). Fencing and signage would be installed as part of access restriction. O&M would include installation of 1 new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Initially, CVLFA would be divided into two zones. Installation of an Evapotranspiration cap at LF 5 would include importing 678 cubic yards of foundation soil for of Zone 1 and 2,358 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil and a vegetative cover would be installed over the landfill surface (0.99 acres). Fencing and signage would be installed as part of access restriction. O&M would include installation of 1 new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, approximately 436 cubic yards of waste would be excavated from the landfill and consolidated into a smaller area. It is estimated that 4 cubic yards of the excavated waste will be classified as hazardous or regulated and require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 1,555 cubic yards of foundation material at Zone 1, 504 cubic yards of foundation material at Zone 2, and 4,421 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and a vegetative cover would be installed over the landfill surface (0.70 acres). Fencing and signage would be installed as part of access restriction. O&M would include installation of 1 new monitoring well, semiannual sampling of the site monitoring wells (3 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 436 cubic yards of waste will be excavated and classified. It is estimated that 4 cubic yards of the waste will be classified as hazardous or regulated and require off site disposal. The remaining 432 cubic yards of waste would be taken to LF 3 for consolidation and disposal. The CVLFA excavation will then be backfilled with 436 cubic yards of makeup backfill. Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 436 cubic yards of waste will be excavated and classified. It is estimated that 4 cubic yards of the waste will be classified as hazardous or regulated and be taken to a Class I or Class II landfill for disposal. The remaining 432 cubic yards of waste will be taken to a municipal landfill for disposal. The CVLFA excavation will then be backfilled with 436 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	
	Class III Cap (Entire Area of Concern)	**Evapotranspiration Cap (Entire Area of Concern)**	**Zoned Cap**	**Excavation and On Site Disposal**	**Excavation and Off site Disposal**	**SVE/Bioventing & Thermally Enhanced SVE**
Castle Vista Landfill B (CVLFB)	Initially, CVLFB would be divided into two zones. Installation of a Class III cap at CVLFB would include importing 41,203 cubic yards of foundation soil at Zone 1 and 2,007 cubic yards of foundation soil at Zone 2. Also, 1 ft of low permeability soil or a 40 mil FML cap, a Geocomposite filter layer, and vegetative cover would be installed over the landfill surface (6.77 acres). Fencing and signage would be installed as part of access restriction. O&M would include installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Initially, CVLFB would be divided into two zones. Installation of an Evapotranspiration cap to CVLFB would include importing 41,203 cubic yards of foundation soil for Zone 1 and 2,007 cubic yards of foundation soil for Zone 2. Also, a 4 ft loamy soil storage layer, 1 ft of low permeability soil and a vegetative cover would be installed over the landfill surface (6.77 acres). Fencing and signage would be installed as part of access restriction. O&M would include installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, approximately 18,804 cubic yards of waste would be excavated from the landfill and consolidated into a smaller area. It is estimated that 188 cubic yards of the excavated waste will be classified as hazardous or regulated and require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. The cap will require 17,259 cubic yards of foundation material at Zone 1, 1,357 cubic yards of foundation material at Zone 2, and 18,804 cubic yards of makeup backfill for the excavated areas. Either 1 foot of low permeability soil or a 60 mil FML cap, a geocomposite filter layer, and a vegetative cover would be installed over the landfill surface (2.67 acres). Fencing and signage would be installed as part of access restriction. O&M would include installation of 2 new monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.	Under the excavation and on site disposal alternative, approximately 18,804 cubic yards of waste will be excavated and classified. It is estimated that 188 cubic yards of the waste will be classified as hazardous or regulated and require off site disposal. The remaining 18,616 cubic yards of waste would be taken to LF 3 for consolidation and disposal. The CVLFB excavation will then be backfilled with 18,804 cubic yards of makeup backfill. Fencing and signage would be installed as part of access restriction. O&M would include semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and off site disposal alternative, approximately 18,804 cubic yards of waste will be excavated and classified. It is estimated that 188 cubic yards of the waste will be classified as hazardous or regulated and be taken to Class I or Class II landfills for disposal. The remaining 18,616 cubic yards of waste will be taken to a municipal landfill for disposal. The CVLFB excavation will then be backfilled with 18,804 cubic yards of makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The sampling requirements would be subject to review. If sampling indicated landfill is not contributing to ground water contamination, sampling could be discontinued.	SVE and Thermally Enhanced SVE were considered for remediation of VOCs at CVFLB. It is estimated that 4 extraction wells would be required at CVFLB and that remediation would take 12 months to complete. Under the Thermally Enhanced SVE alternative, steam injection wells and vapor extraction wells would be installed to effect VOC remediation. It is estimated the Thermally Enhanced SVE would be completed in approximately 8 months.

Plate 5-1-5
Cost Estimate
Summary for No Action
Landfill Group (x$1,000) (See Note 1)

Site:			**LF1**	**LF2**	**LF3**	**LF4**	**LF5**	**CVLFA**	**CVLFB**	
Size Category:			Medium	Large	Medium	Large	Large	Medium	Small	
Wells Present and Available for Monitoring:			2	1	2	12	12	3	3	
Additional Wells Needed:			2	2	1	0	0	1	2	**LF Group**
Total number of Wells Assumed for Monitoring:			4	3	3	5	5	3	4	**Totals:**
Capital	$ X 1,000									
Total Capital Cost for Additional Wells	**23**	**/well**	**46**	**46**	**23**	**0**	**0**	**23**	**46**	**184**
O&M										
Subtotal O&M per Monitoring Well Event	1.2		5	4	4	6	6	4	5	
Contingency (20 %)	0.24	20%	1	1	1	1	1	1	1	
Semi-annual O & M Costs for Years 1 - 10	2.9	/yr, well	12	9	9	14	14	9	12	
Present Worth Years 1-10	**22**	**(5%,10yr)**	**89**	**67**	**67**	**111**	**111**	**67**	**89**	
Annual O&M Costs For Years 11-30	1.4	/yr, well	6	4	4	7	7	4	6	
Present Worth Years 11-30	**11**	**(5%,20yr)**	**44**	**33**	**33**	**55**	**55**	**33**	**44**	
Total Present Worth Costs For Years 1-30			**179**	**146**	**123**	**166**	**166**	**123**	**179**	**1,082**

1. Adapted from final SCOU RI/FS (JEG, 1997)
2. Present Worth Costs represent the total cost of the project in 1998 dollars using an estimated escalation rate of 5%.

Plate 5-1-6a

LF1 - Capital Cost Estimate for Alternatives 1 Through 5b (See Note 1)

	Quantity		Unit Cost		**Alt. 1** Excavation/ Disposal @ On-site Consolid. Landfill[2]	**Alt.2** Excavation/ Disposal @ Off-site Landfill	**Alt.3-a** Prescriptive Class III Cap whole area of concern (clay liner) & Institutional Controls	**Alt. 3-b** Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	**Alt. 4** Evapotrans-piration (ET) Cap & Institutional Controls	**Alt. 5-a** Zoned Cap, Prescriptive Class III Cap (clay liner) & Institutional Controls	**Alt. 5-b** Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls
	Total CY	Indiv. Acres	$/CY	$/Acre	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $
Institutional Controls for Alts. 5 a & b (Fencing @ 10$/Lin. Ft.)		4.65								$18,002	$18,002
Institutional Controls for Alts. 3 a & b and Alt. 4 (Fencing @ 10$/Lin. Ft.)		13.28					$30,418	$30,418	$30,418		
Vegetative cover for Alts. 5 a & b		4.65		$28,723						$133,560	$133,560
Vegetative cover for Alts. 3 a & b and Alt. 4		13.28		$28,723			$381,320	$381,320	$381,320		
Geocomposite Filter Layer for Alts. 5 a & b		4.65		$21,344						$99,251	$99,251
Geocomposite Filter Layer for Alts. 3 a & b		13.28		$21,344			$283,367	$283,367			
FML (top cap) (60 mil.) for Alts. 5 a & b		4.65		$25,265							$117,482
FML (top cap) (60 mil.) for Alts. 3 a & b		13.28		$25,265				$335,417			
Low Perm. Soil Layer (1 ft.) for Alts. 5 a & b		4.65		$40,054						$186,251	
Low Perm. Soil Layer (1 ft.) for Alts 3 a & b and Alt. 4		13.28		$40,054			$531,756		$531,756		
Loamy Soil Storage Layer (4 ft.) for Alt. 4		13.28		$149,945					$1,990,663		
Foundation Layer (Zone I) for Alts. 5 a & b	32,687	3.50	$3.50	$500						$116,154	$116,154
Foundation Layer (Zone I) for Alts. 3 a & b and Alt. 4	97,624	11.73	$9.30	$500			$913,772	$913,772	$913,772		
Foundation Layer (Zone II) for Alts. 5 a & b	3,690	1.15	$3.50	$500						$13,490	$13,490
Foundation Layer (Zone II) for Alts. 3 a & b and Alt. 4	2,496	1.55	$9.30	$500			$23,989	$23,989	$23,989		
Excavate Waste & Haul for Alts. 1 & 2	118,637		$3.00		$355,911	$355,911					
Excavate Waste & Haul for Alts. 5 a & b	36,744		$3.00							$110,233	$110,233
Spread Waste & Pick for Alts. 1 & 2	118,637		$1.21		$143,551	$143,551					
Spread Waste & Pick for Alts. 5 a & b	36,744		$1.21							$44,461	$44,461
Haul Picks to Class 1 or 2 LF for Alts. 1 & 2	1,186		$4.12		$4,885	$4,885					
Haul Picks to Class 1 or 2 LF for Alts. 5 a & b	367		$4.12							$1,513	$1,513
Class 1 or 2 Landfill Disposal for Alts. 1 & 2	1,186		$367.21		$435,642	$435,642					
Class 1 or 2 Landfill Disposal for Alts. 5 a & b	367		$367.21							$134,927	$134,927
Class III LF disposal for Alt. 2	117,451		$43.61			$5,122,024					
Haul Waste,Place,Comp for Alt. 1(found. layer @ LF3)	117,451		$7.50		$880,880						
Haul Waste, Place & Comp for Alts. 5 a & b	36,377		$6.00							$218,261	$218,261
Makeup backfill for Alts. 1 & 2	118,637		$9.30		$1,103,324	$1,103,324					
Makeup backfill for Alts. 5 a & b	36,744		$9.30							$341,722	$341,722
Subtotal					$2,924,194	$7,165,337	$2,134,204	$1,937,865	$3,841,500	$1,399,824	$1,331,055
Engineering Design and Construction Management (15%)					$438,629	$1,074,801	$320,131	$290,680	$576,225	$209,974	$199,658
Contingency (30%)					$877,258	$2,149,601	$640,261	$581,359	$1,152,450	$419,947	$399,316
Total Cost for Alternative					$4,240,081	$10,389,739	$3,094,596	$2,809,904	$5,570,175	$2,029,745	$1,930,029
Cost per Acre					$124,708	$305,581	$91,018	$82,644	$163,829	$59,698	$56,766
Number of Acres for Landfill 1=	34										

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997).
2. Does not include cost for final cover cap. This cost is developed in Plate 5-1-7a&b.

Plate 5-1-6b
LF1 - Operation and Maintenance Costs for Considered Alternatives (See Note 1)

ITEM		# GW Wells	No Action	Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3 Prescriptive Class III Cap (whole area of concern) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap (whole area of concern) & Institutional Controls	Alt 5 Zoning Prescriptive Class III Cap[3] & Institutional Controls	Reference
CAPITAL COSTS									
	New GW Wells	2	$ 46,002	$ 46,002	$ 46,002	$ 46,002	$ 46,002	$ 46,002	
O & M COSTS (per sampling event)									Note 4
	Sampling of Existing GW Wells	4	$ 4,800	$ 4,800	$ 4,800	$ 4,800	$ 4,800	$ 4,800	Notes 4, 5
	Sampling of Landfill Gas Wells		$ -	$ -	$ -	$ 5,000	$ 5,000	$ 2,500	Notes 4, 5
	Land Survey		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
	Inspection		$ -	$ -	$ -	$ 4,000	$ 4,000	$ 2,000	Notes 4, 5
	Drainage Control		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
	Revegetation		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
	Security		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
	Report Preparation		$ -	$ -	$ -	$ 6,000	$ 6,000	$ 3,000	Notes 4, 5
O&M SUBTOTAL (per sampling event)			$ 4,800	$ 4,800	$ 4,800	$ 29,800	$ 29,800	$ 17,300	
Contingency (20%)			$ 960	$ 960	$ 960	$ 5,960	$ 5,960	$ 3,460	
TOTAL O&M COSTS (per sampling event)			$ 5,760	$ 5,760	$ 5,760	$ 35,760	$ 35,760	$ 20,760	
PRESENT WORTH 0&M COSTS									
	Years 1 through 10 (semi-annually)		$ 88,954	$ 88,954	$ 88,954	$ 552,258	$ 552,258	$ 320,606	
	Years 11 through 30 (annually)		$ 44,068	$ 44,068	$ 44,068	$ 273,590	$ 273,590	$ 158,829	
TOTAL PRESENT WORTH O&M COSTS			$ 179,025	$ 179,025	$ 179,025	$ 871,850	$ 871,850	$ 525,437	

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997)
2. O&M cost related to maintenance of cap are included at LF3 only (consolidated LF).
3. O&M costs were established for Alternatives 3 a & b and 4. Due to the smaller LF size assume that O&M cost for Alternative 5 a & b is reduced to half, except for GW monitoring.
4. O&M costs are assumed semi-annually for the first 10 years, and annually for the remainder of the 30-year period.
5. Costs are estimated based on professional experience.

Plate 5-1-7a

LF2 - Capital Cost Estimate for Alternatives 1 Through 5b (See Note 1)

	Quantity		Unit Cost		Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt.2 Excavation/ Disposal @ Offsite Landfill	Alt.3-a Prescriptive Class III Cap whole area of concern (clay liner) & Institutional Controls	Alt. 3-b Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap & Institutional Controls	Alt. 5-a Zoned Cap, Prescriptive Class III Cap (clay liner) & Institutional Controls	Alt. 5-b Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls
	Total CY	Indiv. Acres	$/CY	$/Acre	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $
Institutional Controls for Alts. 5 a & b (Fencing @ 10$/Lin. Ft.)		1.63								$10,659	$10,659
Institutional Controls for Alts. 3 a & b and Alt. 4 (Fencing @ 10$/Lin. Ft.)		5.88					$20,246	$20,246	$20,246		
Vegetative cover for Alts. 5 a & b		1.63		$28,723						$46,818	$46,818
Vegetative cover for Alts. 3 a & b and Alt. 4		5.88		$28,723			$168,934	$168,934	$168,934		
Geocomposite Filter Layer for Alts. 5 a & b		1.63		$21,344						$34,791	$34,791
Geocomposite Filter Layer for Alts. 3 a & b and Alt. 4		5.88		$21,344			$125,538	$125,538			
FML (top cap) (60 mil.) for Alts. 5 a & b		1.63		$25,265							$41,182
FML (top cap) (60 mil.) for Alts. 3 a & b and Alt 4.		5.88		$25,265				$148,597			
Low Perm. Soil Layer (1 ft.) for Alts. 5 a & b		1.63		$40,054						$65,288	
Low Perm. Soil Layer (1 ft.) for Alts 3 a & b and Alt. 4		5.88		$40,054			$235,580		$235,580		
Geocomposite Filter Layer for Alt. 3 a & b		5.88		$149,945					$881,909		
Foundation Layer (Zone I) for Alts. 5 a & b	6,139	1.17	$3.50	$500						$22,071	$22,071
FML (top cap) (60 mil.) for Alt. 3 a & b	42,852	4.91	$9.30	$500			$400,979	$400,979	$400,979		
Foundation Layer (Zone II) for Alts. 5 a & b	748	0.46	$3.50	$500						$2,849	$2,849
Foundation Layer (Zone II) for Alts. 3 a & b and Alt. 4	1,563	0.97	$9.30	$500			$15,020	$15,020	$15,020		
Excavate Waste & Haul for Alts. 1 & 2	11,795		$3.00		$35,386	$35,386					
Excavate Waste & Haul for Alts. 5 a & b	6,090		$3.00							$18,269	$18,269
Spread Waste & Pick for Alts. B&C	11,795		$1.21		$14,272	$14,272					
Spread Waste & Pick for Alts. 5 a & b	6,090		$1.21							$7,368	$7,368
Haul Picks to Class 1 or 2 LF for Alts. 1 & 2	118		$4.12		$486	$486					
Haul Picks to Class 1 or 2 LF for Alts. 5 a & b	61		$4.12							$251	$251
Class 1 or 2 Landfill Disposal for Alts. 1 & 2	118		$367.21		$43,313	$43,313					
Class 1 or 2 Landfill Disposal for Alts. 5 a & b	61		$367.21							$22,361	$22,361
Class III LF disposal for Alt. 2	11,677		$43.61			$509,244					
Haul Waste, Place & Comp for Alt. 1	11,677		$7.50		$87,579						
Haul Waste, Place & Comp for Alts. 5 a & b	6,029		$6.00							$36,172	$36,172
Makeup backfill for Alts. 1 & 2	11,795		$9.30		$109,695	$109,695					
Makeup backfill for Alts. 5 a & b	6,948		$9.30							$64,616	$64,616
Subtotal					$290,730	$712,395	$946,050	$859,067	$1,702,421	$320,855	$296,749
Haul Waste,Place,Comp for Alt. 1 (found. layer @ LF3)					$43,610	$106,859	$141,907	$128,860	$255,363	$48,128	$44,512
Contingency (30%)					$87,219	$213,719	$283,815	$257,720	$510,726	$96,256	$89,025
Total Cost for Alternative					$421,559	$1,032,973	$1,371,772	$1,245,648	$2,468,510	$465,240	$430,286
Cost per Acre					$58,469	$143,270	$190,260	$172,767	$342,373	$64,527	$59,679
Number of Acres for Landfill 2=	7.21										

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997). Actual waste volume excavated during Removal Action was (es) 60,000 cubic yards.
2. Does not include cost for final cover cap. This cost is developed in Plate 5-1-7a&b.

Plate 5-1-7b
LF2 - Operations and Maintenance Costs for Considered Alternatives

ITEM	# GW Wells	No Action	Alt. 1 Excavation/ Disposal @ On-site Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Off-site Landfill	Alt. 3 Prescriptive Class III Cap (whole area of concern) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap (whole area of concern) & Institutional Controls	Alt 5 Zoning Prescriptive Class III Cap[3] & Institutional Controls	Reference
CAPITAL COSTS								
New GW Wells	2	$ 46,002	$ 46,002	$ 46,002	$ 46,002	$ 46,002	$ 46,002	
O & M COSTS (per sampling event)								Note 4
Sampling of Existing GW Wells	3	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	Notes 4, 5
Sampling of Landfill Gas Wells		$ -	$ -	$ -	$ 5,000	$ 5,000	$ 2,500	Notes 4, 5
Land Survey		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Inspection		$ -	$ -	$ -	$ 4,000	$ 4,000	$ 2,000	Notes 4, 5
Drainage Control		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Revegetation		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Security		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Report Preparation		$ -	$ -	$ -	$ 6,000	$ 6,000	$ 3,000	Notes 4, 5
O&M SUBTOTAL (per sampling event)		$ 3,600	$ 3,600	$ 3,600	$ 28,600	$ 28,600	$ 16,100	
Contingency (20%)		$ 720	$ 720	$ 720	$ 5,720	$ 5,720	$ 3,220	
TOTAL O&M COSTS (per sampling event)		$ 4,320	$ 4,320	$ 4,320	$ 34,320	$ 34,320	$ 19,320	
PRESENT WORTH O&M COSTS								
Years 1 through 10 (semi-annually)		$ 66,716	$ 66,716	$ 66,716	$ 530,020	$ 530,020	$ 298,368	
Years 11 through 30 (annually)		$ 33,051	$ 33,051	$ 33,051	$ 262,573	$ 262,573	$ 147,812	
TOTAL PRESENT WORTH O&M COSTS		$ 145,769	$ 145,769	$ 145,769	$ 838,594	$ 838,594	$ 492,182	

Notes:
1. Adapted from final SCOU RI/ FS (JEG, 1997)
2. O&M cost related to maintenance of cap are included at LF3 only (consolidated LF).
3. O&M costs were established for Alternatives 3 a & b and 4. Due to the smaller LF size assume that O&M cost for Alternative 5 a & b is reduced to half, except for GW monitoring.
4. O&M costs are assumed semi-annually for the first 10 years, and annually for the remainder of the 30-year period.
5. Costs are estimated based on professional experience.

Plate 5-1-8a

LF3 - Capital Cost Estimate for Alternatives 1 Through 5b (See Note 1)

	Quantity		Unit Cost		Total $	Alt. 1 Excavation/ Disposal @ On site Consolid. Landfill[2]	Alt.2 Excavation/ Disposal @ Off site Landfill	Alt.3-a Prescriptive Class III Cap whole area of concern (clay liner) & Institutional Controls	Alt. 3-b Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap & Institutional Controls	Alt. 5-a Zoned Cap, Prescriptive Class III Cap (clay liner) & Institutional Controls	Alt. 5-b Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls
	Total CY	Indiv. Acres	$/CY	$/Acre		Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $
Institutional Controls for Alts. 5 a & b (Fencing @ 10$/Lin. Ft.)		2.79			$13,945						$13,945	$13,945
Institutional Controls for Alts. 1, 3 a & b and Alt. 4 (Fencing @ 10$/Lin. Ft.)		14.36			$31,633	$31,633		$31,633	$31,633	$31,633		
Vegetative cover for Alts. 5 a & b		2.79		$28,723	$80,136	$80,136					$80,136	$80,136
Vegetative cover for Alts. 1, 3 a & b and Alt. 4		14.36		$28,723	$412,377	$412,377		$412,377	$412,377	$412,377		
Geocomposite Filter Layer for Alts. 5 a & b		2.79		$21,344	$59,551						$59,551	$59,551
Geocomposite Filter Layer for Alts. 1, 3 a & b, and Alt. 4		14.36		$21,344	$306,446	$306,446		$306,446	$306,446			
Geocomposite Filter Layer for Alts. 3 a & b		2.79		$25,265	$70,489							$70,489
FML (top cap) (60 mil.) for Alts. 1, 3 a & b and Alt. 4		14.36		$25,265	$362,735	$362,735			$362,735			
FML (top cap) (60 mil.) for Alts. 3 a & b		2.79		$40,054	$111,751						$111,751	
Low Perm. Soil Layer (1 ft.) for Alts 3 a & b and Alt. 4		14.36		$40,054	$575,065			$575,065		$575,065		
Loamy Soil Storage Layer (4 ft.) for Alt. 4		14.36		$149,945	$2,152,794					$2,152,794		
Foundation Layer (Zone I) for Alts. 5 a & b	18,449	1.71	$3.50	$500	$65,426						$65,426	$65,426
Foundation Layer (Zone I) for Alts. 3 a & b and Alt. 4	103,111	12.67	$9.30	$500	$965,269			$965,269	$965,269	$965,269		
Foundation Layer (Zone II) for Alts. 5 a & b	4,574	1.08	$3.50	$500	$16,549						$16,549	$16,549
Foundation Layer (Zone II) for Alts. 3 a & b and Alt. 4	2,719	1.69	$9.30	$500	$26,125			$26,125	$26,125	$26,125		
Excavate Waste & Haul for Alt. 2	39,870		$3.00		$119,611		$119,611					
Excavate Waste & Haul for Alts. 5 a & b	23,256		$3.00		$69,758						$69,768	$69,768
Spread Waste & Pick for Alt. 2	39,870		$1.21		$48,243		$48,243					
Spread Waste & Pick for Alts. 5 a & b	23,256		$1.21		$28,140						$28,140	$28,140
Haul Picks to Class 1 or 2 LF for Alt. 2	399		$4.12		$1,642		$1,642					
Haul Picks to Class 1 or 2 LF for Alts. 5 a & b	233		$4.12		$958						$958	$958
Class 1 or 2 Landfill Disposal for Alt. 2	399		$367.21		$146,406		$146,406					
Class 1 or 2 Landfill Disposal for Alts. 5 a & b	233		$367.21		$85,398						$85,398	$85,398
Class III LF disposal for Alt. 2	39,472		$43.61		$1,721,359		$1,721,359					
Haul Waste, Place & Comp for Alts. 5 a & b	23,023		$6.00		$138,141						$138,141	$138,141
Makeup backfill for Alt. 2	39,870		$9.30		$370,794		$370,794					
Makeup backfill for Alts. 5 a & b	23,256		$9.30		$216,281						$216,281	$216,281
Subtotal						$1,193,327	$2,408,056	$2,285,282	$2,072,952	$4,131,630	$872,098	$830,837
Engineering Design and Construction Management (15%)						$178,999	$361,208	$342,792	$310,943	$619,744	$130,815	$124,626
Contingency (30%)						$357,998	$722,417	$685,585	$621,886	$1,239,489	$261,629	$249,251
Total Cost for Alternative						$1,730,325	$3,491,681	$3,313,659	$3,005,781	$5,990,863	$1,264,543	$1,204,713
Cost per Acre						$129,418	$261,158	$247,843	$224,815	$448,083	$94,581	$90,106
Number of Acres for Landfill 3= 13.37		Total acrage of all landfills= 117.36										

Notes:

1. Adapted from final SCOU RI/FS (JEG 1997)
2. For Alt. 3, the following volumes for cover cost estimate were used:
   - The consolidated landfill (Alt. 3) will cover the entire area of Landfill 3 (13.37 Acres).
   - This area was used for the cost estimate of the Alt. 3 cover.
3. The estimated total height of the consolidated landfill=30 ft.
4. Total costs for Alternative 3 include only capping activities.
   - Total costs including excavation, segregation, transportation, disposal of Class I materials, transportation and compaction (Foundation Layer), and capping= $13,973,025
   - Cost per acre of sum of all landfills= $119,061 per acre

	Total of Waste (CY)
LF1	118,637
LF2	11,795
LF4	93,244
LF5	99,633
CVLFA	436
CVLFB	18,804
Total CY of Waste=	**342,550**

Plate 5-1-8b
LF3 - Operations and Maintenance Costs for Considered Alternatives (See Note 1)

ITEM	# GW Wells	No Action	Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3 Prescriptive Class III Cap (whole area of concern) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap (whole area of concern) & Institutional Controls	Alt 5 Zoning Prescriptive Class III Cap[3] & Institutional Controls	Reference
CAPITAL COSTS								
New GW Wells	1	$ 23,001	$ 23,001	$ 23,001	$ 23,001	$ 23,001	$ 23,001	
O & M COSTS (per sampling event)								Note 4
Sampling of Existing GW Wells	3	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	Notes 4, 5
Sampling of Landfill Gas Wells		$ -	$ 5,000	$ -	$ 5,000	$ 5,000	$ 2,500	Notes 4, 5
Land Survey		$ -	$ 3,000	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Inspection		$ -	$ 4,000	$ -	$ 4,000	$ 4,000	$ 2,000	Notes 4, 5
Drainage Control		$ -	$ 3,000	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Revegetation		$ -	$ 2,000	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Security		$ -	$ 2,000	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Report Preparation		$ -	$ 6,000	$ -	$ 6,000	$ 6,000	$ 3,000	Notes 4, 5
O&M SUBTOTAL (per sampling event)		$ 3,600	$ 28,600	$ 3,600	$ 28,600	$ 28,600	$ 16,100	
Contingency (20%)		$ 720	$ 5,720	$ 720	$ 5,720	$ 5,720	$ 3,220	
TOTAL O&M COSTS (per sampling event)		$ 4,320	$ 34,320	$ 4,320	$ 34,320	$ 34,320	$ 19,320	
PRESENT WORTH 0&M COSTS								
Years 1 through 10 (semi-annually)		$ 66,716	$ 530,020	$ 66,716	$ 530,020	$ 530,020	$ 298,368	
Years 11 through 30 (annually)		$ 33,051	$ 262,573	$ 33,051	$ 262,573	$ 262,573	$ 147,812	
TOTAL PRESENT WORTH O&M COSTS		$ 122,768	$ 815,593	$ 122,768	$ 815,593	$ 815,593	$ 469,181	

Notes:
1. Adapted from final SCOU RI/ FS (JEG, 1997)
2. O&M cost related to maintenance of cap are included at LF3 only (consolidated LF).
3. O&M costs were established for Alternatives 3 a & b and 4. Due to the smaller LF size assume that O&M cost for Alternative 5 a & b is reduced to half, except for GW monitoring.
4. O&M costs are assumed semi-annually for the first 10 years, and annually for the remainder of the 30-year period.
5. Costs are estimated based on professional experience.

Plate 5-1-9a

LF4 - Capital Cost Estimate for Alternatives 1 Through 5b (See Note 1)

	Quantity		Unit Cost		**Alt. 2** Excavation/ Disposal @ Offsite Landfill	**Alt. 1** Excavation/ Disposal @ Onsite Consolid. Landfill	**Alt. 3-a** Prescriptive Class III Cap whole area of concern (clay liner) & Institutional Controls	**Alt. 3-b** Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	**Alt. 4** Evapotrans-piration (ET) Cap & Institutional Controls	**Alt. 5-a** Zoned Cap, Prescriptive Class III Cap (clay liner) & Institutional Controls	**Alt. 5-b** Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls
	Total CY	Indiv. Acres	$/CY	$/Acre	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $
Institutional Controls for Alts. 5 a & b (Fencing @ 10$/Lin. Ft.)		7.82								$23,346	$23,346
Institutional Controls for Alts. 3 a & b and Alt. 4 (Fencing @ 10$/Lin. Ft.)		17.63					$35,058	$35,058	$35,058		
Vegetative cover for Alts. 5 a & b		7.82		$28,723						$224,611	$224,611
Vegetative cover for Alts. 3 a & b and Alt. 4		17.63		$28,723			$506,504	$506,504	$506,504		
Geocomposite Filter Layer for Alts. 5 a & b		7.82		$21,344						$166,913	$166,913
Geocomposite Filter Layer for Alts. 3 a & b and Alt. 4		17.63		$21,344			$376,394	$376,394			
FML (top cap) (60 mil.) for Alts. 5 a & b		7.82		$25,265							$197,572
FML (top cap) (60 mil.) for Alts. 3 a & b and Alt 4		17.63		$25,265				$445,531			
Low Perm. Soil Layer (1 ft.) for Alts. 5 a & b		7.82		$40,054						$313,223	
Geocomposite Filter Layer for Alts. 3 a & b		17.63		$40,054			$706,326		$706,326		
Loamy Soil Storage Layer (4 ft.) for Alt. 4		17.63		$149,945					$2,644,177		
FML (top cap) (60 mil.) for Alts. 3 a & b	20,877	3.67	$3.50	$500						$74,905	$74,905
Foundation Layer (Zone I) for Alts. 3 a & b and Alt. 4	119,778	15.58	$9.30	$500			$1,121,724	$1,121,724	$1,121,724		
Foundation Layer (Zone II) for Alts. 5 a & b	8,925	4.15	$3.50	$500						$33,314	$33,314
Foundation Layer (Zone II) for Alts. 3 a & b and Alt. 4	3,311	2.05	$9.30	$500			$31,820	$31,820	$31,820		
Excavate Waste & Haul for Alt. 1 & 2	93,244		$3.00		$279,733	$279,733					
Excavate Waste & Haul for Alts. 5 a & b	30,104		$3.00							$90,311	$90,311
Spread Waste & Pick for Alts. 1 & 2	93,244		$1.21		$112,826	$112,826					
Spread Waste & Pick for Alts. 5 a & b	30,104		$1.21							$36,425	$36,425
Haul Picks to Class 1 or 2 LF for Alt. 1 & 2	932		$4.12		$3,839	$3,839					
Haul Picks to Class 1 or 2 LF for Alts. 5 a & b	301		$4.12							$1,240	$1,240
Class 1 or 2 Landfill Disposal for Alts. 1 & 2	932		$367.21		$342,399	$342,399					
Class 1 or 2 Landfill Disposal for Alts. 5 a & b	301		$367.21							$110,543	$110,543
Class III LF disposal for Alt. 2	92,312		$43.61		$4,025,726						
Haul Waste, Place & Comp for Alt. 1	92,312		$7.50			$692,340					
Haul Waste, Place & Comp for Alts. 5 a & b	29,803		$6.00							$178,816	$178,816
Makeup backfill for Alt. 1 & 2	93,244		$9.30		$867,173	$867,173					
Makeup backfill for Alts. 5 a & b	30,104		$9.30							$279,964	$279,964
Haul Waste,Place,Comp for Alt. 1 (found. layer @ LF3)					$5,631,697	$2,298,311	$2,742,767	$2,481,972	$5,010,551	$1,510,265	$1,394,615
Engineering Design and Construction Management (15%)					$844,755	$344,747	$411,415	$372,296	$751,583	$226,540	$209,192
Contingency (30%)					$1,689,509	$689,493	$822,830	$744,592	$1,503,165	$453,080	$418,384
Total Cost for Alternative					$8,165,961	$3,332,551	$3,977,012	$3,598,859	$7,265,298	$2,189,885	$2,022,192
Cost per Acre					$299,778	$122,340	$145,999	$132,117	$266,714	$80,392	$74,236
Number of Acres for Landfill 4=	27.24										

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997).
2. Does not include cost for final cover cap. This cost is developed in Plate 5-1-7a&b.

Plate 5-1-9b
FL4 - Operations and Maintenance Costs for Considered Alternatives
Landfill Group (x$1,000) (See Note 1)

ITEM	# GW Wells	No Action	Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3 Prescriptive Class III Cap (whole area of concern) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap (whole area of concern) & Institutional Controls	Alt 5 Zoning Prescriptive Class III Cap[3] & Institutional Controls	Reference
CAPITAL COSTS								
New GW Wells	0	$ -	$ -	$ -	$ -	$ -	$ -	
O & M COSTS (per sampling event)								Note 4
Sampling of Existing GW Wells	5	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	Notes 4, 5
Sampling of Landfill Gas Wells		$ -	$ -	$ -	$ 5,000	$ 5,000	$ 2,500	Notes 4, 5
Land Survey		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Inspection		$ -	$ -	$ -	$ 4,000	$ 4,000	$ 2,000	Notes 4, 5
Drainage Control		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Revegetation		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Security		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Report Preparation		$ -	$ -	$ -	$ 6,000	$ 6,000	$ 3,000	Notes 4, 5
O&M SUBTOTAL (per sampling event)		$ 6,000	$ 6,000	$ 6,000	$ 31,000	$ 31,000	$ 18,500	
Contingency (20%)		$ 1,200	$ 1,200	$ 1,200	$ 6,200	$ 6,200	$ 3,700	
TOTAL O&M COSTS (per sampling event)		$ 7,200	$ 7,200	$ 7,200	$ 37,200	$ 37,200	$ 22,200	
PRESENT WORTH 0&M COSTS								
Years 1 through 10 (semi-annually)		$ 111,193	$ 111,193	$ 111,193	$ 574,497	$ 574,497	$ 342,845	
Years 11 through 30 (annually)		$ 55,085	$ 55,085	$ 55,085	$ 284,607	$ 284,607	$ 169,846	
TOTAL PRESENT WORTH O&M COSTS		$ 166,278	$ 166,278	$ 166,278	$ 859,104	$ 859,104	$ 512,691	

Notes:
1. Adapted from final SCOU RI/ FS (JEG, 1997)
2. O&M cost related to maintenance of cap are included at LF3 only (consolidated LF).
3. O&M costs were established for Alternatives 3 a & b and 4. Due to the smaller LF size assume that O&M cost for Alternative 5 a & b is reduced to half, except for GW monitoring.
4. O&M costs are assumed semi-annually for the first 10 years, and annually for the remainder of the 30-year period.
5. Costs are estimated based on professional experience.

Plate 5-1-10a

LF5 - Capital Cost Estimate for Alternatives 1 Through 5b (See Note 1)

	Quantity		Unit Cost		Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt.2 Excavation/ Disposal @ Offsite Landfill	Alt.3-a Prescriptive Class III Cap whole area of concern (clay liner) & Institutional Controls	Alt. 3-b Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap & Institutional Controls	Alt. 5-a Zoned Cap, Prescriptive Class III Cap (clay liner) & Institutional Controls	Alt. 5-b Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls
	Total CY	Indiv. Acres	$/CY	$/Acre	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $
Institutional Controls for Alts. 5 a & b (Fencing @ 10$/Lin. Ft.)		7.53								$75	$75
Institutional Controls for Alts. 3 a & b and Alt. 4 (Fencing @ 10$/Lin. Ft.)		18.77					$188	$188	$188		
Vegetative cover for Alts. 5 a & b		7.53		$3,000						$22,599	$22,599
Vegetative cover for Alts. 3 a & b and Alt. 4		18.77		$3,000			$56,298	$56,298	$56,298		
Geocomposite Filter Layer for Alts. 5 a & b		7.53		$21,344						$160,788	$160,788
Geocomposite Filter Layer for Alts. 3 a & b and Alt. 4		18.77		$21,344			$400,551	$400,551			
FML (top cap) (60 mil.) for Alts. 5 a & b		7.53		$25,265							$190,321
FML (top cap) (60 mil.) for Alts. 3 a & b and Alt 4.		18.77		$25,265				$474,125			
Low Perm. Soil Layer (1 ft.) for Alts. 5 a & b		7.53		$40,054						$301,728	
Low Perm. Soil Layer (1 ft.) for Alts. 3 a & b and Alt. 4		18.77		$40,054			$751,658		$751,658		
Loamy Soil Storage Layer (4 ft.) for Alt. 4		18.77		$149,945					$2,813,881		
Foundation Layer (Zone I) for Alts. 5 a & b	54,075	6.51	$3.50	$500						$192,517	$192,517
Foundation Layer (Zone I) for Alts. 3 a & b and Alt. 4	240,037	17.10	$9.30	$500			$2,240,893	$2,240,893	$2,240,893		
Foundation Layer (Zone II) for Alts. 5 a & b	1,662	1.02	$3.50	$500						$6,328	$6,328
Foundation Layer (Zone II) for Alts. 3 a & b and Alt. 4	2,693	1.67	$9.30	$500			$25,876	$25,876	$25,876		
Excavate Waste & Haul for Alts. 1 & 2	99,633		$3.00		$298,898	$298,898					
Excavate Waste & Haul for Alts. 5 a & b	55,597		$3.00							$166,791	$166,791
Spread Waste & Pick for Alts. 1 & 2	99,633		$1.21		$120,555	$120,555					
Spread Waste & Pick for Alts. 5 a & b	55,597		$1.21							$67,272	$67,272
Haul Picks to Class 1 or 2 LF for Alts. 1 & 2	996		$4.12		$4,103	$4,103					
Haul Picks to Class 1 or 2 LF for Alts. 5 a & b	556		$4.12							$2,289	$2,289
Class 1 or 2 Landfill Disposal for Alts. 1 & 2	996		$367.21		$365,857	$365,857					
Class 1 or 2 Landfill Disposal for Alts. 5 a & b	556		$367.21							$204,156	$204,156
Class III LF disposal for Alt. 2	98,636		$43.61			$4,301,528					
Haul Waste, Place & Comp for Alt. 1	98,636		$7.50		$739,772						
Haul Waste, Place & Comp for Alts. 5 a & b	55,041		$6.00							$330,246	$330,246
Makeup backfill for Alts. 1 & 2	99,633		$9.30		$926,583	$926,583					
Makeup backfill for Alts. 5 a & b	56,293		$9.30							$523,522	$523,522
Subtotal					$2,455,768	$6,017,523	$3,475,275	$3,197,742	$5,888,605	$1,978,236	$1,866,830
Engineering Design and Construction Management (15%)					$368,365	$902,628	$521,291	$479,661	$883,291	$296,735	$280,024
Contingency (30%)					$736,730	$1,805,257	$1,042,583	$959,323	$1,766,582	$593,471	$560,049
Total Cost for Alternative					$3,560,863	$8,725,409	$5,039,149	$4,636,726	$8,538,478	$2,868,442	$2,706,903
Cost per Acre					$136,956	$335,593	$193,813	$178,336	$328,403	$110,325	$104,112
Number of Acres for Landfill 5=	26										

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997).
2. Does not include cost for final cover cap. This cost is developed in Plate 5-1-7a&b.

Plate 5-1-10b
LF5 - Operation and Maintenance Costs for Considered Alternatives (See Note 1)

ITEM	# GW Wells	No Action	Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3 Prescriptive Class III Cap (whole area of concern) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap (whole area of concern) & Institutional Controls	Alt. 5 Zoning Prescriptive Class III Cap[3] & Institutional Controls	Reference
CAPITAL COSTS								
New GW Wells	0	$ -	$ -	$ -	$ -	$ -	$ -	
O & M COSTS (per sampling event)								Note 4
Sampling of Existing GW Wells	6	$ 7,200	$ 7,200	$ 7,200	$ 7,200	$ 7,200	$ 7,200	Notes 4, 5
Sampling of Landfill Gas Wells		$ -	$ -	$ -	$ 5,000	$ 5,000	$ 2,500	Notes 4, 5
Land Survey		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Inspection		$ -	$ -	$ -	$ 4,000	$ 4,000	$ 2,000	Notes 4, 5
Drainage Control		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Revegetation		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Security		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Report Preparation		$ -	$ -	$ -	$ 6,000	$ 6,000	$ 3,000	Notes 4, 5
O&M SUBTOTAL (per sampling event)		$ 7,200	$ 7,200	$ 7,200	$ 32,200	$ 32,200	$ 19,700	
Contingency (20%)		$ 1,440	$ 1,440	$ 1,440	$ 6,440	$ 6,440	$ 3,940	
TOTAL O&M Costs (per sampling event)		$ 8,640	$ 8,640	$ 8,640	$ 38,640	$ 38,640	$ 23,640	
PRESENT WORTH 0&M COSTS								
Years 1 through 30 (semi-annually)		$ 133,432	$ 133,432	$ 133,432	$ 596,736	$ 596,736	$ 365,084	
Years 11 through 30 (annually)		$ 66,102	$ 66,102	$ 66,102	$ 295,624	$ 295,624	$ 180,863	
TOTAL PRESENT WORTH O&M COSTS		$ 199,534	$ 199,534	$ 199,534	$ 892,359	$ 892,359	$ 545,947	

Notes:
1. Adapted from final SCOU RI/ FS (JEG, 1997)
2. O&M cost related to maintenance of cap are included at LF3 only (consolidated LF).
3. O&M costs were established for Alternatives 3 a & b and 4. Due to the smaller LF size assume that O&M cost for Alternative 5 a & b is reduced to half, except for GW monitoring.
4. O&M costs are assumed semi-annually for the first 10 years, and annually for the remainder of the 30-year period.
5. Costs are estimated based on professional experience.

Plate 5-1-11a

CVLA - Capital Cost Estimate for Alternatives 1 Through 5b (See Note 1)

	Quantity		Unit Cost		Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3-a Prescriptive Class III Cap whole area of concern (clay liner) & Institutional Controls	Alt. 3-b Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap & Institutional Controls	Alt. 5-a Zoned Cap, Prescriptive Class III Cap (clay liner) & Institutional Controls	Alt. 5-b Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls
	Total CY	Indiv. Acres	$/CY	$/Acre	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $
Institutional Controls for Alts. 5 a & b (Fencing @ 10$/Lin. Ft.)		0.70								$6,986	$6,986
Institutional Controls for Alts. 3 a & b and Alt. 4 (Fencing @ 10$/Lin. Ft.)		0.99					$8,320	$8,320	$8,320		
Vegetative cover for Alt. 5 a & b		0.70		$28,723						$20,111	$20,111
Vegetative cover for Alts. 3 a & b and Alt. 4		0.99		$28,723			$28,529	$28,529	$28,529		
Geocomposite Filter Layer for Alt. 5 a & b		0.70		$21,344						$14,945	$14,945
Geocomposite Filter Layer for Alts. 3 a & b and Alt. 4		0.99		$21,344			$21,200	$21,200			
FML (top cap) (60 mil.) for Alt. 5 a & b		0.70		$25,265							$17,690
FML (top cap) (60 mil.) for Alts. 3 a & b and Alt. 4		0.99		$25,265				$25,094			
Low Perm. Soil Layer (1 ft.) for Alt. 5 a & b		0.70		$40,054						$28,045	
Geocomposite Filter Layer for Alts. 3 a & b		0.99		$40,054			$39,784		$39,784		
Loamy Soil Storage Layer (4 ft.) for Alt.4		0.99		$149,945					$148,933		
FML (top cap) (60 mil.) for Alts. 3 a & b	1,555	0.39	$3.50	$500						$5,638	$5,638
Foundation Layer (Zone I) for Alts. 3 a & b and Alt. 4	2,358	0.57	$9.30	$500			$22,215	$22,215	$22,215		
Foundation Layer (Zone II) for Alt. 5 a & b	504	0.31	$3.50	$500						$1,919	$1,919
Foundation Layer (Zone II) for Alts. 3 a & b and Alt. 4	678	0.42	$9.30	$500			$6,513	$6,513	$6,513		
Excavate Waste & Haul for Alts. 1 & 2	436		$3.00		$1,309	$1,309					
Excavate Waste & Haul for Alt. 5 a & b	436		$3.00							$1,309	$1,309
Spread Waste & Pick for Alts. 1 & 2	436		$1.21		$528	$528					
Spread Waste & Pick for Alt. 5 a & b	436		$1.21							$528	$528
Haul Picks to Class 1 or 2 LF for Alts. 1 & 2	4		$4.12		$18	$18					
Haul Picks to Class 1 or 2 LF for Alt. 5 a & b	4		$4.12							$18	$18
Class 1 or 2 Landfill Disposal for Alts. 1 & 2	4		$367.21		$1,602	$1,602					
Class 1 or 2 Landfill Disposal for Alt. 5 a & b	4		$367.21							$1,602	$1,602
Class III LF disposal for Alt. 2	432		$43.61			$18,838					
Haul Waste, Place & Comp for Alt. 1	432		$7.50		$3,240						
Haul Waste, Place & Comp for Alt. 5 a & b	432		$6.00							$2,592	$2,592
Makeup backfill for Alts. 1 & 2	436		$9.30		$4,058	$4,058					
Makeup backfill for Alt. 5 a & b	4,421		$9.30							$41,119	$41,119
Haul Waste, Place, Comp for Alt. 1 (found. layer @ LF3)					$10,755	$26,353	$118,241	$103,552	$245,974	$117,826	$107,471
Engineering Design and Construction Management (15%)					$1,613	$3,953	$17,736	$15,533	$36,896	$17,674	$16,121
Contingency (30%)					$3,226	$7,906	$35,472	$31,066	$73,792	$35,348	$32,241
Total Cost for Alternative					$15,594	$38,212	$171,450	$150,150	$356,662	$170,848	$155,833
Cost per Acre					$7,797	$19,106	$85,725	$75,075	$178,331	$85,424	$77,917
Number of Acres for CVLFA=	2										

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997). Actual waste volume excavated during Removal Action was (es) 8500 cubic yards.
2. Does not include cost for final cover cap. This cost is developed in Plate 5-1-7a&b.

Plate 5-1-11b
CVLFA - Operation and Maintenance Costs for Considered Alternatives (See Note 1)

ITEM	# GW Wells	No Action	Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3 Prescriptive Class III Cap (whole area of concern) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap (whole area of concern) & Institutional Controls	Alt. 5 Zoning Prescriptive Class III Cap[3] & Institutional Controls	Reference
CAPITAL COSTS								
New GW Wells	1	$ 23,001	$ 23,001	$ 23,001	$ 23,001	$ 23,001	$ 23,001	
O & M COSTS (per sampling event)								Note 4
Sampling of Existing GW Wells	3	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	Notes 4, 5
Sampling of Landfill Gas Wells		$ -	$ -	$ -	$ 5,000	$ 5,000	$ 2,500	Notes 4, 5
Land Survey		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Inspection		$ -	$ -	$ -	$ 4,000	$ 4,000	$ 2,000	Notes 4, 5
Drainage Control		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Revegetation		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Security		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Report Preparation		$ -	$ -	$ -	$ 6,000	$ 6,000	$ 3,000	Notes 4, 5
O&M SUBTOTAL (per sampling event)		$ 3,600	$ 3,600	$ 3,600	$ 28,600	$ 28,600	$ 16,100	
Contingency (20%)		$ 720	$ 720	$ 720	$ 5,720	$ 5,720	$ 3,220	
TOTAL O&M Costs (per sempling event)		$ 4,320	$ 4,320	$ 4,320	$ 34,320	$ 34,320	$ 19,320	
PRESENT WORTH 0&M COSTS								
Years 1 through 10 (semi-annually)		$ 66,716	$ 66,716	$ 66,716	$ 530,020	$ 530,020	$ 298,368	
Years 11 through 30 (annually)		$ 33,051	$ 33,051	$ 33,051	$ 262,573	$ 262,573	$ 147,812	
TOTAL PRESENT WORTH O&M COSTS		$ 122,768	$ 122,768	$ 122,768	$ 815,593	$ 815,593	$ 469,181	

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997)
2. O&M cost related to maintenance of cap are included at LF3 only (consolidated LF).
3. O&M costs were established for Alternatives 3 a & b and 4. Due to the smaller LF size assume that O&M cost for Alternative 5 a & b is reduced to half, except for GW monitoring.
4. O&M costs are assumed semi-annually for the first 10 years, and annually for the remainder of the 30-year period.
5. Costs are estimated based on professional experience.

Plate 5-1-12a

CVLFB - Capital Cost Estimate for Alternatives 1 Through 5b (See Note 1)

	Quantity		Unit Cost		Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3-a Prescriptive Class III Cap whole area of concern (clay liner) & Institutional Controls	Alt. 3-b Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap & Institutional Controls	Alt. 5-a Zoned Cap, Prescriptive Class III Cap (clay liner) & Institutional Controls	Alt. 5-b Zoned Cap, Engineered Alternative to Prescriptive Class III Cap (FML) & Institutional Controls
	Total CY	Indiv. Acres	$/CY	$/Acre	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $	Total Cost $
Institutional Controls for Alts. 5 a & b (Fencing @ 10$/Lin. Ft.)		2.67								$13,654	$13,654
Institutional Controls for Alts. 3 a & b and Alt 4 (Fencing @ 10$/Lin. Ft.)		6.77					$21,715	$21,715	$21,715		
Vegetative cover for Alts. 5 a & b		2.67		$28,723						$76,829	$76,829
Vegetative cover for Alts. 3 a & b and Alt. 4		6.77		$28,723			$194,328	$194,328	$194,328		
Geocomposite Filter Layer for Alts. 5 a & b		2.67		$21,344						$57,093	$57,093
Geocomposite Filter Layer for Alt. 3 a & b		6.77		$21,344			$144,409	$144,409			
FML (top cap) (60 mil.) for Alts. 5 a & b		2.67		$25,265							$67,580
FML (top cap) (60 mil.) for Alt. 3 a & b		6.77		$25,265				$170,935			
Low Perm. Soil Layer (1 ft.) for Alts. 5 a & b		2.67		$40,054						$107,138	
Low Perm. Soil Layer (1 ft.) for Alts. 3 a & b and Alt. 4		6.77		$40,054			$270,993		$270,993		
Loamy Soil Storage Layer (4 ft.) for Alt. 4		6.77		$149,945					$1,014,479		
Foundation Layer (Zone I) for Alts. 5 a & b	17259	1.83	$3.50	$500						$61,322	$61,322
Foundation Layer (Zone I) for Alts. 3 a & b and Alt. 4	41203	5.52	$9.30	$500			$385,947	$385,947	$385,947		
Foundation Layer (Zone II) for Alts. 5 a & b	1357	0.84	$3.50	$500						$5,170	$5,170
Foundation Layer (Zone II) for Alts. 3 a & b and Alt. 4	2007	1.24	$9.30	$500			$19,291	$19,291	$19,291		
Excavate Waste & Haul for Alts. 1 & 2	18804		$3.00		$56,412	$56,412					
Excavate Waste & Haul for Alts. 5 a & b	18804		$3.00							$56,412	$56,412
Spread Waste & Pick for Alts. 1 & 2	18804		$1.21		$22,753	$22,753					
Spread Waste & Pick for Alts. 5 a & b	18804		$1.21							$22,753	$22,753
Haul Picks to Class 1 or 2 LF for Alts. 1 & 2	188		$4.12		$774	$774					
Haul Picks to Class 1 or 2 LF for Alts. 5 a & b	188		$4.12							$774	$774
Class 1 or 2 Landfill Disposal for Alts. 1 & 2	188		$367.21		$69,049	$69,049					
Class 1 or 2 Landfill Disposal for Alts. 5 a & b	188		$367.21							$69,049	$69,049
Class III LF disposal for Alt. 2	18616		$43.61			$811,840					
Haul Waste, Place, Comp for Alt. 1 (found, layer @ LF3)	18616		$7.50		$139,619						
Haul Waste, Place & Comp for Alts. 5 a & b	18616		$6.00							$111,695	$111,695
Makeup backfill for Alts. 1 & 2	18804		$9.30		$174,877	$174,877					
Makeup backfill for Alts. 5 a & b	18804		$9.30							$174,877	$174,877
Subtotal					$463,484	$1,135,704	$1,014,967	$914,909	$1,885,037	$743,112	$703,554
Engineering Design and Construction Management (15%)					$69,523	$170,356	$152,245	$137,236	$282,756	$111,467	$105,533
Contingency (30%)					$139,045	$340,711	$304,490	$274,473	$565,511	$222,934	$211,066
Total Cost for Alternative					$672,052	$1,646,771	$1,471,703	$1,326,619	$2,733,304	$1,077,513	$1,020,153
Cost per Acre					$89,132	$218,405	$196,186	$175,944	$362,507	$142,906	$135,299
Number of Acres for CVLFB=	7.54										

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997). Actual waste volume excavated during Removal Action was (es) 62,000 cubic yards.
2. Does not include cost for final cover cap. This cost is developed in Plate 5-1-7 a & b.

Plate 5-1-12b
CVLFB - Operation and Maintenance Costs for Considered Alternatives (See Note 1)

ITEM	# GW Wells	No Action	Alt. 1 Excavation/ Disposal @ Onsite Consolid. Landfill[2]	Alt. 2 Excavation/ Disposal @ Offsite Landfill	Alt. 3 Prescriptive Class III Cap (whole area of concern) & Institutional Controls	Alt. 4 Evapotrans-piration (ET) Cap (whole area of concern) & Institutional Controls	Alt. 5 Zoning Prescriptive Class III Cap[3] & Institutional Controls	Reference
CAPITAL COSTS								
New GW Wells	2	$ 46,002	$ 46,002	$ 46,002	$ 46,002	$ 46,002	$ 46,002	
O & M COSTS (per sampling event)								Note 4
Sampling of Existing GW Wells	4	$ 4,800	$ 4,800	$ 4,800	$ 4,800	$ 4,800	$ 4,800	Notes 4, 5
Sampling of Landfill Gas Wells		$ -	$ -	$ -	$ 5,000	$ 5,000	$ 2,500	Notes 4, 5
Land Survey		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Inspection		$ -	$ -	$ -	$ 4,000	$ 4,000	$ 2,000	Notes 4, 5
Drainage Control		$ -	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	Notes 4, 5
Revegetation		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Security		$ -	$ -	$ -	$ 2,000	$ 2,000	$ 1,000	Notes 4, 5
Report Preparation		$ -	$ -	$ -	$ 6,000	$ 6,000	$ 3,000	Notes 4, 5
O&M SUBTOTAL (per sampling event)		$ 4,800	$ 4,800	$ 4,800	$ 29,800	$ 29,800	$ 17,300	
Contingency (20%)		$ 960	$ 960	$ 960	$ 5,960	$ 5,960	$ 3,460	
TOTAL O&M Costs (per sampling event)		$ 5,760	$ 5,760	$ 5,760	$ 35,760	$ 35,760	$ 20,760	
PRESENT WORTH 0&M COSTS								
Years 1 through 10 (semi-annually)		$ 88,954	$ 88,954	$ 88,954	$ 552,258	$ 552,258	$ 320,606	
Years 11 through 30 (annually)		$ 44,068	$ 44,068	$ 44,068	$ 273,590	$ 273,590	$ 158,829	
TOTAL PRESENT WORTH O&M COSTS		$ 179,025	$ 179,025	$ 179,025	$ 871,850	$ 871,850	$ 525,437	

Notes:
1. Adapted from final SCOU RI/FS (JEG, 1997)
2. O&M cost related to maintenance of cap are included at LF3 only (consolidated LF).
3. O&M costs were established for Alternatives 3 a & b and 4. Due to the smaller LF size assume that O&M cost for Alternative 5 a & b is reduced to half, except for GW monitoring.
4. O&M costs are assumed semi-annually for the first 10 years, and annually for the remainder of the 30-year period.
5. Costs are estimated based on professional experience.

Plate 5-1-12c
Cost Estimate for SVE/Bioventing CVLFB (x$1,000) (See Note 1)

		Site:	**CVLF B**	
		No. Extraction Wells:	4	
		No. Monitoring Wells:		
		GAC/CatOx/CatScrub:	CatOx	**CVLF B**
		Operation (months):	12	**Totals:**
CAPITAL				
Site Cost [2, 3]			130	
Extraction & Monitoring Wells [4]	$2.0	/well	8	
Treatability/Permeability Test			40	
Subtotal			***178***	
Contingency	30%		53	
Design	10%		18	
Health & Safety	5%		9	
Construction Management	5%		9	
Bonds & Insurance	1.25%		2	
TOTAL CAPITAL			**269**	**269**
O&M				
Labor [5]	$10.0	/mo	120	
GAC Utilities [6]	$1.5	/mo, well		
CatOx Utilities [7]	$2.5	/mo	120	
CatOx w/Scrubber Utilities [8]	$3.1	/mo		
Env'l Monitoring [9]	$1.1	/mo	13	
Subtotal			***253***	
Contingency	20%		51	
TOTAL O & M			**304**	
O & M Present Worth	(@5%/12)		**296**	**296**
TOTAL PRESENT WORTH			**565**	**565**

Notes:
[1] Adapted from final SCOU RI/FS (JEG, 1997)
[2] Includes permitting, health & safety, community relations, & utilities
[3] Includes vendor engineering/construction, mob/demob, and start-up/shut-down
[4] Based on $50/LF (PVC) x 40 feet (avg)
[5] Includes prorated SVE/Treatment system supervision, health & safety, and O & M
[6] Includes prorated SVE/Treatment system electricity and GAC changeouts, assume 50 scfm per well
[7] Includes prorated SVE/Treatment system electricity and natural gas
[8] Includes prorated SVE/Treatment system electricity, natural gas, and chemicals
[9] Includes monthly air and confirmatory soil sampling

Correction Factors Used:

	Site Cost				O & M Cost	
# of wells	GAC	CatOx	CatScrub	Labor	GAC	Env'l Mon.
1 to 3	1	1	1	1	1	1
4 to 9	2	1	1	1	1	1
10 to 14	3	1.5	1.5	1	1	1
15 to 25	4	1.5	1.5	1.5	1	1.5
26 to29	5	2	2	2	1	2
40 and up	6	3	3	2	1	2

Plate 5-1-13
Comparison of Alternatives for Landfill Sites

Site Name	Landfill 1	Landfill 2	Landfill 3
Associated Sites	*Disposal Pits 1, 2, and 3*	*No other SCOU sites associated.*	*No other SCOU sites associated.*
Alternatives Considered **(Selected Alternative bolded)**	***For Waste:*** **1) Excavation and On-Site Disposal** 2) Excavation and Off-Site Disposal 3) Class III Landfill Cap 4) Evapotranspiration Cap 5) Zoned Cap	***For Waste:*** **1) Excavation and On-Site Disposal** 2) Excavation and Off-Site Disposal 3) Class III Landfill Cap 4) Evapotranspiration Cap 5) Zoned Cap	***For Waste:*** **1) Excavation and On-Site Disposal** 2) Excavation and Off-Site Disposal 3) Class III Landfill Cap 4) Evapotranspiration Cap 5) Zoned Cap
EPA Evaluation Criteria[1]			
Long Term Effectiveness (LTE)	***For Waste:*** Alternative 2 was considered the best alternative at meeting LTE because all contaminants would be removed from the site. Alternatives 1 and 5 were considered slightly better alternatives than 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site disposal.	***For Waste:*** Alternative 2 was considered the best alternative at meeting LTE because all contaminants would be removed from the site. Alternatives 1 and 5 were considered slightly better alternatives than 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site disposal.	***For Waste:*** Alternative 2 was considered the best alternative at meeting LTE because all contaminants would be removed from the site. Alternatives 1 and 5 were considered slightly better alternatives than 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site disposal.
Implementability	***For Waste:*** Because there is only a limited number of local Class I or Class II facilities that could accept landfill waste, alternatives 1, 2, and 5 were considered more difficult to implement than alternatives 3 and 4. Alternatives 1 and 5 are considered less difficult to implement than alternative 2 because it is estimated that there will be only a small volume of hazardous waste generated during excavation and consolidation operations that will require off site disposal.	***For Waste:*** Because there is only a limited number of local Class I or Class II facilities that could accept landfill waste, alternatives 1, 2, and 5 were considered more difficult to implement than alternatives 3 and 4. Alternatives 1 and 5 are considered less difficult to implement than alternative 2 because it is estimated that there will be only a small volume of hazardous waste generated during excavation and consolidation operations that will require off site disposal.	***For Waste:*** Because there is only a limited number of local Class I or Class II facilities that could accept landfill waste, alternatives 1, 2, and 5 were considered more difficult to implement than alternatives 3 and 4. Alternatives 1 and 5 are considered less difficult to implement than alternative 2 because it is estimated that there will be only a small volume of hazardous waste generated during excavation and consolidation operations that will require off site disposal.
Short-term Effectiveness	***For Waste:*** Alternatives 3 and 4 were considered the best in short-term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 1, 2, and 5, were considered slightly less effective in the short-term because workers could be exposed to VOCs or other potentially hazardous materials.	***For Waste:*** Alternatives 3 and 4 were considered the best in short-term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 1, 2, and 5, were considered slightly less effective in the short-term because workers could be exposed to VOCs or other potentially hazardous materials.	***For Waste:*** Alternatives 3 and 4 were considered the best in short-term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 1, 2, and 5, were considered slightly less effective in the short-term because workers could be exposed to VOCs or other potentially hazardous materials.
Reduction of Toxicity, Mobility, or Volume (TMV)	***For Waste:*** Alternative 1 ranked highest in reduction of TMV because all contaminants would be permanently removed from the site. Alternatives 2 and 5 are considered more effective in reducing TMV than alternatives 3 and 4 because of the segregation and off site disposal of any hazardous or regulated wastes identified.	***For Waste:*** Alternative 2 ranked highest in reduction of TMV because all contaminants would be permanently removed from the site. Alternatives 1 and 5 are considered more effective in reducing TMV than alternatives 3 and 4 because of the segregation and off site disposal of any hazardous or regulated wastes identified.	***For Waste:*** Alternative 2 ranked highest in reduction of TMV because all contaminants would be permanently removed from the site. Alternatives 1 and 5 are considered more effective in reducing TMV than alternatives 3 and 4 because of the segregation and off site disposal of any hazardous or regulated wastes identified.
Cost Effectiveness	***For Waste:*** All of the alternatives were considered effective. Alternative 5 had the lowest projected costs followed in order of increasing costs by alternatives 3, 1, 4, and 2.	***For Waste:*** All of the alternatives were considered effective. Alternative 1 had the lowest projected costs followed in order of increasing costs by alternatives 5, 2, 3, and 4.	***For Waste:*** All of the alternatives were considered effective. Alternative 5 had the lowest projected costs followed in order of increasing costs by alternatives 1, 2, 3, and 4.
Regulatory Acceptance	***For Waste:*** All of the alternatives are considered acceptable by the regulatory agencies.	***For Waste:*** All of the alternatives are considered acceptable by the regulatory agencies.	***For Waste:*** All of the alternatives are considered acceptable by the regulatory agencies.
Community Acceptance	***For Waste:*** The community considers alternative 2 to be the most acceptable alternative, followed by alternative 1. The community is strongly opposed to any of the cap in place alternatives (Alternatives 3, 4, and 5).	***For Waste:*** The community considers alternative 2 to be the most acceptable alternative, followed by alternative 1. The community is strongly opposed to any of the cap in place alternatives (Alternatives 3, 4, and 5).	***For Waste:*** The community considers alternative 2 to be the most acceptable alternative, followed by alternative 1. The community is strongly opposed to any of the cap in place alternatives (Alternatives 3, 4, and 5).

1- Information on how each considered alternative met Overall Protection of Human Health and the Environment and Compliance with ARARs ("Threshold" Criteria) can be found in the Description of Alternatives for Landfill Sites (Section II, Subsection 5.13).

Plate 5-1-13 (continued)
Comparison of Alternatives for Landfill Sites

Site Name	Landfill 4	Landfill 5	Castle Vista Landfill A	Castle Vista Landfill B
Associated Sites	**Disposal Pits 5 and 6**	**Disposal Pits 8, 8A, and 9, and Trenches A through L**	**No other SCOU sites associated.**	**No other SCOU sites associated.**
Alternatives Considered **(Selected Alternative bolded)**	***For Waste:*** 1) Excavation and On-Site Disposal 2) Excavation and Off-Site Disposal 3) Class III Landfill Cap 4) Evapotranspiration Cap **5) Zoned Cap**	***For Waste:*** 1) Excavation and On-Site Disposal 2) Excavation and Off-Site Disposal 3) Class III Landfill Cap 4) Evapotranspiration Cap **5) Zoned Cap**	***For Waste:*** **1) Excavation and On-Site Disposal** 2) Excavation and Off-Site Disposal 3) Class III Landfill Cap 4) Evapotranspiration Cap 5) Zoned Cap	***For Waste:*** **1) Excavation and On-Site Disposal** 2) Excavation and Off-Site Disposal 3) Class III Landfill Cap 4) Evapotranspiration Cap 5) Zoned Cap **For *VOCs:*** 1) **SVE/Bioventing** 2) Thermally Enhanced SVE
EPA Evaluation Criteria[1]				
Long Term Effectiveness (LTE)	***For Waste:*** Alternative 2 was considered the best alternative at meeting LTE because all contaminants would be removed from the site. Alternatives 1 and 5 were considered slightly better alternatives than 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site for disposal.	***For Waste:*** Alternative 2 was considered the best alternative at meeting LTE because all contaminants would be removed from the site. Alternatives 1 and 5 were considered slightly better alternatives than 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site for disposal.	***For Waste:*** Alternative 2 was considered the best alternative at meeting LTE because all contaminants would be removed from the site. Alternatives 1 and 5 were considered slightly better alternatives than 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site for disposal.	***For Waste:*** Alternative 2 was considered the best alternative at meeting LTE because all contaminants would be removed from the site. Alternatives 1 and 5 were considered slightly better alternatives than 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site for disposal. ***For VOCs:*** Alternative 1 would be effective in permanently removing VOCs from soil. Alternative 2 would be technically unsound for halogenated VOCs.
Implementability	***For Waste:*** Because there is only a limited number of local Class I or Class II facilities that could accept landfill waste, alternatives 1, 2, and 5 were considered more difficult to implement than alternatives 3 and 4. Alternatives 1 and 5 are considered less difficult to implement than alternative 2 because it is estimated that there will be only a small volume of hazardous waste generated during excavation and consolidation operations that will require off site disposal.	***For Waste:*** Because there are only a limited number of local Class I or Class II facilities that could accept landfill waste, alternatives 1, 2, and 5 were considered more difficult to implement than alternatives 3 and 4. Alternatives 1 and 5 are considered less difficult to implement than alternative 2 because it is estimated that there will be only a small volume of hazardous waste generated during excavation and consolidation operations that will require off site disposal.	***For Waste:*** Because there are only a limited number of local Class I or Class II facilities that could accept landfill waste, alternatives 1, 2, and 5 were considered more difficult to implement than alternatives 3 and 4. Alternatives 1 and 5 are considered less difficult to implement than alternative 2 because it is estimated that there will be only a small volume of hazardous waste generated during excavation and consolidation operations that will require off site disposal.	***For Waste:*** Because there are only a limited number of local Class I or Class II facilities that could accept landfill waste, alternatives 1, 2, and 5 were considered more difficult to implement than alternatives 3 and 4. Alternatives 1 and 5 are considered less difficult to implement than alternative 2 because it is estimated that there will be only a small volume of hazardous waste generated during excavation and consolidation operations that will require off site disposal. ***For VOCs:*** SVE/Biovent is commercially available and has been used successfully at numerous NPL sites. Thermally enhanced SVE is less widely used and is considered more difficult to implement.
Short-term Effectiveness	***For Waste:*** Alternatives 3 and 4 were considered the best in short-term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 1, 2, and 5, were considered slightly less effective in the short-term because workers could be exposed to VOCs or other potentially hazardous materials.	***For Waste:*** Alternatives 3 and 4 were considered the best in short-term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 1, 2, and 5, were considered slightly less effective in the short-term because workers could be exposed to VOCs or other potentially hazardous materials.	***For Waste:*** Alternatives 3 and 4 were considered the best in short-term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 1, 2, and 5, were considered slightly less effective in the short-term because workers could be exposed to VOCs or other potentially hazardous materials.	***For Waste:*** Alternatives 3 and 4 were considered the best in short-term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 1, 2, and 5, were considered slightly less effective in the short-term because workers could be exposed to VOCs or other potentially hazardous materials. ***For VOCs:*** Installation of both alternatives would present a small but controllable risk to on site workers or the community.
Reduction of Toxicity, Mobility, or Volume (TMV)	***For Waste:*** Alternative 2 ranked highest in reduction of TMV because all contaminants would be permanently removed from the site. Alternatives 1 and 5 are considered more effective in reducing TMV than alternatives 3 and 4 because of the segregation and off site disposal of any hazardous or regulated wastes identified.	***For Waste:*** Alternative 2 ranked highest in reduction of TMV because all contaminants would be permanently removed from the site. Alternatives 1 and 5 are considered more effective in reducing TMV than alternatives 3 and 4 because of the segregation and off site disposal of any hazardous or regulated wastes identified.	***For Waste:*** Alternative 2 ranked highest in reduction of TMV because all contaminants would be permanently removed from the site. Alternatives 1 and 5 are considered more effective in reducing TMV than alternatives 3 and 4 because of the segregation and off site disposal of any hazardous or regulated wastes identified.	***For Waste:*** Alternative 2 ranked highest in reduction of TMV because all contaminants would be permanently removed from the site. Alternatives 1 and 5 are considered more effective in reducing TMV than alternatives 3 and 4 because of the segregation and off site disposal of any hazardous or regulated wastes identified. ***For VOCs:*** Both alternatives would significantly reduce TMV at the site.
Cost Effectiveness	***For Waste:*** All of the alternatives were considered effective. Alternative 5 had the lowest projected costs followed in order of increasing costs by alternatives 1, 3, 4, and 2.	***For Waste:*** All of the alternatives were considered effective. Alternative 5 had the lowest projected costs followed in order of increasing costs by alternatives 1, 3, 2, and 4.	***For Waste:*** All of the alternatives were considered effective. Alternative 1 had the lowest projected costs followed in order of increasing costs by alternatives 2, 5, 3, and 4.	***For Waste:*** All of the alternatives were considered effective. Alternative 1 had the lowest projected costs followed in order of increasing costs by alternatives 5, 2, 3, and 4. ***For VOCs:*** Both alternatives are considered cost effective remediation alternatives, however, the cost estimate for alternative 1 was slightly less than that for alternative 2.
Regulatory Acceptance	***For Waste:*** All of the alternatives are considered acceptable by the regulatory agencies.	***For Waste:*** All of the alternatives are considered acceptable by the regulatory agencies.	***For Waste:*** All of the alternatives are considered acceptable by the regulatory agencies.	***For Waste:*** All of the alternatives are considered acceptable by the regulatory agencies. ***For VOCs:*** Both alternatives are considered acceptable by the regulatory agencies.
Community Acceptance	***For Waste:*** The community considers alternative 2 to be the most acceptable alternative, followed by alternative 1. The community is strongly opposed to any of the cap in place alternatives (Alternatives 3, 4, and 5).	***For Waste:*** The community considers alternative 2 to be the most acceptable alternative, followed by alternative 1. The community is strongly opposed to any of the cap in place alternatives (Alternatives 3, 4, and 5).	***For Waste:*** The community considers alternative 2 to be the most acceptable alternative, followed by alternative 1. The community is strongly opposed to any of the cap in place alternatives (Alternatives 3, 4, and 5).	***For Waste:*** The community considers alternative 2 to be the most acceptable alternative, followed by alternative 1. The community is strongly opposed to any of the cap in place alternatives (Alternatives 3, 4, and 5). ***For VOCs:*** The community considers both alternatives acceptable.

1- Information on how each considered alternaive met Overall Protection of Human Health and the Environment and Compliance with ARARs ("Threshold" Criteria) can be found in the Description of Alternatives for Landfill Sites (Section II, Subsection 5.1.3).

Plate 5-1-14
Selected Remedy and Major Components for the Landfill Sites

Landfill Name	Selected Remedy	Waste Volume (yd^3)	O&M Costs (Total Present Worth)	Capital Costs (Total Present Worth)	Unit Costs ($/$yd^3$)
Landfill 1	Excavation/On-site Disposal	587,000	$179,025[1]	$4,240,080	$7.50
Landfill 2	Excavation/On-site Disposal	60,000	$145,769[1]	$421,559	$9.45
Landfill 3	Zoned Capping	311,000	$469,189	$1,204,713	$5.40
Landfill 4	Zoned Capping	290,000[1]	$512,691[1]	$2,022,192	$8.70
Landfill 5[1]	Zoned Capping	100,000 (waste)	$545,947	$2,706,903	$22.00
Castle Vista A	Excavation/On-site Disposal	8,500	$122,768[1]	$15,594	$16.30
Castle Vista B	Excavation/On-site Disposal & SVE for VOCs	62,000 (waste) 150,000 (VOC)	$179,025[1] $296,000	$672,052 $269,000	$13.75 $3.80

[1]Costs assume Landfill 4 to be the base consolidation landfill. Waste volume includes estimates of volumes from other on-base sources. If waste is taken to other on-base Landfills for consolidation, volume estimates may vary.

Plate 5-2-1
NFA Summary

Pre-Remedial Investigation NFA (17 Sites)		
No.	*Site*	*NFA Basis*
1.	ETC3	Site not sampled. No source of soil contamination identified. Air Force confirmed area not used as DBF. BCT concurrence with NFA Status.
2.	ETC6	Site not sampled. Geophysical surveys found no evidence of USTs, no source of soil contamination identified. BCT concurrence with NFA Status.
3.	ETC13	Site not sampled. Geophysical surveys found no evidence of USTs, no source of soil contamination identified. BCT concurrence with NFA Status.
4.	H1	Site not sampled. Site was commercial gas station in Castle Vista/Castle Garden Area. Station was not part of base operations.
5.	H2	Site not sampled. Site was commercial gas station in Castle Vista/Castle Garden Area. Station was not part of base operations.
6.	H3	Site not sampled. Site was commercial gas station in Castle Vista/Castle Garden Area. Station was not part of base operations.
7.	LG1	Site not sampled. Site was a former municipal sewage lagoon. No known hazardous materials stored or discharged at site.
8.	N2	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
9.	N3	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
10.	N4	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
11.	N5	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
12.	N6	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
13.	N7	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
14.	N8	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
15.	N9	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
16.	N10	Site not sampled. No evidence of use or storage of hazardous materials. BCT concurrence with NFA status.
17.	PCB7	Site not sampled. Determined not contaminated. Site recommended for NFA based on a pre-RI decision.

Plate 5-2-1 (continued)
NFA Summary

Pre-Feasibility Study NFA (26 Sites)					
		Human Health Risk Evaluation		***WQSA Evaluation***	
No.	*Site*	*Cancer Risk*	*Hazard Index*	*Status*	*Basis*
1.	B23	1.3×10^{-9}	0.0001	Passed	VLEACH1, 2 (SVOCs/VOCs)
2.	B47	3.9×10^{-8}	0.0001	Passed	VLEACH2, DLM (VOCs and metals)
3.	B541	No contamination source identified. Site not sampled.			
4.	B545	No contamination source identified. Site not sampled.			
5.	B547	1.7×10^{-8}	0.00002	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
6.	B1182	No evidence of contamination identified. Site not sampled.			
7.	B1204	2.0×10^{-8} (Note 1)	0.0001[1]	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
8.	B1205	2.0×10^{-8}	0.0001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
9.	B1207	No carcinogens	0.00004	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
10.	B1319	3.0×10^{-8}	0.00004	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
11.	B1562	5.6×10^{-8}	0.04	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
12.	DP4A/4B	No contamination identified in site soil samples.			
13.	ETC12	No contamination identified in site soil samples.			
14.	Hangar F-1	2.9×10^{-8}	0.0001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
15.	Hangar F-2	1.0×10^{-8} (Note 2)	0.00002[2]	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
16.	Hangar F-3	1.2×10^{-8} (Note 3)	0.00002[3]	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
17.	Hangar F-5	2.4×10^{-8}	0.0001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
18.	Hangar F-6	No contamination identified in site soil samples.			
19.	HWS4	2.2×10^{-8}	0.0001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
20.	IWL	5.1×10^{-9}	0.00001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
21.	SA B2	No contamination identified in site soil.			VLEACH1,2 (SVOCs/VOCs) DLM (metals)
22.	SA B4	6.7×10^{-8}	0.1	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
23.	SS3	1.9×10^{-8}	0.0003	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
24.	SS5	7.2×10^{-9}	0.00001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
25.	SS9	8.7×10^{-9}	0.0001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
26.	ST1571	8.7×10^{-9}	0.00001	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)

Plate 5-2-1 (continued)
NFA Summary

Post-Feasibility Study NFA (75 Sites)					
		Human Health Risk		***WQSA Evaluation***	
No.	*Site*	*Cancer Risk*	*Hazard Index*	*Status*	*Basis*
1.	B871	2.8×10^{-6} (Note 4)	0.1	Passed	VLEACH & DLM
2.	PCB9	6.4×10^{-5} (Note 5)	2.8	Passed	VLEACH
3-34.	Stains 1-32	1.9×10^{-8}	0.0003	Passed	VLEACH & DLM
35.	Structure T85	No carcinogens	< 1 (Note 6)	Passed	VLEACH & DLM
		Closure Basis/Closure Reference			
36.	B1344	Closure Report December 2000			
37.	B1550	Closure Report December 2000			
38.	CVLFA	Closure Report May 1999			
39.	CVLFB	Closure Report September 2000			
40.	DA-3	Closure Report December 2000			
41.	DA-8	Closure Report December 2000			
42.	Disposal Pit 1 (LF1)	Closure Report September 2000			
43.	Disposal Pit 2 (LF1)	Closure Report September 2000			
44.	Disposal Pit 3 (LF1)	Closure Report September 2000			
45.	ETC2	Closure Report December 2000			
46.	ETC8	Closure Report December 2000			
---	ETC10	This site was included in early versions of the SCOU ROD Part 1, but was deferred to a subsequent ROD. This listing is retained for information and tracking purposes only.			
47.	Firing Range	Closure Report September 2000			
48.	LF1	Closure Report September 2000			
49.	LF2	Closure Report May 1999			
50.	LF3	Closure Report September 2000			
51.	SS6	Closure Report December 2000			
52.	SS7	Closure Report December 2000			
53.	SWMU 4.1 - Storage Pad	Post-RI Sampling Results			
54.	SWMU 4.2 - AST	RI Sampling HWS4/SCOU RI/FS			
55.	SWMU 4.9 - OWS	WQSA/VLEACH2/Laguna Volume II			
56.	SWMU 4.10 - OWS	Water Board-DLM/Laguna Volume I			

Plate 5-2-1 (continued)
NFA Summary

	Site	***Closure Basis/Closure Reference***
57.	SWMU 4.11 - OWS	Wtr Board-DLM/Laguna Volume II
58.	SWMU 4.12 - OWS	Site Review & BCT Consensus
59.	SWMU 4.13 - OWS	Wtr Board-DLM/Laguna Volume II
60.	SWMU 4.19 - OWS	Wtr Board-DLM/VLEACH2/SCOU RI/FS
61.	SWMU 4.20 - OWS	Wtr Board-DLM/Laguna Volume I
62.	SWMU 4.24 - Silver Recovery Unit	RCRA. Record review, field inspection & BCT Consensus
63.	SWMU 4.25 - Silver Recovery Unit	Water Board-DLM/SCOU RI/FS & Data Gap Rpt.
64.	SWMU 4.26 - Solvent Distillation Unit	RCRA, 1993
65.	SWMU 4.27 - Spray Booth Sump	RCRA, 1994
66.	SWMU 4.28 - Open Burn Pit	RI Sampling-Wtr Board/DLM/VLEACH2/SCOU RI/FS
67.	SWMU 4.30 - HW Accumulation Pt	Visual Inspection/BCT Consensus
68.	SWMU 4.31 - HW Accumulation Pt	RI Sampling B1350/SCOU RI/FS
69.	SWMU 4.32 - HW Accumulation Pt	Visual Inspection/BCT Consensus
70.	SWMU 4.33 - HW Accumulation Pt	RI sampling B1550/Visual Inspection/BCT Consensus
71.	SWMU 4.34 - HW Accumulation Pt	RI sampling B1319/Wtr Board-DLM/VLEACH2/SCOU RI/FS
72.	SWMU 4.35 - HW Accumulation Pt	RI Sampling B325/Wtr Board-DLM/VLEACH2/SCOU RI/FS
73.	SWMU 4.36 - HW Accumulation Pt	RI Sampling B1324/Wtr Board/DLM/VLEACH2/SCOU RI/FS
74.	SWMU 4.37 - IWL Pipeline	RI Sampling IWL/Wtr Board-DLM/VLEACH2/SCOU RI/FS
75.	SWMU 4.38 - Basin	RI Sampling/Wtr Board-DLM/VLEACH2/SCOU RI/FS

Plate 5-2-1 (continued)
NFA Summary

Risk Management Decision NFA (23 Sites)					
	Site	**Human Health Risk**		**WQSA Evaluation**	
		Cancer Risk	**Hazard Index**	**Status**	**Basis**
1.	B84	No carcinogens	< 1 (Note 6)	Failed (Note 7)	VLEACH & DLM
2.	B1335	2.1×10^{-8}	0.00003	Failed (Note 8)	VLEACH2 (VOCs)
3.	B1404	1.6×10^{-8}	0.0001	Failed (Note 7)	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
4.	B1405	NA[9]	NA (Note 9)	Failed (Note 10)	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
5.	B1529	7.5×10^{-9}	0.00001	Failed (Note 11)	VLEACH2
6.	DBF	5.8×10^{-6}	0.1	Passed	VLEACH & DLM
7.	ETC7	NA[12]	NA (Note 12)	Failed (Note 12)	VLEACH2
8.	ETC11	7.7×10^{-6}	0.003	Passed	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
9.	PCB1,2,3	1.3×10^{-6} (Note 13)	NA (Note 13)	Passed	VLEACH
10.	PCB4	1.4×10^{-5} (Note 13)	NA (Note 13)	Passed	VLEACH
11.	PCB5	8.6×10^{-6} (Note 13)	NA (Note 13)	Passed	VLEACH
12.	PCB6	1.2×10^{-5} (Note 13)	NA (Note 13)	Passed	VLEACH
13.	PCB8	NA (Note 14)	NA (Note 14)	Passed	VLEACH
14.	SS1	3.1×10^{-8}	0.001	Failed (Note 15)	VLEACH1,2 (SVOCs/VOCs) DLM (metals)
15.	ST1201	1.6×10^{-9}	0.002	Failed (Note 16)	VLEACH2 (VOCs)
16.	ST1206	1.6×10^{-9}	0.002	Failed (Note 16)	VLEACH2 (VOCs)
17.	UFL4	4.8×10^{-9}	0.00001	Failed (Note 17)	VLEACH2 (VOCs)
18.	DP7	***Subsurface Soil***			
	Adult Resident Child Resident Occupational	1.1×10^{-5} (Note 18) 1.2×10^{-5} (Note 18) 6.4×10^{-7}	0.05 0.2 0.0004	Passed	VLEACH2 (VOCs) DLM (metals)
19.	DP10	***Surface Soil***			
	Adult Resident Child Resident Occupational	1.3×10^{-5} (Note 19) 1.4×10^{-5} (Note 19) 7.4×10^{-7}	0.3 0.6 0.001	Passed	VLEACH2 (VOCs) DLM (metals)
	DP10	***Surface Soil***			
	Adult Resident Child Resident Occupational	8.0×10^{-5} (Note 19) 7.2×10^{-5} (Note 19) 4.9×10^{-7}	0.07 0.05 0.002	Passed	VLEACH2 (VOCs) DLM (metals)

Plate 5-2-1 (continued)
NFA Summary

Risk Management Decision NFA (23 Sites)					
	Site	**Human Health Risk**		**WQSA Evaluation**	
		Cancer Risk	**Hazard Index**	**Status**	**Basis**
20.	FTA2	Surface Soil			
	Adult Resident Child Resident Occupational	1.0×10^{-5} (Note 20) 1.1×10^{-5} (Note 20) 1.4×10^{-6} (Note 20)	0.0009 0.004 <1	Passed	VLEACH1,2 (SVOCs/VOCs)
	FTA2	Subsurface Soil			
	Adult Resident Child Resident Occupational	5.0×10^{-6} (Note 20) 5.3×10^{-6} (Note 20) 7.0×10^{-7} (Note 20)	0.0002 0.001 <1	Passed	VLEACH1,2 (SVOCs/VOCs)
21.	SA B1	*Surface Soil*			
	Adult Resident Child Resident Occupational	3.7×10^{-6} (Note 21) 4.1×10^{-6} (Note 21) 2.1×10^{-7}	<1 <1 <1	Passed	VLEACH & DLM
	SA B1	*Subsurface Soil*			
	Adult Resident Child Resident Occupational	6.5×10^{-6} (Note 21) 7.0×10^{-6} (Note 21) 3.6×10^{-7}	<1 <1 <1	Failed (Note 21)	VLEACH & DLM
22.	SDS	*Surface Soil*			
	Adult Resident Child Resident Occupational	6×10^{-6} (Note 22) 4×10^{-7} (Note 22) 1×10^{-7} (Note 22)	<1 0.05 0.001	Passed	VLEACH & DLM
23.	DA-2	Appendix E and Section 5.2.5.23 discuss the change in DA-2 from a Petroleum Hydrocarbon Only Site to a Risk Management Decision NFA Site.			

Notes:

[1]Sites B1204 and B1205 were combined for risk assessment.

[2]Blood-lead level estimated at 5.8 ìg/dL.

[3]Blood-lead level estimated at 4.8 ìg/dL.

[4]B871 was remediated through Removal Action. Closure approval received December 12, 1996.

[5]Risks at PCB9 site were addressed by removal action excavation work. Confirmation samples confirmed cleanup complete.

[6]Silver, which is not a carcinogen was only COPC evaluated during risk assessment. Silver was evaluated using the Hazard Index for three exposure scenarios, adult residential, child residential, occupational. Hazard Index for all three was less than one.

[7]Site failed WQSA screening based on presence of manganese. Review of site data concluded manganese was naturally occurring and not a threat to ground water.

[8]TCE in soil gas at B1335 exceeded VLEACH2 thresholds at 10 and 40 feet bgs. However, it was determined that the elevated TCE levels were a result of ground water off-gassing and not related to an on site contaminant release.

[9]Lead was only COC that exceeded screening levels. Estimated blood-lead level was 6.7 ìg/dL.

Plate 5-2-1 (continued)
NFA Summary

[10]Benzene in soil gas at 41 feet bgs exceeded WQSA VLEACH2 thresholds. However, because no shallow source of benzene was identified, it was determined that the downhole soil gas was related to the FS4 fuel release site and not from a release at B1405.
[11]The Data Gap investigation determined that VOC contamination at the site increased with depth, and was most likely a result of the ground water plume off-gassing.
[12]Pre-RI investigation found elevated TCE levels, above WQSA screening criteria, in site soil gas. Further evaluation of site data during the RI concluded that soil gas identified in Pre-RI study was from SS2 and not related to a release at ETC7. Because site related contamination was not identified during the RI, a risk assessment was not conducted for this site.
[13] Based on proposed industrial reuse and the remedial work that has already been undertaken, it was determined that the site did not pose a significant threat to human health or water quality.
[14]Because the transformer oil that was released had minimal levels of PCBs and because the release was contained to paved areas, it was determined that the site did not pose a significant threat to human health or water quality.
[15]SS1 failed the WQSA evaluation based on elevated levels of manganese that were slightly above TBV. Review of RI data concluded that the elevated levels of manganese were naturally occurring and not anthropogenic.
[16]TCE in soil gas at 94 feet bgs exceeded WQSA VLEACH2 threshold levels. However, because TCE was not identified in shallow soil samples, it was determined that soil gas TCE at 94 feet bgs was the result of ground water plume off-gassing.
[17]Site failed WQSA evaluation based on TCE in soil gas at 40 ft bgs. However, because a shallow TCE source area was not identified at the site, it was concluded that the elevated TCE levels at depth were a result of ground water off-gassing.
[18]Quantitative Risk Assessment was conducted for subsurface soil only, because contaminants were not identified in surface soils. Residential risks are driven by beryllium which was less than the TBV.
[19]DP10 was included as part of the Landfill 5, Area 2 quantitative risk assessment. For surface soil, residential risks were driven by beryllium which was less than the TBV. For subsurface soil, risk was primarily driven by 1,4-Dichlorobenzene which was not found at DP10.
[20]Residential risks associated with surface soil were primarily driven by elevated PAH levels in one surface soil sample collected from FTA2 SB01. It is likely that this sample included small bits of asphalt that were noted at the site. Lower levels of PAH were identified in the subsurface soil samples and are most likely more representative of site conditions.
[21]Site failed WQSA screening based on the presence of manganese. Site failed risk screening based on the presence of beryllium. Based on review of site data, both metals were determined to be naturally occurring and not anthropogenic.
[22]The adult risk assessment assumes 30 years residency with 350 days per year contact with maximum soil concentration. The child risk assessment assumes six years contact with maximum soil concentration, three days per week, two hours per day. The occupational risk assessment assumes 25 years worker contact with maximum soil concentration five days per year, eight hours per day.

Plate 5-2-2
Alternatives Considered for
Risk Management No Further Action Sites

Site Name	*No Action*	*Soil Vapor Extraction and Bioventing*	*Thermally Enhanced SVE*
Building 1529	Under this alternative, no remedial action would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. For purposes of cost evaluation, it is assumed that ground water monitoring would be conducted semi-annually for the first 10 years and annually for the last 20 years.	Initially, a treatability/permeability test would be conducted to help determine design and operating parameters for the system. Permitting, health and safety plans, community relations, and utility hook up would be part of a system construction. Granular activated carbon filtration would be used to treat system effluent. O&M will include monthly air monitoring/sampling, GAC change outs, system supervision, and final confirmatory soil sampling.	Initially, a treatabillity/permeability test would be conducted to help determine design and operating parameters for the system. Permitting, health and safety plans, community relations, and utility hook up would be part of system construction. Granular activated carbon filtration would be used to treat system effluent. O&M will include monthly air monitoring/sampling, GAC change outs, system supervision, and final confirmatory soil sampling.
	No Action	*Solidification /Stabilization*	*Soil Washing*
SAB1	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. Monitoring could be accomplished as part of the base wide ground water monitoring program.	Under this alternative, contaminated soil would be excavated and blended with a mixture of concrete to render the PCBs immobile. Confirmation samples would be collected to confirm site remediation was complete. Stabilized soil could then be taken to an on-base consolidation landfill or to an off-site facility for disposal.	Under this alternative, contaminated soil would be excavated and washed with a mixture of water and surfactant. Waste water and fines from the washing process would be classified and taken to an on-site consolidation landfill or to an off-site facility for disposal. Washed soil could be replaced into the site excavation.

	No Action	*SVE and Bioventing*	*Thermally Enhanced SVE*	*Intrinsic Remedation*	*Land Treatment Unit*
UFL-4	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period of up to 30 years. For purposes of cost evaluation, it is assumed that ground water monitoring would be conducted semi-annually for the first 10 years and annually for the last 20 years.	Initially, a treatability/permeability test would be conducted to help determine design and operating parameters for the system. Permitting, health and safety plans, community relations, and utility hook up would be part of system construction. Granular activated carbon filtration would be used to treat system effluent. O&M will include monthly air monitoring/sampling. GAC change outs, system supervision, and final confirmatory soil sampling.	Initially, a treatability/permeability test would be conducted to help determine design and operating parameters for the system. Permitting, health and safety plans, community relations, and utility hook up would be part of system construction. Granular activated carbon filtration would be used to treat system effluent. O&M will include monthly air monitoring/sampling, GAC change outs, system supervision, and final confirmatory soil sampling.	Intrinsic remediation would involve installation of ground water and soil vapor monitoring wells. Soil, soil vapor, and ground water samples would be collected from the sample points to determine microbial potential for contaminant degradation, and to establish a site contamination baseline. Quarterly monitoring would be undertaken for up to 5 years to confirm remediation progress. If it is determined that IR will not meet remediation goals, active remediation measures would be taken.	A land treatment unit would involve the excavation of contaminated soil. The soil would be taken to above ground treatment pad where nutrients and water would be added to augment contaminant degradation. If necessary, off gases would be contained and treated using a blower and an activated carbon filter system. After remediation cleanup goals are met, the soil would be used to backfill the site excavation.

Plate 5-2-2 (continued)
Alternatives Considered for
Risk Management No Further Action Sites

Site Name	*No Action*	*SVE/Biovent & Solidification/Stabilization & Excavation/Disposal*	*SVE/Biovent & Soil Washing & Excavation/Disposal*	*Thermally enhanced SVE & Solidification/ Stabilization & Excavation/Disposal*	*Thermally Enhanced SVE & Soil Washing & Excavation/Disposal*
DBF	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period of up to 30 years. For purposes of cost evaluation, it is assumed that ground water monitoring would be conducted semi-annually for the first 10 years and annually for the last 20 years.	Under this alternative, the remediation would be accomplished in three main steps. First, the SVE system would be installed and operated to remove the VOCs from the soil. Second, the SVE system would be modified into the Bioventing system, which would be operated to remove the SVOCs from the soil. Third, non-volatile contaminants would be excavated and treated or removed to a consolidated landfill on base.	Under this alternative, the remediation would be accomplished in three main steps. First, the SVE system would be installed and operated to remove the VOCs from the soil. Second, the SVE system would be modified into the Bioventing system, which would be operated to remove the SVOCs from the soil. Third, the metal-contaminated soils would be excavated and treated with a soil washing process.	Under this alternative, the remediation would be accomplished in two main steps. First, the thermally enhanced SVE system would be installed and operated to remove the VOCs and SVOCs from the soil. Second, the metal-contaminated soils would be excavated and treated with a solidification process.	Under this alternative, the remediation would be accomplished in two main steps. First, the thermally enhanced SVE system would be installed and operated to remove the VOCs and SVOCs from the soil. Second, the metal-contaminated soils would be excavated and treated with a soil washing process.
FTA2	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period of up to 30 years. For purposes of cost evaluation, it is assumed that ground water monitoring would be conducted semi-annually for the first 10 years and annually for the last 20 years.	Under this alternative, the remediation would be accomplished in three main steps. First, the SVE system would be installed and operated to remove the VOCs from the soil. Second, the SVE system would be modified into the Bioventing system, which would be operated to remove the SVOCs from the soil. Third, non-volatile contaminants would be excavated and treated or removed to a consolidated landfill on base.	Under this alternative, the remediation would be accomplished in three main steps. First, the SVE system would be installed and operated to remove the VOCs from the soil. Second, the SVE system would be modified into the Bioventing system, which would be operated to remove the SVOCs from the soil. Third, the metal-contaminated soils would be excavated and treated with a soil washing process.	Under this alternative, the remediation would be accomplished in two main steps. First, the thermally enhanced SVE system would be installed and operated to remove the VOCs and SVOCs from the soil. Second, the metal-contaminated soils would be excavated and treated with a solidification process.	Under this alternative, the remediation would be accomplished in two main steps. First, the thermally enhanced SVE system would be installed and operated to remove the VOCs and SVOCs from the soil. Second, the metal-contaminated soils would be excavated and treated with a soil washing process.

	No Action	*Institutional Controls*
SDS	Under this alternative, no remedial action would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period of up to 30 years. For purposes of cost evaluation, it is assumed that ground water monitoring would be conducted semi-annually for the first 10 years and annually for the last 20 years.	Under this alternative, no active remediation would be conducted. However, to prevent potential human exposure to contaminants remaining at the site, deed restrictions would be implemented to prevent residential or other inappropriate reuse.

Plate 5-2-2 (continued)
Alternatives Considered for
Risk Management No Further Action Sites

Site Name	*No Action*	*Excavation and Off-site Disposal*	*Excavation and On-site Disposal*	*Class III Cap*	*Evapotranspiration Cap*	*Zoned Cap*
Disposal Pit 7	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period of up to 30 years. For purposes of cost evaluation, it is assumed that ground water monitoring would be conducted semi-annually for the first 10 years and annually for the last 20 years.	Under the excavation and off site disposal alternative, waste will be excavated and classified. Any part of the waste classified as hazardous or regulated and would be taken to Class I or Class II landfills for disposal. The remaining waste will be taken to municipal landfill for disposal. The excavation will then be backfilled with makeup backfill. O&M would semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and on site disposal alternative, waste will be excavated and classified. If classified as hazardous or regulated and will require off site disposal. The remaining waste will be taken for consolidation and disposal. The excavation will then be backfilled with makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continuing sampling would be reviewed based on sampling results.	Installation of a Class III cap would include importing foundation soil. Also, 1 ft of low permeability soil or a 60 mil FML Cap, a Geocomposite filter layer, and vegetative cover would be installed over the disposal pit surface. Fencing and signage would be installed as part of access restriction. O&M would include the installation of monitoring wells, semiannual sampling of the site monitoring wells for 10 years, and annual sampling for 20 years.	Installation of an Evapotranspiration cap would include importing foundation soil. Also, a loamy soil storage layer, 1 ft of low permeability soil, vegetative cover would be installed over the surface. Fencing and signage would be installed as part of access restriction. O&M would include the installation of monitoring wells, semiannual sampling of the site monitoring wells for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, waste would be excavated from the disposal pit and consolidated into a smaller area. It is estimated that the excavated waste may be classified as hazardous or regulated and will require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. Foundation material, 1 foot of low permeability soil, or a 60-mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the surface. Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.
Disposal Pit 10	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. For purposes of cost evaluation, it is assumed that ground water monitoring would be conducted semi-annually for the first 10 years and annually for the last 20 years.	Under the excavation and off site disposal alternative, waste will be excavated and classified. Any part of the waste classified as hazardous or regulated and would be taken to Class I or Class II landfills for disposal. The remaining waste will be taken to municipal landfill for disposal. The excavation will then be backfilled with makeup backfill. O&M would semiannual sampling of the site monitoring wells. The need for continued sampling would be reviewed based on sampling results.	Under the excavation and on site disposal alternative, waste will be excavated and classified. If classified as hazardous or regulated and will require off site disposal. The remaining waste will be taken for consolidation and disposal. The excavation will then be backfilled with makeup backfill. O&M would include semiannual sampling of the site monitoring wells. The need for continuing sampling would be reviewed based on sampling results.	Installation of a Class III cap would include importing foundation soil. Also, 1 ft of low permeability soil or a 60 mil FML Cap, a Geocomposite filter layer, and vegetative cover would be installed over the disposal pit surface. Fencing and signage would be installed as part of access restriction. O&M would include the installation of monitoring wells, semiannual sampling of the site monitoring wells for 10 years, and annual sampling for 20 years.	Installation of an Evapotranspiration cap would include importing foundation soil. Also, a loamy soil storage layer, 1 ft of low permeability soil, vegetative cover would be installed over the surface. Fencing and signage would be installed as part of access restriction. O&M would include the installation of monitoring wells, semiannual sampling of the site monitoring wells for 10 years, and annual sampling for 20 years.	Under the Zoned cap alternative, waste would be excavated from the disposal pit and consolidated into a smaller area. It is estimated that the excavated waste may be classified as hazardous or regulated and will require off site disposal. Once the waste has been sorted and consolidated, a Class III cap will be installed. Foundation material, 1 foot of low permeability soil, or a 60-mil FML cap, a geocomposite filter layer, and vegetative cover would be installed over the surface. Fencing and signage would be installed as part of access restriction. O&M would include the installation of 2 monitoring wells, semiannual sampling of the site monitoring wells (4 wells) for 10 years, and annual sampling for 20 years.

Plate 5-2-2 (continued)
Alternatives Considered for
Risk Management No Further Action Sites

Site Name	*No Action*	*Solidification/Stabilization*	*Soil Washing*	*Excavation/Disposal*	*Institutional Controls*
PCB 1, 2, 3	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. Monitoring could be accomplished as part of the base wide ground water monitoring program.	Under this alternative, PCB contaminated soil would be excavated and blended with a mixture of concrete to render the PCBs immobile. Confirmation samples would be collected to confirm site remediation was complete. Stabilized soil could then be taken to an on-base consolidation landfill or to an off-site facility for disposal.	Under this alternative, PCB contaminated soil would be excavated and washed with a mixture of water and surfactant. Waste water and fines from the washing process would be classified and taken to an on-site consolidation landfill or to an off-site facility for disposal. Washed soil could be replaced into the site excavation.	Under this alternative, PCB contaminated soil would be excavated, stockpiled, characterized, and taken to an on-base consolidation landfill or off-site for disposal. Confirmation samples would be collected after excavation work completed to confirm remediation complete.	Under this alternative, no active remediation would be conducted. However, to prevent potential human exposure to contaminants remaining at the site, deed restriction would be implemented to prevent residential or other inappropriate reuse.
PCB 4	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. Monitoring could be accomplished as part of the base wide ground water monitoring program.	Under this alternative, PCB contaminated soil would be excavated and blended with a mixture of concrete to render the PCBs immobile. Confirmation samples would be collected to confirm site remediation was complete. Stabilized soil could then be taken to an on-base consolidation landfill or to an off-site facility for disposal.	Under this alternative, PCB contaminated soil would be excavated and washed with a mixture of water and surfactant. Waste water and fines from the washing process would be classified and taken to an on-site consolidation landfill or to an off-site facility for disposal. Washed soil could be replaced into the site excavation.	Under this alternative, PCB contaminated soil would be excavated, stockpiled, characterized, and taken to an on-base consolidation landfill or off-site for disposal. Confirmation samples would be collected after excavation work completed to confirm remediation complete.	Under this alternative, no active remediation would be conducted. However, to prevent potential human exposure to contaminants remaining at the site, deed restriction would be implemented to prevent residential or other inappropriate reuse.
PCB 5	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. Monitoring could be accomplished as part of the base wide ground water monitoring program.	Under this alternative, PCB contaminated soil would be excavated and blended with a mixture of concrete to render the PCBs immobile. Confirmation samples would be collected to confirm site remediation was complete. Stabilized soil could then be taken to an on-base consolidation landfill or to an off-site facility for disposal.	Under this alternative, PCB contaminated soil would be excavated and washed with a mixture of water and surfactant. Waste water and fines from the washing process would be classified and taken to an on-site consolidation landfill or to an off-site facility for disposal. Washed soil could be replaced into the site excavation.	Under this alternative, PCB contaminated soil would be excavated, stockpiled, characterized, and taken to an on-base consolidation landfill or off-site for disposal. Confirmation samples would be collected after excavation work completed to confirm remediation complete.	Under this alternative, no active remediation would be conducted. However, to prevent potential human exposure to contaminants remaining at the site, deed restriction would be implemented to prevent residential or other inappropriate reuse.
PCB 6	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. Monitoring could be accomplished as part of the base wide ground water monitoring program.	Under this alternative, PCB contaminated soil would be excavated and blended with a mixture of concrete to render the PCBs immobile. Confirmation samples would be collected to confirm site remediation was complete. Stabilized soil could then be taken to an on-base consolidation landfill or to an off-site facility for disposal.	Under this alternative, PCB contaminated soil would be excavated and washed with a mixture of water and surfactant. Waste water and fines from the washing process would be classified and taken to an on-site consolidation landfill or to an off-site facility for disposal. Washed soil could be replaced into the site excavation.	Under this alternative, PCB contaminated soil would be excavated, stockpiled, characterized, and taken to an on-base consolidation landfill or off-site for disposal. Confirmation samples would be collected after excavation work completed to confirm remediation complete.	Under this alternative, no active remediation would be conducted. However, to prevent potential human exposure to contaminants remaining at the site, deed restriction would be implemented to prevent residential or other inappropriate reuse.
PCB 8	Under this alternative, no remedial activity would be employed to prevent direct soil contact, surface water percolation into ground water, or wind dispersion of contaminated soils. Continuing monitoring of ground water would be required. Ground water monitoring would continue for a period up to 30 years. Monitoring could be accomplished as part of the base wide ground water monitoring program.	Under this alternative, PCB contaminated soil would be excavated and blended with a mixture of concrete to render the PCBs immobile. Confirmation samples would be collected to confirm site remediation was complete. Stabilized soil could then be taken to an on-base consolidation landfill or to an off-site facility for disposal.	Under this alternative, PCB contaminated soil would be excavated and washed with a mixture of water and surfactant. Waste water and fines from the washing process would be classified and taken to an on-site consolidation landfill or to an off-site facility for disposal. Washed soil could be replaced into the site excavation.	Under this alternative, PCB contaminated soil would be excavated, stockpiled, characterized, and taken to an on-base consolidation landfill or off-site for disposal. Confirmation samples would be collected after excavation work completed to confirm remediation complete.	Under this alternative, no active remediation would be conducted. However, to prevent potential human exposure to contaminants remaining at the site, deed restriction would be implemented to prevent residential or other inappropriate reuse.

Plate 5-2-3
Comparison of Alternatives for
Risk Management No Further Action Sites

Site Name	***Building 1529***	***Detonation and Burn Facility (DBF)***
WQSA	Failed Initial Assessment (see Risk management Decision)	Passed
Human Health Risk	Passed	Failed Initial Assessment (see Risk Management Decision)
Alternatives Considered (Selected Alternative bolded)	**1) No Action** 2) SVE and Bioventing 3) Thermally Enhanced SVE	**1) No Action** 2) Excavation/Disposal 3) Solidification/Stabilization 4) Soil Washing
Risk Management Decision		
Risk Management Decision	Because VOC contamination at the site did not exceed screening levels, remediation was not required. Remediation of the low levels of petroleum hydrocarbons (TEPH) was also considered for the site. However, because 1) TEPH was identified in down hole samples from only one boring, 2) TVPH was not detected in any of the soil samples, and 3) TEPH is relatively immobile in the subsurface, a No Further Action Risk Management decision was made	Initial RI sampling found elevated levels of manganese above threshold background levels. Further sampling conducted after the site had been demolished and regraded by the Air Force found no evidence of contamination. The No Further Action recommendation is based on this second round of soil sampling.
EPA Evaluation Criteria		
Long Term Effectiveness	Alternatives 2 and 3 would rapidly remediate VOC contamination. Alternative 1 may be effective in reducing VOC contaminants but would remediate at a slower rate. However, based on Risk Management Decision, all of the alternatives ranked equally.	Alternative 2, 3, and 4 would all be effective in remediation of manganese contamination identified at the site. However, based on Risk Management Decision, all of the alternatives ranked equally.
Implementability	Alternative 1 is the easiest alternative to implement; alternatives 2 and 3 are commercially available and have been used successfully at numerous NPL sites.	Alternative 1 would be the easiest to implement, followed in order by 2, 3, and 4.
Short Term Effectiveness	Alternative 1 is the safest alternative in regard to short term effectiveness. Installation of wells associated with alternatives 2 and 3 would present a small but controllable risk to on site workers. However, based on Risk Management Decision, all of the alternatives ranked equally.	Alternative 1 is the safest alternative in regard to short term effectiveness. Excavation of soils associated with alternatives 2, 3, and 4 would present a small but controllable risk to on site workers.
Reduction of Toxicity, Mobility, or Volume (TMV)	Alternatives 2 and 3 offer the quickest reduction in TMV. Alternative 1 also has potential to reduce TMV but at slower rates. However, based on Risk Management Decision, all of the alternatives ranked equally.	Alternatives 2, 3, and 4 offer the quickest reduction in TMV. Alternative 1 offers no potential reduction of TMV. However, based on Risk Management Decision, all of the alternatives ranked equally.
Cost Effectiveness	Alternative 1 is the least cost alternative to implement.	Alternative 1 is the least cost alternative to implement.
Regulatory Acceptance	In general, the agencies prefer active alternatives such as alternatives 2 and 3.	In general, the agencies are in favor of active alternatives 2, 3, or 4.
Community Acceptance	In general, the community prefers active alternatives such as alternatives 2 and 3.	In general, the community prefers active alternatives such as alternatives 2, 3, or 4.

Plate 5-2-3 (continued)
Comparison of Alternatives for
Risk Management No Further Action Sites

Site Name	***Disposal Pit 7***	***Disposal Pit 10***
WQSA	Passed	Passed
Human Health Risk	Failed Initial Assessment (see Risk Management Decision)	Failed Initial Assessment (see Risk Management Decision)
Alternatives Considered (Selected Alternative bolded)	**1) No Action** 2) Excavation/Disposal 3) Class III Cap 4) Evapotranspiration Cap 5) Zoned Cap	**1) No Action** 2) Excavation/Disposal 3) Class III Cap 4) Evapotranspiration Cap 5) Zoned Cap
Risk Management Decision		
Risk Management Decision	Risk calculations for the residential exposure scenarios exceeded 10-6 levels. A large percentage of this risk was driven by the presence of beryllium. However, the maximum beryllium levels at the site were less than the threshold background values. Based on this evaluation of the results, the site does not pose a risk to human health, and no further action is needed.	Risk under the residential scenario exceeded 1X10-6 levels. However, for surface soils, beryllium, which was the primary risk driver for all three exposure scenarios, was below the TBV. For subsurface soils, the VOC 1,4-Dichlorobenzene was the primary COPC contributing to site risk. VOCs were detected in Landfill 5 Area 2 trenches B and D, but not at DP10. Based on this evaluation, it was determined that DP10 did not present a significant threat to human health.
EPA Evaluation Criteria		
Long Term Effectiveness	Alternative 2 was considered best alternative at meeting LTE because all contaminants would be removed from the site. Alternative 5 was considered slightly better than alternatives 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site disposal. However, based on Risk Management Decision, all of the alternatives ranked equally.	Alternative 2 was considered best alternative at meeting LTE because all contaminants would be removed from the site. Alternative 5 was considered slightly better alternatives 3 and 4 because hazardous or regulated wastes identified during removal/consolidation operations would be segregated and taken off site disposal. However, based on Risk Management Decision, all of the alternatives ranked equally.
Implementability	Alternative 1 was the easiest alternative to implement. Considering the small volume of waste located at this site, alternative 2 would be easier to implement than alternatives 3, 4, or 5.	Alternative 1 was the easiest alternative to implement. Considering the small volume of waste located at this site, alternative 2 would be easier to implement than alternatives 3, 4, or 5.
Short Term Effectiveness	Alternative 1 is considered the best in short term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 3 and 4, ranked higher than 2 and 5 because of potential human exposure during excavation or consolidation work.	Alternative 1 is considered the best in short term effectiveness because no intrusive work would be undertaken and potential exposure to hazardous materials would be very limited. Alternatives 3 and 4, ranked higher than 2 and 5 because of potential human exposure during excavation or consolidation work.
Reduction of Toxicity, Mobility, or Volume (TMV)	Alternatives 2 and 5 ranked highest in reduction of TMV because any hazardous or designated waste identified during site work would be segregated and taken off-site for disposal. Alternatives 3 and 4 are considered effective in reducing mobility but would have no impact on toxicity or volume. Alternative I would have no impact on TMV. However, based on Risk Management Decision, all of the alternatives ranked equally.	Alternatives 2 and 5 ranked highest in reduction of TMV because any hazardous or designated waste identified during site work would be segregated and taken off-site for disposal. Alternatives 3 and 4 are considered effective in reducing mobility but would have no impact on toxicity or volume. Alternative 1 would have no impact on TMV. However, based on Risk Management Decision, all of the alternatives ranked equally.
Cost Effectiveness	Alternative 1 had the lowest projected costs followed in order by alternatives 2, 5, 3, and 4.	Alternative 1 had the lowest projected costs followed in order by alternatives 2, 5, 3, and 4.
Regulatory Acceptance	All of the alternatives are considered acceptable by the regulatory agencies	All of the alternatives are considered acceptable by the regulatory agencies.
Community Acceptance	The community considers alternatives 2 and 5 to be the most acceptable alternative because any hazardous or designated wastes would be taken off-site for disposal.	The community considers alternatives 2 and 5 to be the most acceptable alternative because any hazardous or designated wastes would be taken off-site for disposal.

Plate 5-2-3 (continued)
Comparison of Alternatives for
Risk Management No Further Action Sites

Site Name	***FTA2***	***PCB1, 2, 3***	***PCB4***
WQSA	Passed	Passed	Passed
Human Health Risk	Failed Initial Assessment (see Risk Management Decision)	Failed Initial Assessment (see Risk Management Decision)	Failed Initial Assessment (see Risk Management Decision)
Alternatives Considered (Selected Alternative Bolded)	**1) No Action** 2) Excavation/Disposal 3) Solidification/Stabilization 4) Soil Washing	**1) No Action** 2) Solidification/Stabilization 3) Soil Washing 4) Excavation/Disposal 5) Institutional Controls	**1) No Action** 2) Solidification/Stabilization 3) Soil Washing 4) Excavation/Disposal 5) Institutional Controls
Risk Management Decision			
Risk Management Decision	Based on the Data Gap Investigation conducted in 1997, surface and subsurface soil presented an unacceptable risk under the residential scenario. PAH levels in one sample (FTA2SB01) were the main risk driver. Data review suggested the PAH in this sample was most likely the result of asphalt mixing with the soil sample, which resulted in calculated risk levels that likely over estimated actual risks. Lower PAH levels were found in samples collected from beneath the layer impacted by asphalt and are most likely more representative of actual site conditions. Therefore, the existing PAH concentrations in shallow soil pose a minimal threat to human health.	Review of site data determined: 1) only a small amount of soil containing PCBs remains at the site, and 2) PCB levels noted in the confirmation samples are not currently exposed at the surface. Based on this information, the PCB affected soils do not present an unacceptable risk.	Review of site data determined: 1) only a small amount of soil containing PCBs remains at the site, and 2) PCB levels noted in the confirmation samples are not currently exposed at the surface. Based on this information, the PCB affected soils do not present an unacceptable risk.
EPA Evaluation Criteria			
Long Term Effectiveness	Alternatives 2, 3, and 4 would all be effective in remediation of PAH contamination identified at the site. However, based on Risk Management Decision, all alternatives ranked equally.	Alternatives 2, 3, and 4 ranked highest in terms of long term effectiveness. Alternatives 1 and 5 ranked second, providing that site reuse remains industrial.	Alternatives 2, 3, and 4 ranked highest in terms of long term effectiveness. Alternatives 1 and 5 ranked second, providing that site reuse remains industrial.
Implementability	Alternative l world be the easiest to implement, followed in order by 2, 3, and 4.	Alternatives 1 would be the easiest to implement. Alternatives 4 and 5 ranked second and third, and Alternatives 2 and 3 tied for last.	Alternatives 1 would be the easiest to implement. Alternatives 4 and 5 ranked second and third, and Alternatives 2 and 3 tied for last.
Short Term Effectiveness	Alternative 1 is the safest alternative in regard to short term effectiveness. Excavation of soils associated with alternatives 2, 3, and 4 would present a small but controllable risk to on site workers.	Alternatives 1 and 5 ranked highest in terms of short term effectiveness because active remediation would be enacted. Alternatives 2, 3, and 5 tied for second based on potential worker exposure to contaminants.	Alternatives 1 and 5 ranked highest in terms of short-term effectiveness because active remediation would be enacted. Alternatives 2, 3, and 5 tied for second based on potential worker exposure to contaminants.
Reduction of Toxicity, Mobility, or Volume (TMV)	Alternatives 2, 3, and 4 offer the quickest reduction in TMV. Alternative 1 offers no potential reduction of TMV. However, based on Risk Management Decision, all alternatives ranked equally.	Alternatives 2, 3, and 4 ranked highest in reduction of TMV, because remediation would be undertaken. Alternatives 1 and 5 ranked second because there would be no reduction in TMV.	Alternatives 2, 3, and 4 ranked highest in reduction of TMV, because remediation would be undertaken. Alternatives 1 and 5 ranked second because there would be no reduction in TMV.
Cost Effectiveness	Alternative 1 is the least cost alternative to implement.	Alternative 1 ranked the highest. Alternatives 4 and 5 ranked second and third respectively. Alternatives 2 and 3 tied for last.	Alternative 1 ranked the highest. Alternatives 4 and 5 ranked second and third respectively. Alternatives 2 and 3 tied for last.
Regulatory Acceptance	In general, the agencies are in favor of active alternatives 2, 3, or 4.	Alternative 1 would be preferred by the regulatory agencies, providing the site reuse remains industrial. In general, alternatives 2 through 5 ranked roughly the same.	Alternative 1 would be preferred by the regulatory agencies, providing the site reuse remains industrial. In general, alternatives 2 through 5 ranked roughly the same.
Community Acceptance	In general, the community prefers active alternatives such as alternatives 2, 3, or 4.	Alternatives 2, 3, and 4 rank highest in terms of community acceptance, because further remediation would be undertaken at the site. Because the community is generally opposed to institutional controls, alternative 5 ranked last.	Alternatives 2, 3, and 4 rank highest in terms of community acceptance, because further remediation would be undertaken at the site. Because the community is generally opposed to institutional controls, alternative 5 ranked last.

Plate 5-2-3 (continued)
Comparison of Alternatives for
Risk Management No Further Action Sites

Site Name	***PCB5***	***PCB6***	***PCB8***
WQSA	Passed	Passed	Passed
Human Health Risk	Failed Initial Assessment (see Risk Management Decision)	Failed Initial Assessment (see Risk Management Decision)	Failed Initial Assessment (see Risk Management Decision)
Alternatives Considered (Selected Alternative Bolded)	**1) No Action** 2) Solidification/Stabilization 3) Soil Washing 4) Excavation/Disposal 5) Institutional Controls	**1) No Action** 2) Solidification/Stabilization 3) Soil Washing 4) Excavation/Disposal 5) Institutional Controls	**1) No Action** 2) Solidification/Stabilization 3) Soil Washing 4) Excavation/Disposal 5) Institutional Controls
Risk Management Decision			
Risk Management Decision	Review of site data determined: 1) only a small amount of soil containing PCBs remains at the site, and 2) PCB levels noted in the confirmation samples are not currently exposed at the surface. Based on this information, the PCB affected soils do not present an unacceptable risk.	Review of site data determined that only very low level of PCB contamination were identified at the site. Risk evaluation confirmed that site soil not present an unacceptable risk.	Review of site data determined that potential for PCB contaminated soil at the site was remote. The PCB level of the released transformer oil was very low and the spill was confined to a paved area.
EPA Evaluation Criteria			
Long Term Effectiveness	Alternatives 2, 3, and 4 ranked highest in terms of long term effectiveness. Alternatives 1 and 5 ranked second, providing that site reuse remains industrial.	Alternatives 2, 3, and 4 ranked highest in terms of long term effectiveness. Alternatives 1 and 5 ranked second, providing that site reuse remains industrial.	Alternatives 2, 3, and 4 ranked highest in terms of long term effectiveness. Alternatives 1 and 5 ranked second, providing that site reuse remains industrial.
Implementability	Alternatives 1 would be the easiest to implement. Alternatives 4 and 5 ranked second and third, and Alternatives 2 and 3 tied for last.	Alternatives 1 would be the easiest to implement. Alternatives 4 and 5 ranked second and third, and Alternatives 2 and 3 tied for last.	Alternatives 1 would be the easiest to implement. Alternatives 4 and 5 ranked second and third, and Alternatives 2 and 3 tied for last.
Short Term Effectiveness	Alternatives 1 and 5 ranked highest in terms of short-term effectiveness because active remediation would be enacted. Alternatives 2, 3, and 5 tied for second based on potential worker exposure to contaminants.	Alternatives 1 and 5 ranked highest in terms of short-term effectiveness because active remediation would be enacted. Alternatives 2, 3, and 5 tied for second based on potential worker exposure to contaminants.	Alternatives 1 and 5 ranked highest in terms of short-term effectiveness because active remediation would be enacted. Alternatives 2, 3, and 5 tied for second based on potential worker exposure to contaminants.
Reduction of Toxicity, Mobility, or Volume (TMV)	Alternatives 2, 3, and 4 ranked highest in reduction of TMV, because remediation would be undertaken. Alternatives 1 and 5 ranked second because there would be no reduction in TMV.	Alternatives 2, 3, and 4 ranked highest in reduction of TMV, because remediation would be undertaken. Alternatives 1 and 5 ranked second because there would be no reduction in TMV.	Alternatives 2, 3, and 4 ranked highest in reduction of TMV, because remediation would be undertaken. Alternatives 1 and 5 ranked second because there would be no reduction in TMV.
Cost Effectiveness	Alternative 1 ranked the highest. Alternatives 4 and 5 ranked second and third respectively. Alternatives 2 and 3 tied for last.	Alternative 1 ranked the highest. Alternatives 4 and 5 ranked second and third respectively. Alternatives 2 and 3 tied for last.	Alternative 1 ranked the highest. Alternatives 4 and 5 ranked second and third respectively. Alternatives 2 and 3 tied for last.
Regulatory Acceptance	Alternative 1 would be preferred by the regulatory agencies, providing the site reuse remains industrial. In general, alternatives 2 through 5 ranked roughly the same.	Alternative 1 would be preferred by the regulatory agencies, providing the site reuse remains industrial. In general, alternatives 2 through 5 ranked roughly the same.	Alternative 1 would be preferred by the regulatory agencies, providing the site reuse remains industrial. In general, alternatives 2 through 5 ranked roughly the same.
Community Acceptance	Alternatives 2, 3, and 4 rank highest in terms of community acceptance, because further remediation would be undertaken at the site. Because the community is generally opposed to institutional controls, alternative 5 ranked last.	Alternatives 2, 3, and 4 rank highest in terms of community acceptance, because further remediation would be undertaken at the site. Because the community is generally opposed to institutional controls, alternative 5 ranked last.	Alternatives 2, 3, and 4 rank highest in terms of community acceptance, because further remediation would be undertaken at the site. Because the community is generally opposed to institutional controls, alternative 5 ranked last.

Plate 5-2-3 (continued)
Comparison of Alternatives for
Risk Management No Further Action Sites

Site Name	*SA B1*	*SDS*	*UFL-4*
WQSA	Failed Initial Assessment (see Risk Management Decision)	Passed	Failed Initial Assessment (see Risk Management Decision)
Human Health Risk	Failed Initial Assessment (see Risk Management Decision)	Failed Initial Assessment (see Risk Management Decision)	Passed
Alternatives Considered (Selected Alternative Bolded)	**1) No Action** 2) Excavation/Disposal 3) Solidification/Stabilization 4) Soil Washing	**1) No Action** 2) Institutional Controls	**1) No Action** 2) SVE and Bioventing 3) Thermally Enhanced SVE 4) Intrinsic Remediation 5) Land Treatment Unit
Risk Management Decision			
Risk Management Decision	SAB1 failed the WQSA screening based on elevated levels of manganese and failed initial assessment human health risk analyses based on the presence of beryllium. Further review of site data concluded that the elevated levels of this metal were most likely naturally occurring and not the result of a contaminant release at the site.	Risk estimates presented in the 1996 RI/FS were unacceptable. The estimates were based on maximum concentrations of COCs in one sample (SDSE09), that were not representative of metals and PAHs in site soil, with 80 percent of the cancer risk and 96 percent of the non-cancer risk attributable to ingestion of home grown produce. There is a high degree of uncertainty associated with estimated PAH uptake from soil into plants in the absence of data supporting significant measured uptake likely over estimated actual risks. In addition, further reevaluation of the risk assessment supported using revised frequency and duration of contact assumptions more appropriate to site conditions to estimate exposure. The revised risk levels based on incidental ingestion, dermal contact, and inhalation of particulates are well within the risk management range.	TCE contamination exceeding WQSA thresholds was found at 40 ft bgs at the UFL4 site. However, because no shallow TCE contamination was found at the site, it was determined that the down hole TCE contamination was related to a documented ground water VOC plume and was not a result of a contaminant release at UFL4.
EPA Evaluation Criteria			
Long Term Effectiveness	All of the alternatives are effective contamination remediation methods. However, based on Risk Management Decision, there is no need to remediated SAB1.	Continued groundwater monitoring will assess effectiveness.	Alternatives 2, 3, and 5 are active remedies that would rapidly remediate contaminated sites. Alternatives 1 and 5 may be effective in reducing contaminants but would remediate at a slower rate. However, based on Risk Management Decision, all alternatives ranked equally.
Implementability	Alternative 1 would be the easiest to implement, followed in order by 2, 3, and 4.	No limitations.	Alternative 1 is the easiest alternative to implement, followed in order by alternatives 4, 2, 3, and 5.
Short Term Effectiveness	Alternative 1 is the safest alternative in regard to short-term effectiveness. Excavation of soils associated with alternatives 2, 3, and 4 would present a small but controllable risk to on site workers.	No new construction.	Alternative 1 is the safest alternative in regard to short-term effectiveness. Installation of wells associated with alternatives 2, 3, and 4 and excavation of contaminated soil and construction/monitoring of an LTU associated with alternative 5 would require would present a small but controllable risk to on site workers.
Reduction of Toxicity, Mobility, or Volume (TMV)	Alternatives 2, 3, and 4 offer the quickest reduction in TMV. Alternative 1 offers no potential reduction of TMV. However, based on Risk Management Decision, all alternatives ranked equally.	No reduction in TMV.	Alternatives 2 and 3 offer the quickest reduction in TMV. Alternatives 1, 4 and 5 also have potential to reduce TMV but at slower rates. However, based on Risk Management Decision, all alternatives ranked equally.
Cost Effectiveness	Alternative 1 is the least cost alternative to implement.	Alternative 1 is the least cost alternative to implement.	Alternative 1 is the least costly alternative to implement. Alternatives 2 and 3 would be the most expensive.
Regulatory Acceptance	In general, the agencies are in favor of active alternatives 2, 3, or 4.	All of the alternatives are considered acceptable to the regulatory agencies.	In general, the active alternatives 2, 3, and 5 are more acceptable to the agencies than the passive alternatives 1 and 4.
Community Acceptance	In general, the community prefers active alternatives such as alternatives 2, 3, or 4.	Alternative 1 ranks highest because the community in generally opposed to Institutional Controls.	In general, the active alternatives 2, 3, and 5 are more acceptable to the community than the passive alternatives 1 and 4.

Plate 5-2-3 Addendum
Comparison of Alternatives for
Risk Management No Further Action Sites

Explanatory Note for DA-2

The Discharge Area 2 (DA-2) site was originally categorized as a Petroleum Hydrocarbon Only Site and was remediated by removal of petroleum contamination in soil at the site. DA-2 was not considered a CERCLA site, with cancer risk for COCs below 1×10^{-6} and non-cancer hazard index below 1.0. Therefore, this site was not evaluated as part of the Comparison of Alternatives for Risk Management Decision No Further Action Sites found on the immediate preceding pages. As a result of a re-evaluation of risk based upon updated cancer and non-cancer toxicity values that had occurred since the inception of the SCOU ROD Part 1, risk values for COCs suggested that this site should be re-categorized from a Petroleum Hydrocarbon Only Site to a Risk Management Decision NFA Site. Details on the re-evaluation of risk for DA-2 is found in Section 5.2.5.23 and Appendix E.

Appendix D

Earlier versions of the SCOU ROD Part 1 included the two sites LF4 and LF5 which were the only sites that required development of ARARs. Prior to the final version of the ROD, this appendix contained Plates 6-1 (federal ARARs) and 6-2 (state ARARs), those that related to LF4 and LF5 only. Because LF4 and LF5 have since been deferred to a later decision document, no ARARS are required for this ROD. This appendix is retained as a placeholder for clarity in tracking changes as this document has evolved and for maintaining consistency in references throughout the ROD.

Appendix E

DEPARTMENT OF THE AIR FORCE
AIR FORCE BASE CONVERSION AGENCY

3 July, 2001

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SUBJECT: Project Note #003: Evaluation of Changes Affecting the SCOU Baseline Human Health Risk Assessments, Selected Remedies and Remedial Action Objectives, Final

Please find the enclosed the subject document prepared for the Air Force by Jacobs Engineering Group, Inc. The project note has been updated to address US EPA comments including the removal of the comparison of PRGs to RAOs for both the baseline and updated HHR assessment. This submittal (revision 4 of Project Note #003) incorporates all regulatory agency comments received to date. Copies of this project note will be included in the appendices SCOU RODs and the Comprehensive Basewide (CB) Remedial Investigation/Feasibility Study (RI/FS).

If you have any questions, please call me at (209) 726-4304.

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Transmittal # 012

CASTLE AIRPORT TRANSMITTAL

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Date: 3 July 2001
Contract No.: F41624-00-D-8034
T.O. No.: 0010
Project No.: 05Z01001
Project Name: Comprehensive Basewide Part II Remedial Investigation/Feasibility Study, Proposed Plan, and Record of Decision

From: Campbell McLeod
Project Manager

For Amir Matin
Program Manager

ENCL. NO.	TYPE OF DELIVERABLE	VERSION	DESCRIPTION OF DELIVERABLE	DATE	NUMBER OF PAGES
1.	Project Note	Revision 4	Project Note #003: Evaluation of Changes Affecting the SCOU Baseline Human Health Risk Assessments, Selected Remedies and Remedial Action Objectives	7/3/01	

REMARKS: This project note has been updated to address written comments received from the EPA and is resubmitted as Revision 4. This project note will also be included in the appendices of SCOU ROD 1 and SCOU ROD 2.

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Project Note #003

Revision 4

Evaluation of Changes Affecting the SCOU Baseline Human Health Risk Assessments, Selected Remedies and Remedial Action Objectives

July 2001

Prepared for
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USAF Contract No. F41624-00-D-8031, Task Order No. 10
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1 INTRODUCTION

A review of Source Control Operable Unit (SCOU) sites has been conducted to determine whether changes in toxicity factors and exposure parameters that have occurred since completion of the SCOU baseline human health risk assessment (BHHRA) have had an effect on human health risks and associated remedial response decisions. This review was intended to determine whether any adjustments are required to selected remedies or remedial action objectives for SCOU sites, particularly for SCOU Record of Decision (ROD) 1, but also for the SCOU ROD 2.

The following questions are addressed by this review:

1. Do no further action (NFA) sites remain as NFA when the new risk factors are considered? (SCOU ROD 1 issue)

2. Do non-petroleum related risk issues surface when the new risk factors are considered for the petroleum hydrocarbon only (PHO) sites? (SCOU ROD 1 issue)

3. Are new contaminants of concern (COCs) introduced at SCOU sites when the new risk factors are considered? (SCOU RODs 1 and 2 issue)

4. Are any of the remedial action objectives (RAOs) affected by changes in toxicity factors and other risk assessment parameters? What are the implications of the revised RAOs on completed removal actions?

For the purposes of this discussion, COCs are defined as contaminants of potential concern (COPCs) that exceed the health protective thresholds of 1.0E-06 for cancer risk, 1.0 for non-cancer hazard and 10 µg/dL for estimated blood-lead concentration. COPCs are chemicals that were evaluated in the SCOU BHHRA.

2 RESULTS AND CONCLUSIONS

A summary of the responses to each question follows:

1. Do NFA sites remain as NFA when the new risk factors are considered? (SCOU ROD 1 issue)

    - All of the SCOU ROD 1 NFA sites remain as NFA sites, with some modification to the definition of the Storm Drain System (SDS) site.

2. Do non-petroleum related risk issues surface when the new risk factors are considered for the PHO sites? (SCOU ROD 1 issue)

    - Cadmium at levels approximately two times the revised Castle RAO was detected at two surface sample locations at Discharge Area 2 (DA-2). Lead, at concentrations that exceed the residential RAO of 400 mg/kg, was also detected in the same two surface samples at DA-2. The surface excavation conducted at DA-2 to address total extractable and total volatile petroleum hydrocarbon (TEPH/TVPH) contamination did not address the area of these sample locations. No other non-petroleum related COCs were identified at PHO sites as a result of using the revised toxicity values.

3. Are new COCs introduced at SCOU sites when the new risk factors are considered? (SCOU RODs 1 and 2 issue)

    - Cadmium and lead are new COCs at DA-2.

    - Cadmium, lead, benzo(a)pyrene and 1,2-dichloroethane are new COCs for the residential scenario (necessary to avoid institutional controls) at LF-1.

    - Benzo(a)anthracene and benzo(b)fluoranthene are new COCs at B1344. Cadmium is also a new COC for the residential scenario (necessary to avoid institutional controls).

    - Benzo(a)anthracene and benzo(b)fluoranthene are new COCs at LF-3.

4. Are any of the RAOs affected by changes in toxicity factors and other risk assessment parameters? What are the implications of the revised RAOs on completed removal actions?

    - Revised Castle RAOs were calculated based on the revised risk factors and parameters (Tables 12, 13 and 14). Changes in RAO values are presented on the tables. The revised RAOs will be incorporated into the SCOU ROD 1. Except for DA-2 and ETC-10, the removal actions attained all of the revised RAOs. Isolated detections of lead and cadmium at DA-2, and lead at ETC-10, are present at a concentration greater than the respective RAOs.

3 RISK ASSESSMENT CHANGES

Risk assessment changes affecting the calculation of cancer risk, non-cancer hazard and lead exposure were evaluated to determine the impact on selected remedy decisions and on RAOs. The exposure input parameters used in both the 1996 SCOU BHHRA and the current update are shown in Tables 1 and 2.

3.1 CANCER RISK

1. All COPCs used in the SCOU BHHRA were reviewed to determine whether new slope factors had been established since publication of the SCOU RI/FS in 1996. Table 3 summarizes the slope factors used for the SCOU in comparison to the current slope factors. The columns for maximum oral and inhalation slope factor indicate the most current factors applicable for this review. The last two columns, which provide the ratio of the current factors to the factors used in the SCOU, indicate the magnitude of the revision to the slope factor and whether the revision results in increased risk (>1) or decreased risk (<1). Table 4 summarizes those COPCs with revised slope factors that could affect the SCOU BHHRA. The revised factors represent the more conservative (higher) of the current EPA and California oral and inhalation slope factors.

2. Those COPCs having revised slope factors that are less than those used in the SCOU BHHRA will result in decreased cancer risk at SCOU sites. As shown by the ratio of the revised factor to the SCOU factor shown in Table 4, these COPCs include chlordane; chrysene; dibenz(a,h)anthracene; 1,4-dichlorobenzene; polychlorinated biphenyls (PCBs); and 1,1,2,2-tetrachloroethane.

3. COPCs with new or revised slope factors greater than those used in the SCOU BHHRA will result in increased cancer risk at affected SCOU sites: cadmium; nickel; carbon tetrachloride; chloroform; pentachlorodibenzofurans; 1,2-dibromo-3-chloropropane; dibromochloromethane; 1,2,4-trichlorobenzene; and 1,1,2-trichloroethane. At least one of the slope factors for these COPCs—cadmium; nickel; pentachlorodibenzofurans; and 1,2,4-tricholorobenzene—are newly established since publication of the SCOU RI/FS. Therefore, the associated pathways were not evaluated quantitatively in the SCOU BHHRA.

3.2 NON-CANCER HAZARD

1. All COPCs used in the SCOU BHHRA were reviewed to determine whether new reference doses have been established since publication of the SCOU RI/FS in 1996. Table 5 summarizes the reference doses used for the SCOU in comparison to the current reference doses. The last two columns, which provide the ratio of the SCOU reference doses to the current reference doses, indicate the relative impact of the revised reference dose and whether the revision results in increased hazard (>1) or decreased hazard (<1). Table 6 summarizes those COPCs with revised reference doses that could

affect the SCOU BHHRA. The revised doses represent the more conservative (lower) of either the current EPA IRIS or HEAST oral and inhalation reference doses.

2. COPCs having revised reference doses that are greater than those used in the SCOU BHHRA will result in decreased non-cancer hazard at SCOU sites. As shown by the ratio of the SCOU factor to the revised factor shown in Table 6, these COPCs are chromium; benzene; carbon tetrachloride; chlordane; chlorobenzene; isopropylbenzene; hexachlorobutadiene; tetrachloroethylene; and 1,2,4-tricholorbenzene.

3. COPCs having new or revised reference doses less than those used in the SCOU BHHRA will result in increased non-cancer hazard at affected SCOU sites. These COPCs include: aluminum; beryllium; cadmium; cobalt; manganese; thallium; bromochloromethane; n-butylbenzene; sec-butylbenzene; t-butylbenzene; chloroform; chrysene; isopropyltoluene; DDD; DDE; dibenz(a,h)anthracene; dibenzofuran; 1,2-dichlorobenzene 1,3-dichlorobenzene; 1,4-dichlorobenzene; dichloroflouromethane; 1,2-dichloroethane; indeno(1,2,3-c,d)pyrene; 2-methyl naphthalene; naphthalene; phenanthrene; 1,1,2,2-tetrachloroethane; 1,1,1-trichloroethane; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; vinyl chloride; and xylenes. Of these COPCs, at least one of the reference doses for all but cobalt; manganese; thallium; 1,4-dichlorobenzene; 1,2-dichlorobenzene; naphthalene; vinyl chloride; and xylenes are newly established since publication of the SCOU RI/FS. Therefore, the associated pathways were not evaluated quantitatively in the SCOU BHHRA.

3.3 LEAD

Lead at SCOU sites was evaluated in the BHHRA by estimating blood-lead levels for the child receptor using the Cal-EPA blood-lead biokinetic uptake model (Department of Toxic Substances Control [DTSC], 1992). With the exception of using a site-specific value for lead in water (0.3 µg/L), default values for the current model (Version 7) were used to update estimated blood lead levels (with and without the produce pathway) presented in the SCOU BHHRA. The results of the current model compared to the SCOU BHHRA results for the child residential scenario are provided in Table 7.

As seen in Table 7, calculations for two additional sites (LF-1 Area 1 Subsurface and DA-2 Surface) indicate their lead levels now exceed the nominal estimated blood-lead decision criteria of 10 micrograms per deciliter (µg/dL). Lead is a new COC at these sites. Section 6 addresses whether lead has been addressed by the LF-1 removal action or petroleum related cleanup actions at DA-2.

Using the current model to back calculate from a target blood-lead level of 10 µg/dL, the risk-based remedial action objective was determined to be 387 mg/kg for the child residential receptor, without the produce pathway. This value compares favorably with the 1996 Castle RAO and the 2000 EPA PRG, both of which are 400 mg/kg for the residential scenario, without the produce pathway.

4 UPDATED CANCER RISK AND NON-CANCER HAZARD

Table 8 presents a summary of the risk assessment results provided in the SCOU BHHRA compared to updated results using current toxicity values and reference doses. Although the child residential and occupational scenarios were also updated, results in Table 7 are for the adult residential scenario since this scenario was generally used for remedy selection at Castle Airport. Only those results affected by revisions to slope factors and reference doses are shown. For all calculations, a particulate emission factor (PEF) of 8.99E+08 was used for the inhalation routes instead of the 4.63E+09 value used in the SCOU BHHRA (see Tables 1 and 2 for exposure input parameters). Results presented in bold represent sites for which the cancer risk or non-cancer hazard has increased from below to above the decision criteria of 1.0E-06 and 1.0, respectively.

Exposure pathways included in the adult residential scenario at Castle Airport are incidental soil ingestion, inhalation of particulates, inhalation of volatiles, ingestion of homegrown fruits and vegetables (produce pathway) and dermal contact with soil contaminants. As reported in the SCOU BHHRA, there is a high degree of uncertainty associated with the produce pathway. Many of the past, current and planned land uses at Castle Airport have been identified as aviation support or industrial. Hence, the use of the residential scenario, with the produce pathway, is likely to overestimate risk associated with actual human exposures. The SCOU BHHRA also assumes complete exposure pathways for human receptors, when, in fact, many site areas are paved with asphalt or concrete. In addition, the model used to estimate the uptake and incorporation of contaminants into plant tissues is simplified and incorporates conservative assumptions that are likely to overestimate the concentration of contaminants in plant tissues by several orders of magnitude. Therefore, risk managers must be aware that, due to the high degree of uncertainty, incorporation of the produce pathway is likely to overestimate risk.

4.1 RESULTS

As can be seen in Table 8, application of the current toxicity values resulted in five sites—B1562, DA-2, DA-3, LF-1 and SDS—that newly exceed the nominal decision point of

1.0E-06 cancer risk. In addition, subsurface soil at B1344 now exceeds 1.0E-06 cancer risk-based on updated SCOU data gap results. Revisions to reference doses resulted in four sites—B1260, DA-5, FTA-1 and SDS Area 2—that exceed the nominal non-cancer hazard decision point of 1.0. Revisions to estimated blood-lead concentrations resulted in five sites—DA-2, DA-3, LF-1 Area 1, LF-2 Area 2, and Stain 41— that exceed the nominal blood-lead concentration decision point of 10 µg/dL. Each of these sites is discussed in this section.

B1562—Risk is increased from 5.6E-08 to 1.8E-06 due to the addition of the oral exposure pathway for cadmium. The percentage contribution of cadmium to total risk increased from 3 to 97 percent due to this change. Cadmium is the only contaminant that exceeds 1.0E-06 cancer risk. B1562 is an NFA site in the SCOU ROD 1.

ACTION: Because of the relatively low risk calculated for B1562 in the SCOU BHHRA screening process, a more rigorous quantitative risk assessment was not performed in the BHHRA. However, due to the updated results, a revised screening risk assessment, including the home grown produce pathway, was performed for B1562 (Table 9). The updated BHHRA cancer risk is 5.3E-05 with 100 percent of the risk due to cadmium. However, 99 percent of the cancer risk from cadmium is from the produce pathway, which is not utilized in the calculation of Castle RAOs. Without consideration of the produce pathway, cancer risk at B1562 is 7.1E-07. Therefore, the NFA designation for B1562 remains appropriate.

DA-2—Risk is increased from 1.8E-08 to 5.5E-06 due to the addition of the oral exposure pathway for cadmium. The percentage contribution of cadmium to total risk increased from 25 to 100 percent due to this change. Cadmium is the only contaminant that exceeds 1.0E-06 cancer risk. The estimated blood-lead concentration for the child scenario increased from 9.2 to 15.4 µg/dL due to lead in the surface soil without the plant pathway. DA-2 is a PHO site in the SCOU ROD 1.

ACTION: Because of the relatively low risk calculated for DA-2 in the SCOU BHHRA screening process a more rigorous quantitative risk assessment was not performed in the

BHHRA. However, due to the updated results, a revised screening risk assessment, including the home grown produce pathway, was performed for DA-2 (Table 10). The updated cancer risk for DA-2 is 1.6E-04, with 100 percent of the risk due to cadmium. However, 99 percent of the risk from cadmium is due to the produce pathway, which is not utilized in the calculation of Castle RAOs. Without consideration of the produce pathway, the cancer risk is 2.1E-06. Similarly, the updated non-cancer hazard is 2.1, with 98 percent of the hazard due to cadmium. Ninety-eight percent of the hazard due to cadmium is due to the produce pathway. Non-cancer hazard at DA-2, without the produce pathway is 0.05. When the produce pathway is removed from the calculation, the cancer risk at DA-2 is slightly above the decision criterion of 1.0E-06. The updated estimated blood-lead concentration of 15.4 µg/dL, without the produce pathway, is above the protective level of 10 µg/dL. An evaluation of DA-2 cadmium and lead levels relative to revised Castle RAOs is presented in Section 6.

DA-3—Risk at DA-3 was considered to be insignificant in the SCOU BHHRA, primarily because the methylene chloride detected at the site was suspected to be a lab contaminant. The SCOU update resulted in 5.1E-05 cancer risk and an index of 0.7 for non-cancer hazard. The increase in risk and hazard is due to the addition of the oral exposure pathway for cadmium. Cadmium contributes 100 percent of the cancer risk and 88 percent of the non-cancer hazard. Cadmium is the only contaminant that exceeds 1.0E-06 cancer risk. The estimated blood-lead concentration for the child scenario due to lead in the surface soil with the plant pathway increased from 18.9 to 35.2 µg/dL. Without the plant pathway, the updated surface result is 20.6 µg/dL. As a result of a removal action that was implemented at the site, DA-3 is an NFA site in the SCOU ROD 1.

ACTION: Ninety-nine percent of the cancer risk at DA-3 is contributed by the homegrown produce pathway, which is not utilized in the calculation of Castle RAOs. Without consideration of the produce pathway, the cancer risk is 6.7E-07, which is below the health protective threshold of 1.0E-06. An evaluation of DA-3 lead levels relative to the updated Castle RAOs is provided in Section 6.

LF-1 Areas 1 and 2—According to the SCOU ROD 1, the occupational scenario is appropriate for LF-1. Revised cancer risk values for the occupational scenario at LF-1 did not exceed 1.0E-06; therefore, the updated risk assessment results do not result in any additional COCs at LF-1. LF-1 is an NFA site in the SCOU ROD 1 that has undergone a removal action. For completeness and consistency, the following discussion addresses updates to the residential scenario:

Risk is increased from 3.1E-07 to 2.5E-05 in LF-1 Area 1 subsurface soil, from 8.8E-07 to 1.8 E-05 in LF-1 Area 2 surface soil, and from 9.0E-08 to 8.1 E-06 in LF-1 Area 2 subsurface soil. The cancer risks for LF-1 Area 1 surface soil and LF-1 Area 3 surface soil were reported in excess of 1.0E-06 in the SCOU BHHRA, and are further increased by the updated results. In all cases, cadmium is the only COPC with revised slope factors that result in increased risk. In the SCOU BHHRA, cadmium did not contribute significant (>1 percent) risk for any of the scenarios, whereas in the updated results, cadmium contributes from 83-99 percent of the cancer risk. Cadmium is the only COC contributing cancer risk equal to or greater than 1.0E-06 at LF-1, except for benzo(a)pyrene and 1,2-dichloroethane at LF-1 Area 1 surface soil. At LF1 Area 1, the estimated blood-lead concentration for the child scenario increased from 5.5 and 5.1 µg/dL in the SCOU BHHRA to 19.3 and 11.7 µg/dL in the updated subsurface results, with and without the plant pathway, respectively.

ACTION: No revision to the selected remedy is required, since the updated cancer risk and non-cancer hazard did not exceed the respective decision points of 1.0E-06 and 1.0 for the occupational scenario. However, in order to avoid institutional controls, attainment of applicable residential RAOs will be confirmed for all COCs at LF-1 (see Section 6).

SDS Areas 1—The cancer risk for SDS Area 1 was reported in excess of 1.0E-06 in the SCOU BHHRA (3.8E-05) and increased to 1.2E-03 in the updated results. The only COPC with revised slope factors that could increase risk is cadmium. In the SCOU BHHRA, cadmium had contributed <1 percent risk to Area 1, while in the updated results, cadmium contributes 97 percent. Cadmium, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene each contribute risk in excess of 1.0E-06.

The hazard for SDS Area 1 was reported in excess of 1.0 in the SCOU BHHRA (7.3) and increased to 14.4 in the updated results due to revised reference doses for cadmium, cobalt, chrysene and phenanthrene. Cadmium is the largest contributor to hazard in the SCOU BHHRA (Area 1—96%) and in the updated results (Area 1—98 percent). SDS (Area 1 and 2) is a NFA site in the SCOU ROD 1.

ACTION: The Area 1 sampling location (SDSE09) is in a pipe section that leads from B1350 to the SDS. The pipe section is accessed via a grated interceptor box on the northeast side of B1350. Sediment from the B1350 lateral presumably collected in the box. Due to discontinued operations and the passing of time, it is not certain that the contaminated sediment remains in the box or whether the location can be considered representative of the entire Area 1. The highest cadmium result within Area 1 was 65.6 mg/kg, detected at SDSE09. The next highest was 2.3 mg/kg at SDSE12, which was taken in an open stretch of the SDS. The SDSE12 value is above background but considerably lower than the SDSE09 value.

Since SDSE09 drives the risk at SDS1 and the sample location is outside of the SDS, a revised risk assessment was performed for SDS 1 without this sample result (Table 11). The revised cancer risk and non-cancer hazard are 7.9E-05 and 0.8, respectively for SDS-1. Based on these revised results, SDS-1 does not exceed the decision criteria for non-cancer hazard but still exceeds the decision criteria for cancer risk.

For both the original and updated BHHRA cancer risk values, a high proportion of the risk (91 percent) is associated with the produce pathway. Without consideration of the produce pathway, which is not used in the Castle RAO calculation and should be considered an unlikely pathway for the SDS, the updated cancer risk result for SDS 1 is 7.2E-06. The updated non-cancer hazard, without consideration of the produce pathway, is 0.1. Given these results, SDS Area 1 can remain as NFA in the SCOU ROD 1. Despite the cancer risk at SDS Area 1 being slightly greater than the decision criterion of 1.0E-06, NFA is appropriate because the assumptions for an adult residential scenario for the SDS would be very conservative (i.e., exposure duration at the SDS would not be as high as under the

residential scenario). However, the sediments associated with SDSE09 will be removed from the box under routine operation and maintenance activities.

SDS Area 2— Cancer risk is increased from 1.4E-07 to 6.8E-05 for SDS Area 2. The only COPC with revised slope factors that could increase risk is cadmium. In the SCOU BHHRA, cadmium had contributed 1 percent of the cancer risk to Area 2, while in the updated results cadmium contributes 100 percent. Cadmium is the only COC contributing risk in excess of 1.0E-06.

The non-cancer hazard at SDS Area 2 increased from 0.6 to 1.0 as a result of revised reference doses for cadmium and cobalt. Cadmium is the largest contributor to hazard in the SCOU BHHRA (Area 2—74 percent) and in the updated results (Area 2-84 percent).

ACTION: For both the original and updated BHHRA cancer risk values, a high proportion of the risk (99 percent) is associated with the produce pathway. Without consideration of the produce pathway, which is not used in the Castle RAO calculation and should be considered an unlikely pathway for the SDS, the updated cancer risk result for SDS 2 is 8.9E-07. The non-cancer hazard, without consideration of the produce pathway, is 0.01. Given these results, SDS Area 2 can remain as NFA in the SCOU ROD 1.

B1260—Non-cancer hazard at B1260 increased from 0.2 to 1.0 in subsurface soil due to revised reference doses for n-butylbenzene; 1,2-dichlorobenzene; 1,3-dichlorobenzene; 1,4-dichlorobenzene; isopropyltoluene; naphthalene;1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and xylenes. Hazard at B1260 is driven by the dichlorobenzenes (85 percent combined total), methylene chloride (10 percent), and naphthalene (5 percent). None of the COPCs exceed a 1.0 non-cancer hazard on its own. B1260 is a SCOU ROD 2 site that is part of the B54 Group slated for SVE and bioventing.

ACTION: No revision to the selected remedy is required, since the revised hazard is very low and there are no individual contaminants contributing hazard greater than 1.0.

DA-5—Non-cancer hazard at DA-5 increased from 0.3 to 1.3 in surface soil due to revised reference doses for cadmium; cobalt; sec-butylbenzene; isopropyltoluene; 2-methylnaphthalene; naphthalene;1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and xylenes. Hazard at DA-5 is driven by 2-methylnaphthalene (51 percent), naphthalene (25 percent) and cadmium (19 percent). None of the COPCs exceeds a 1.0 non-cancer hazard on its own. DA-5 is a SCOU ROD 2 site for which the se1ected remedy is SVE with bioventing, plus excavation and on-site disposal of metal-contaminated soil.

ACTION: No revision to the selected remedy is required since the revised hazard is very low and there are no individual contaminants contributing hazard greater than 1.0. Implementation of the selected remedy in accordance with revised RAOs will address reduction of non-cancer hazard to protective levels.

FTA-1—Non-cancer hazard at FTA-1 increased from 0.9 to 1.1 in surface soil due to revised reference doses for beryllium; cadmium; cobalt; sec-butylbenzene; t-butylbenzene; chrysene;1,2 dichloroethane; indeno(1,2,3)pyrene; isopropyltoluene; 2-methylnaphthalene; naphthalene; phenanthrene;1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and xylenes. Hazard at FTA-1 due to surface soil contamination is driven by nickel (37 percent), cadmium (20 percent), arsenic (18 percent), 4-methylphenol (11 percent) and 1,2-dibromo-3-chloropropane. None of the COPCs exceeds a 1.0 non-cancer hazard on its own. FTA-1 is a SCOU ROD 2 site for which the selected remedy is SVE with bioventing plus capping and institutional controls.

ACTION: FTA-1 is the subject of a Focused Feasibility Study (FFS) to determine whether additional measures to those implemented by the FTA-1 removal action are required to ensure protection of human health and the environment. The FFS will be conducted with consideration of the revised risk assessment results and RAOs. A revision to the selected remedy to specifically address the revised non-cancer hazard posed by surface soils is not anticipated since the revised hazard is very low and there are no individual contaminants contributing hazard greater than 1.0. In addition, implementation of the selected remedy in accordance with revised RAOs will (or has, given the existing cap at the site) decrease or eliminate the exposure pathways for non-cancer hazard at FTA-1.

LF2 Area 2—An estimated blood-lead concentration for the child scenario increased from 8.1 to 10.4 µg/dL due to lead in surface soil with the plant pathway. Without the plant pathway, the result is 6.7 µg/dL. LF-2 is an NFA site in SCOU ROD 1 that has undergone a removal action.

ACTION: The estimated blood-lead concentration without the produce pathway is less than the health protective level of 10 µg/dL. Therefore, no revision to the selected remedy is required.

STA-41—The estimated blood-lead concentration for the child scenario increased from 9.0 to 12.5 µg/dL due to lead in surface soil with the plant pathway. Without the plant pathway, the result is 7.9 µg/dL. STA-41 is an institutional control site in the SCOU ROD 2.

ACTION: The estimated blood-lead concentration without the produce pathway is less than the health protective level of 10 µg/dL. Therefore, no revision to the selected remedy is required.

5 REVISED REMEDIAL ACTION OBJECTIVES

Using the procedure established in Section 4.4.2.5 of the SCOU ROD Part 1, updated Castle RAOs were calculated and are presented in Tables 12, 13 and 14 for VOCs, SVOCs, and metals, respectively. When the RAO has changed, the former RAO is shown in parentheses on the respective tables next to the updated RAO. RAOs for the adult residential and occupational scenarios are provided. Differences in RAOs between 1996 and 2001 are due to the revisions to exposure input parameters identified in Tables 1 and 2, and the revisions to toxicity factors identified in Tables 3 through 6. Generally, the effect of revisions to toxicity factors is more significant than the relatively minor revisions to the exposed input parameters.

6 AFFECTED SELECTED REMEDIES AND REMOVAL ACTIONS

As necessary, the sites which newly exceed the risk decision criteria of 1.0E-06, 1.0, and 10 µg/dL, respectively, for cancer risk, non-cancer hazard and estimated blood-lead concentration, were evaluated relative to the revised Castle RAOs to determine whether the selected remedies can be confirmed or require modification. Based on the evaluation presented in Section 4, the affected sites include DA-2, DA-3 and LF-1. In addition, all completed removal actions were evaluated for attainment of the updated RAOs. More detailed discussions follow.

DA-2—The updated BHHRA for DA-2 specifies cadmium and lead as COCs. The revised Castle risk-based RAO for cadmium is 4.4 mg/kg, which is lower than the WQSA value and would, therefore, be the Castle RAO. The maximum cadmium concentrations at DA-2 was 9.1 mg/kg, which exceeds the revised Castle RAO (Note: the EPA PRG is 9.0 mg/kg). Two surface samples at DA-2 (9.1 mg/kg at DA2SB08 and 7.6 mg/kg at DA2SB11) exceeded the TBV and the revised Castle RAO for cadmium. These two sample locations also had lead concentrations that exceed the TBV and the revised Castle residential RAO (639 mg/kg at DA2SB08 and 481 mg/kg at DA2SB11). The sample locations are immediately adjacent to each other, at the southwest corner of the washrack sump. This area was not included in the surface excavation conducted at DA-2 to address TEPH/TVPH contamination.

However, no further action (NFA) is recommended for DA-2 because: 1) reuse for the DA-2 site area is designated as Aviation Support; 2) the detected levels of cadmium and lead are below the Castle occupational RAOs and the WQSA levels for protection of groundwater; and 3) the affected area is known to be small.

DA-3—Both the original SCOU BHHRA and the update identify lead as a COC at DA-3. A removal action was implemented at DA-3 between June and August 2000 to address lead-contaminated soil. Contamination results indicated that the highest remaining lead concentration was 42.6 mg/kg (*Closure Report for CERCLA and Petroleum Hydrocarbon-*

Contaminated Excavation/Disposal Sites, Jacobs, 2000), which is well below the updated Castle RAO of 400 mg/kg.

LF-1—Cadmium; lead; benzo(a)pyrene; and 1,2-dichloroethane are the only COCs at LF-1. The revised Castle risk-based RAOs are 4.4 mg/kg for cadmium, 400 mg/kg for lead, 0.089 mg/kg for benzo(a)pyrene, and 0.043 mg/kg for 1,2-dichloroethane. Each of these values is less than the corresponding WQSA values and, therefore, would be the Castle RAOs. An evaluation of the confirmation sample results for LF-1 (Appendix F, Landfill 1 Closure Report) indicates that neither benzo(a)pyrene nor 1,2-dichloroethane were detected. The maximum detected results for cadmium and lead were 0.393 and 31.1 mg/kg, respectively, in the trench samples and 0.971 and 36.2 mg/kg, respectively, in the scrape samples (Table 3-1, LF-2 Closure Report). Therefore, all of the confirmation results for LF-1 were below the revised Castle RAOs.

In addition, completed removal actions were reviewed to determine if any new COCs or reduced RAOs were identified for the sites by the BHHRA update. Risk assessments for SCOU removal action sites that were affected by the BHHRA update include B871, B1344, DA-8, CVLFA, CVLFB, ETC-10, LF-1, LF-2, LF-3, LF-4, LF-5, and PCB-9. Risk assessments for ETC-2, Firing Range, Detonation and Burn Facility and DA-3 were not affected by the updates. Comparison of the COCs identified in the SCOU and the updated risk assessments was conducted to determine if any new COCs were appropriate.

- The updated risk assessments for CVLFA and DA-8 did not increase risk or hazard above 1.0E-6 and 1.0, respectively, so no new COCs were introduced by the updated risk assessment for these sites.
- Comparison of the SCOU and updated risk assessments for B871, and CVLFB, ETC-10, LF-2, LF-4, LF-5 and PCB-9 indicated that there were no new COCs for these sites.
    - Based on a review of the respective closure documents, residual concentrations of COCs at B871, CVLFB, LF-2, LF-4 and PCB-9 are all under the updated Castle risk-based RAOs.
    - At LF-5, one COC was deleted by the updated risk assessment and the RAO was increased for the other affected COC (1,4-dichlorobenzene).
    - ETC-10 is an area identified for industrial/occupational reuse. For the removal action implemented at ETC-10, the WQSA value of 855 mg/kg was used as the RAO, since the WQSA value was less than the risk-based occupational RAO. The

updated risk-based occupational RAO is 750 mg/kg. Therefore, the removal action at ETC-10 may not have achieved health protective levels for the occupational scenario.

- The updated risk assessment did not increase risk or hazard above 1.0E-06 or 1.0, respectively, for the occupational scenario, so no new COCs were introduced by the updated risk assessment for LF-1. However, as specified earlier in this section, attainment of the updated residential RAOs was confirmed so that institutional controls can be avoided. Additional COCs introducted when considering the residential scenario at LF-1 include cadmium, benzo(a)pyrene and 1,2-dichloroethane.

- New COCs for the occupational scenario at B1344 (benzo(a)anthracene and benzo(b)fluoranthene) and LF-3 (Benzo(a)anthracene and benzo(b)fluoranthene) were identified by the updated risk assessment. In addition, cadmium is a new COC at B1344 under the residential scenario. Although the occupational scenario is appropriate at both B1344 and LF-3, the attainment of residential RAOs will avoid any potential institutional controls.

  - At B1344, a review of conformation sampling results (Table 3-8, Closure Report for CERCLA and Petroleum Contaminated Excavation Sites) indicates the updated Castle residential RAOs were attained for PAHs. Cadmium (2 mg/kg at B1344 was detected at less that the updated Castle residential RAO (4.4 mg/kg).

  - At LF-3, the residential RAOs for PAHs, including the new COCs, were attained during the removal action.

Table 1
Summary of Exposure Input Values Used for Risk Assessment, PRGs and RAOs

Input exposure parameter	Symbol	1996 EPA Region IX PRGs	2000 EPA Region IX PRGs[i]	Castle 1996 BHHRA/RAOs	Castle 2001 BHHRA/RAOs
Body weight, adult (kg)	BW_a	70	70	70	70
Body weight, child (kg)	BW_c	15	15	15	15
Averaging time - carcinogen (days)	AT	25550	25550	25550	25550
Averaging time, adult - noncarcinogens (days) [a]	AT_a	8760	8760	10950	10950
Averaging time, child - noncarcinogens (days) [a]	AT_c	2190	2190	2190	2190
Averaging time, worker - noncarcinogens (days) [a]	AT_w	9125	9125	9125	9125
Dermal Contact					
Skin surface area, adult (cm^2/day)	SA_g	5000 [b]	--	--	--
Skin surface area, adult resident (cm2/day)	SA_r	--	5700	5800	5700 [h]
Skin surface area, adult worker (cm2/day)	SA_w	--	3300	5000	5700 [h]
Skin surface area, child (cm2/day)	SA_c	2000 [b]	2800	2000	2900 [h]
Adherence factor (mg/cm^2)	AF	0.2	--	--	--
Adherence factor, adult resident (mg/cm2)	AF_r	--	0.07	0.2	0.07 [h]
Adherence factor, adult worker (mg/cm2)	AF_w	--	0.2	0.2	0.2 [h]
Adherence factor, child (mg/cm2)	AF_c	--	0.2	0.2	0.2 [h]
Skin absorption (unitless)					
- organics	ABS	0.1	--	cs	cs
- inorganics		0.01	--	cs	cs
- semi-volatile organics		--	cs	cs	cs
Exposure Frequency, adult [days/year]	EF_a	350	350	100	350 [h]
Exposure Frequency, child [days/year]	EF_c	350	350	350	350 [h]
Exposure Frequency, worker [days/year]	EF_w	250	250	250	250 [h]

Table 1
Summary of Exposure Input Values Used for Risk Assessment, PRGs and RAOs

Input exposure parameter	Symbol	1996 EPA Region IX PRGs	2000 EPA Region IX PRGs[l]	Castle 1996 BHHRA/RAOs	Castle 2001 BHHRA/RAOs
Inhalation					
Inhalation rate - adult (m^3/day)	IR_a	20	20	20	20
Inhalation rate - child (m^3/day)	IR_c	10	10	10	10
Soil Ingestion					
Soil ingestion - adult (mg/day)	IRS_a	100	100	100	100
Soil ingestion - child (mg/day)	IRS_c	200	200	200	200
Soil ingestion - adult worker (mg/day)	IRS_w	50	50	50	50
Exposure frequency - residential (days/yr)	EF_r	350	350	350	350
Exposure frequency - worker (days/yr)	EF_w	250	250	250	250
Exposure duration - residential (years)	ED_r	30 [c]	30 [c]	30 [d]	30 [d]
Exposure duration - child (years)	ED_c	6	6	6	6
Exposure duration - worker (years)	ED_w	25	25	25	25
Ingestion of Produce (resident)					
Ingestion Rate, adult [kg/day]	IRP_a	--	--	0.122	0.122
Ingestion Rate, child [kg/day]	IRP_c			0.122	0.122
Exposure Frequency, adult [days/year]	EF_a	--	--	350	350
Exposure Frequency, child [days/year]	EF_c			350	350
Exposure Duration, adult (ED) [yrs]	ED_a	--	--	30	30
Exposure Duration, child (ED) [yrs]	ED_c	--	--	6	6
Body Weight, adult (BW) [kg]	BW_a	--	--	70	70
Body Weight, child (BW) [kg]	BW_c	--	--	15	15
Averaging Time - cancer (AT) [days]	AT	--	--	25550	25550
Averaging Time, adult - noncancer (AT) [days]	AT_a	--	--	10950	10950
Averaging Time, child - noncancer (AT) [days]	AT_{ch}	--	--	2190	2190

Table 1
Summary of Exposure Input Values Used for Risk Assessment, PRGs and RAOs

Input exposure parameter	Symbol	1996 EPA Region IX PRGs	2000 EPA Region IX PRGs[i]	Castle 1996 BHHRA/RAOs	Castle 2001 BHHRA/RAOs
Age-adjusted factors for resident (carcinogens):					
Ingestion factor, soils ([mg-yr]/(kg/day])		114	114	126	126
Skin contact factor, soils ([mg-yr]/(kg/day])		503	503	657	657
Inhalation factor, ([mg^3-yr]/[kg/day])		11	11	12.6	12.6
Particulate emission factor	PEF	$1.316*10^{9}$ [e]	$1.316*10^{9}$ [e]	$4.63*10^{9}$ [f]	$8.99*10^{8}$ [g]
Volatilization factor for soil (m^3/kg)	VF	cs	cs	cs	cs
Soil saturation concentration (mg/kg)	sat	cs	cs	cs	cs

Notes

[a] Averaging Time (AT) (days) = Exposure Duration (ED) (years) x 365 days/year
[b] 25% of skin surface area
[c] Exposure duration for lifetime residents is assumed to be 30 years total. For carcinogens, exposures are combined for children (6 years) and adults (24 years).
[d] Exposure duration for lifetime resident were assumed to be 30 years total. For carcinogens, exposures were based on 30 year adult.
[e] U.S. Environmental Protection Agency (EPA). 1996. *Preliminary Remediation Goals*. Region IX.
[f] EPA, 1994.
[g] Area-specific PEF calculated based on data from Fresno, California.
[h] Department of Toxic Substances (DTSC). 2000. Memorandum from S. DiZio, M. J. Wade, and D. Oudiz to Human and Ecological Risk Division (HERD). Guidance for the Dermal Exposure Pathway (DRAFT). January 7.
[i] US Environmental Protection Agency (EPA). Nov., 2000 Preliminary Remediation Goals. Region IX.
[j] Chemical specific values for Absorption Fraction from Soil (ABS) used in dermal risk calculations are provided in Table 2.

cs = chemical-specific

Table 2
Absorption Fraction from Soil (ABS) Values Used in Dermal Risk Calculations

Chemical	ABS (JEG, 1997)	ABS (DTSC,1994)	(USEPA, in preparation)	Proposed ABS
Aluminum	0.01	0.01	NA	0.01
Arsenic	0.03	0.03	0.03	0.03
Antimony	0.01	0.01	NA	0.01
Barium	0.01	0.01	NA	0.01
Beryllium	0.01	0.01	NA	0.01
Cadmium	0.001	0.001	0.001	0.001
Chromium	0.01	0.01	NA	0.01
Cobalt	0.01	0.01	NA	0.01
Copper	0.01	0.01	NA	0.01
Lead	0.01	0.01	NA	0.01
Manganese	0.01	0.01	NA	0.01
Mercury	0.01	0.01	NA	0.01
Molybdenum	0.01	0.01	NA	0.01
Nickel	0.01	0.01	NA	0.01
Selenium	0.01	0.01	NA	0.01
Silver	0.01	0.01	NA	0.01
Thallium	0.01	0.01	NA	0.01
Vanadium	0.01	0.01	NA	0.01
Zinc	0.01	0.01	NA	0.01
Acenaphthene	0.15	0.15	0.13	0.15
Acenaphthylene	0.15	0.15	0.13	0.15
Anthracene	0.15	0.15	0.13	0.15
Benzene	0.1	0.1	NA	0.1
Benzo(a)anthracene	0.15	0.15	0.13	0.15
Benzo(a)pyrene	0.15	0.15	0.13	0.15
Benzo(b)fluoranthene	0.15	0.15	0.13	0.15
Benzo(g,h,i)perylene	0.15	0.15	0.13	0.15
Benzo(k)fluoranthene	0.15	0.15	0.13	0.15
Bromochloromethane	0.1	0.1	NA	0.1
Di(2-ethylhexyl) phthalate	0.1	0.1	0.1	0.1
2-Butanone	0.1	0.1	NA	0.1
Butyl benzyl phthalate	0.1	0.1	0.1	0.1
n-Butylbenzene	0.1	0.1	NA	0.1
sec-Butylbenzene	0.1	0.1	NA	0.1
t-Butylbenzene	0.1	0.1	NA	0.1
Carbon tetrachloride	0.1	0.1	NA	0.1
a-Chlordane	0.05	0.05	0.04	0.05
g-Chlordane	0.05	0.05	0.04	0.05
4-Chloroaniline	0.1	0.1	0.1	0.1
Chlorobenzene	0.1	0.1	NA	0.1
Chloroform	0.1	0.1	NA	0.1
4-Chlorotoluene	0.1	0.1	NA	0.1
Chrysene	0.15	0.15	0.13	0.15
Isopropylbenzene	0.1	0.1	NA	0.1
p-Isopropyltoluene	0.1	0.1	NA	0.1
DDD	0.05	0.05	NA	0.05
DDE	0.05	0.05	NA	0.05
DDT	0.05	0.05	0.03	0.05
Octachlorodibenzo-p-dioxin	0.03	0.03	0.03	0.03
Di-n-butyl phthalate	0.1	0.1	0.1	0.1
Di-n-octylphthalate	0.1	0.1	0.1	0.1
Dibenz(a,h)anthracene	0.15	0.15	0.13	0.15
Dibenzofuran	0.1	0.1	NA	0.1
Dibromochloromethane	0.1	0.1	NA	0.1
1,2-Dibromo-3-chloropropane	0.1	0.1	NA	0.1
1,2-Dichlorobenzene	0.1	0.1	NA	0.1

Table 2
Absorption Fraction from Soil (ABS) Values Used in Dermal Risk Calculations

Chemical	ABS (JEG, 1997)	ABS (DTSC,1994)	(USEPA, in preparation)	Proposed ABS
1,3-Dichlorobenzene	0.1	0.1	NA	0.1
1,4-Dichlorobenzene	0.1	0.1	NA	0.1
Dichlorodifluoromethane	0.1	0.1	NA	0.1
1,2-Dichloroethane	0.1	0.1	NA	0.1
cis-1,2-Dichloroethene	0.1	0.1	NA	0.1
1,2-Dichloropropane	0.1	0.1	NA	0.1
Dieldrin	0.05	0.05	NA	0.05
Diethyl phthalate	0.1	0.1	0.1	0.1
2,4-Dimethylphenol	0.1	0.1	0.1	0.1
2,4-Dinitrotoluene	0.1	0.1	0.1	0.1
Dioxin (2,3,7,8-TCDD)	0.03	0.03	0.03	0.03
Endrin	0.05	0.05	NA	0.05
Ethylbenzene	0.1	0.1	NA	0.1
Fluoranthene	0.15	0.15	0.13	0.15
Fluorene	0.15	0.15	0.13	0.15
Heptachlor epoxide	0.05	0.05	NA	0.05
Hexachlorobutadiene	0.1	0.1	0.1	0.1
Indeno(1,2,3-cd)pyrene	0.15	0.15	0.13	0.15
Methylene chloride	0.1	0.1	NA	0.1
2-Methylnaphthalene	0.1	0.1	0.1	0.1
2-Methylphenol	0.1	0.1	0.1	0.1
4-Methylphenol	0.1	0.1	0.1	0.1
Naphthalene	0.15	0.15	0.13	0.15
PCBs	0.15	0.15	0.14	0.15
Pentachlorodibenzofurans, Total	0.03	0.03	NA	0.03
Pentachlorophenol	0.25	0.25	0.25	0.25
Phenanthrene	0.15	0.15	0.13	0.15
Phenol	0.1	0.1	0.1	0.1
n-Propylbenzene	0.1	0.1	0.1	0.1
Pyrene	0.15	0.15	0.13	0.15
Styrene	0.1	0.1	NA	0.1
1,1,2,2-Tetrachloroethane	0.1	0.1	NA	0.1
Tetrachloroethene	0.1	0.1	NA	0.1
Toluene	0.1	0.1	NA	0.1
1,2,3-Trichlorobenzene	0.1	0.1	NA	0.1
1,2,4-Trichlorobenzene	0.1	0.1	NA	0.1
1,1,1-Trichloroethane	0.1	0.1	NA	0.1
1,1,2-Trichloroethane	0.1	0.1	NA	0.1
Trichloroethene	0.1	0.1	NA	0.1
Trichlorofluoromethane	0.1	0.1	NA	0.1
2,4,5-Trichlorophenol	0.1	0.1	NA	0.1
1,2,3-Trichloropropane	0.1	0.1	NA	0.1
1,2,4-Trimethylbenzene	0.1	0.1	NA	0.1
1,3,5-Trimethylbenzene	0.1	0.1	NA	0.1
Xylenes	0.1	0.1	NA	0.1
Vinyl chloride	0.1	0.1	NA	0.1

Note: NA = Not available

References:

Department of Toxic Substances Control (DTSC). 1994. *Preliminary Endangerment Assessment Guidance Manual.* January.

Jacobs Engineering Group (JEG). 1997. *SCOU RI/FS Part 2: Baseline Human Health Risk Assessment*. May.

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Table 3
Comparison of SCOU and Current Slope Factors

		EPA Oral Cancer Slope Factors				EPA Inhalation Cancer Slope Factors				California Cancer Slope Factors							
	Chemical Name	Oral SF (SCOU) (mg/kg-day)$^{-1}$	Oral Slope Factor Source	Current Oral SF (mg/kg-day)$^{-1}$	Current Oral Slope Factor Source	Inhal SF (SCOU) (mg/kg-dat)$^{-1}$	Inhal SF Source	Current Inhal SF (mg/kg-day)$^{-1}$	Current Inhal Slope Factor Source	CA Oral Slope Factor (SCOU)	Current CA Oral Slope Factor	CA Inhal Slope Factor (SCOU)	Current CA Inhal Slope Factor	Max Oral Slope Factor	Max Inhalation Slope Factor	Oral Slope Factor Ratio Current/ SCOU	Inhalation Slope Factor Ratio Current/ SCOU
	Metals																
car	Arsenic	1.5E+00	IRIS	1.5E+00	IRIS	1.5E+01	IRIS	1.5E+01	IRIS		1.5E+00	1.2E+01	1.2E+01	1.5E+00	1.5E+01	1.0	1.0
car	Beryllium	4.3E+00	IRIS			8.4E+00	HEAST	8.4E+00	IRIS				8.4E+00	0.0E+00	8.4E+00		1.0
car	Cadmium		NA		NA	1.5E+01	IRIS	1.5E+01	IRIS		3.8E-01	1.5E+01	1.5E+01	3.8E-01	1.5E+01	Calc Risk	1.0
car	Lead		NA		NA		NA		NA								
car	Nickel		NA		NA								9.1E-01		9.1E-01		Calc Risk
	Organic Compounds																
car	Benzene	1.0E-01	IRIS	1.0E-01	IRIS	1.0E-01	IRIS	1.0E-01	IRIS	1.0E-01	1.0E-01	1.0E-01	1.0E-01	1.0E-01	1.0E-01	1.0	1.0
car	Benzo(a)anthracene	7.3E-01	TOX EQUIV	7.3E-01	TOX EQUIV	7.3E-01	ROUTE	7.3E-01	ROUTE	1.2E+00	1.2E+00	3.9E-01	3.9E-01	1.2E+00	7.3E-01	1.0	1.0
car	Benzo(a)pyrene	7.3E+00	IRIS	7.3E+00	IRIS	7.3E+00	ROUTE	7.3E+00	ROUTE	1.2E+01	1.2E+01	3.9E+00	3.9E+00	1.2E+01	7.3E+00	1.0	1.0
car	Benzo(b) fluoranthene	7.3E-01	TOX EQUIV	7.3E-01	TOX EQUIV	7.3E-01	ROUTE	7.3E-01	ROUTE	1.2E+00	1.2E+00	3.9E-01	3.9E-01	1.2E+00	7.3E-01	1.0	1.0
car	Benzo(k) fluoranthene	7.3E-01	TOX EQUIV	7.3E-01	TOX EQUIV	7.3E-01	ROUTE	7.3E-01	ROUTE	1.2E+00	1.2E+00	3.9E-01	3.9E-01	1.2E+00	7.3E-01	1.0	1.0
car	Bis(2-ethylhexyl) phthalate	1.4E-02	IRIS	1.4E-02	IRIS	1.4E-02	ROUTE	1.4E-02	ROUTE	8.4E-03	3.0E-03	8.4E-03	8.4E-03	1.4E-02	1.4E-02	1.0	1.0
car	Bromodichloro-methane	1.3E-01	IRIS	1.3E-01	IRIS	1.3E-01	ROUTE	1.3E-01	ROUTE	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.0	1.0
car	Bromoform	7.9E-03	IRIS	7.9E-03	IRIS	3.9E-03	HEAST	3.9E-03	IRIS					7.9E-03	3.9E-03	1.0	1.0
car	Carbon tetrachloride	1.3E-01	IRIS	1.3E-01	IRIS	5.3E-02	IRIS	5.3E-02	IRIS		1.5E-01		1.5E-01	1.5E-01	1.5E-01	1.2	2.8
car	α-Chlordane	1.3E+00	IRIS	3.5E-01	IRIS	1.3E+00	HEAST	3.5E-01	IRIS	1.2E+00	1.3E+00	1.2E+00	1.2E+00	1.3E+00	1.2E+00	1.0	.09
car	γ-Chlordane	1.3E+00	IRIS	3.5E-01	IRIS	1.3E+00	HEAST	3.5E-01	IRIS	1.2E+00	1.3E+00	1.2E+00	1.2E+00	1.3E+00	1.2E+00	1.0	.09
car	Chloroform	6.1E-03	IRIS	6.1E-03	IRIS	8.0E-02	HEAST	8.0E-02	IRIS		3.1E-02		1.9E-02	3.1E-02	8.0E-02	5.1	1.0
car	Chrysene	7.3E-02	TOX EQUIV	7.3E-02	TOX EQUIV	7.3E-02	ROUTE	3.1E-03	PEF	1.2E-01	1.2E-01	3.9E-02	3.9E-02	1.2E-01	3.9E-02	1.0	0.5
car	DDD	2.4E-01	IRIS/ CAL EPA	2.4E-01	IRIS/ CAL EPA	2.4E-01	ROUTE	2.4E-01	ROUTE	2.4E-01	2.4E-01	2.4E-01	2.4E-01	2.4E-01	2.4E-01	1.0	1.0
car	DDE	3.4E-01	IRIS/ CAL EPA	3.4E-01	IRIS/ CAL EPA	3.4E-01	ROUTE	3.4E-01	ROUTE	3.4E-01	3.4E-01	3.4E-01	3.4E-01	3.4E-01	3.4E-01	1.0	1.0
car	DDT	3.4E-01	IRIS	3.4E-01	IRIS	3.4E-01	HEAST	3.4E-01	IRIS	3.4E-01	3.4E-01	3.4E-01	3.4E-01	3.4E-01	3.4E-01	1.0	1.0
car	1,2,3,4,6,7,8-Heptachlorodi-benzofuran	1.5E+03	TOX EQUIV	1.5E+03	TOX EQUIV	1.5E+03	ROUTE	1.5E+03	ROUTE	1.3E+03	--	1.3E+03	1.3E+03	1.5E+03	1.5E+03	1.0	1.0

Table 3
Comparison of SCOU and Current Slope Factors

		EPA Oral Cancer Slope Factors				EPA Inhalation Cancer Slope Factors				California Cancer Slope Factors							
	Chemical Name	Oral SF (SCOU) (mg/kg-day)$^{-1}$	Oral Slope Factor Source	Current Oral SF (mg/kg-day)$^{-1}$	Current Oral Slope Factor Source	Inhal SF (SCOU) (mg/kg-dat)$^{-1}$	Inhal SF Source	Current Inhal SF (mg/kg-day)$^{-1}$	Current Inhal Slope Factor Source	CA Oral Slope Factor (SCOU)	Current CA Oral Slope Factor	CA Inhal Slope Factor (SCOU)	Current CA Inhal Slope Factor	Max Oral Slope Factor	Max Inhalation Slope Factor	Oral Slope Factor Ratio Current/ SCOU	Inhalation Slope Factor Ratio Current/ SCOU
car	1,2,3,4,6,7,8-Heptachlorodi-benzo-p-dioxin	1.5E+03	TOX EQUIV	1.5E+03	TOX EQUIV	1.5E+03	ROUTE	1.5E+03	ROUTE	1.3E+03	--	1.3E+03	1.3.E+03	1.5E+03	1.6E+03	1.0	1.0
car	Octachlorodi-benzo-p-dioxin	1.5E+02	TOX EQUIV	1.5E+02	TOX EQUIV	1.5E+02	ROUTE	1.5E+02	ROUTE	1.3E+02	--	1.3E+02	1.3E+02	1.5E+02	1.5E+02	1.0	1.0
car	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)			1.50E+05	HEAST			1.50E+05	HEAST		1.3E+05		1.3E+05	1.5E+05	1.5E+05		
car	Dibenz(a,h)-anthracene	7.3E+00	TOX EQUIV	7.3E+00	TOX EQUIV	7.3E+00	ROUTE	3.1E+00	PEF	4.1E+00	4.1E+00	4.1E+00	4.1E+00	7.3E+00	4.1E+00	1.0	0.6
car	1,2-Dibromo-3-chloropropane	1.4E+00	HEAST	1.4	HEAST	2.4E-03	HEAST	2.4E-03	HEAST		7.0E+00		7.0E+00	7.0E+00	7.0E+00	5.0	2916.7
car	Dibromochloro-methane	8.4E-02	IRIS	8.4E-02	IRIS	8.4E-02	ROUTE	8.4E-02	ROUTE		9.4E-02		9.4E-02	9.4E-02	9.4E-02	1.1	1.1
car	1,4-Dichlorobenzene	4.0E-02	HEAST	2.4E-02	HEAST	4.0E-02	ROUTE	2.4E-02	ROUTE	4.0E-02	5.4E-03	4.0E-02	4.0E-02	2.4E-02	4.0E-02	0.6	1.0
car	1,1-Dichloroethane	5.7E-03	NA	5.7E-03	NA	5.7E-03	NA	5.7E-03	NA	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	1.0	1.0
car	1,2-Dichloroethane	9.1E-02	IRIS	9.1E-02	IRIS	9.1E-02	HEAST	9.1E-02	IRIS	7.0E-02	4.7E-02	7.0E-02	7.0E-02	9.1E-02	9.1E-02	1.0	1.0
car	1,1-Dichloroethene	6.0E-01	IRIS	6.0E-01	IRIS	1.8E-01	HEAST	1.8E-01	HEAST					6.0E-01	1.8E-01	1.0	1.0
car	1,2-Dichloropropane	6.8E-02	HEAST	6.8E-02	HEAST	6.8E-02	ROUTE	6.8E-02	ROUTE	6.3E-02	3.6E-02	6.3E-02	3.6E-02	6.8E-02	6.8E-02	1.0	1.0
car	Dieldrin	1.6E+01	IRIS	1.6E+01	IRIS	1.6E+01	HEAST	1.6E+01	IRIS	1.6E+01	1.6E+01	1.6E+01	1.6E+01	1.6E+01	1.6E+01	1.0	1.0
car	2,4-Dinitrotoluene		IRIS		IRIS		NA		NA	3.1E-01	3.1E-01	3.1E-01	3.1E-01	3.1E-01	3.1E-01	1.0	1.0
car	Heptachlor epoxide	9.1E+00	IRIS	9.1E+00	IRIS	9.1E+00	HEAST	9.1E+00	IRIS		5.50E+00		5.5E+00	9.1E+00	9.1E+00	1.0	1.0
car	Hexachlorobutadiene	7.8E-02	IRIS	7.8E-02	IRIS	7.8E-02	HEAST	7.8E-02	IRIS					7.8E-02	7.8E-02	1.0	1.0
car	Indeno(1,2,3-c,d)pyrene	7.3E-01	TOX EQUIV	7.3E-01	TOX EQUIV	7.3E-01	ROUTE	7.3E-01	ROUTE	1.2E+00	1.2E+00	3.9E-01	3.9E-01	1.2E+00	7.3E-01	1.0	1.0
car	Methylene chloride	1.4E-02	IRIS	7.5E-03	IRIS	3.5E-03	IRIS		NA	1.4E-02	1.4E-02	3.5E-03	3.5E-03	1.4E-02	3.5E-03	1.0	1.0
car	2-Methylphenol		IRIS		IRIS		IRIS		IRIS								
car	4-Methylphenol		IRIS		IRIS		IRIS		IRIS								
car	PCBs	7.7E+00	IRIS	2.0E+00	IRIS	7.7E+00	ROUTE	2.0E+00	ROUTE		5.0E+00		2.0E+00	5.0E+00	2.0E+00	0.6	0.3
car	Pentachloro-phenol	1.2E-01	IRIS (1992)	1.2E-01	IRIS	1.2E-01	ROUTE	1.2E-01	ROUTE	1.8E-02	8.1E-02	1.8E-02	1.8E-02	1.2E-01	1.2E-01	1.0	1.0
car	1,1,2,2-Tetrachloro-ethane	2.0E-01		2.6E-02	IRIS	2.0E-01	IRIS	2.6E-02	ROUTE	2.7E-01	2.7E-01	2.7E-01	2.0E-01	2.7E-01	2.0E-01	1.0	0.7
car	Tetrachloroethene	5.1E-02	ECAO	5.2E-02	NCEA	2.1E-03	ECAO	2.1E-03	NCEA	5.1E-02	5.1E-02	2.1E-02	2.1E-02	5.2E-02	2.1E-02	1.0	1.0
car	1,2,4-Trichlorobenzene		NA		NA		NA		NA		3.6E-03			3.6E-03		Calc Risk	

Table 3
Comparison of SCOU and Current Slope Factors

		EPA Oral Cancer Slope Factors				EPA Inhalation Cancer Slope Factors				California Cancer Slope Factors							
	Chemical Name	Oral SF (SCOU) (mg/kg-day)$^{-1}$	Oral Slope Factor Source	Current Oral SF (mg/kg-day)$^{-1}$	Current Oral Slope Factor Source	Inhal SF (SCOU) (mg/kg-dat)$^{-1}$	Inhal SF Source	Current Inhal SF (mg/kg-day)$^{-1}$	Current Inhal Slope Factor Source	CA Oral Slope Factor (SCOU)	Current CA Oral Slope Factor	CA Inhal Slope Factor (SCOU)	Current CA Inhal Slope Factor	Max Oral Slope Factor	Max Inhalation Slope Factor	Oral Slope Factor Ratio Current/ SCOU	Inhalation Slope Factor Ratio Current/ SCOU
car	1,1,2-Trichloroethane	5.7E-02	IRIS	5.7E-02	IRIS	5.7E-02	HEAST	5.7E-02	IRIS		7.2E-02		5.7E-02	7.2E-02	5.7E-02	1.3	1.0
car	Trichloroethene	1.5E-02	REGION IX (ECAO)	1.5E-02	REGION IX (ECAO)	1.0E-02	REGION IX (ECAO)	6.0E-03	REGION IX (NCEA)	1.5E-02	1.5E-02	1.0E-02	1.0E-02	1.5E-02	1.0E-02	1.0	1.0
car	1,2,3-Trichloropropane	7.0E+00	HEAST	7.0E+00	HEAST	7.0E+00	ROUTE	7.0E+00	ROUTE					7.0E+00	7.0E+00	1.0	1.0
car	Vinyl chloride			1.50E+00	IRIS			1.60E-02	IRIS		2.70E-01		2.7E-01	1.5E+00	2.7E-01	CalcRisk	CalcRisk

Notes

SF_O	Oral cancer slope factor
SF_I	Inhalation cancer slope factor
IRIS	Integrated Risk Information System
HEAST	Health Effects Assessment Summary Tables
REGION IX (NCEA)	National Center for Environmental Assessment
REGION IX (ECAO)	Environment Criteria and Assessment Office
TOX EQUIV	Toxicity Equivalency Factor
ROUTE	Indicates that the value is a direct extrapolation from the published oral or inhalation value

Table 4
Revised Slope Factors for Carcinogens

No.	COC	SCOU BHHRA Factor {Oral (O) and Inhalation(I)}	Revised Factor {Oral (O) and Inhalation (I)}	Ratio of Revised Factor and SCOU Factor
1	Cadmium		3.8E-01 (O)	**New**
2	Nickel		9.1E-01 (I)	**New**
3	Carbon Tetrachloride	1.3E-01 (O) 5.3E-02 (I)	1.5E-01 (O) 1.5E-01 (I)	1.2 2.8
4	α-Chlordane	1.3E+00 (I)	1.2E+00 (I)	0.9
5	γ-Chlordane	1.3E+00 (I)	1.2E+00 (I)	0.9
6	Chloroform	6.1E-03 (O)	3.1E-02 (O)	5.1
7	Chrysene	7.3E-02 (I)	3.9E-02 (I)	0.5
8	Pentachlorodibenzofurans		6.5E+03	**New**
9	Dibenz(a,h)-anthracene	7.3E+00 (I)	4.1E+00 (I)	0.6
10	1,2-Dibromo-3-chloropropane	1.4E+00 (O) 2.4E-03 (I)	7.0E+00 (O) 7.0E+00 (I)	5.0 2917
11	Dibromochloromethane	8.4E-02 (O) 8.4E-02 (I)	9.4E-02 (O) 9.4E-02 (I)	1.1 1.1
12	1,4-Dichlorobenzene	4.0E-02 (O)	2.4E-02 (O)	0.6
13	PCBs	7.7E+00 (O) 7.7E+00 (I)	5.0E+00 (O) 2.0E+00 (I)	0.6 0.3
14	1,1,2,2-Tetrachloroethane	2.7E-01 (I)	2.0E-01 (I)	0.7
15	1,2,4-Triclorobenzene		3.6E-03 (O)	**New**
16	1,1,2-Trichloroethane	5.7E-02 (O)	7.2E-02 (O)	1.3
17	Vinyl Chloride		1.5E+00 (0)	**New**

Note

Shaded COCs will result in increased cancer risk.

Table 5
Comparison of SCOU and Current Reference Doses

		Chronic Oral RfD Values					Chronic Inhalation RfD Values					
	Chemical Name	Chronic Oral RfD (SCOU) mg/kg-day	Chronic Oral RfD Source	Current Chronic Oral RfD mg/kg-day	Current Chronic Oral RfD Source	Chronic Inhal RfC (mg/m3)	Chronic Inhal RfD (SCOU) mg/kg-day	Chronic Inhal RfD Source	Current Chronic Inhal RfD mg/kg-day	Current Chronic Inhal RfD Source	Oral Ref. Dose Ratio SCOU/ Current	Inhalation Ref. Dose Ratio SCOU/ Current
	Metals											
	Aluminum	1.0E+00	ECAO	1.0E+00	NCEA				1.4E-03	NCEA	1.0	Calc HI
	Antimony	4.0E-04	IRIS	4.0E-04	IRIS			NA		NA	1.0	1.0
car	Arsenic	3.0E-04	IRIS	3.0E-04	IRIS			NA		NA	1.0	1.0
	Barium	7.0E-02	IRIS	7.0E-02	IRIS	5.0E-04	1.4E-04	HEAST	1.4E-04	HEAST	1.0	1.0
car	Beryllium	5.0E-03	IRIS	2.0E-03	IRIS			NA	5.7E-06	IRIS	2.5	Calc HI
	Boron	9.0E-02	IRIS	9.0E-02	IRIS	2.0E-02	5.7E-03	HEAST	5.7E-03	HEAST	1.0	1.0
car	Cadmium	1.0E-03	IRIS	5.0E-04	IRIS			NA			2.0	1.0
	Calcium											
	Chromium	1.0E+00	IRIS	1.5E+00	IRIS			NA		NA	0.7	1.0
	Cobalt	6.0E-02	ECAO	6.0E-02	ECAO		2.9E-04	ECAO	NA		1.0	N/A
	Copper	3.7E-02	HEAST	3.7E-02	HEAST			NA		NA	1.0	1.0
	Iron											
car	Lead											
	Magnesium											
	Manganese	1.4E-01	IRIS	2.4E-02	IRIS	5.0E-05	1.4E-05	IRIS	1.4E-05	IRIS	5.8	1.0
	Mercury	3.0E-04	HEAST	3.0E-04	HEAST	3.0E-04	8.6E-05	HEAST	8.6E-05	HEAST	1.0	1.0
	Molybdenum	5.0E-03	IRIS	5.0E-03	IRIS						1.0	1.0
car	Nickel	2.0E-02	IRIS	2.0E-02	IRIS			NA		NA	1.0	1.0
	Potassium											
	Selenium	5.0E-03	IRIS	5.0E-03	IRIS			NA		NA	1.0	1.0
	Silica											
	Silver	5.0E-03	IRIS	5.0E-03	IRIS			NA		NA	1.0	1.0
	Sodium											
	Thallium	8.0E-05	IRIS	6.6E-05	IRIS			NA		NA	1.2	1.0
	Vanadium	7.0E-03	HEAST	7.0E-03	HEAST			NA		NA	1.0	1.0
	Zinc	3.0E-01	IRIS	3.0E-01	IRIS			NA		NA	1.0	1.0
	Organic Compounds											
	Acenaphthene	6.0E-02	IRIS	6.0E-02	IRIS		6.0E-02	ROUTE	6.0E-02	ROUTE	1.0	1.0
	Acenaphthylene							NA		NA		
	Anthracene	3.0E-01	IRIS	3.0E-01	IRIS		3.0E-01	ROUTE	3.0E-01	ROUTE	1.0	1.0
car	Benzene	1.7E-03	ROUTE	3.0E-03	NCEA		1.7E-03	NCEA	1.7E-03	NCEA	0.6	1.0
car	Benzo(a)anthracene		NA		NA			NA		NA		
car	Benzo(a)pyrene		NA		NA			NA		NA		

Table 5
Comparison of SCOU and Current Reference Doses

		Chronic Oral RfD Values					Chronic Inhalation RfD Values					
	Chemical Name	Chronic Oral RfD (SCOU) mg/kg-day	Chronic Oral RfD Source	Current Chronic Oral RfD mg/kg-day	Current Chronic Oral RfD Source	Chronic Inhal RfC (mg/m3)	Chronic Inhal RfD (SCOU) mg/kg-day	Chronic Inhal RfD Source	Current Chronic Inhal RfD mg/kg-day	Current Chronic Inhal RfD Source	Oral Ref. Dose Ratio SCOU/ Current	Inhalation Ref. Dose Ratio SCOU/ Current
car	Benzo(b) fluoranthene		NA		NA			NA		NA		
	Benzo(g,h,i) perylene		NA		NA			NA		NA		
car	Benzo(k) fluoranthene		NA		NA			NA		NA		
car	Bis(2-ethylhexyl) phthalate	2.0E-02	IRIS	2.0E-02	IRIS		2.0E-02	ROUTE	2.0E-02	ROUTE	1.0	1.0
	Bromochloro-methane		NA	6.0E-02	Surrogate[1]				8.6E-01	Surrogate[1]	Calc HI	Calc HI
car	Bromodichloro-methane	2.0E-02	IRIS	2.0E-02	IRIS		2.0E-02	ROUTE	2.0E-02	ROUTE	1.0	1.0
car	Bromoform	2.0E-02	IRIS	2.0E-02	IRIS		2.0E-02	ROUTE	2.0E-02	ROUTE	1.0	1.0
	2-Butanone	6.0E-01	IRIS	6.0E-01	IRIS	1.0E+00	1.0E+00	IRIS	1.0E+00	IRIS	1.0	1.0
car	Butyl benzyl phthalate	2.0E-01	IRIS	2.0E-01	IRIS		2.0E-01	ROUTE	2.0E-01	ROUTE	1.0	1.0
	n-Butylbenzene		NA	1.0E-02	NCEA			NA	1.0E-02	ROUTE	Calc HI	Calc HI
	sec-Butylbenzene		NA	1.0E-02	NCEA			NA	1.0E-02	ROUTE	Calc HI	Calc HI
	t-Butylbenzene		NA	1.0E-02	NCEA			NA	1.0E–02	ROUTE	Calc HI	Calc HI
car	Carbon tetrachloride	7.0E-04	IRIS	7.0E-04	IRIS		5.7E-04	ECAO	7.0E-04	ROUTE	1.0	0.8
car	α-Chlordane	6.0E-05	IRIS	5.0E-04	IRIS		6.0E-05	ROUTE	2.0E-04	IRIS	0.1	0.3
car	γ-Chlordane	6.0E-05	IRIS	5.0E-04	IRIS		6.0E-05	ROUTE	2.0E-04	IRIS	0.1	0.3
	4-Chloroaniline	4.0E-03	IRIS	4.0E-03	IRIS		4.0E-03	ROUTE	4.0E-03	ROUTE	1.0	1.0
	Chlorobenzene	2.0E-02	IRIS	2.0E-02	IRIS	2.0E-02	5.7E-03	ECAO	1.7E-02	NCEA	1.0	0.3
car	Chloroform	1.0E-02	IRIS	1.0E-02	IRIS		1.0E-02	ROUTE	8.6E-05	NCEA	1.0	116.3
	4-Chlorotoluene											
car	Chrysene			3.0E-02	Surrogate[2]				3.0E-02	Surrogate[2]	Calc HI	Calc HI
	Isophropylbenzene	4.0E-02	IRIS	1.0E-01	IRIS	9.0E-03	2.6E-03	HEAST	1.1E-01	IRIS	0.4	0.02
	Isopropyltoluene		NA	1.0E-01	Surrogate[3]			NA	1.1E-01	Surrogate[3]	Calc HI	Calc HI
car	DDD		NA	5.0E-04	Surrogate[4]			NA	5.0E-04	Surrogate[4]	Calc HI	Calc HI
car	DDE		NA	5.0E-04	Surrogate[5]			NA	5.0E-04	Surrogate[5]	Calc HI	Calc HI
car	DDT	5.0E-04	IRIS	5.0E-04	IRIS		5.0E-04	ROUTE	5.0E-04	ROUTE	1.0	1.0
	Heptachlorodi-benzo-p-dioxins, total											
car	1,2,3,4,6,7,8-Heptachlorodi-benzofuran	1.0E-07	TOX EQUIV	1.0E-07	TOX EQUIV		1.0E-07	ROUTE	1.0E-07	ROUTE	1.0	1.0
	Heptachloro-dibenzofurans, total											

Table 5
Comparison of SCOU and Current Reference Doses

		Chronic Oral RfD Values					Chronic Inhalation RfD Values					
	Chemical Name	Chronic Oral RfD (SCOU) mg/kg-day	Chronic Oral RfD Source	Current Chronic Oral RfD mg/kg-day	Current Chronic Oral RfD Source	Chronic Inhal RfC (mg/m3)	Chronic Inhal RfD (SCOU) mg/kg-day	Chronic Inhal RfD Source	Current Chronic Inhal RfD mg/kg-day	Current Chronic Inhal RfD Source	Oral Ref. Dose Ratio SCOU/ Current	Inhalation Ref. Dose Ratio SCOU/ Current
car	1,2,3,4,6,7,8-Heptachlorodi-benzo-p-dioxin	1.0E-07	TOX EQUIV	1.0E-07	TOX EQUIV		1.0E-07	ROUTE	1.0E-07	ROUTE	1.0	1.0
	Hexachlorodi-benzo-p-dioxins, total											
car	Octachlorodi-benzo-p-dioxin	1.0E-06	TOX EQUIV	1.0E-08	TOX EQUIV		1.0E-06	ROUTE	1.0E-06	ROUTE	1.0	1.0
	Pentachlorodi-benzo-furans, total											
car	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)											
	Tetrachlorodi-benzo-p-dioxins, total											
	Tetrachlorodi-benzofurans, total											
	Di-*n*-butyl phthalate	1.0E-01	IRIS	1.0E-01	IRIS		1.0E-01	ROUTE	1.0E-01	ROUTE	1.0	1.0
	Di-*n*-octylphthalate	2.0E-02	HEAST	2.0E-02	HEAST		2.0E-02	ROUTE	2.0E-02	ROUTE	1.0	1.0
car	Dibenz(a,h)-anthracene		NA	3.0E-02	Surrogate[6]			NA	3.0E-02	Surrogate[6]	Calc HI	Calc HI
	Dibenzofuran		NA	4.0E-03	NCEA			NA	4.0E-03	ROUTE	Calc HI	Calc HI
car	1,2-Dibromo-3-chloropropane	5.7E-05	ROUTE	5.7E-05	ROUTE	2.0E-04	5.7E-05	IRIS	5.71E-05	IRIS	1.0	1.0
car	Dibromochloro-methane	2.0E-02	IRIS	2.0E-02	IRIS		2.0E-02	ROUTE	2.0E-02	ROUTE	1.0	1.0
	1,2-Dichlorobenzene	9.0E-02	IRIS	9.0E-02	IRIS	2.0E-01	9.0E-02	ROUTE	5.7E-02	HEAST	1.0	1.6
	1,3-Dichlorobenzene			9.0E-04	NCEA			NA	9.0E-04	ROUTE	Calc HI	Calc HI
car	1,4-Dichlorobenzene	2.3E-01	ROUTE	3.0E-02	IRIS	8.0E-01	2.3E-01	IRIS	2.3E-01	IRIS	7.7	1.0
	Dichlorodifluoromethane			2.0E-01	IRIS				5.7E-02	HEAST	Calc HI	Calc HI
car	1,1-Dichloroethane	1.0E-01	HEAST	1.0E-01	HEAST	5.0E-01	1.4E-01	HEAST	1.4E-01	HEAST	1.0	1.0
car	1,2-Dichloroethane		NA	3.0E-02	NCEA			NA	1.4E-03	NCEA	Calc HI	Calc HI
car	1,1-Dichloroethene	9.0E-03	IRIS	9.0E-03	IRIS		9.0E-03	ROUTE	9.0E-03	ROUTE	1.0	1.0
	cis-1.2-Dichloroethene	1.0E-02	HEAST	1.0E-02	HEAST		1.0E-02	ROUTE	1.0E-02	ROUTE	1.0	1.0
car	1,2-Dichloropropane	1.1E-03	ROUTE	1.1E-03	ROUTE	4.0E-03	1.1E-03	IRIS	1.1E-03	IRIS	1.0	1.0
car	Dieldrin	5.0E-05	IRIS	5.0E-05	IRIS		5.0E-05	ROUTE	5.0E-05	ROUTE	1.0	1.0
	Diethyl phthalate	8.0E-01	IRIS	8.0E-01	IRIS		8.0E-01	ROUTE	8.0E-01	ROUTE	1.0	1.0
	2,4-Dimethylphenol	2.0E-02	IRIS	2.0E-02	IRIS		2.0E-02	ROUTE	2.0E-02	ROUTE	1.0	1.0
	2,4-Dinitrophenol	2.0E-03	IRIS	2.0E-03	IRIS		2.0E-03	ROUTE	2.0E-03	ROUTE	1.0	1.0
car	2,4-Dinitrotoluene	2.0E-03	IRIS	2.0E-03	IRIS		2.0E-03	ROUTE	2.0E-03	ROUTE	1.0	1.0
	Endrin	3.0E-04	IRIS	3.0E-04	IRIS		3.0E-04	ROUTE	3.0E-04	ROUTE	1.0	1.0

Table 5
Comparison of SCOU and Current Reference Doses

		Chronic Oral RfD Values					Chronic Inhalation RfD Values					
	Chemical Name	Chronic Oral RfD (SCOU) mg/kg-day	Chronic Oral RfD Source	Current Chronic Oral RfD mg/kg-day	Current Chronic Oral RfD Source	Chronic Inhal RfC (mg/m3)	Chronic Inhal RfD (SCOU) mg/kg-day	Chronic Inhal RfD Source	Current Chronic Inhal RfD mg/kg-day	Current Chronic Inhal RfD Source	Oral Ref. Dose Ratio SCOU/ Current	Inhalation Ref. Dose Ratio SCOU/ Current
	Ethylbenzene	1.0E-01	IRIS	1.0E-01	IRIS	1.0E+00	2.9E-01	IRIS	2.9E-01	IRIS	1.0	1.0
	Fluoranthene	4.0E-02	IRIS	4.0E-02	IRIS		4.0E–02	ROUTE	4.0E-02	ROUTE	1.0	1.0
	Fluorene	4.0E-02	IRIS	4.0E-02	IRIS		4.0E-02	ROUTE	4.0E-02	ROUTE	1.0	1.0
car	Heptachloro epoxide	1.3E-05	IRIS	1.3E-05	IRIS		1.3E-05	ROUTE	1.3E-05	ROUTE	1.0	1.0
car	Hexachlorobuladiene	2.0E-04	HEAST	3.0E-04	HEAST		2.0E-04	ROUTE	3.0E-04	ROUTE	0.7	0.7
car	Indeno(1,2,3-c,d)pyrene		NA	3.0E-02	Surrogate[7]			NA	3.0E-02	Surrogate[7]	Calc HI	Calc HI
car	Methylene chloride	6.0E-02	IRIS	6.0E-02	IRIS	3.0E+00	8.6E-01	HEAST	8.6E-01	HEAST	1.0	1.0
	2-Methyl-naphthalene		NA	2.0E-02	Surrogate[8]			NA	8.6E-04	Surrogate[8]	Calc HI	Calc HI
car	2-Methylphenol	5.0E-02	IRIS	5.0E-02	IRIS		5.0E-02	ROUTE	5.0E-02	ROUTE	1.0	1.0
car	4-Methylphenol	5.0E-03	HEAST	5.0E-03	HEAST		5.0E-03	ROUTE	5.0E-03	ROUTE	1.0	1.0
	Naphthalene	4.0E-02	ECAO	2.0E-02	IRIS		4.0E-02	ROUTE	8.6E-04	IRIS	2.0	46.5
car	PCBs	2.0E-05	IRIS	2.0E-05	IRIS		2.0E-05	ROUTE	2.0E-05	ROUTE	1.0	1.0
car	Pentachloro-phenol	3.0E-02	IRIS	3.0E-02	IRIS		3.0E-02	ROUTE	3.0E-02	ROUTE	1.0	1.0
	Phenanthrene		NA	3.0E-02	Surrogate[9]			NA	3.0E-02	Surrogate[9]	Calc HI	Calc HI
	Phenol	6.0E-01	IRIS	6.0E-01	IRIS		6.0E-01	ROUTE	6.0E-01	ROUTE	1.0	1.0
	n-Propylbenzene		NA		NA			NA		NA	1.0	1.0
	Pyrene	3.0E-02	IRIS	3.0E-02	IRIS		3.0E-02	ROUTE	3.0E-02	ROUTE	1.0	1.0
	Styrene	2.0E-01	IRIS	2.0E-01	IRIS	1.0E+00	2.9E-01	IRIS	2.9E-01	IRIS	1.0	1.0
car	1,1,2,2-Tetrachloro-ethane			6.0E-02	IRIS			NA	6.0E-02	ROUTE	Calc HI	Calc HI
car	Tetrachloroethene	1.0E-02	IRIS	1.0E-02	IRIS		1.0E-02	ROUTE	1.1E-01	NCEA	1.0	0.1
	Toluene	2.0E-01	IRIS	2.0E-01	IRIS	4.0E-01	1.1E-01	IRIS	1.1E-01	IRIS	1.0	1.0
	1,2,3-Trichlorobenzene		NA		NA			NA		NA		
car	1,2,4-Trichlorobenzene	1.0E-02	IRIS	1.0E-02	IRIS	9.0E-03	1.0E-02	ROUTE	5.7E-02	ROUTE	1.0	0.2
	1,1,1-Trichloroethane			2.0E-02	NCEA				2.0E-01	NCEA	Calc HI	Calc HI
car	1,1,2-Trichloroethane	4.0E-03	IRIS	4.0E-03	IRIS		4.0E-03	ROUTE	4.0E-03	ROUTE	1.0	1.0
car	Trichloroethene	6.0E-03	ECAO	6.0E-03	NCEA(a)		6.0E-03	ROUTE	6.0E-03	ROUTE	1.0	1.0
	Trichloro-fluoromethane	3.0E-01	IRIS	3.0E-01	IRIS	7.0E-01	2.0E-01	HEAST	2.0E-01	HEAST	1.0	1.0
	2,4,5-Trichlorophenol	1.0E-01	IRIS	1.0E-01	IRIS		1.0E-01	ROUTE	1.0E-01	ROUTE	1.0	1.0
car	1,2,3-Trichloropropane	6.0E-03	IRIS	6.0E-03	IRIS		6.0E-03	ROUTE	6.0E-03	ROUTE	1.0	1.0
	1,2,4-Trimethylbenzene		NA	5.0E-02	NCEA			NA	1.7E-03	NCEA	Calc HI	Calc HI
	1,3,5-Trimethylbenzene		NA	5.0E-02	NCEA			NA	1.7E-03	ROUTE	Calc HI	Calc HI
car	Vinyl chloride			3.0E-03	IRIS				2.9E-02	IRIS	Calc HI	Calc HI

Table 5
Comparison of SCOU and Current Reference Doses

		Chronic Oral RfD Values					Chronic Inhalation RfD Values					
	Chemical Name	Chronic Oral RfD (SCOU) mg/kg-day	Chronic Oral RfD Source	Current Chronic Oral RfD mg/kg-day	Current Chronic Oral RfD Source	Chronic Inhal RfC (mg/m3)	Chronic Inhal RfD (SCOU) mg/kg-day	Chronic Inhal RfD Source	Current Chronic Inhal RfD mg/kg-day	Current Chronic Inhal RfD Source	Oral Ref. Dose Ratio SCOU/ Current	Inhalation Ref. Dose Ratio SCOU/ Current
	Xylenes	2.0E+00	IRIS	2.0E+00	IRIS		2.0E+00	IRIS	2.0E-01	IRIS-(a)	1.0	10

Notes:

[a] RfD withdrawn

RfD_O	Oral reference dose
RfD_I	Inhalation reference dose
ECAO	Environmental Criteria and Assessment Office
IRIS	Integrated Risk Information System
HEAST	Health Effects Assessment Summary Tables
NCEA	National Center for Environmental Assessment, US EPA
NA	Not available
TOX EQUIV	Toxicity equivalency factor
ROUTE	Indicates that the value is a direct extrapolation from the published oral or inhalation value
Surrogate	Indicates that a surrogate compound was used to obtain RfDs

Surrogate Values for RFDs

	Analyte	Surrogate
[1]	Bromocholromethane	Dichloromethane
[2]	Chrysene	Pyrene
[3]	Isopropyltoluene	Butylbenzene
[4]	DDD	DDT
[5]	DDE	DDT
[6]	Dibenz(a,h)anthracene	Pyrene
[7]	Indeno(1,2,3-c,d)purene	Pyrene
[8]	2-Methylnaphthalene	Naphthalene
[9]	Phenanthrene	Pyrene

Table 6
Revised Reference Doses

No.	COC	SCOU BHHRA RfD {Oral (O) and Inhalation(I)}	Revised RfD {Oral (O) and Inhalation (I)}	Ratio of SCOU RfD and Revised RfD
1	Aluminum		1.4E-03 (I)	New
2	Beryllium	5.0E-03 (O)	2.0E-03 (O) 5.7E-06 (I)	2.5 New
3	Cadmium	1.0E-03 (O)	5.0E-04 (O) 5.7E-06 (I)	2.0 New
4	Chromium	1.0E+00 (O)	1.5E+00 (O)	0.7
5	Cobalt	2.9E-04 (I)	Deleted	New
6	Manganese	1.4E-01 (O)	2.4E-02 (I)	5.8
7	Thallium	8.0E-05 (O)	6.6E-05 (O)	1.2
8	Benzene	1.7E-03 (O)	3.0E-03 (O)	0.6
9	Bromochloromethane		6.0E-02 (O) 8.6E-01 (I)	New New
10	N Butylbenzene		1.0E-02 (O) 1.0E-02 (I)	New New
11	Sec-Butylbenzene		1.0E-02 (O) 1.0E-02 (I)	New New
12	t-Butylbenzene		1.0E-02 (O) 1.0E-02 (I)	New New
13	Carbon Tetrachloride	5.7E-04 (I)	7.0E-04 (I)	0.8
14	α-Chlordane	6.0E-05 (O) 6.0E-05 (I)	5.0E-04 (O) 2.0E-04 (I)	0.1 0.3
15	γ-Chlordane	6.0E-05 (O) 6.0E-05 (I)	5.0E-04 (O) 2.0E-04 (I)	0.1 0.3
16	Chlorobenzene	5.7E-03 (I)	1.7E-02 (I)	0.3
17	Chloroform	1.0E-02 (I)	8.6E-05 (I)	116
18	Chrysene		3.0E-02 (O) 3.0E-02 (I)	New New
19	Isophropylbenzene	4.0E-02 (O) 2.6E-03 (I)	1.0E-01 (O) 1.1E-01 (I)	0.4 0.02
20	Isopropyltoluene		1.0E-01 (O) 1.1E-01 (I)	New New
21	DDD		5.0E-04 (O) 5.0E-04 (I)	New New
22	DDE		5.0E-04 (O) 5.0E-04 (I)	New New
23	Dibenz(a,h)-anthracene		3.0E-02 (O) 3.0E-02 (I)	New New
24	Dibenzofuran		4.0E-03 (O) 4.0E-03 (I)	New New
25	1,2-Dichlorobenzene	9.0E-02 (I)	5.7E-02 (I)	1.6
26	1,3-Dichlorobenzene		9.0E-04 (O) 9.0E-04 (I)	New New
27	1,4-Dichlorobenzene	2.3E-01 (O)	3.0E-02 (O)	7.7
28	Dichlorodifluoromethane		2.0E-01 (O) 5.7E-07 (I)	New New
29	1,2-Dichloroethane		3.0E-02 (O) 1.4E-03 (I)	New New
30	Hexachlorobutadiene	2.0E-04 (O) 2.0E-04 (I)	3.0E-04 (O) 3.0E-04 (I)	0.7 0.7
31	Indeno(1,2,3-c,d)pyrene		3.0E-02 (O) 3.0E-02 (I)	New New
32	2-Methyl-naphthalene		2.0E-02 (O) 8.6E-04 (I)	New New
33	Naphthalene	4.0E-02 (O) 4.0E-02 (I)	2.0E-02 (O) 8.6E-04 (O)	2 46.5
34	Phenanthrene		3.0E-02 (O) 3.0E-02 (I)	New New
35	1,1,2,2-Tetrachloroethane		6.0E-02 (O) 6.0E-02 (I)	New New
36	Tetrachloroethylene	1.0E-02 (I)	1.1E-01 (I)	0.1

Table 6
Revised Reference Doses

NO.	COC	SCOU BHHRA RfD {Oral (O) and Inhalation (I)}	Revised RfD {Oral (O) and Inhalation (I)}	Ratio of SCOU RfD and Revised RfD
37	1,2,4-Trichlorobenzene	1.0E-02 (I)	5.7E-02 (I)	0.2
38	1,1,1-Trichloroethane		2.0E-02 (O) 2.0E-01 (I)	New New
39	1,2,4-Trimethylbenzene		5.0E-02(O) 1.7E-03 (I)	New New
40	1,3,5-Trimethylbenzene		5.0E-02 (O) 1.7E-03 (I)	New New
41	Vinyl chloride		3.0E-03 (O) 2.9E-02 (I)	New New
42	Xylenes	2.0E+00 (I)	2.0E-01 (I)	10

Notes

Shaded COCs will result in increased non-cancer hazard.
RfD- Reference Dose

Table 7
Summary of Updated Estimated Blood-Lead Concentrations (µg/dL)
(based on Cal-EPA Lead Spread, Version 7)

	Exposure Point Concentration (mg/kg)		Child Residential							
			SCOU				Updated			
Site Name	**Surface**	**Subsurface**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**
Building 871	12.2	3.8	4.5	4.6	4.4	4.6	2.1	2.0	1.8	1.9
Building 1253	--	--	--	--	--	--	--	--	--	--
Building 1260	--	--	--	--	--	--	--	--	--	--
Building 1344	212.0	3.7	7.8	6.1	4.4	4.6	9.7	6.3	1.8	1.9
Castle Vista Landfill B	122.0	--	6.3	5.4	--	--	6.3	4.4	--	--
Detonation and Burn Facility	--	--		--		--		--	--	--
Discharge Area 3	887	176	18.9		7.2		35.2	20.6	8.3	5.5
Discharge Area 5	106.0	8.8	6.1	5.3	4.5	4.6	5.7	4.0	2.0	2.0
Earth Technology Corporation Site #10	283,000.0	--	4663.7	2074.7	--	--	10,701.0	6010.9	--	--
Earth Technology Corporation Site #11	--	--	--	--	--	--	--	--	--	--
Fire Training Area 1	51.6	77.3	5.2	4.9	5.6	5.1	3.6	2.9	4.6	3.4
Fire Training Area 2	--	--	--	--	--	--	--	--	--	--
Fire Training Area 3	--	--	--	--	--	--	--	--	--	--
Fuel Spill 1	--	17.6	--	--	4.6	4.7	--	--	2.3	2.2
Fuel Spill 2	--	--	--	--	--	--	--	--	--	--
Fuel Spill 3	--	11.6	--	--	4.5	4.6	--	--	2.1	2.0
Landfill 1 Area1	72.9	467.0	5.5	5.1	12.0	8.0	4.4	3.3	19.3	11.7
Landfill 1 Area 2	16.3	--	4.6	4.7	--	--	2.3	2.1	--	--
Landfill 1 Area 3	6.3	--	4.4	4.6	--	--	1.9	1.9	--	--
Landfill 2 Area 1	9.0	--	4.5	4.6	--	--	2.0	2.0	--	--
Landfill 2 Area2	231.0	--	8.1	6.2	--	--	10.4	6.7	--	--
Landfill 3 Area 1	29,000	6.9	481.8	216.7	4.4	4.6	1098.1	617.6	1.9	1.9
Landfill 3 Area 2	19.4	--	4.7	4.7	--	--	2.4	2.2	--	--
Landfill 4 Area 1	58.6	--	5.3	5.0	--	--	3.9	3.0	--	--
Landfill 4 Area 2	9.9	--	4.5	4.6	4.4	4.6	2.0	2.0	--	--
Landfill 5 Zone1	12.0	5.8	4.5	4.6	4.4	4.6	2.1	2.0	1.9	1.9
Landfill 5 Zone 2	36.5	--	4.9	4.8	--	--	3.0	2.6	--	--
Landfill 5, DP-9	35.3	6.3	4.9	4.8	4.4	4.6	3.0	2.5	1.9	1.9
Landfill 5, DP-7	--	5.3	--	--	4.4	4.6	--	--	1.9	1.9
PCB Site 9	--	--	--	--	--	--	--	--	--	--
POL Fuel Farm Area	--	--	--	--	--	--	--	--	--	--

Table 7
Summary of Updated Estimated Blood-Lead Concentrations (µg/dL)
(based on Cal-EPA Lead Spread, Version 7)

	Exposure Point Concentration (mg/kg)		Child Residential							
			SCOU				Updated			
Site Name	**Surface**	**Subsurface**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**
Sanitary Sewer Line 8	--	--	--	--	--	--	--	--	--	--
Stain 41	286.0	4.4	9.0	6.6	4.4	4.6	12.5	7.9	1.8	1.9
Storm Drain System Area 1	53.9	--	22.4	12.6	--	--	3.7	2.9	--	--
Storm Drain System Area 2	40.2	--	5.0	4.8	--	--	3.2	3.0	--	--
Structure T-61	--	16.0	--	--	4.6	4.7	--	--	2.3	2.1
Underground Fuel Leak 3	--	--	--	--	--	--	--	--	--	--
Aircraft Maintenance Site #1	50.1	--		4.9		--		2.8		--
Aircraft Maintenance Site #2	175	--		5.8		--		5.5		--
Aircraft Maintenance Site #3	36.1	--		4.8		--		2.5		--
Aircraft Maintenance Site #4	--	--		--		--		--		--
Aircraft Maintenance Site #5	--	--		--		--		--		--
Aircraft Maintenance Site #6	--	--		--		--		--		--
Building 23	--	--		--		--		--		--
Building 47	--	--		--		--		--		--
Building 51	--	--		--		--		--		--
Building 52	--	--		--		--		--		--
Building 53	--	--		--		--		--		--
Building 54	--	--		--		--		--		--
Building 84	--	--		--		--		--		--
Building 175	--	--		--		--		--		--
Building 325	--	--		--		--		--		--
Building 547	--	--		--		--		--		--
Building 551	--	--		--		--		--		--
Building 1205	--	--		--		--		--		--
Building 1207	--	--		--		--		--		--
Building 1266	--	--		--		--	--			--
Building 1319	15.6	--		4.7		--		2.1		--
Building 1324	--	--		--		--		--		--
Building 1325	--	--		--		--		--		--
Building 1335	--	--		--		--		--		--
Building 1350	--	--		--		--		--		--

Table 7
Summary of Updated Estimated Blood-Lead Concentrations (µg/dL)
(based on Cal-EPA Lead Spread, Version 7)

	Exposure Point Concentration (mg/kg)		Child Residential							
			SCOU				Updated			
Site Name	**Surface**	**Subsurface**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**
Building 1404	--	--		--		--		--		--
Building 1405	156	--		5.7		--		5.1		--
Building 1529	--	--		--		--		--		--
Building 1532	--	--		--		--		--		--
Building 1541	--	--		--		--		--		--
Building 1560	--	--		--		--		--		--
Building 1562	85.9	--		5.2		--		3.6		--
Building 1709	--	--		--		--		--		--
Building 1762	--	--		--		--		--		--
Building 1865/1868	--	--		--		--		--		--
Castle Vista Landfill A	--	--		--		--		--		--
Discharge Area 2	639	--		9.2		--		15.4		--
Discharge Area 4	--	--		--		--		--		--
Discharge Area 6	18.4	--		4.7		--		2.2		--
Discharge Area 8	166	--		5.8		--		5.3		--
Disposal Pit 4	--	--		--		--		--		--
Earth Technology Corporation #2	29.2	--		4.8		--		2.4		--
Earth Technology Corporation #12	--	--		--		--		--		--
Firing Range	69.7	--		5.0		--		3.3		--
Fuel Spill 4	--	--		--		--		--		--
Hazardous Waste Storage 4	--	--		--		--		--		--
Industrial Waste Line	--	--		--		--		--		--
JP-4 Fuel Line	--	--		--		--		--		--
Sanitary Sewer Line 1	--	--		--		--		--		--
Sanitary Sewer Line 2	--	--		--		--		--		--
Sanitary Sewer Line 3	--	--		--		--		--		--
Sanitary Sewer Line 4	--	--		--		--		--		--
Sanitary Sewer Line 5	--	--		--		--		--		--
Sanitary Sewer Line 6	--	--		--		--		--		--
Sanitary Sewer Line 7	--	--		--		--		--		--
Sanitary Sewer Line 8	--	--		--		--		--		--
Sanitary Sewer Line 9	--	--		--		--		--		--

Table 7
Summary of Updated Estimated Blood-Lead Concentrations (µg/dL)
(based an Cal-EPA Lead Spread, Version 7)

	Exposure Point Concentration (mg/kg)		Child Residential							
			SCOU				Updated			
Site Name	**Surface**	**Subsurface**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**	**Surface with Plant Uptake**	**Surface w/o Plant Uptake**	**Subsurface with Plant Uptake**	**Subsurface w/o Plant Uptake**
Soild Waste Management Unit 4.6	--	--		--		--		--		--
Solid Waste Management Unit 4.16	--	--		--		--		--		--
Soild Waste Management Unit 4.20	26	--		4.7		--		2.3		--
Stain 11	--	--		--		--		--		--
Storage Area B-2	30.9	--		4.8		--		2.4		--
Storage Area B-3	--	--		--		--		--		--
Storage Area B-4	--	--		--		--		--		--
Structure 55	--	--		--		--		--		--
Structure 1201	--	--		--		--		--		--
Structure 1571	--	--		--		--		--		--
Structure T66	--	--		--		--		--		--
Structure T67	--	--		--		--		--		--
Structure T85	--	--		--		--		--		--
Test Center Cell 1 Group	17.5	--		4.7		--		2.2		--
Underground Fuel Leak 1	--	--		--		--		--		--
Underground Fuel Leak 2	17.6	--		4.7		--		2.2		--
Underground Fuel Leak 4	--	--		--		--		--		--

Note

Bold- Results presented in bold represent sites for which the estimated blood-lead concentration has increased from below to above the decision criteria of 10 µg/dl for the child scenario.

Table 8
Summary of SCOU and Updated Baseline Human Health Risk Assessment Results

	CANCER RISK (Adult Residential)		NONCANCER HAZARD (Adult Residential)			CANCER RISK (Adult Residential)		NON-CANCER HAZARD (Adult Residential)	
SITE	**SCOU**	**UPDATE**	**SCOU**	**UPDATE**	**SITE**	**SCOU**	**UPDATE**	**SCOU**	**UPDATE**
F-1	2.9E-08	2.9E-08	0.0001	0.0001	CVLFB	6.2E-06	6.2E-06	0.1	0.1
B23	1.3E-09	1.2E-09	0.0001	0.0001	CVLFB S	2.1E-06	1.4E-06	0.004	0.013
B47	--	--	0.0001	0.0001	DA-3	N/A	5.1E-05	N/A	0.7
B51	--	--	0.001	0.001	DA-5	2.1E-05	4.1E-05	0.3	1.3
B52	--	--	0.001	0.001	DA-5S	6.4E-05	1.6E-05	0.1	0.2
B53	--	--	0.002	0.002	*ETC-2*	*1.1E-04*	*1.1E-04*	*0.0005*	*0.0012*
B54	3.0E-08	3.0E-08	0.001	0.001	*ETC-8*	*2.2E-04*	*2.2E-04*	*0.02*	*0.07*
B84/BT85S	*4.6E-08*	*4.6E-08*	*0.0002*	*0.0002*	*ETC-8 S*	--	--	*0.03*	*0.08*
B325	4.6E-06	4.5E-08	0.004	0.059	ETC-11S	1.8E-05	1.2E-09	0.002	0.005
B551	8.6E-07	8.5E-07	0.02	0.03	FTA-1	5.2E-05	7.5E-05	0.9	1.1
B1205	--	--	0.0001	0.0001	FTA-1S	1.6E-03	1.6E-03	40	41
B1207	--	--	0.00004	0.00005	*FTA-2*	*1.0E-05*	*1.1E-05*	*0.0009*	*0.0028*
B1266	3.6E-08	3.5E-08	0.0003	0.0003	*FTA-2 S*	*5.0E-06*	*5.1E-06*	*0.0002*	*0.0003*
B1319	--	--	0.00004	0.00005	FTA-3S	--	--	0.04	0.06
B1324	--	--	0.01	0.11	FS-1S	--	--	0.4	0.3
B1325	--	--	0.005	0.05	FS-2S	--	--	0.2	0.6
B1350	--	--	0.0002	0.0002	FS-3S	--	--	3.8	2.4
B1404	--	--	0.0001	0.0001	LF-1 A1	6.8E-06	4.0E-05	0.7	0.9
B1532	1.2E-07	1.1E-07	0.01	0.01	**LF-1 A1S**	**3.1E-07**	**2.5E-05**	4.2	5.2
B1541	--	--	0.05	0.6	**LF-1 A2**	**8.8E-07**	**1.8E-05**	0.1	0.2
B1562	**5.6E-08**	**1.8E-06**	**0.04**	**0.08**	**LF-1 A2S**	**9.0E-08**	**8.1E-06**	**1.9**	**2.1**
B1865/8	--	--	0.003	0.01	LF-1 A3	1.8E-06	1.1E-05	0.4	0.6
CVLFA	9.0E-08	8.2E-08	0.002	0.002	LF-2 A1	9.3E-06	7.6E-06	0.1	0.1
DA-2	**1.8E-08**	**5.5E-06**	0.3	0.4	LF-2 A1S	--	--	0.01	0.01
DA-4	--	--	0.003	0.003	LF-2 A2	5.1E-05	1.0E-04	0.4	0.7
DA-8	4.0E-07	3.8E-07	0.02	0.02					
HWS-4	--	--	0.0001	0.0001	LF-3 A1	2.1E-03	2.1E-03	10.6	10.9
FS-4	1.7E-08	1.7E-08	0.0002	0.0003	LF-3 A1S	1.7E-04	1.6E-04	0.01	0.02
JP-4	--	--	0.004	0.012	LF-3 A2	1.0E-04	1.0E-04	0.1	0.1
SS-1	3.1E-08	3.0E-08	0.0003	0.0003	LF-4 A1	6.1E-06	6.1E-06	0.001	0.003
SS-2	--	--	0.001	0.003	LF-4 A2	--	--	0.0003	0.0016
SS-3	1.9E-08	1.9E-08	0.0003	0.0003	LF-5 A1	1.1E-05	1.2E-05	0.1	0.2
SS-4	--	--	0.0001	0.0003	LF-5 A1S	1.6E-05	1.5E-07	0.01	0.02
SS-6	--	--	0.002	0.002	LF-5 A2	1.3E-05	2.1E-05	0.3	0.3
SS-9	--	--	0.0001	0.0001	LF-5 A2S	8.0E-06	5.3E-06	0.07	0.11
SWMU 4.20	--	--	0.00002	0.00002	DP-7 S	1.1E-05	7.5E-06	0.05	0.09
SAB-4	6.7E-08	7.5E-08	0.1	0.1	DP-9	8.6E-06	8.1E-06	0.1	0.2
St55	3.1E-07	3.0E-07	0.02	0.02	DP-9 S	1.0E-05	1.6E-05	0.1	0.2
StT66	--	--	0.002	0.002	PCB-9	1.1E-04	7.7E-05	1.8	1.5
StT85	--	--	0.00001	0.00001	PCB-9 S	8.7E-06	7.8E-06	0.2	0.2
St1201	1.6E-09	1.4E-09	--	--	PFFA S	1.3E-05	1.3E-05	0.02	0.03
TCC1	2.8E-07	2.6E-07	0.02	0.28	*SAB-1*	*3.7E-06*	*3.2E-07*	*0.05*	*0.08*
UFL-1	8.3E-08	4.6E-07	0.001	0.02	*SAB-1 S*	*6.5E-06*	*4.4E-10*	*0.1*	*0.2*
UFL-2	4.6E-07	8.2E-08	0.01	0.02	SS-8 S	6.5E-06	6.6E-06	0.002	0.002
B871	7.7E-06	6.9E-06	0.1	0.1	Stain 41	2.5E-04	2.5E-04	0.01	0.02
B871S	1.2E-07	1.2E-07	0.0001	0.001	SDS A1	3.8E-05	1.2E-03	7.3	14.4
B1253S	7.1E-05	7.1E-05	0.0003	0.004	**SDS A2**	**1.4E-07**	**6.8E-05**	**0.6**	**1.0**
B1260S	8.1E-05	6.7E-05	0.2	1.0	St T61 S	9.6E-04	9.8E-04	0.01	0.4
B1344	***1.4E-04***	***1.8E-04***	*0.2*	*0.4*	UFL-3 S	--	--	0.2	0.1
B1344S	*2.1E-05*	*2.1E-05*	*0.0005*	*0.0009*					

Table 8
Summary of SCOU and Updated Baseline Human Health Risk Assessment Results

Notes
All values are for the adult residential scenario, surface soil, unless designated with the letter “S” after the site name, indicating subsurface soil. Bold- Results presented in bold represent sites for which the cancer risk or non-cancer hazard has increased from below to above the decision criteria of 1.0E-06 and 1.0, respectively. Italics- SCOU site for which data gap results modified the SCOU BHHRA results. The updated data gap risk assessment values are entered under the SCOU and were also used as the basis for the updated results.

--Indicates no COPCs were affected by update.

N/A not applicable

Table 9
B1562 Updated Screening Risk Assessment with Homegrown Produce Pathway

Building 1562: Adult Residential											
					Carcinogenic Risk						
Analyte	**Conc. (mg/kg)**	**SF_o $(mg/kg\text{-}day)^{-1}$**	**SF_i $(mg/kg\text{-}day)^{-1}$**	**Class**	**Ingestion**	**Inhalation**	**Dermal**	**Produce**	**Total**	**%**	**w/o Produce**
Inorganics											
Cadmium	3.0	3.8E-01	1.5E+01	B1	6.7E-07	5.9E-09	2.2E-09	5.2E-05	5.2E-05	1.0E+02	6.8E-07
Lead	85.9			B2						0	
Organics											
Bis(2-ethylhexyl)phthalate	0.98	1.4E-02	1.4E-02	B2	8.1E-09	1.8E-12	2.7E-09	1.2E-07	1.3E-07	2.4E-01	1.1E-08
Methylene chloride	0.0075	1.4E-02	3.5E-03	B2	6.2E-11	1.7E-08	2.0E-11	1.1E-07	1.3E-07	2.4E-01	1.7E-08
					6.8E-07	2.3E-08	4.9E-09	5.2E-05	5.3E-05		7.1E-07
					1	0.04	0	99			
Noncarcinogenic Hazard											
Analyte	**Conc. (mg/kg)**	**RfD_o (mg/kg-day)**	**RfD_i (mg/kg-day)**		**Ingestion**	**Inhalation**	**Dermal**	**Produce**	**Total**	**%**	
Inorganics											
Cadmium	3.0	0.00	5.7E-06		8.2E-03		2.7E-05	6.4E-01	6.4E-01	1.0E+02	8.2E-03
Lead	85.9	0.00	0.0E+00							0	
Organics											
Bis(2-ethylhexyl)phthalate	0.98	2.0E-02	2.0E-02		6.7E-05	1.5E-08	2.2E-05	9.6E-04	1.1E-03	1.6E-01	8.9E-05
Methylene chloride	0.0075	6.0E-02	8.6E-01		1.7E-07	1.3E-05	5.7E-08	3.0E-04	3.2E-04	4.9E-02	1.4E-05
					0.008	0.0000	0.00005	0.6	0.6		0.008
					1	0	0	99			

Notes
1. Calculation of average daily dose (ADD) and lifetime average daily dose (LADD) were performed in accordance with the methodology presented in Section 5.5, Estimation of Chemical Intake, of the SCOU BHHRA (Jacobs, 1997).
2. Calculation of carcinogenic risk and non-carcinogenic hazard were performed in accordance with the methodology described in Section 7.1, Risk Characterization Methodology, of the SCOU BHHRA (Jacobs, 1997).

Table 10
DA-2 Updated Screening Risk Assessment with Homegrown Produce Pathway

Discharge Area 2: Adult Residential											
					Carcinogenic Risk						
Analyte	**Conc. (mg/kg)**	**SF_o $(mg/kg\text{-}day)^{-1}$**	**SF_i $(mg/kg\text{-}day)^{-1}$**	**Class**	**Ingestion**	**Inhalation**	**Dermal**	**Produce**	**Total**	**%**	**w/o Produce**
Inorganics											
Cadmium	9.1	3.8E-01	1.5E+01	B1	2.0E-06	1.8E-08	6.7E-09	1.6E-04	1.6E-04	100	2.1E-06
Lead	639.0			B2						0	
Organics											
Mehtylene chloride	0.0045	1.4E-02	3.5E-03	B2	3.7E-11	1.0E-08	1.2E-11	6.6E-08	7.6E-08	0	1.0E-08
					2.0E-06	2.8E-08	6.7E-09	1.6E-04	1.6E-04		2.1E-06
					1	0.02	0	99			
					Noncarcinogenic Hazard						
Analyte	**Conc. (mg/kg)**	**RfD_o (mg/kg-day)**	**RfD_i (mg/kg-day**		**Ingestion**	**Inhalation**	**Dermal**	**Produce**	**Total**	**%**	
Inorganics											
Barium	670	7.00E-02	1.4E-04		1.3E-02	1.4E-03	4.3E-04	5.4E-02	6.9E-02	3	1.5E-02
Boron	22.5	9.00E-02	5.7E-03		3.4E-04	1.2E-06	1.1E-05	1.4E-03	1.8E-03	0	3.6E-04
Cadmium	9.1	5.00E-04	5.7E-03		2.5E-02		8.3E-05	1.9E+00	2.0E+00	95	2.5E-02
Chromium	150	1.50E+00			1.4E-04		4.5E-06	5.7E-04	7.1E-04	0	1.4E-04
Lead	839	0.00E+00	0.0E+00							0	
Molybdenum	8.3	5.00E+03	0.0E+00		2.3E-03		7.5E-05	9.4E-03	1.2E-02	1	2.3E-03
Selenium	1.2	5.00E-03			3.3E-04		1.1E-05	1.4E-03	1.7E-03	0	3.4E-04
Organics											
sec-Butylbenzene	0.18	1.0E-02	1.0E-02		2.5E-05	5.5E-09	8.2E-06	1.0E-04	1.4E-04	0	3.3E-05
Ethylbenzene	0.22	1.0E-01	2.9E-01		3.0E-08	2.5E-05	1.0E-06	4.3E-04	4.8E-04	0	2.9E-05
Isopropylbenzene	0.15	1.0E-01	1.1E-01		2.1E-06	4.2E-10	6.8E-07	1.5E-04	1.8E-04	0	2.7E-06
Isopropyltoluene	0.34	1.0E-01	1.1E-01		4.7E-06	9.4E-10	1.5E-06	2.0E-04	2.1E-04	0	6.2E-06
Methylene chloride	0.0045	6.0E-02	8.6E-01		1.0E-07	8.1E-06	3.4E-08	1.8E-04	1.9E-04	0	8.2E-06
Naphthalene	0.62	2.0E-02	8.6E-04		4.2E-05	4.4E-03	1.4E-05	5.0E-03	9.5E-03	0	4.4E-03
n-Propylbenzene	0.30	0.0E+00	0.0E+00							0	
Toluene	0.09	2.0E-01	1.1E-01		6.2E-07	4.0E-05	2.0E-07	1.5E-04	1.9E-04	0	4.1E-05
1,2,3-Trichlorobenzene	0.0009	0.0E+00	0.0E+00							0	
1,2,4-Trimethylbenzene	2.7	5.0E-02	1.7E-03		7.4E-05	4.8E-07	2.5E-05	3.1E-04	4.1E-04	0	9.9E-05
1,2,5-Trimethylbenzene	4.2	5.0E-02	1.7E-03		1.2E-04	7.5E-07	3.8E-05	4.8E-04	6.3E-04	0	1.5E-04
Xylenes	2.70	2.0E+00	2.0E-01		1.8E-06	5.7E-04	6.1E-07	2.5E-04	8.2E-04	0	5.7E-04
					0.04	0.0064	0.0007	2.0	2.1		0.05
					2	0	0	98			

Notes

1. Calculation of average daily dose (ADD) and lifetime average daily dose (LADD) were performed in accordance with the methodology presented in Section 5.5, Estimation of Chemical Intake, of the SCOU BHHRA (Jacobs, 1997).
2. Calculation of carcinogenic risk and non-carcinogenic hazard were performed in accordance with the methodology described in Section 7.1, Risk Characterization Methodology, of the SCOU BHHRA (Jacobs, 1997).

Table 11
SDS Area 1 Updated Quantitative Risk Assessment (without SDSE09)

Storm Drain System Area1 Surface Soil: Adult Residential										
					Carcinogenic Risk					
Analyte	**Conc. (mg/kg)**	**SF_o $(mg/kg\text{-}day)^{-1}$**	**SF_i $(mg/kg\text{-}day)^{-1}$**	**Class**	**Ingestion**	**Inhalation**	**Dermal**	**Produce**	**Total**	**%**
Inorganics										
Cadmium	2.3	3.8E-01	1.5E+01	B1	5.1E-07	4.5E-09	1.7E-09	4.0E-05	4.0E-05	51
Lead	53.9			B2						0
Organics										
Benzo(a)anthracene	0.62	1.2E+00	7.3E-01	B2	4.4E-07	5.9E-11	2.2E-07	4.0E-06	4.6E-06	6
Benzo(a)pyrene	0.46	1.2E+01	7.3E+00	B2	3.2E-06	4.4E-10	1.6E-06	2.2E-05	2.7E-05	35
Benzo(b)fluoranthene	0.95	1.2E+00	7.3E-01	B2	6.7E-07	9.1E-11	3.3E-07	4.5E-06	5.6E-06	7
Bis(2-ethylhexyl)phthalate	3.2	1.4E-02	1.4E-02	B2	2.6E-08	5.9E-12	8.7E-09	3.8E-07	4.1E-07	1
Chrysene	0.84	1.2E-01	3.9E-02	B2	5.9E-08	4.3E-12	2.9E-08	5.4E-07	6.2E-07	1
					4.9E-06	5.1E-09	2.2E-06	7.1E-05	7.9E-05	
					6	0.0	3	91		
					Noncarcinogenic Hazard					
Analyte	**Conc. (mg/kg)**	**RfD_o (mg/kg-day)**	**$RfD1_i$ (mg/kg-day)**		**Ingestion**	**Inhalation**	**Dermal**	**Produce**	**Total**	**%**
Inorganics										
Cadmium	2.3	5.0E-04	0.0E+00		6.3E-03		2.1E-05	4.9E-01	4.9E-01	64
Chromium	129.7	1.5E+00			1.2E-04		3.9E-06	4.9E-04	6.1E-04	0
Cobalt	5.5	6.0E-02	0.0E+00		1.3E-04		4.2E-06	5.2E-04	6.5E-04	0
Lead	1100.0	0.0E+00	0.0E+00							0
Molybdenum	167.0	5.0E-03	0.0E+00		4.6E-02		1.5E-03	1.9E-01	2.4E-01	31
Selenium	2.5	5.0E-03			6.7E-04		2.2E-05	2.8E-03	3.5E-03	0
Silver	0.31	5.0E-03			8.4E-05		2.8E-06	3.5E-04	4.3E-04	0
Organics										
Acenaphthene	0.050	6.0E-02	6.0E-02		1.1E-06	7.8E-07	5.7E-07	5.6E-05	5.8E-05	0
Anthracene	0.22	3.0E-01	3.0E-01		1.0E-06	3.8E-07	5.0E-07	2.9E-05	3.1E-05	0
Benzo(a)anthracene	0.62	0.0E+00								0
Benzo(a)pyrene	0.46	0.0E+00								0
Benzo(b)fluoranthene	0.95	0.0E+00								0
Benzo(g,h,I)perylene	0.085	0.0E+00								0
Bis(2-ethylhexyl)phthalate	3.2	2.0E-02	2.0E-02		2.2E-04	4.9E-08	7.3E-05	3.1E-03	3.4E-03	0
Butyl benzyl phthalate	0.43	2.0E-01	2.0E-01		2.9E-06	6.6E-10	9.8E-07	6.0E-05	6.3E-05	0
Chrysene	0.84	3.0E-02	3.0E-02		3.8E-05	8.5E-09	1.9E-05	3.5E-04	4.0E-04	0
Di-*n*-octylphthalate	0.15	2.0E-02	2.0E-02		1.0E-05	2.3E-09	3.4E-06	4.3E-05	5.7E-05	0
Fluoranthalate	1.3	4.0E-02	4.0E-02		4.5E-05	9.9E-09	2.2E-05	7.5E-04	8.1E-04	0
Fluorene	0.16	4.0E-02	4.0E-02		5.5E-06	2.5E-06	2.7E-06	2.1E-04	2.2E-04	0

Table 11
SDS Area 1 Updated Quantitative Risk Assessment (without SDSE09)

Storm Drain System Area 1 Surface Soil: Adult Residential										
4-Methylphenol	0.12	5.0E-03	5.0E-03		3.3E-05	7.3E-09	1.1E-05	2.3E-02	2.3E-02	3
Phenanthrene	1.5	3.0E-02	3.0E-02		6.8E-05	1.5E-08	3.4E-05	1.7E-03	1.8E-03	0
Pyrene	1.7	3.0E-02	3.0E-02		7.8E-05	1.7E-08	3.9E-05	1.4E-03	1.5E-03	0
					0.1	3.8E-06	0.002	0.7	0.8	
					7	0.0005	0.23	93		

Notes
1. Calculation of average daily dose (ADD) and lifetime average daily dose (LADD) were preformed in accordance with the methodology presented in Section 5.5, Estimation of Chemical Intake, of the SCOU BHHRA (Jacobs, 1997).
2. Calculation of carcinogenic risk and non-carcinogenic hazard were performed in accordance with the methodology decribed in Section 7.1, Risk Characterization Methodology, of the SCOU BHHRA (Jacobs, 1997).

Table 12
Updated Remedial Action Objectives for Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil], µg/L [soil gas])						BHHRA RAOs (Residential Scenario, previous 1996 RAOs in parentheses, where applicable)	BHHRA RAOs (Industrial Scenario, previous 1996 RAOs in parentheses, where applicable)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
Volatile Organics[1]									
benzene (soil)	VLEACH1	88,567.0	19,594.0	5,658.0	1,698.9	501.1	86.2	360	610
	VLEACH2	291.5	68.4	20.8	3.0	1.4	0.0		
benzene (soil gas)	VLEACH1	85,763.0	18,974.0	5,479.0	1,645.2	485.2	83.5		
	VLEACH2	282.2	66.3	20.1	5.9	1.4	0.1		
carbon tetrachloride (soil)	VLEACH1	2,700.0	1,000.0	500.0	300.0	200.0	100.0	240 (650)	400 (1100)
	VLEACH2	47.8	18.3	10.2	6.6	4.6	1.7		
carbon tetrachloride (soil gas)	VLEACH1	2,846.8	1,040.1	559.1	352.7	235.0	102.4		
	VLEACH2	49.6	19.0	10.6	6.9	4.8	1.8		
chloroform (soil)	VLEACH1	8,900.0	2,000.0	5,700.0	1,700.0	500.0	100.0	450 (460)	760 (770)
	VLEACH2	291.5	68.4	20.8	3.0	1.4	0.0		
chloroform (soil gas)	VLEACH1	85,763.0	18,974.0	5,479.0	1,645.2	485.2	83.5		
	VLEACH2	282.2	66.3	20.1	5.9	1.4	0.1		
dichlorobenzene, 1,2-(soil)	VLEACH1	293,400.0	102,200.0	28,500.0	8,600.0	2,500.0	500.0	370,000 (700,000)	370,000 (700,000)
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
dichlorobenzene, 1,2-(soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.2	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.8	4.8		
dichlorobenzene, 1,4-(soil)	VLEACH1	293,400.0	102,200.0	28,500.0	8,600.0	2,500.0	500.0	3,600 (3500)	6,100 (5800)
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
dichlorobenzene, 1,4-(soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.0	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.8	4.8		
dichlorodiflouoromethane (FC12)- (soil)	VLEACH1	85.0	25.0	12.0	6.0	3.0	1.0	280,000 (N/A)	400,000 (N/A)
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
dichlorodiflouoromethane (FC12)- (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		

Table 12
Updated Remedial Action Objectives for Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil], µg/L [soil gas])						BHHRA RAOs (Residential Scenario, previous 1996 RAOs in parentheses, where applicable)	BHHRA RAOs (Industrial Scenario, previous 1996 RAOs in parentheses, where applicable)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
dichloroethane,1,2- (soil)	VLEACH1	84.9	25.0	11.5	6.3	3.4	1.3	430	720
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
dichloroethane,1,2- (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		
dichloroethene, cis-,1,2- (soil)	VLEACH1	1,212.7	454.7	249.5	160.7	110.0	50.8	140,000	190,000
	VLEACH2	21.5	8.4	4.8	3.2	2.3	1.0		
dichloroethene, cis-,1,2- (soil gas)	VLEACH1	2,294.0	880.1	472.0	304.0	208.1	96.0		
	VLEACH2	40.7	16.0	9.1	6.1	4.4	1.8		
dichloropropane,1,2- (soil)	VLEACH1	---------	---------	---------	---------	---------	---------	670 (N/A)	1,100 (N/A)
	VLEACH2	---------	---------	---------	---------	---------	---------		
dichloropropane,1,2- (soil gas)	VLEACH1	---------	---------	---------	---------	---------	---------		
	VLEACH2	---------	---------	---------	---------	---------	---------		
ethylbenzene (soil)	VLEACH1	220,400.0	88,804.0	24,747.0	7,435.9	2,226.0	442.4	230,000	230,000
	VLEACH2	220,340.0	220,340.0	78,540.0	22,619.0	4,383.4	42.1		
ethylbenzene (soil gas)	VLEACH1	48,799.0	19,662.0	5,479.3	1,646.3	492.1	97.9		
	VLEACH2	48,785.0	48,785.0	17,391.0	5,008.2	970.6	9.3		
methylene chloride (soil)	VLEACH1	84.9	25.0	11.5	6.3	3.4	1.3	2,300	3,900
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
methylene chloride (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		
naphthalene (soil)	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	190,000 (240000)	260,000 (8500000)
	VLEACH2	82,896.0	82,896.0	82,896.0	82,896.0	68,348.0	74.9		
naphthalene (soil gas)	VLEACH1	1,599.9	1,599.9	1,599.9	1,599.9	424.0	33.0		
	VLEACH2	1,599.9	1,599.9	1,599.9	1,599.9	1,318.9	1.4		
tetrachloroethene (soil)	VLEACH1	2,700.0	1,000.0	500.0	300.0	200.0	100.0	3,800	6,300
	VLEACH2	47.8	18.3	10.2	6.6	4.6	1.7		

Table 12
Updated Remadial Action Objectives for Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil], µg/L [soil gas])						BHHRA RAOs (Residential Scenario, previous 1996 RAOs in parentheses, where applicable)	BHHRA RAOs (Industrial Scenario, previous 1996 RAOs in parentheses, where applicable)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
tetrachloroethene (soil gas)	VLEACH1	2,846.8	1,040.1	559.1	352.7	235.0	102.4		
	VLEACH2	49.6	19.0	10.6	6.9	4.8	1.8		
toluene (soil)	VLEACH1	215,810.0	44,728.0	12,463.0	3,744.0	1,128.0	207.6	520,000 (3400000)	4,700,000
	VLEACH2	315,150.0	75,409.0	21,600.0	6,148.9	1,201.8	25.7		
toluene (soil gas)	VLEACH1	94,872.01	19,662.0	5,479.0	1,645.9	489.2	91.3		
	VLEACH2	138,540.0	33,150.0	9,495.3	2,703.0	528.3	11.3		
TVPH-volatile (as gasoline in soil)	DLM	100,000.0	100,000.0	TBD[2]	TBD[2]	TBD[2]	TBD[2]	N/A	N/A
	DLM	---------	---------	---------	---------	---------	---------		
TEPH-extractable (as diesel; JP-4 in soil)	DLM	1,500,000.0	1,500,000.0	TBD[2]	TBD[2]	TBD[2]	TBD[2]	N/A	N/A
	DLM	---------	---------	---------	---------	---------	---------		
trichloroethene (soil)	VLEACH1	2,742.8	1,002.1	538.7	339.8	226.5	98.7	3,700	6,100
	VLEACH2	47.8	18.3	10.2	6.6	4.6	1.7		
trichloroethene (soil gas)	VLEACH1	2,846.6	1,040.1	559.1	352.7	235.0	102.4		
	VLEACH2	49.6	19.0	10.6	6.9	4.8	1.8		
trichlorofluoromethane (FC11)- (soil)	VLEACH1	85.0	25.0	12.0	6.0	3.0	1.0	1,200,000	1,700,000
	VLEACH2	8.6	2.5	1.2	0.6	0.3	0.1		
trichlorofluoromethane (FC11)- (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		
trimethylbenzene,1,2,4- (soil)	VLEACH1	293,350.0	102,200.0	28,480.0	8,555.9	2,547.9	485.9	120,000 (N/A)	170,000 (N/A)
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
trimethylbenzene,1,2,4- (soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.2	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.8	4.8		
vinyl chloride (soil)	VLEACH1	84.9	25.0	11.5	6.3	3.4	1.3	30 (N/A)	51 (N/A)
	VLEACH2	8.5	2.5	1.2	0.6	0.3	0.1		
vinyl chloride (soil gas)	VLEACH1	21,035.0	6,187.5	2,850.5	1,548.9	845.8	312.7		
	VLEACH2	2,001.3	620.6	286.5	156.8	85.4	14.2		

Table 12
Updated Remedial Action Objectives for Volatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination (µg/kg [soil], µg/L [soil gas])						BHHRA RAOs (Residential Scenario, previous 1996 RAOs in parentheses, where applicable)	BHHRA RAOs (Industrial Scenario, previous 1996 RAOs in parentheses, where applicable)
		Shallow		Deep					
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'	< 15 feet (µg/kg)	< 15 feet (µg/kg)
xylene (soil)	VLEACH1	293,350.0	102,200.0	28,480.0	8,555.9	2,647.9	485.9	210,000 (320000)	320,000
	VLEACH2	293,350.0	195,050.0	54,641.0	15,397.0	2,847.5	25.2		
xylene (soil gas)	VLEACH1	56,439.0	19,962.0	5,479.3	1,646.1	490.2	93.5		
	VLEACH2	56,439.0	37,525.0	10,512.0	2,962.3	547.8	4.8		

Footnotes
1 - Final RAOs for VOCs will be presented in SCOU ROD Part 2 or CB ROD Part 2
2 - TEPH/TVPH RAOs are based on:
-0 to 20 ft, DLM
TBD-Greater than 20 ft must meet State Acceptance Criteria, site-specific

Notes
- Shaded regions indicate soil gas RAOs
- VLEACH1= Vadose Zone model with 1 ft mixing zone.
VLEACH2= Vadose model with no mixing zone.
DLM= California Water Board, Designated Level Methodolgy.

Table 13
Updated Remedial Action Objectives for Semivolatile Organics

Contaminant	Model	Water Quality Site Assessment Threshold for Given Maximum Depths of Contamination ([µg/kg [soil], µg/L [soil])						BHHRA RAOs (Residential Scenario, previous 1996 RAOs in parentheses, where applicable)	BHHRA RAOs (Industrial Scenario, previous 1996 RAOs in parentheses, where applicable)
		Shallow		Deep				< 15 feet (µg/kg)	< 15 feet (µg/kg)
		0-10'	10-20'	20-30'	30-40'	40-50'	50-60'		
Semi-Volatile Organics									
anthracene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	100,000,000 (5700)	100,000,000 (5700)
benzo(a)anthracene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	890 (950)	1,200
benzo(a)pyrene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	89 (95)	120
benzo(a)fluoranthene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	890 (950)	1,200
benzo(k)fluoranthene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	890 (950)	1,200
bis(2-ethylhexyl) phthalate	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	87000 (91,000)	140,000
chrysene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	8,900 (7200)	12,000
di-*n*-butyl phthalate	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	52000000 (55,000,000)	68,000,000
DDD	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	5900 (6,100)	12,000
DDE	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	4200 (4300)	8,400
DDT	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	4200 (4300)	8,400
dibenz(a,h)anthracene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	150 (160)	200
dinitrotoluene,2,4-	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	3900 *n*(4,100)	6,200
fluoranthene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	18000000 (20,000,000)	20,000,000
g-chlordane	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	1,100	2,200
HPCDD,f,2,3,4,6,7,8-	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
heptachlor epoxide	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	180	310
heptachlorodibenzo-*p*-dioxins	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
heptachlorodibenzofurans	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
hexachlorodibenzo-*p*-dioxins	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A
indeno(1,2,3-cd)pyrene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	890 (950)	2,900 (2600)
4-methylphenol	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	2800000 (2,700,000)	3,400,000 (34000000)
naphthalene (soil)[1]	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	190,000 (240000)	260,000 (8500000)
cctachlorodibenzo-*p*-dioxin	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	10	24
PCB	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	210 (570)	290 (720)
pentachlorodibenzofurans	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	1,200 (N/A)	2,000 (N/A)
phenathrene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	14,000,000 (N/A)	15,000,000 (N/A)
pyrene	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	14,000,000, (100,000)	54,000,000, (100000)
tetrachlorodibenzo-*p*-dioxins	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	0.01 (N/A)	0.024 (N/A)
tetrachlorodibenzofurans	VLEACH1	82,907.0	82,907.0	82,907.0	82,907.0	21,969.0	1,707.6	N/A	N/A

Notes
[1]Napthalene is also included in the Volatile Organic Compound RAO summary.

Table 14
Updated Remedial Action Objectives for Metals/Other Inorganics

Contaminant	Water Quality Site Assesment Threshold for Metals [3] (µg/kg)	BHHRA RAOs (Residential Scenario, previous 1996 RAOs in parentheses, where applicable) (µg/kg)	BHHRA RAOs (Industrial Scenario, previous 1996 RAOs in parentheses, where applicable) (µg/kg
Metals/Other Inorganics			
aluminum	71103000.00	100,000,000 (N/A)	100,000,000 (N/A)
antimony	11,500	280,000	680,000
arsenic[4]	20,000	1,000	2,400
barium	2775000.00	44,000,000 (48000000)	100000000
beryllium	7600.00	910,000 (380)	1,500,000 (1000)
cadmium	43700.00	4,400, (730000)	15,000 (2000000)
chromium[3]	2,500,000	100,000,000	100,000,000
cobalt	349,000	42,000,000	100,000,000
copper	244000.00	26,000,000 (N/A)	63,000,000 (N/A)
lead	855000	400000	750,000 (1000000)
manganese	228000.00	12,000,000 (N/A)	25,000,000 (N/A)
molybdenum	95,000	3,500,000	8,500,000
mercury	100	210,000	510,000
nickel[1]	1167000.00	8,400,000 (14000000)	14,000,000 (34000000)
selenium	32,000	3,500,000	8,500,000
silver	N/A	3,500,000	8,500,000
thallium[2]	20000.00	47,000 (57000)	110,000 (140000)
vanadium	629000.00	4,900,000 (N/A)	12,000,000 (N/A)
zinc	319000.00	100,000,000 (N/A)	100,000,000 (N/A)

Notes
[1]Nickel (Soluble Salts)
[2]Thallic Oxide
[3]WQSA values derived using California Water Board Designated Level Methodology: depth interval assumed--40 to 65 ft bgs.
[4]The arsenic RAO is less than the TBV so the TBV would take precedence as the RAO.

Contaminant	SCOU Shallow Silts Threshold Background Value (µg/kg)
Metals/Other Inorganics	
aluminum	16,200,000
antimony	6,700
arsenic	9,900
barium	319,000
beryllium	890
cadmium	500
chromium[3]	29,400
cobalt	12,800
copper	53,600
lead	7,400
manganese	1,100,000
molybdenum	590
mercury	100
nickel[1]	29,600
selenium	500
silver	300
thallium[2]	40,000
vanadium	70,200
zinc	70,200

Appendix F

File: 17G
B.M.

CASTLE AFB
CALIFORNIA

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 1705

AR No: 1785
17G - Administrative Record

File:
B.M. 17c-9-2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

10 July 1998

Mr. Robert Matthews
Base Realignment and Closure Environmental Coordinator
Air Force Base Conversion Agency (AFBCA)
4500 North Hospital Road
Atwater, CA 95301

SUBJECT: Remedial Decisions for Source Control Operable Unit Polychlorinated Biphenyl Sites 1, 2, 3, 4, 5, 6, and 8, Castle Airport

Dear Mr. Matthews:

This letter and the attached table document the Base Realignment and Closure Cleanup Team's (BCT) remedial decisions for Source Control Operable Unit (SCOU) Polychlorinated Biphenyl (PCB) Sites 1, 2, 3, 4, 5, 6, and 8. The remedial decisions for PCB Sites 7 and 9 are not addressed: the BCT previously determined that no further action is required for PCB Site 7, and the Air Force has conducted a removal action at PCB Site 9 and site closure is pending regulatory agency concurrence.

The attached "Data Quality Objectives (DQO) Summary" table was updated following the 21 May 1998 Remedial Project Managers (RPM) meeting, when it was originally presented to the BCT by the United States Environmental Protection Agency (EPA). The table was revised to incorporate: 1) the remedial decisions for PCB Sites 1, 2, 3, and 8 reached by the BCT at the 21 May meeting; 2) new information obtained from Air Force compliance files following the meeting; and 3) the remedial decisions for PCB Sites 4, 5, and 6 reached following the meeting. All sites are recommended for no further action based on the absence of unacceptable risks. This will allow for unrestricted use of all sites and will result in a minimum cost saving to the Air Force of approximately $25K (based on Air Force estimates for implementing institutional controls that otherwise would have been necessary). The total cost saving is probably substantially greater if the resulting increased flexibility in reuse options for the community is considered.

I . Background

As you are aware, EPA conducted a review and assessment of historical data for PCB Sites 1, 2, 3, 4, 5, 6, and 8 in response to community objections to institutional controls identified

for these sites in the SCOU Proposed Plan. The sites had been the focus of transformer spill cleanups conducted by the Air Force in the 1980's to remove PCB c soils. However, the risks associated with remaining PCB contaminated soils previously had not been assessed. In lieu of such an assessment, the BCT had agreed to adopt the conservative approach of targeting the sites for institutional controls to ensure protection of human health.

II. Summary of EPA's Evaluation and Conclusions

Initial Evaluation: To assess the site risks and determine whether institutional controls were warranted, EPA initially reviewed the historical site information and summary data presented in the report *Final Technical Document to Support No Further Action (Sites Nos. 22, 23, 24, 25, 26, and 27)*[1] *for Castle Air Force Base* (August 1991, CDM Federal Programs Corporation and Woodward-Clyde Consultant). The initial DQO table presented at the 21 May meeting was based on information presented in this report. EPA had recommended no further action for PCB Sites 1, 2, 3, 6, and 8, and additional confirmation sampling for PCB Sites 4 and 5. Although results for confirmation samples were presented in the 1991 report, only maximum hits were reported. As a result, it was not possible to complete risk calculations for these sites using the limited data presented.

Follow Up Data Retrieval: On 22 May 1998, following EPA's presentation of initial recommendations, Mr. Brad Hicks of your staff and I reviewed archived Air Force compliance records located by Mr. Hicks. During this records review, previously unavailable PCB site data were uncovered, including sample results, chain of custody records, maps, and other site specific information. These data were the basis for the majority of summary information presented in the 1991 report cited above. Mr. Hicks and I then conducted site visits at PCB Sites 4 and 5 to verify the accuracy of hand drawn maps of the sites showing previous sampling locations. We found the maps for both sites to be sufficiently accurate and, therefore, suitable as supporting documentation for remedial decisions.

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[1]The sites are cross-referenced as follows:

PCB Site	Site No.	Building
1,2,3	22	1203
4	23	534
5	24	404
6	25	851
8	27	360

Final Assessment and Modification of Initial Recommendations: Based on the data obtained from the Air Force compliance records, EPA has concluded that no further action is warranted for all of the PCB sites. Institutional controls for these sites are unnecessary. The attached table presents the excess cancer risks associated with each site (under Step 7, Optimize the Design) calculated by EPA. No unacceptable risks were determined to be associated with the sites. For all sites, the associated risks were either less than or within the target risk range of 10^{-6} to 10^{-4}. Rationales are presented in the attached table for allowing unrestricted use at each site with associated risks that fell within the target risk range.

Prior to locating the additional site data, EPA had recommended that the Air Force conduct composite surface soil sampling at PCB Sites 4 and 5 to confirm the absence PCB contaminated soils. However, the additional data show that no unacceptable risks exist at these sites. Also, EPA had based its recommendation for no further action at PCB Site 6 solely on historical information regarding the nature of the spill at this site. The additional data for this site support the validity of EPA's recommendation for no further action.

EPA's final conclusions have been discussed with and concurred on by Mr. Rizgar Ghazi of the California Department of Toxic Substances Control (DTSC). A detailed summary of EPA's evaluation and conclusions is presented in the attached table, which has been revised to reflect the additional data obtained from the compliance records and the final remedial decision for all sites.

III. SCOU Record of Decision

The remedial decisions for PCB Sites 1, 2, 3, 4, 5, 6, and 8 summarized in this letter should be reflected in the SCOU Record of Decision (ROD). Additionally, the ROD should present the rationales, as detailed in the attached table, for concluding that no further action is warranted for these sites.

IV. Administrative Record

EPA requests that the Administrative Record be updated to include all of the relevant information for PCB Sites 1, 2, 3, 4, 5, 6, and 8 contained in the Castle Air Force Base compliance files. All pertinent PCB Site information, including sample results, chain of custody records, maps, and other site specific data, should be copied and assembled into a complete package, along with this letter. The package should be labeled with a descriptive title to identify it as supporting documentation for the SCOU Remedial Investigation/Feasibility Study and ROD.

If there are any questions regarding this letter, please feel free to call me at 415-744-2213.

Sincerely,

Lisa Hanusiak
Remedial Project Manager

Attachment a/s

cc: Distribution (List Attached)
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Castle Airport Source Control Operable Unit (SCOU)
Data Quality Objectives Summary for PCB Site 1,2,3 (Site 22; Building 1203)

Step	Process	Response
1	State the Problem (PCB Site 1,2,3)	A) Confirmation sampling data show some polychlorinated biphenyl (PCB) contaminated soil remains after removal action. B) Risk from remaining contaminated soil was not evaluated after removal action. C) Site was targeted for deed restrictions. D) Although future land use is occupational, community is unsatisfied with imposition of deed restrictions. E) It is unclear whether deed restrictions are warranted. F) Some historical data are unavailable. Only high hits and range provided in Air Force report. Some sampling locations unknown.
2A	Identify the Primary Decision (PCB Site 1,2,3)	Primary Decision: Does remaining PCB contamination in soil present an unacceptable risk ($>10^{-6}$ - 10^{-4}) and, therefore, warrant deed restrictions? Alternative Actions: • Recommend that deed restrictions are unnecessary. • Recommend that deed restrictions are necessary to protect against risk posed by PCB contaminated soil. Decision Statement: Decide whether remaining PCB contaminated soil exceeds the acceptable risk range and warrants deed restrictions.
2B	Identify the Supplementary Decisions (PCB Site 1,2,3)	Supplementary Decisions: A) Were Toxic Substances Control Act (TSCA) cleanup requirements met (and documented) during previous cleanup? B) Are historical data summarized in report[1] positively unavailable in Administrative Record? C) Are existing available data sufficient to assess the remaining risk? D) Was the 1990 confirmation sampling conducted in the same location as the 1985 sampling? E) Do the 1990 data represent current site characterization? If so, can an adequate assessment be made based solely on 1990 data? F) If existing data are sufficient, does remaining contamination at site pose a risk that exceeds 10^{-6}?

[1] *Final Technical Document to Support No Further Action (Sites Nos. 22, 23, 24, 25, 26, and 27) for Castle Air Force Base,* August 1991, CDM Federal Programs Corporation and Woodward-Clyde Consultants.

2B	Identify the Supplementary Decisions (PCB Site 1,2,3) (Continued)	Supplementary Decisions: G) If risk is within risk range (10^{-4}- 10^{-6}), do other mitigating factors exist, or is other information available, to allow for further evaluation of need for deed restrictions? • For example, do building practices in Central Valley necessitate using more conservative assumptions concerning risk? • Do the site specific conditions (e.g., size, location with respect to adjacent structures) warrant further evaluation and merit special consideration? H) If existing available data are insufficient and other mitigating factors do not exist, what additional data are necessary to make decision concerning need for deed restrictions? I) If risk is within risk range (10^{-4}- 10^{-6}), does the BCT have the flexibility to accept certain mitigating factors in assessing need for deed restrictions? J) Is it acceptable to provide notification only (as already provided in FOSL/FOST for PCBs to meet TSCA notification requirements) in lieu of actual deed restrictions?
3	Identify Inputs to the Decisions (PCB Site 1,2,3)	A) Site historical information: PCB sites 1,2,3 part of Fire Training Area 3. Utilized as a transformer shed and yard area. Five cleanup actions conducted (Cleanup #1 1983, Cleanup #2 1983, Cleanup #3 1984, Cleanup #4 1984, Cleanup #5 1985); 162 55-gallon drums of soil removed. B) Confirmation sampling data: • 1985 data: 5 to 27 mg/kg PCB @ 5'; data indicate site is clean to 5'. *Actual data unavailable (not located in compliance records); sampling locations unknown. Results cannot be verified.* Only highest hits and range available. • 1990 data (IT Report 9/7/90): 2.2 mg/kg @ 15'; data indicate site is clean at all depths; no restrictions. Data available for all sampling points, including range (5' to 45'); maximum hits (2.2 mg/kg @ 15'; 2 mg/kg @ 10'; and sampling locations. • 1991 data (Jonas and Associates): Phase III Confirmatory Sampling - composite samples collected at 1' - 3' bgs. • Approximate site area: 6119 ft^2 = (85'x 75') - 256 ft^2; 256 ft^2 = area of building (spill occurred outside building) • Average concentration of remaining PCBs over site area necessary to complete risk assessment. C) Building approaches in Central Valley: Placing slab on concrete on ground versus digging a foundation. Can we make assumptions about the approach that is generally used? D) Site specific conditions: location, size, adjacent structures, bare dirt or paved?
4	Define the Study Boundaries (PCB Site 1,2,3)	A) Risk to be evaluated for surface and subsurface soil (to 15' bgs) at PCB Site 1,2,3. B) Not necessary to collect additional data. (It appears that sufficient sampling has been conducted.)

5A	Develop a Primary Decision Rule (PCB Site 1,2,3)	Primary Decision: If remaining PCB contamination in soil presents an unacceptable risk, then deed restrictions are warranted. (If remaining contamination does not present an unacceptable risk, then unrestricted use can be allowed.)
5B	Develop Supplementary Decision Rules (PCB Site 1,2,3)	Supplementary Decisions: A) If TSCA cleanup requirements were met (and documented) during previous cleanup, then the CERCLA requirements are considered satisfied and deed restrictions are unwarranted. B) If the data summarized in the report are unavailable, then the report data cannot be used as a basis for specifying no further action. C) If the existing available data are sufficient, then the risk and the need for deed restrictions can be assessed. D) If the 1990 confirmation sampling was conducted in the same location as 1985 sampling, then it may be acceptable to use the 1990 data only for assessment. E) If the 1990 data represent the current site characterization and the 1990 data are sufficient, then unrestricted site use can be allowed. (1990 data indicate site is clean.) F) If the site does not pose a risk that exceeds 10^{-6}, then unrestricted site use can be allowed. G) If the site risk is within the risk range (10^{-4}- 10^{-6}), but other mitigating factors exist or other information is available, deed restrictions may be unnecessary. • For example, if the building practices in Central Valley involve placing a concrete slab on ground, then less conservative assumptions can be used concerning risk, and unrestricted site use may be possible. • See A above. H) If existing available data are insufficient, then additional factors need to be considered to determine whether deed restrictions are necessary. I) If risk is within risk range (10^{-4}- 10^{-6}), and the BCT cannot accept mitigating factors, then deed restrictions will be necessary. J) If it is acceptable to provide notification in lieu of actual deed restrictions, the community may be more willing to accept this approach.
6	Specify Limits of Uncertainty (PCB Site 1,2,3)	A) If it appears that a combination of building practices are used, then it may not be reasonable to assume that a building foundation will not be dug. B) If risk exceeds 10^{-6}, the BCT may be unable to accept no deed restrictions even if mitigating circumstances exist.

7	Optimize the Design (PCB Site 1,2,3)	Summary of Risk Screening: EPA used the 1990 PCB data for risk screening. A summary of the key information is presented below: Sampling depth = 0 to 15' bgs Maximum concentration = 2.2 mg/kg Minimum concentration = ND (< 0.5 mg/kg) Minimum detected concentration = 0.11 mg/kg Average concentration = 0.75 mg/kg (Use of average concentration is appropriate based on size (area) of site.) Frequency of detection = 6/10 Risk (at average concentration)* = 1.3×10^{-6} *Risk = (PCB concentration at site)/(RAO x 10^{-6}); Risk calculated using the Castle AFB remedial action objective (RAO) for PCBs of 0.57 mg/kg. Conclusion: No further action determined to be necessary for site (BCT consensus at 5/21/98 RPM meeting). • Data collected in 1990 were available in 1991 report and in Air Force compliance records (which were separate from the Administrative Record); the data were adequate to characterize the site. • The 1990 data show no unacceptable risk exists. The highest hit was 2.2 ppm and the average concentration across the site is less than 0.75 ppm. The site risk is within the target risk range. Based on the average site concentration for PCBs, institutiona1 controls are considered to be unnecessary. Evaluating supplementary decisions H through J was unnecessary. • The Air Force compliance records include sample results for what appear to be a RCRA facility closure, although it is unclear whether the State formally concurred on closure. Given the analysis above, site closure appears to be appropriate.

Castle Airport Source Control Operable Unit (SCOU)
Data Quality Objectives Summary for PCB Sites 4 (Site 23; Building 534) and 5 (Site 24; Building 404)

Step	Process	Response
1	State the Problem (PCB Sites 4/5)	A) Confirmation sampling data show some PCB contaminated soil remains after spill cleanups. B) Risk was not evaluated after spill cleanups. C) Sites were targeted for deed restrictions. D) Although future land use is occupational, the community is unsatisfied with imposition of deed restrictions. E) It is unclear whether deed restrictions are warranted.
2A	Identify the Primary Decision (PCB Sites 4/5)	Primary Decision: Does remaining PCB contamination in soil present an unacceptable risk ($>10^{-6}$ - 10^{-4}) and, therefore, warrant deed restrictions? Alternative Actions: • Recommend that deed restrictions are unnecessary. • Recommend that deed restrictions are necessary to protect against risk posed by PCB contaminated soil. Decision Statement: Decide whether remaining PCB contaminated soil exceeds the acceptable risk range and warrants deed restrictions.
2B	Identify the Supplementary Decisions (PCB Sites 4/5)	Supplementary Decisions: A) Were TSCA cleanup requirements met (and documented) during previous cleanups? B) Are historical data summarized in 1991 report positively unavailable in Administrative Record? C) Are existing available data sufficient to assess remaining risk? D) If risk is within risk range (10^{-4}- 10^{-6}), do other mitigating factors exist or is other information available to allow for further evaluation of need for deed restrictions? • For example, do building practices in Central Valley necessitate using more conservative assumptions concerning risk? • Do the site specific conditions (e.g., size, location with respect to adjacent structures) warrant further evaluation and merit special consideration? • Can we assume that the same procedure was used to clean up both PCB sites 4 and 5? If so, and if the more highly contaminated site was sufficiently cleaned up, can we conclude that both sites are sufficiently clean and, therefore, deed restrictions are unnecessary? E) If risk is within risk range (10^{-4}- 10^{-6}), does the BCT have the flexibility to accept certain mitigating factors in assessing need for deed restriction? F) If existing available data are insufficient and other mitigating factors do not exist, what additional data are necessary to make decision concerning need for deed restrictions? Is it necessary to sample and, if so, how many samples should be collected?

2B	Identify the Supplementary Decision (PCB Sites 4/5) (Continued)	Supplementary Decisions: G) How do we determine whether additional sampling would be worthwhile? (Sampling may not be worthwhile if it is unlikely that deed restrictions can be eliminated.) H) Is it acceptable to provide notification only (as already provided in FOSL/FOST for PCBs to meet TSCA notification requirements) in lieu of actual deed restrictions?
3	Identify Inputs to the Decisions (PCB Sites 4/5)	A) Site historical information: PCB spills were reported at Sites 4 and 5. *Site 4*: Compliance records indicate that at least two soil cleanups were conducted. The first occurred in 1980; samples were collected on 8/28/80. The second occurred in 1982, following sampling on 1/27/82 to delineate contamination. Follow up confirmation sampling was conducted on 10/27/82. The 1991 report does not adequately document these events, although the compliance records include this information. *Site 5*: Top 6-inches of soil was removed to cleanup spills (1982). B) Confirmation sampling data: The data were located in Air Force compliance records. *Site 4*: Soil samples collected 10/27/82: (Post spill cleanup results) conc. mg/kg: 8, <0.5, <0.5 depth bgs: 5', 4', 5'6" Approximate site area =128 ft^2 = (8'x16') *Site 5*: Soil samples collected 12/17/81: (Post spill cleanup results) conc. mg/kg: 1.7, <0.5, 7.7, 14, 2.7, 2.2, <1.0, <1.0 depth bgs: 6", 6", 6", 1', 1', 6", 6", 1' conc. mg/kg: 13, 3.7, 7.4, 8.6, 1.3, <1.0, 10 depth bgs: 6", 1', 6", 6", 6", 1', 6" Approximate site area = 120 ft^2 = (10'x12') Average concentration of remaining PCBs over area of site is necessary for risk assessment. C) Building approaches in Central Valley: Placing slab on concrete on ground versus digging a foundation. D) Site specific conditions: location, size, adjacent structures, bare dirt or paved?

4	Define the Study Boundaries (PCB Sites 4/5)	A) Risk to be evaluated for surface and subsurface soil (to 15' bgs) at PCB Sites 4 and 5. B) May be necessary to collect additional data. C) Area of site will determine how many samples are necessary. D) Surface soil samples (6" to 1' bgs) would be collected since; due to nature of spill (i.e., single event) and chemical (i.e., low mobility), sampling at depth is unwarranted.
5A	Develop a Primary Decision Rule (PCB Sites 4/5)	Primary Decision: If remaining PCB contamination in soil presents an unacceptable risk, then deed restrictions are warranted. (If remaining contamination does not present an unacceptable risk, then unrestricted use can be allowed.)
5B	Develop Supplementary Decision Rules (PCB Sites 4/5)	Supplementary Decisions: A) If TSCA cleanup requirements were met (and documented) during previous cleanups, then the CERCLA requirements are considered satisfied and deed restrictions are unwarranted. B) If the data summarized in the 1991 report are unavailable, then the report data cannot be used as a basis for specifying no further action. C) If the existing available data are sufficient, then the risk and the need for deed restrictions can be assessed. D) If the site risk is within risk range (10^{-4}- 10^{-6}), but other mitigating factors exist or other information is available, deed restrictions may be unnecessary. • For example, if the building practices in Central Valley involve placing a concrete slab on ground, then less conservative assumptions can be used concerning risk, and unrestricted site use may be possible. • If we can assume that the same procedure was used to clean up both PCB sites 4 and 5, and the more highly contaminated site was sufficiently cleaned up, we may be able to conclude that both cites are sufficiently clean and, therefore, deed restrictions are unnecessary. • See A above. E) If risk is within risk range (10^{-4}- 10^{-6}), and the BCT cannot accept mitigating factors, then collecting additional data or deed restrictions will be necessary. F) If existing available data are insufficient, then X number of samples will be collected from locations Y based on the area of the site(s). G) If collecting additional samples is considered necessary, then BCT must assess the likelihood whether deed restrictions will be necessary regardless of additional data (sampling may not make sense). If sampling makes sense, then BCT needs to define decisions based on anticipated possible outcomes (i.e., results). H) If it is acceptable to provide notification in lieu of actual deed restrictions, the community may be more willing to accept this approach.

6	Specify Limits of Uncertainty (PCB Sites 4/5)	A) If it appears that a combination of building practices are used, then it may not be reasonable to assume that a building foundation will not be dug. B) If risk exceeds 10^{-6}, the BCT may be unable to accept no deed restriction even if mitigating circumstances exist.
7	Optimize the Design (PCB Sites 4/5)	*PCB Site 4:* Summary of Risk Screening: A summary of the key information is presented below: Sampling depth minimum = 5' bgs Maximum concentration = 8 mg/kg Minimum concentration = ND (< 0.5 mg/kg) Minimum detected concentration = Not applicable Average concentration = Not applicable Frequency of detection = 1/3 Risk* =1.4×10^{-5} *Refer to information for PCB Sites 1,2,3 for risk calculation formula. Conclusion: No further action determined to be necessary for site. • Data summarized in 1991 report were located in Air Force compliance records (which were separate from the Administrative Record) and were used to calculate risk at the site. • The data show no unacceptable risk exists for the site. The site risk is within the target risk range. Although the highest hit was 8 ppm, there is no evidence of PCB contaminated soil at 0 to 5' bgs: the site has been backfilled. Institutional controls are considered to be unnecessary. Evaluating supplementary decisions E through H was unnecessary. *PCB Site 5*: Summary of Risk Screening: A summary of the key information is presented below: Sampling depth = minimum 5' bgs Maximum concentration = 14 mg/kg Minimum concentration = ND (< 0.5 mg/kg) Minimum detected concentration = 1.3 mg/kg Average concentration = 4.9 mg/kg (appropriate because of adequate sample size [N=l5] for site area) Frequency of detection = Not applicable Risk (at average concentration)* = 8.6×10^{-6}

7	Optimize the Design (PCB Sites 4/5) (Continued)	*PCB Site 5:* Conclusion: No further action determined to be necessary for site. • Data summarized in 1991 report were located in Air Force compliance records (which were separate from the Administrative Record) and were used to calculate risk at the site. • The data show no unacceptable risk exists for the site. The site risk is within the target risk range. Based on the small size of the site, institutional controls are considered to be unnecessary. As a result, evaluating supplementary decisions E through H was unnecessary.

Castle Airport Source Control Operable Unit (SCOU)
Data Quality Objectives Summary for PCB Site 6 (Site 25; Building 851)

Step	Process	Response
1	State the Problem (PCB Site 6)	A) Up to 15 gallons of PCB was spilled on a truck, the asphalt, and soil at the site. The PCB was cleaned up after spill (1991 report). B) Risk from remaining contaminated soil was not evaluated. C) Site was targeted for deed restrictions. D) Although future land use is occupational, community is unsatisfied with imposition of deed restrictions. E) It is unclear whether deed restrictions are warranted.
2A	Identify the Primary Decision (PCB Site 6)	Primary Decision: Does remaining PCB contamination in soil present an unacceptable risk ($>10^{-6}$ - 10^{-4}) and, therefore, warrant deed restrictions? Alternative Actions: • Recommend that deed restrictions are unnecessary. • Recommend that deed restrictions are necessary to protect against risk posed by PCB contaminated soil. Decision Statement: Decide whether remaining PCB contaminated soil exceeds the acceptable risk range and warrants deed restrictions.
2B	Identify the Supplementary Decisions (PCB Site 6)	Supplementary Decisions: A) Were TSCA cleanup requirements met (and documented) during previous cleanup? B) Given the nature of the spill, are actual soil data necessary to determine risk? Since the PCBs were spilled on a truck, the asphalt, and soil, and the spill was cleaned up afterwards, can we assume this action was sufficient? C) Are existing available data sufficient to assess remaining risk? D) If risk is within risk range (10^{-4}- 10^{-6}) or data are insufficient, do other mitigating factors exist or is other information available to allow for further evaluation of need for deed restrictions? For example, do building practices in Central Valley necessitate using more conservative assumptions concerning risk? E) If risk is within risk range (10^{-4}- 10^{-6}), does the BCT have the flexibility to accept certain mitigating factors in assessing need for deed restrictions? F) If existing available data are insufficient and other mitigating factors do not exist, what additional data are necessary to make decision concerning need for deed restrictions? Is collection of additional samples necessary and, if so, how many samples should be collected? G) How do we determine whether additional sampling would be worthwhile? (Sampling may not be worthwhile if it is unlikely that deed restrictions can be eliminated.)

2B	Identify the Supplementary Decisions (PCB Site 6) (Continued)	Supplementary Decisions: H) Is it acceptable to provide notification only (as already provided in FOSL/FOST for PCBs to meet TSCA notification requirements) in lieu of actual deed restrictions?
3	Identify Inputs to the Decisions (PCB Site 6)	A) Site historical information B) Existing sample data: • Soil samples collected on 6/14/82 (post cleanup sampling) (data located in Air Force compliance records): conc. mg/kg — depth bgs 5 — 6"-5' (estimated)* 6 — 6"-5' (estimated)* 9 — 6"-5' (estimated)* *Actual sampling depths were unspecified in site information. However, the sampling depth was not critical to the risk calculation. • 1991 report indicated transformer oil was tested and 9 ppm PCB was detected. However, data were not located in Air Force compliance records. It is unclear whether the 1991 report information is accurate. As a result, this data point was not used in the risk screening. • Approximate site area: 64 ft^2 = 8'x8' (assuming a spill of 5 to 10 gallons; most spilled on truck) • Average concentration of remaining PCB over area of site is necessary for risk assessment. C) Building approaches in Central Valley: Placing slab on concrete on ground versus digging a foundation. D) Site specific conditions: location, size, adjacent structures, bare dirt or paved?
4	Define the Study Boundaries (PCB Site 6)	A) May be unnecessary to collect additional data. B) Area of site will determine how many samples necessary. C) Surface soil samples (6" to 1' bgs) would be collected since it was surface spill and PCBs do not migrate.
5A	Develop a Primary Decision Rule (PCB Site 6)	Primary Decision: If remaining PCB contamination in soil presents an unacceptable risk, then deed restrictions are warranted. (If remaining contamination does not present an unacceptable risk, then unrestricted use can be allowed.) It is unclear whether soil was even significantly affected; historical information indicates that the spill occurred primarily on truck and asphalt.

5B	Develop Supplementary Decision Rules (PCB Site 6)	<u>Supplementary Decisions</u>: A) If TSCA cleanup requirements were met (and documented) during previous cleanup, then the CERCLA requirements are considered satisfied and deed restrictions are unwarranted. B) If we can assume the cleanup was sufficient, even in the absence of soil data, then unrestricted site use can be allowed. The volume of the spill was small (15 gallons); the PCBs spilled were in oil, which has a low mobility; oil most likely stayed primarily on truck and asphalt, where it was cleaned up. C) If the existing data are sufficient and the site does not pose a risk that exceeds 10^{-6}, then unrestricted site use can be allowed. D) If the site risk is within risk range (10^{-4}- 10^{-6}), but other mitigating factors exist or other information is available, deed restrictions may be unnecessary. • For example, if the building practices in Central Valley involve placing a concrete slab on ground, then less conservative assumptions can be used concerning risk, and unrestricted site use may be possible. • See A above. E) If risk is within risk range (10^{-4}- 10^{-6}), and the BCT cannot accept mitigating factors, then collecting additional data or deed restrictions will be necessary. F) If existing data are insufficient, then X number of samples will he collected from locations Y based on the area of the site. G) If collecting additional samples is considered necessary, then BCT must assess the likelihood whether deed restrictions will be necessary regardless of additional data (sampling may not make sense). If sampling makes sense, then BCT needs to define decisions based on anticipated possible outcomes (i.e., results). H) If it is acceptable to provide notification in lieu of actual deed restrictions, the community may be more willing to accept this approach.
6	Specify Limits of Uncertainty (PCB Site 6)	A) If it appears that a combination of building practices are used, then it may not be reasonable to assume that a building foundation will not be dug. B) If risk exceeds 10^{-5}, the BCT may be unable to accept no deed restriction even if mitigating circumstances exist.
7	Optimize the Design (PCB Site 6)	<u>Summary of Risk Screening</u>: A summary of the key information is presented below: Sampling depth = unknown; assumed to be 6" to 5' bgs (not critical to risk calculation) Maximum concentration = 9 mg/kg Minimum concentration = 5 mg/kg Minimum detected concentration = 5 mg/kg Average concentration = 6.7 mg/kg

7	Optimize the Design (PCB Site 6) (Continued)	Summary of Risk Screening (continued): Risk (at average concentration)* $=1.2x10^{-5}$ Other considerations: Three sampling points considered to be adequate for site area (8'x8'). *Refer to information for PCB Sites 1,2,3 for risk calculation formula. Conclusion: No further action determined to be necessary for site. • Soil data located in Air Force compliance records (which were separate from the Administrative Record) were used to calculate risk at the site. Transformer oil results discussed in 1991 report were not located in compliance records, and, therefore, could not be verified. • Historical information on the nature of the spill (i.e., it occurred primarily on truck and asphalt) support no further action for the site. • The soil data show no unacceptable risk exists for the site. The risk was within the target risk range. Based on the small size of the site, institutional controls are considered to be unnecessary. Evaluating supplementary decisions F through H was unnecessary.

Castle Airport Source Control Operable Unit (SCOU)
Data Quality Objectives Summary for PCB Site 8 (Site 27; Building 360)

Step	Process	Response
1	State the Problem (PCB Site 8)	A) Oil from transformer was spilled at site. B) Historical data do not indicate soil was affected by spill. C) Transformer oil sampled to confirm presence of PCBs. (Soil not sampled.) D) Risk was not evaluated. E) Site was targeted for deed restrictions. F) Although future land use is occupational, community is unsatisfied with imposition of deed restrictions. G) It is unclear whether sampling transformer oil only was adequate. H) It is unclear whether deed restrictions are warranted.
2A	Identify the Primary Decision (PCB Site 8)	Primary Decision: Does remaining PCB contamination in soil present an unacceptable risk ($>10^{-6}$ - 10^{-4}) and, therefore, warrant deed restrictions? Alternative Actions: • Recommend that deed restrictions are unnecessary. • Recommend that deed restrictions are necessary to protect against risk posed by PCB contaminated soil. Decision Statement: Decide whether remaining PCB contaminated soil exceeds the acceptable risk range and warrants deed restrictions.
2B	Identify the Supplementary Decisions (PCB Site 8)	Supplementary Decisions: A) Were TSCA cleanup requirements met (and documented) during previous cleanup? B) Are historical data summarized in 1991 report positively unavailable in Administrative Record? C) Are existing data (transformer oil results) sufficient to assess remaining risk? D) Are there other mitigating factors or is other information available to allow for further evaluation of need for deed restrictions without collecting additional samples? • For example, do building practices in Central Valley necessitate using more conservative assumptions concerning risk? • Do the site specific conditions (e.g., size, location with respect to adjacent structures) warrant further evaluation and merit special consideration? E) Does the BCT have the flexibility to accept certain mitigating factors in assessing need for deed restriction? F) If existing data are insufficient and other mitigating factors do not exist, what additional data are necessary to make decision concerning need for deed restrictions? Is it necessary to sample and, if so, how many samples should be collected?

2B	Identify the Supplementary Decisions (PCB Site 8) (Continued)	Supplementary Decisions: G) How do we determine whether additional sampling would be worthwhile? (Sampling may not be worthwhile if it is unlikely that deed restrictions can be eliminated.) H) Is it acceptable to provide notification only (as already provided in FOSL/FOST for PCBs to meet TSCA notification requirements) in lieu of actual deed restrictions?
3	Identify Inputs to the Decisions (PCB Site 8)	A) Site historical information B) Existing sample data: Data were located in Air Force compliance records. Transformer oil sampled on 5/26/82. Reported result: 7 mg/L (ppm), below 50 ppm level to qualify as PCB containing transformer under TSCA. C) Building approaches in Central Valley: Placing slab on concrete on ground versus digging a foundation. D) Site specific conditions: location, size, adjacent structures, bare dirt or paved?
4	Define the Study Boundaries (PCB Site 8)	A) May be unnecessary to collect additional data. B) Area of site will determine how many samples necessary. C) Surface soil samples (6" to 1' bgs) would be collected since it was surface spill and PCBs do not migrate.
5A	Develop a Primary Decision Rule (PCB Site 8)	Primary Decision: If remaining PCB contamination in soil presents an unacceptable risk, then deed restrictions are warranted. (If remaining contamination does not present an unacceptable risk, then unrestricted use can be allowed.)
5B	Develop Supplementary Decision Rules (PCB Site 8)	Supplementary Decisions: A) If TSCA cleanup requirements were met (and documented) during previous cleanup, then the CERCLA requirements are considered satisfied and deed restrictions are unwarranted. B) If the data summarized in the 1991 report are unavailable, then the report data cannot be used as a basis for specifying no further action. C) If existing data (transformer oil) are sufficient, deed restrictions are unnecessary; oil results confirmed transformer did not contain PCBs. D) If other mitigating factors exist or other information is available, deed restrictions may be unnecessary. • For example, if the building practices in Central Valley involve placing a concrete slab on ground, then less conservative assumptions can be used concerning risk, and unrestricted site use may be possible. • See A above. E) If the BCT cannot accept mitigating factors, then collecting additional data or deed restrictions will be necessary. F) If existing data are insufficient, then X member of samples will be collected from locations Y based on the area of the site.

5B	Develop Supplementary Decision Rules (PCB Site 8) (Continued)	Supplementary Decisions: G) If collecting additional samples is considered necessary, then we must assess the likelihood whether deed restrictions will be necessary regardless of additional data (sampling may not make sense). If sampling makes sense, then BCT needs to define decisions based on anticipated possible outcomes (i.e., results). H) If it is acceptable to provide notification in lieu of actual deed restrictions, the community may be more willing to accept this approach.
6	Specify Limits of Uncertainty (PCB Site 8)	A) If it appears that a combination of building practices are used, then it may not be reasonable to assume that a building foundation will not be dug. B) If risk exceeds 10^{-6}, the BCT may be unable to accept no deed restriction even if mitigating circumstances exist.
7	Optimize the Design (PCB Site 8)	Summary of Risk Screening: Not applicable. (See explanation below.) Conclusion: No further action determined to be necessary for site (BCT consensus at 5/21/98 RPM meeting) • Data summarized in 1991 report were located in Air Force compliance records (which were separate from the Administrative Record). • Historical information on the nature of the spill (i.e., spill appears to have not impacted soil, only paved area) supports no further action for the site. • The data show levels of PCBs detected in transformer oil were well below 50 ppm trigger level for TSCA cleanup. As a result, performing a risk calculation and evaluating supplementary decisions D through H were unnecessary.